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UNITED STATES DISTRICT COURT

SOUTHERN DISTRICT OF CALIFORNIA

VICTORIA PHIPPS, Plaintiff, vs. CAMP PENDLETON & QUANTICO HOUSING LLC, a Delaware limited liability company; LPC PENDLETON QUANTICO PM LP, a Delaware limited partnership; and DOES 1 through 50, inclusive, Defendants.	CASE NO. 3:21-cv-01514-DMS-MMP **DEFENDANTS' *DAUBERT* MOTION TO EXCLUDE TESTIMONY OF ANDREW HEYMAN, MD** **Date: October 13, 2023** **Time: 1:30 p.m.** **Judge: Hon. Dana M. Sabraw** **Courtroom: 13A**

Defendants Camp Pendleton & Quantico Housing LLC and LPC Pendleton Quantico PM LP (hereinafter, "Defendants") submit this Motion to exclude the testimony of Plaintiff's designated expert Dr. Andrew Heyman under Federal Rule of Evidence 702, and the ruling of *Daubert v. Merrell Dow Pharmaceuticals, Inc.* 509 U.S. 579 (1993) and its progeny, on the grounds that his diagnosis of Plaintiff with Chronic Inflammatory Response Syndrome ("CIRS"), a purported condition not accepted by the general medical community, and is not based on any reliable medical testing and data.

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I. AUTHORITY

The admission of expert testimony in federal court is governed by Federal Rule of Evidence 702. Rule 702 provides that expert testimony is admissible if the witness is sufficiently "qualified as an expert by knowledge, skill, experience, training or education" and:

> **(a)** the expert's scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue; **(b)** the testimony is based on sufficient facts or data; **(c)** the testimony is the product of reliable principles and methods; and **(d)** the expert has reliably applied the principles and methods to the facts of the case.

Fed. Rules Evid., Rule 702.

The United States Supreme Court interpreted Rule 702 to require district courts to be certain that expert evidence based on scientific, technical or other specialized knowledge is "not only relevant, but reliable." *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579, 589 (1993). The court must make a "preliminary assessment of whether that reasoning or methodology properly can be applied to the facts at issue." *Id.* at 592-593.

The *Daubert* opinion also provided guidelines for determining the reliability, and thus admissibility, of expert testimony. *Daubert*, 509 U.S. at 579. The four factors provided by the court are whether: (1) the theory "can be (and has been) tested"; (2) the theory "has been subjected to peer review and publication"; (3) the theory has a "known or potential rate of error"; and (4) whether or not the theory or technique enjoys "general acceptance" within a "relevant scientific community." *Id.* at 592-594, internal quotation marks omitted. The Supreme Court has since emphasized that the list of non-exhaustive factors provided in *Daubert* are flexible, and are "meant to be helpful, not definitive." *Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 151 (1999).

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II. ARGUMENT

A. Dr. Heyman's Diagnosis of Chronic Inflammatory Response Syndrome ("CIRS") Is not Reliable

i. CIRS is Not Generally Accepted in the Medical Community

For litigation purposes, Plaintiff sought out the opinion of Dr. Heyman, a medical professional claiming to specialize in CIRS, a condition not recognized by the majority of the medical community. As noted above, one of the key factors considered by the *Daubert* court for determining the reliability of proposed expert testimony is whether or not the theory enjoys "general acceptance" within a "relevant scientific community." *Daubert*, 509 U.S. at 592-594.

CIRS is not generally accepted in the medical community as a potential health effect associated with mold exposure. In the medical community, it is generally accepted that "[e]xposure to molds can cause human disease through several well-defined mechanisms." (Declaration of Kristin Reyna DeHart ("DeHart Decl."), Ex. B at p. 470). As noted in the Journal of Allergy and Clinical Immunology, mold causes harmful health effects through three specific mechanisms: "generation of a harmful immune response (eg, allergy or hypersensitivity pneumonitis [HP]), direct infection by the organism, and toxic-irritant effects from mold byproducts. For each of these defined pathophysiologic mechanisms, there are scientifically documented mold-related human diseases that present with objective clinical evidence of disease." (*Ibid.*) Put differently, these three mechanisms and only these three mechanisms "can be (and has been) tested"; "ha[ve] been subjected to peer review and publication"; and enjoys "general acceptance" within a "relevant scientific community." *Daubert*, 509 U.S. at 592-594.

In contrast to these well-accepted mold related illnesses, there exist a number of purported mold-related illnesses that "are characterized by the absence of objective evidence of disease and the lack of a defined pathology and are

typically without specificity for the involved fungus-fungal product purported to cause the illness." (DeHart Decl., Ex. C at p. 1). Indeed, another article from the American College of Occupational and Environmental Medicine notes with respect to these poorly defined diseases such as CIRS or Sick Building Syndrome, "despite a voluminous literature on the subject, the causal connection remains weak and unproven, particularly with respect to mycotoxins." (Exh. B to DeHart Decl. at p. 475.)

Perhaps most indicative of the lack of support for this diagnosis in the general medical community is its absence from the *International Classification of Diseases, 10th Revision, Clinical Modification*. (DeHart Decl., Ex. E at p. 111:17-20.) The ICD, propagated by the World Health Organization, provides "[t]he global standard for health data, clinical documentation and statistical aggregation." (DeHart Decl., Ex. D at p. 1.) CIRS's absence from this classification is strongly indicative of a lack of acceptance of this diagnosis in the medical community.

ii. Dr. Heyman's Opinions are not Supported by Reliable Scientific Medical Data in Relation to Plaintiff

Dr. Heyman's testimony cannot reliably establish general causation because he examined the Plaintiff too long after her alleged exposure, to possibly determine the mechanism and route of exposure to mold, or the frequency or duration of exposure.

Dr. Heyman defines CIRS as a "multi-symptom, multi-system illness caused by exposure to biotoxins or neurotoxins derived from a biological source." (DeHart Decl., Ex. F at p. 7.) Dr. Heyman employs a series of diagnostic criteria for CIRS, several of which lack a nexus between the facts of this case and any expertise Dr. Heyman may offer.

a. Exposure to a Biotoxin

First, Dr. Heyman opines that he must determine that: "[t]he Patient must have an exposure to a biotoxin causing illness verified by the presence of visible

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mold or mycological testing." Dr. Heyman concludes that Plaintiff satisfies this criteria because she has had "a known exposure to a water damaged building." (DeHart Decl., Ex. F at p. 11.) The medical validity of such a diagnostic criteria is suspect considering there are no known medical tests which could led to such a conclusion.

Specifically, Dr. Heyman testified at deposition that he is not a certified industrial hygienist or toxicologist and he has no other training or education that would allow him to make such a determination. (DeHart Decl., Ex. E at p. 32:17-21.) Nor is there any indication Dr. Heyman consulted with an expert qualified to make such a determination prior to reaching such a conclusion. Accordingly, he lacks the qualifications to determine that Plaintiff was exposed to a known water damaged building and any biotoxins or mycotoxins therein as required.

Further, such conclusions are not supported by actual documentation of mold testing conducted at the time of Plaintiff's tenancy and its evaluation by an actual certified industrial hygienist, which showed airborne mold spore levels comparable to the outside and were extremely low, and found no actual mold growth. (DeHart Decl., Exh. G, *generally*.) Moreover, although Dr. Heyman cites to this testing that he is not qualified to interpret as supporting his conclusions, he later in his deposition acknowledged that air sampling is not reliable. (DeHart Decl., Ex. E, at pp. 87:22-91:4.)

Finally, Dr. Heyman did not evaluate other potential sources of exposure. His review was limited to determining whether an exposure occurred. (DeHart Decl., Exh. F, *generally*.) Given the tenuous connection between the doctor's conclusion and the facts at issue, to allow such testimony that there was a known exposure would likely mislead a jury into giving such a conclusion credence, which the underlying facts do not otherwise warrant.

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b. Other Diseases Ruled Out

The next diagnostic criteria involve conclusions that "Other Diseases are ruled out via a thorough differential diagnosis workup." He claims patients with CIRS are often "misdiagnosed as having depression, anxiety, PTSD, somatization, Alzheimer's, allergy, ADD/ADHD, fibromyalgia and Chronic Fatigue Syndrome" and Dr. Heyman concludes that he ruled out other diseases, attributing multiple symptoms of a laundry list of other credible diagnoses, to mold exposure. (DeHart Decl., Exh. F at p. 11.)

Dr. Heyman's conclusions that other diseases have been ruled out is not based on sound medical practice, considering he did not review Ms. Phipps' pre-tenancy medical records to assess her past conditions. (DeHart Decl., Exh. E at p. 65:2-6; Exh. F at pp. 2-6.) He also did not review the deposition testimony of Plaintiff or various other treating physicians of Plaintiff taken in this case to evaluate their testimony about Plaintiff's pre-existing conditions and her diagnoses. (DeHart Decl., Ex. F at pp. 1-2.)

Despite his conclusion that he ruled out other diseases, Dr. Heyman clearly did not do so in a way that is medically sound. In so doing, he ignores Plaintiff's prior medical history, relying only on the statements of lay persons (Plaintiff) but without reviewing the medical records themselves and prior testing that may substantiate such concerns and make such a conclusion reliable for purposes of expert opinion.

c. Multiple Symptomology

Next, Dr. Heyman claims CIRS patients exhibit "[m]ultiple symptoms from multiple body systems similar to peer-reviewed published research" and Plaintiff meets this criteria. (DeHart Decl., Ex. F at p. 11). In so doing, he utilizes a laundry list of what he calls "organ system categories" including general fatigue and weakness, and other conditions of the muscles, eyes, respiratory system, gastrointestinal system, neurological system, and cognitive function. (*Ibid.*)

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Despite the long list of conditions which may be exhibited, these conditions are vaguely and generally defined so as to allow any number of other conditions to contribute. As noted above, Dr. Heyman fails to reliably rule out pre-existing conditions diagnosed by other providers which provide alternate explanations for such conditions exhibited by Plaintiff. For a doctor to conclude that such symptomology is indicative of this disease, it would be necessary to demonstrate that there are no other causes, but he fails to do so. At best, such circumstances indicate Plaintiff may either have CIRS, or other underlying conditions, and this criteria is not verifiable by any known medically sound practice.

d. Neuroinflammation

Dr. Heyman next concludes that Plaintiff exhibits "indication of neuroinflammation." (DeHart Decl., Ex. F at p. 11). First and foremost, it should be noted that Dr. Heyman reaches this conclusion in large part due to blind reliance on testing and conclusions by one of Plaintiff's medical providers, Environmental Brain Health Clinics,[1] and Plaintiff's other medical expert Dr. David Ross.[2] (DeHart Decl., Ex. E at pp. 102:1-104:9) Such reliance indicates that Dr. Heyman himself largely lacks the qualifications, knowledge or skill to reach this conclusion because he cannot opine on the "circumstances in which she took each of these tests." (*Ibid.* at 102:23-103:1.)

The sole testing which he himself interpreted as indicative of this condition is VCS testing. However, Dr. Heyman admits that he did not see any other VCS testing of Plaintiff for comparative purposes. (DeHart Decl., Ex. E at pp. 126:11-

[1] Defendants' Motion in Limine No. 2 raises the issue that the records of Environmental Brain Health Clinics and their related providers should be excluded from evidence (as well as the testimony of Dr. Heyman and Dr. Ross based upon them), as they were never provided by Plaintiff to Defendants in fact discovery, nor was this provider disclosed by Plaintiff in fact discovery or in her expert disclosures, and was essentially hidden from Defendants so that it would not be subpoenaed or deposed, or its records able to be used by Defendants' own experts Dr. Geng and Dr. Stein for their opinions and reports.

[2] There are issues with the bases of Dr. Ross' opinions as well, however, as discussed in Defendants' *Daubert* motion on Dr. Ross.

20.) Such prior conditions and change over time is an important component of such testing. By failing to look at prior or subsequent testing, the conclusion that there was neuroinflammation over time is not based on medically sound reasoning and should therefore be excluded as unreliable.

IV. CONCLUSION

Defendants respectfully request that this Court exclude opinion testimony of Plaintiffs' expert Dr. Andrew Heyman on the grounds that the diagnosis of CIRS is not reliable, based on its lack of acceptance in the general medical community, and that his diagnostic criteria lack a necessary nexus to the facts of this case and should therefore be excluded.

Respectfully Submitted,

Dated: September 29, 2023

GORDON REES SCULLY MANSUKHANI, LLP

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UNITED STATES DISTRICT COURT

SOUTHERN DISTRICT OF CALIFORNIA

VICTORIA PHIPPS, Plaintiff, vs. CAMP PENDLETON & QUANTICO HOUSING LLC, a Delaware limited liability company; LPC PENDLETON QUANTICO PM LP, a Delaware limited partnership; and DOES 1 through 50, inclusive, Defendants.	CASE NO. 3:21-cv-01514-DMS-MMP **DECLARATION OF KRISTIN REYNA DEHART IN SUPPORT OF DEFENDANTS' *DAUBERT* MOTION TO EXCLUDE TESTIMONY OF ANDREW HEYMAN, MD** **Date: October 13, 2023** **Time: 1:30 p.m.** **Judge: Hon. Dana M. Sabraw** **Courtroom: 13A**

I, Kristin Reyna DeHart, declare:

1. I am a Partner at Gordon Rees Scully Mansukhani LLP, counsel of record for Defendants Camp Pendleton & Quantico Housing LLC and LPC Pendleton Quantico PM LP ("Defendants") in this matter. I make this declaration of my own personal knowledge. As to any matters alleged on information and belief, I believe them to be true.

2. Attached to my declaration as Exhibit A is a true and correct copy of Plaintiff's Rule 26(A)(2)(E) Expert Disclosures, served on February 28, 2023.

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3. Attached hereto as Exhibit B is a true and correct copy of a position paper prepared by the American College of Occupational and Environmental Medicine, Hardin, et al. "Adverse Human Health Effects Associated with Molds in the Indoor Environment", *Journal of Occupational and Environmental Medicine*, Vol. 45, No. 5, May 2003.

4. Attached hereto as Exhibit C is a true and correct copy of a position paper prepared by the American Academy of Allergy, Asthma and Immunology, Bush, et al. "The medical effects of mold Exposure", *Journal of Allergy and Clinical Immunology*, Vol. 117, No. 2, 2006.

5. Attached hereto as Exhibit D is a true and correct copy of ICD-11 Fact Sheet, accessed at https://www.who.int/publications/m/item/icd-11-fact-sheet accessed on March 7, 2023.

6. Attached to my declaration as Exhibit E is a true and correct copy of the transcript of the Deposition of Andrew Heyman, MD taken on April 3, 2023.

7. Attached to my declaration as Exhibit F is a true and correct copy of the Expert Report of Plaintiff's Expert Andrew Heyman, MD, dated February 13, 2023.

8. Attached to my declaration as Exhibit G is a true and correct copy of the Expert Report of Defendants' Expert Colin Young, dated February 27, 2023.

I swear under penalty of perjury of the laws of the United States and the state of California that the foregoing is true and correct and that this declaration was executed this 29th day of September, 2023 in San Diego, California.

By: /s/ *Kristin Reyna DeHart*
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UNITED STATES DISTRICT COURT

SOUTHERN DISTRICT OF CALFIORNIA

VICTORIA PHIPPS, an individual;

Plaintiffs,

vs.

CAMP PENDLETON & QUANTICO HOUSING LLC, et al.,

Defendants.

CASE NO. 3:21-cv-01514-DMS-AHG

PLAINTIFFS' RULE 26(A)(2) EXPERT DISCLOSURES

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Pursuant to Rule 26(a)(2) of the Federal Rules of Civil Procedure and the Court's Order Granting Joint Motion to Amend Scheduling Order [Doc. 36], Plaintiff VICTORIA PHIPPS, (hereinafter "Plaintiff") make the following disclosures of expert witnesses they may use to present evidence at trial.

Plaintiff's investigation into this action is ongoing and Plaintiff reserves her right to modify, amend, clarify, or supplement these disclosures pursuant to Rule 26(e) as additional information becomes available.

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1. **Dr. David Ross**
   Virginia Institute Of Neuropsychiatry
   364 Browns Hill Court
   Midlothian, VA 23114-9511
   Phone: (804) 594-7046
   Fax: (866) 586-8977

Dr. Ross's written report and the information required by Federal Rule of Civil Procedure 26(a)(2)(B) has been served via Box.com link to Opposing Counsel.

2. **Dr. Andrew Heyman, MD MHSA**

   Virginia Center for Health and Wellness
   Medical Director of Integrative Medicine
   Department of Health Sciences
   The George Washington University
   39070 John Mosby Highway, Aldie, VA 20105
   Office (703) 327-2434 Fax (703) 32727

Dr. Heyman's written report and the information required by Federal Rule of Civil Procedure 26(a)(2)(B) has been served via Box.com link to Opposing Counsel.

3. **Joshua M. Rachal, MAC, CMI**
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Dr. Rachal's written report and the information required by Federal Rule of Civil Procedure 26(a)(2)(B) has been served via Box.com link to Opposing Counsel.

4. **Bob Bates, JD, CPA**
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Mr. Bates' written report and the information required by Federal Rule of Civil Procedure 26(a)(2)(B) has been served via Box.com link to Opposing Counsel.

Dated: February 28, 2023

WEBB LAW GROUP, APC

By /s/ *Christian B. Clark*
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PROOF OF SERVICE

STATE OF CALIFORNIA, COUNTY OF SAN DIEGO

I am employed in the County of San Diego, State of California. I am over the age of 18 and not a party to the within action; my primary business address is: **10509 Vista Sorrento Parkway, Suite 450, San Diego, CA 92121.** My email address is **Service@WebbLawGroup.com**.

On **February 28, 2023** I caused the service of document(s) described as:

1. **Plaintiff's Expert Disclosures**

on the interested parties in this action by placing a true copy thereof enclosed in a sealed envelope at: San Diego, California, addressed as follows:

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____ (BY MAIL) I am readily familiar with this business' practice for collection and processing of correspondence for mailing, and that correspondence, with postage thereon fully prepaid, will be deposited with the U.S. Postal Service on the date hereinabove in the ordinary course of business, at San Diego, California.

_XX_ (BY E-MAIL) I caused the above-referenced document(s) to be electronically mailed to the offices of the addressee(s) as a courtesy, pursuant to an applicable code or a valid stipulation. ***(Stipulation for service via email pursuant to CCP § 1010.6(a)(4)(B) entered on March 31, 2020).*** I did not receive, within a reasonable time after the transmission, any electronic message or other indication that the transmission was unsuccessful.

____ (BY OVERNIGHT COURIER) I caused the above-referenced document(s) to be delivered to an overnight courier service, postage prepaid, for delivery to the addressee(s).

Executed on **February 28, 2023**, at San Diego, California.

_XX_ (STATE) I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Christian B. Clark
CHRISTIAN B. CLARK

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EXHIBIT E

Case 3:21-cv-01514-DMS-MMP Document 76-3 Filed 09/29/23 PageID.3264 Page 2 of 10

ACOEM EVIDENCE-BASED STATEMENT

Adverse Human Health Effects Associated with Molds in the Indoor Environment

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In recent years, the growth of molds in home, school, and office environments has been cited as the cause of a wide variety of human ailments and disabilities. So-called "toxic mold" has become a prominent topic in the lay press and is increasingly the basis for litigation when individuals, families, or building occupants believe they have been harmed by exposure to indoor molds. This evidence-based statement from the American College of Occupational and Environmental Medicine (ACOEM) discusses the state of scientific knowledge as to the nature of fungal-related illnesses while emphasizing the possible relationships to indoor environments. Particular attention is given to the possible health effects of mycotoxins, which give rise to much of the concern and controversy surrounding indoor molds. Food-borne exposures, methods of exposure assessment, and mold remediation procedures are beyond the scope of this statement.

Fungi are eukaryotic unicellular or multicellular organisms that, because they lack chlorophyll, are dependent upon external food sources. Fungi are ubiquitous in all environments and play a vital role in the Earth's ecology by decomposing organic matter. Familiar fungi include yeasts, rusts, smuts, mushrooms, puffballs, and bracket fungi. Many species of fungi live as commensal organisms in or on the surface of the human body. "Mold" is the common term for multicellular fungi that grow as a mat of intertwined microscopic filaments (hyphae). Exposure to molds and other fungi and their spores is unavoidable except when the most stringent of air filtration, isolation, and environmental sanitation measures are observed, for example, in organ transplant isolation units.

Molds and other fungi may adversely affect human health through three processes: 1) allergy; 2) infection; and 3) toxicity. One can estimate that about 10% of the population has allergic antibodies to fungal antigens. Only half of these, or 5%, would be expected to show clinical illness. Furthermore, outdoor molds are generally more abundant and important in airway allergic disease than indoor molds, leaving the latter with an important but minor overall role in allergic airway disease. Allergic responses are most commonly experienced as allergic asthma or allergic rhinitis ("hay fever"). A rare, but much more serious immune-related condition, hypersensitivity pneumonitis (HP), may follow exposure (usually occupational) to very high concentrations of fungal (and other microbial) proteins.

Most fungi generally are not pathogenic to healthy humans. A number of fungi commonly cause superficial infections involving the feet (*tinea pedis*), groin (*tinea cruris*), dry body skin (*tinea corporus*), or nails (*tinea onchomycosis*). A very limited number of pathogenic fungi, such as *Blastomyces*, *Coccidioides*, *Cryptococcus*, and *Histoplasma*, infect nonimmunocompromised individuals. In contrast, persons with severely impaired immune function, for example, cancer patients receiving chemotherapy, organ transplant patients receiving immunosuppressive drugs, AIDS patients, and patients with uncontrolled diabetes, are at significant risk for more severe opportunistic fungal infection.

Some species of fungi, including some molds, are known to be capable of producing secondary metabolites, or mycotoxins, some of which find a valuable clinical use, for example, penicillin and cyclosporine. Serious veterinary and human mycotoxicoses have been documented after ingestion of foods heavily overgrown with molds. In agricultural settings, inhalation exposure to high concentrations of mixed organic dusts, which include bacteria, fungi, endotoxins, glucans, and mycotoxins, is associated with organic dust toxic syndrome, an acute febrile illness. The present alarm over human exposure to molds in the indoor environment derives from a belief that inhalation exposures to mycotoxins cause numerous and varied, but generally nonspecific, symptoms. Current scientific evidence does not support the proposition that human health has been adversely affected by inhaled mycotoxins in the home, school, or office environment.

Allergy and Other Hypersensitivity Reactions

Allergic responses to indoor molds may be immunoglobulin E (IgE) or immunoglobulin G (IgG) mediated, and both types of response are associated with exposure to indoor molds. Uncommon allergic syndromes, allergic bronchopulmonary aspergillosis (ABPA) and allergic fungal sinusitis (AFS), are briefly discussed for completeness, although indoor mold has not been suggested as a particular risk factor in the etiology of either.

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Immediate Hypersensitivity

The most common form of hypersensitivity to molds is immediate type hypersensitivity or IgE-mediated "allergy" to fungal proteins. This reactivity can lead to allergic asthma or allergic rhinitis that is triggered by breathing in mold spores or hyphal fragments. Residential or office fungal exposures may be a substantial factor in an individual's allergic airway disease depending on the subject's profile of allergic sensitivity and the levels of indoor exposures. Individuals with this type of mold allergy are "atopic" individuals, that is, have allergic asthma, allergic rhinitis, or atopic dermatitis and manifest allergic (IgE) antibodies to a wide range of environmental proteins among which molds are only one participant. These individuals generally will have allergic reactivity against other important indoor and outdoor allergens such as animal dander, dust mites, and weed, tree, and grass pollens. Among the fungi, the most important indoor allergenic molds are *Penicillium* and *Aspergillus* species.[1] Outdoor molds, for example, *Cladosporium* and *Alternaria*, as well as pollens, can often be found at high levels indoors if there is access for outdoor air (eg, open windows).

About 40% of the population are atopic and express high levels of allergic antibodies to inhalant allergens. Of these 25%, or 10% of the population, have allergic antibodies to common inhalant molds.[2] Because about half of persons with allergic antibodies will express clinical disease from those antibodies, about 5% of the population is predicted to have, at some time, allergic symptoms from molds. Although indoor molds are well-recognized allergens, outdoor molds are more generally important.

A growing body of literature associates a variety of diagnosable respiratory illnesses (asthma, wheezing, cough, phlegm), particularly in children, with residence in damp or water-damaged homes (see reviews[3–5]). Recent studies have documented increased inflammatory mediators in the nasal fluids of persons in damp buildings, but found that mold spores themselves were not responsible for these changes.[6,7] Although dampness may indicate potential mold growth, it is also a likely indicator of dust mite infestation and bacterial growth. The relative contribution of each is unknown, but mold, bacteria, bacterial endotoxins, and dust mites can all play a role in the reported spectrum of illnesses, and can all be minimized by control of relative humidity and water intrusion.

Hypersensitivity Pneunomitis

HP results from exaggeration of the normal IgG immune response against inhaled foreign (fungal or other) proteins and is characterized by: 1) very high serum levels of specific IgG proteins (classically detected in precipitin tests performed as double diffusion tests) and 2) inhalation exposure to very large quantities of fungal (or other) proteins.[8] The resulting interaction between the inhaled fungal proteins and fungal-directed cell-mediated and humoral (antibody) immune reactivity leads to an intense local immune reaction recognized as HP. As opposed to immediate hypersensitivity (IgE-mediated) reactions to mold proteins, HP is not induced by normal or even modestly elevated levels of mold spores. Most cases of HP result from occupational exposures, although cases have also been attributed to pet birds, humidifiers, and heating, ventilating, and air conditioning (HVAC) systems. The predominant organisms in the latter two exposures are thermophilic Actinomyces, which are not molds but rather are filamentous bacteria that grow at high temperatures (116°F).

The presence of high levels of a specific antibody, generally demonstrated as the presence of precipitating antibodies, is required to initiate HP but is not diagnostic of HP.[9] More than half of the people who have occupational exposure to high levels of a specific protein have such precipitin antibodies but do not have clinical disease.[8] Many laboratories now measure IgG to selected antigens by using solid phase immunoassays, which are easier to perform and more quantitative than precipitin (gel diffusion) assays. However, solid phase IgG levels that are above the reference range do not carry the same discriminatory power as do results of a precipitin test, which requires much greater levels of antibody to be positive. Five percent of the normal population has levels above the reference value for any one tested material. Consequently, a panel of tests (eg, 10) has a high probability of producing a false-positive result. Screening IgG antibody titers to a host of mold and other antigens is not justified unless there is a reasonable clinical suspicion for HP and should not be used to screen for mold exposure.[10]

Uncommon Allergic Syndromes: ABPA and AFS

These conditions[11] are unusual variants of allergic (IgE-mediated) reactions in which fungi actually grow within the patient's airway. ABPA is the classic form of this syndrome, which occurs in allergic individuals who generally have airway damage from previous illnesses leading to bronchial irregularities that impair normal drainage, eg, bronchiectasis.[12,13] Bronchial disease and old cavitary lung disease are predisposing factors contributing to fungal colonization and the formation of mycetomas. *Aspergillus* may colonize these areas without invading adjacent tissues. Such fungal colonization is without adverse health consequence unless the subject is allergic to the specific fungus that has taken up residence, in which case there may be ongoing allergic reactivity to fungal proteins released directly into the body. Specific criteria have been recognized for some time for the diagnosis of ABPA.[14,15] As

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fungi other than *Aspergillus* may cause this condition, the term "allergic bronchopulmonary mycosis" has been suggested.

It has more recently become appreciated that a similar process may affect the sinuses—AFS.[16] This condition also presents in subjects who have underlying allergic disease and in whom, because of poor drainage, a fungus colonizes the sinus cavity. *Aspergillus* and *Curvularia* are the most common forms although the number of fungal organisms involved continues to increase. As with ABPA, the diagnosis of AFS has specific criteria that should be used to make this diagnosis.[17–19]

Recommendations

- Individuals with allergic airway disease should take steps to minimize their exposure to molds and other airborne allergens, for example, animal dander, dust mites, pollens. For these individuals, it is prudent to take feasible steps that reduce exposure to aeroallergens and to remediate sources of indoor mold amplification. Sensitized individuals may need to keep windows closed, remove pets, use dust mite covers, use high-quality vacuum cleaners, or filter outdoor air intakes to minimize exposures to inhalant allergens. Humidification over 40% encourages fungal and dust mite growth, so should be avoided. Where there is indoor amplification of fungi, removal of the fungal source is a key measure to be undertaken so as to decrease potential for indoor mold allergen exposure.
- ABPA and AFS are uncommon disorders whereas exposure is ubiquitous to the fungal organisms involved. There is no evidence to link specific exposures to fungi in home, school, or office settings to the establishment of fungal colonization that leads to APBA or AFS.
- Once a diagnosis of HP is entertained in an appropriate clinical setting and with appropriate laboratory support, it is important to consider potential sources of inhaled antigen. If evaluation of the occupational environment fails to disclose the source of antigens, exposures in the home, school, or office should be investigated. Once identified, the source of the mold or other inhaled foreign antigens should be remediated.
- Appropriate measures should be taken in industrial workplaces to prevent mold growth, for example, in machining fluids and where stored organic materials are handled such as in agricultural and grain processing facilities. Engineering controls and personal protective equipment should be used to reduce aerosol generation and minimize worker exposures to aerosols.

Although it is not relevant to indoor mold exposure, it should be mentioned that there is a belief among some health practitioners and members of the public regarding a vague relationship between mold colonization, molds in foods, and a "generalized mold hypersensitivity state." The condition was originally proposed as the chronic Candida syndrome or Candida hypersensitivity syndrome but now has been generalized to other fungi. Adherents may claim that individuals are colonized with the mold(s) to which they are sensitized and that they react to these endogenous molds as well as to exposures in foods and other materials that contain mold products. The proposed hypersensitivity is determined by the presence of any of a host of non-specific symptoms plus an elevated (or even normal) level of IgG to any of a host of molds. The claim of mold colonization is generally not supported with any evidence, eg, cultures or biopsies, to demonstrate the actual presence of fungi in or on the subject. Instead, proponents often claim colonization or infection based on the presence of a wide variety of nonspecific symptoms and antibodies detected in serologic tests that represent no more than past exposure to normal environmental fungi. The existence of this disorder is not supported by reliable scientific data.[20,21]

Infection

An overview of fungi as human pathogens follows. Exposure to molds indoors is generally not a specific risk factor in the etiology of mycoses except under specific circumstances as discussed below for individual types of infection.

Serious Fungal Infections

A very limited number of pathogenic fungi, such as *Blastomyces*, *Coccidioides*, *Cryptococcus*, and *Histoplasma* infect normal subjects and may cause a fatal illness. However, fungal infections in which there is deep tissue invasion are primarily restricted to severely immunocompromised subjects, for example, patients with lymphoproliferative disorders, including acute leukemia, cancer patients who are receiving intense chemotherapy, or persons undergoing bone marrow or solid transplantation who get potent immunosuppressive drugs.[22] Uncontrolled diabetics and persons with advanced AIDS are also at increased risk. Concern is greatest when patients are necessarily in the hospital during their most severe immunocompromise, at which time intense measures are taken to avoid fungal, bacterial, and viral infection.[23] Outside the hospital, fungi, including *Aspergillus*, are so ubiquitous that few recommendations can be made beyond avoidance of known sources of indoor and outdoor amplification, including indoor plants and flowers because vegetation is a natural fungal growth medium.[24,25] *Candida albicans* is a ubiquitous commensal organism on humans that becomes an important pathogen for immunocompromised subjects. However, it and other environmental fungi discussed above that are pathogens in normals as well (eg, *Cryptococcus* associated with bird droppings, *Histoplasma* associated with bat droppings, *Coccidioides* endemic in the

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soil in the southwestern United States) are not normally found growing in the office or residential environment, although they can gain entry from outdoors. Extensive guidelines for specific immunocompromised states can be found at the Centers for Disease Control and Prevention (CDC) web site at www.cdc.gov.

Superficial Fungal Infections

In contrast with serious internal infections with fungi, superficial fungal infections on the skin or mucosal surfaces are extremely common in normal subjects. These superficial infections include infection of the feet (*tinea pedis*), nails (*tinea onychomycosis*), groin (*tinea cruris*), dry body skin (*tinea corporis*) and infection of the oral or vaginal mucosa. Some of the common organisms involved, for example, *Trychophyton rubrum*, can be found growing as an indoor mold. Others, such as *Microsprum canis* and *T. mentagrophytes* can be found on indoor pets (eg, dogs, cats, rabbits, and guinea pigs). As a common commensal on human mucosal surfaces, *C. albicans* can be cultured from more than half of the population that has no evidence of active infection. *C. albicans* infections are particularly common when the normally resident microbial flora at a mucosal site are removed by antibiotic use. Local factors such as moisture in shoes or boots and in body creases and loss of epithelial integrity are important in development of superficial fungal infections.

Pityriasis (*Tinea*) *versicolor* is a chronic asymptomatic infection of the most superficial layers of the skin due to *Pityriasis ovale* (also known as *P. orbiculare* and *Masassezia furfur*) manifest by patches of skin with variable pigmentation. This is not a contagious condition and thus is unrelated to exposures but represents the overgrowth of normal cutaneous fungal flora under favorable conditions.

Recommendations

- Only individuals with the most severe forms of immunocompromise need be concerned about the potential for opportunistic fungal infections. These individuals should be advised to avoid recognizable fungal reservoirs, including but not limited to indoor environments where there is uncontrolled mold growth. Outdoor areas contaminated by specific materials, such as pigeon droppings, should be avoided as well as nearby indoor locations where those sources may contaminate the intake air. Individuals with *M. canis* and *T. mentagrophytes* infections should have their pets checked by a veterinarian. No other recommendations are warranted relative to home, school, or office exposures in patients with superficial fungal infections.

Toxicity

Mycotoxins are "secondary metabolites" of fungi, which is to say mycotoxins are not required for the growth and survival of the fungal species ("toxigenic species") that are capable of producing them. The amount (if any) and type of mycotoxin produced is dependent on a complex and poorly understood interaction of factors that probably include nutrition, growth substrate, moisture, temperature, maturity of the fungal colony, and competition from other microorganisms.[26–30] Additionally, even under the same conditions of growth, the profile and quantity of mycotoxins produced by toxigenic species can vary widely from one isolate to another.[31–34] Thus, it does not necessarily follow from the mere presence of a toxigenic species that mycotoxins are also present.[35–38]

When produced, mycotoxins are found in all parts of the fungal colony, including the hyphae, mycelia, spores, and the substrate on which the colony grows. Mycotoxins are relatively large molecules that are not significantly volatile;[39,40] they do not evaporate or "off-gas" into the environment, nor do they migrate through walls or floors independent of a particle. Thus, an inhalation exposure to mycotoxins requires generation of an aerosol of substrate, fungal fragments, or spores. Spores and fungal fragments do not pass through the skin, but may cause irritation if there is contact with large amounts of fungi or contaminated substrate material.[41] In contrast, microbial volatile organic compounds are low molecular weight alcohols, aldehydes, and ketones.[42] Having very low odor thresholds, microbial volatile organic compounds are responsible for the musty, disagreeable odor associated with mold and mildew and they may be responsible for the objectionable taste of spoiled foods.[42,43]

Most descriptions of human and veterinary poisonings from molds involve eating moldy foods.[41,43–46] Acute human intoxications have also been attributed to inhalation exposures of agricultural workers to silage or spoiled grain products that contained high concentrations of fungi, bacteria, and organic debris with associated endotoxins, glucans, and mycotoxins.[47,48] Related conditions, including pulmonary mycotoxicosis, grain fever, and others, are referred to more broadly as organic dust toxic syndrome.[49] Exposures associated with organic dust toxic syndrome have been described as a "fog" of particulates[50] or an initial "thick airborne dust" that "worsened until it was no longer possible to see across the room."[51] Total microorganism counts have ranged from 10^5 to 10^9 per cubic meter of air[52] or even 10^9 to 10^{10} spores per cubic meter,[53,54] extreme conditions not ordinarily encountered in the indoor home, school, or office environment.

Sick building syndrome, or nonspecific building-related illness, represents a poorly defined set of symptoms (often sensory) that are attributed to occupancy in a building. Investigation generally finds no spe-

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cific cause for the complaints, but they may be attributed to fungal growth if it is found. The potential role of building-associated exposure to molds and associated mycotoxins has been investigated, particularly in instances when *Stachybotrys chartarum* (aka *Stachybotrys atra*) was identified.[55–58] Often referred to in the lay press by the evocative, but meaningless terms, "toxic mold" or "fatal fungus," *S. chartarum* elicits great concern when found in homes, schools, or offices, although it is by no means the only mold found indoors that is capable of producing mycotoxins.[35,36,59,60] Recent critical reviews of the literature[35,61–67] concluded that indoor airborne levels of microorganisms are only weakly correlated with human disease or building-related symptoms and that a causal relationship has not been established between these complaints and indoor exposures to *S. chartarum*.

A 1993 to 1994 series of cases of pulmonary hemorrhage among infants in Cleveland, Ohio, led to an investigation by the CDC and others. No causal factors were suggested initially,[68] but eventually these same investigators proposed that the cause had been exposures in the home to *S. chartarum* and suggested that very young infants might be unusually vulnerable.[69–71] However, subsequent detailed re-evaluations of the original data by CDC and a panel of experts led to the conclusion that these cases, now called 'acute idiopathic pulmonary hemorrhage in infants,"[72] had not been causally linked to *S. chartarum* exposure.[73]

If mycotoxins are to have human health effects, there must be an actual presence of mycotoxins, a pathway of exposure from source to susceptible person, and absorption of a toxic dose over a sufficiently short period of time. As previously noted, the presence of mycotoxins cannot be presumed from the mere presence of a toxigenic species. The pathway of exposure in home, school, and office settings may be either dermal (eg, direct contact with colonized building materials) or inhalation of aerosolized spores, mycelial fragments, or contaminated substrates. Because mycotoxins are not volatile, the airborne pathway requires active generation of that aerosol. For toxicity to result, the concentration and duration of exposure must be sufficient to deliver a toxic dose. What constitutes a toxic dose for humans is not known at the present time, but some estimates can be made that suggest under what circumstances an intoxication by the airborne route might be feasible.

Experimental data on the in vivo toxicity of mycotoxins are scant. Frequently cited are the inhalation LC_{50} values determined for mice, rats, and guinea pigs exposed for 10 minutes to T-2 toxin, a trichothecene mycotoxin produced by *Fusarium* spp.[74,75] Rats were most sensitive in these studies, but there was no mortality in rats exposed to 1.0 mg T-2 toxin/m^3. No data were found on T-2 concentrations in *Fusarium* spores, but another trichothecene, satratoxin H, has been reported at a concentration of 1.0×10^{-4} ng/spore in a "highly toxic" *S. chartarum* strain *s.* 72.[31] To provide perspective relative to T-2 toxin, 1.0 mg satratoxin H/m^3 air would require 10^{10} (ten billion) of these s. 72 *S. chartarum* spores/m^3.

In single-dose in vivo studies, *S. chartarum* spores have been administered intranasally to mice[31] or intratracheally to rats.[76,77] High doses (30×10^6 spores/kg and higher) produced pulmonary inflammation and hemorrhage in both species. A range of doses were administered in the rat studies and multiple, sensitive indices of effect were monitored, demonstrating a graded dose response with 3×10^6 spores/kg being a clear no-effect dose. Airborne *S. chartarum* spore concentrations that would deliver a comparable dose of spores can be estimated by assuming that all inhaled spores are retained and using standard default values for human subpopulations of particular interest—very small infants (5th percentile body weight for 1-month-old male infants, 3.16 kg; respiratory rate for infants under 1 year of age, 4.5 m^3/day[78]), school-age children (50th percentile body weight for 6-year-old boys, 22 kg; respiratory rate for children ages 6 to 9, 10.0 m^3/day[78]), and adults (50th percentile body weight for men aged 25 to 34 years, 77.5 kg; respiratory rate for men age 19–65, 15.2 m^3/day[78]). The no-effect dose in rats (3×10^6 spores/kg) corresponds to continuous 24-hour exposure to 2.1×10^6 spores/m^3 for infants, 6.6×10^6 spores/m^3 for a school-age child, or 15.3×10^6 spores/m^3 for an adult.

That calculation clearly overestimates risk because it ignores the impact of dose rate by implicitly assuming that the acute toxic effects are the same whether a dose is delivered as a bolus intratracheal instillation or gradually over 24 hours of inhalation exposure. In fact, a cumulative dose delivered over a period of hours, days, or weeks is expected to be less acutely toxic than a bolus dose, which would overwhelm detoxification systems and lung clearance mechanisms. If the no-effect 3×10^6 spores/kg intratracheal bolus dose in rats is regarded as a 1-minute administration (3×10^6 spores/kg/minute), achieving the same dose rate in humans (using the same default assumptions as previously) would require airborne concentrations of 3.0×10^9 spores/m^3 for an infant, 9.5×10^9 spores/m^3 for a child, or 22.0×10^9 spores/m^3 for an adult.

In a repeat-dose study, mice were given intranasal treatments twice weekly for three weeks with "highly toxic" *s.* 72 *S. chartarum* spores at doses of 4.6×10^6 or 4.6×10^4 spores/kg (cumulative doses over three weeks of 2.8×10^7 or 2.8×10^5 spores/kg).[79] The higher dose caused severe inflammation with hemorrhage, while less severe inflammation but no hemorrhage was seen at the lower dose of *s.* 72 spores. Using the same assumptions as previously (and again ignoring

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dose-rate implications), airborne *S. chartarum* spore concentrations that would deliver the non-hemorrhagic cumulative three-week dose of 2.8×10^5 spores/kg can be estimated as 9.4×10^3 spores/m^3 for infants, 29.3×10^3 spores/m^3 for a school-age child, and 68.0×10^3 spores/m^3 for adults (assuming exposure for 24 hours per day, 7 days per week, and 100% retention of spores).

The preceding calculations suggest lower bound estimates of airborne *S. chartarum* spore concentrations corresponding to essentially no-effect acute and subchronic exposures. Those concentrations are not unfeasible but they are improbable and inconsistent with reported spore concentrations. For example, in data from 9619 indoor air samples from 1717 buildings, when *S. chartarum* was detected in indoor air (6% of the buildings surveyed) the median airborne concentration was 12 CFU/m^3 (95% CI 12 to 118 CFU/m^3).[80]

Recommendations

- The presence of toxigenic molds within a home, school, or office environment should not by itself be regarded as demonstrating that mycotoxins were present or that occupants of that environment absorbed a toxic dose of mycotoxins.
- Indoor air samples with contemporaneous outdoor air samples can assist in evaluating whether or not there is mold growth indoors; air samples may also assist in evaluating the extent of potential indoor exposure. Bulk, wipe, and wall cavity samples may indicate the presence of mold, but do not contribute to characterization of exposures for building occupants.
- After the source of moisture that supports mold growth has been eliminated, active mold growth can be eliminated. Colonized porous materials, for example, clothing or upholstery, can be cleaned using appropriate routine methods, eg, washing or dry cleaning clothing, and need not be discarded unless cleaning fails to restore an acceptable appearance.
- When patients associate health complaints with mold exposure, treating physicians should evaluate all possible diagnoses, including those unrelated to mold exposure, that is, consider a complete appropriate differential diagnosis for the patient's complaints. To the extent that signs and symptoms are consistent with immune-mediated disease, immune mechanisms should be investigated.
- The possibility of a mycotoxicosis as an explanation for specific signs and symptoms in a residential or general office setting should be entertained only after accepted processes that are recognized to occur have been appropriately excluded and when mold exposure is known to be uncommonly high. If a diagnosis of mycotoxicosis is entertained, specific signs and symptoms ascribed to mycotoxins should be consistent with the potential mycotoxins present and their known biological effects at the potential exposure levels involved.

Summary

Molds are common and important allergens. About 5% of individuals are predicted to have some allergic airway symptoms from molds over their lifetime. However, it should be remembered that molds are not dominant allergens and that the outdoor molds, rather than indoor ones, are the most important. For almost all allergic individuals, the reactions will be limited to rhinitis or asthma; sinusitis may occur secondarily due to obstruction. Rarely do sensitized individuals develop uncommon conditions such as ABPA or AFS. To reduce the risk of developing or exacerbating allergies, mold should not be allowed to grow unchecked indoors. When mold colonization is discovered in the home, school, or office, it should be remediated after the source of the moisture that supports its growth is identified and eliminated. Authoritative guidelines for mold remediation are available.[81–83]

Fungi are rarely significant pathogens for humans. Superficial fungal infections of the skin and nails are relatively common in normal individuals, but those infections are readily treated and generally resolve without complication. Fungal infections of deeper tissues are rare and in general are limited to persons with severely impaired immune systems. The leading pathogenic fungi for persons with nonimpaired immune function, *Blastomyces*, *Coccidioides*, *Cryptococcus*, and *Histoplasma*, may find their way indoors with outdoor air but normally do not grow or propagate indoors. Due to the ubiquity of fungi in the environment, it is not possible to prevent immune-compromised individuals from being exposed to molds and fungi outside the confines of hospital isolation units.

Some molds that propagate indoors may under some conditions produce mycotoxins that can adversely affect living cells and organisms by a variety of mechanisms. Adverse effects of molds and mycotoxins have been recognized for centuries following ingestion of contaminated foods. Occupational diseases are also recognized in association with inhalation exposure to fungi, bacteria, and other organic matter, usually in industrial or agricultural settings. Molds growing indoors are believed by some to cause building-related symptoms. Despite a voluminous literature on the subject, the causal association remains weak and unproven, particularly with respect to causation by mycotoxins. One mold in particular, *Stachybotrys chartarum*, is blamed for a diverse array of maladies when it is found indoors. Despite its well-known ability to produce mycotoxins under appropriate growth conditions, years of intensive study have failed to establish exposure to *S. chartarum* in home, school, or office environments as a cause of adverse human health effects. Levels of exposure in the indoor environment, dose-response data in animals, and dose-rate con-

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siderations suggest that delivery by the inhalation route of a toxic dose of mycotoxins in the indoor environment is highly unlikely at best, even for the hypothetically most vulnerable subpopulations.

Mold spores are present in all indoor environments and cannot be eliminated from them. Normal building materials and furnishings provide ample nutrition for many species of molds, but they can grow and amplify indoors only when there is an adequate supply of moisture. Where mold grows indoors there is an inappropriate source of water that must be corrected before remediation of the mold colonization can succeed. Mold growth in the home, school, or office environment should not be tolerated because mold physically destroys the building materials on which it grows, mold growth is unsightly and may produce offensive odors, and mold is likely to sensitize and produce allergic responses in allergic individuals. Except for persons with severely impaired immune systems, indoor mold is not a source of fungal infections. Current scientific evidence does not support the proposition that human health has been adversely affected by inhaled mycotoxins in home, school, or office environments.

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Position paper

The medical effects of mold exposure

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Exposure to molds can cause human disease through several well-defined mechanisms. In addition, many new mold-related illnesses have been hypothesized in recent years that remain largely or completely unproved. Concerns about mold exposure and its effects are so common that all health care providers, particularly allergists and immunologists, are frequently faced with issues regarding these real and asserted mold-related illnesses. The purpose of this position paper is to provide a state-of-the-art review of the role that molds are known to play in human disease, including asthma, allergic rhinitis, allergic bronchopulmonary aspergillosis, sinusitis, and hypersensitivity pneumonitis. In addition, other purported mold-related illnesses and the data that currently exist to support them are carefully reviewed, as are the currently available approaches for the evaluation of both patients and the environment. (J Allergy Clin Immunol 2006;117:326-33.)

Key words: *Mold, fungi, hypersensitivity, allergy, asthma*

Abbreviations used
ABPA: Allergic bronchopulmonary aspergillosis
CRS: Chronic rhinosinusitis
HP: Hypersensitivity pneumonitis
MVOC: Volatile organic compound made by mold
VOC: Volatile organic compound

Exposure to certain fungi (molds) can cause human illness. Molds cause adverse human health effects through 3 specific mechanisms: generation of a harmful immune response (eg, allergy or hypersensitivity pneumonitis [HP]), direct infection by the organism, and toxic-irritant effects from mold byproducts. For each of these defined pathophysiologic mechanisms, there are scientifically documented mold-related human diseases that present with objective clinical evidence of disease. Recently, in contrast to these well-accepted mold-related diseases, a number of new mold-related illnesses have been hypothesized. This has become a particular issue in litigation that has arisen out of unproved assertions that exposure to indoor molds causes a variety of ill-defined illnesses. Many of these illnesses are characterized by the absence of objective evidence of disease and the lack of a defined pathology and are typically without specificity for the involved fungus–fungal product purported to cause the illness.

In this position paper we will review the state of the science of mold-related diseases and provide interpretation as to what is and what is not supported by scientific evidence. This is important for members of the allergy–clinical immunology community, who are frequently asked by patients, parents, and other interested parties to render opinions about the relationship of mold exposure to a variety of patient complaints. Given the nature of this document, key rather than exhaustive citations are provided. The latter can be found in documents such as the Institute of Medicine reports ''Damp indoor spaces and health''[1] and ''Clearing the air: asthma and indoor air exposure.''[2]

THE RELATIONSHIP OF MOLDS TO ALLERGY AND ASTHMA

It is estimated that approximately 10% of the population have IgE antibodies to common inhalant molds.[3] About half of these individuals (5% of the population) are predicted to have, at some time, allergic symptoms as a consequence of exposure to fungal allergens.[4] Although indoor fungal allergen exposure occurs, outdoor exposure is generally more relevant in terms of sensitization and disease expression. The role of indoor fungi in the pathogenesis of allergic disease has been extensively reviewed in recent reports from the Institute of Medicine of the National Academy of Science.[1]

Sensitization to fungi, particularly *Alternaria alternata*, has been linked to the presence, persistence, and severity of asthma.[5] Exposure to atmospheric fungal spores

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(principally in the outdoor environment) has been related to asthma symptoms and medication use in children with asthma.[6]

The association of asthma symptoms and exposure to indoor fungi is less clearly established. Literature reviews suggest that children living in damp houses, homes with visible mold growth, or both were more likely to experience lower respiratory tract symptoms of cough and wheeze than children who do not.[7,8] Recent prospective epidemiologic studies have shown that infants at risk for asthma, defined by a maternal history of asthma, who are exposed to high concentrations of indoor fungi (in addition to cockroach allergen and nitrogen dioxide sources) in the first year of life are at risk for persistent wheezing and cough.[9,10] These and similar epidemiologic reports fall short of prospective studies that control for confounding factors, such as humidity and other airborne allergens and irritants.

Molds are often presumed to be an important cause of the other atopic manifestations, including allergic rhinitis and, to a far lesser degree, atopic dermatitis. Abundant published data have established that sensitization (by skin testing, circulating IgE antibodies, or both) to one or more airborne molds occurs in these diseases, although sensitization is less frequent to molds than to pollens, animal danders, and house dust mite.

Current studies do not conclusively demonstrate a causal relationship of airborne mold exposure and clinical manifestations of allergic rhinitis. The data on outdoor molds (eg, *Alternaria* species and basidiomycetes) purportedly causing allergic rhinitis are indirect and conflicting.[11-13] Studies attempting to correlate indoor molds with symptomatic allergic rhinitis are even more problematic because of such methodological uncertainties as lack of quantitative mold sampling[14-16] and inclusion of upper respiratory tract infections.[17]

Published reports document mold sensitivity in some children and adults with atopic dermatitis.[18-20] However, there are no publications that establish a causal role for airborne molds in this disease rather than the IgE antibodies simply reflecting an expected concomitant of their atopic state. There are no credible reports in the medical literature documenting indoor exposure to molds as a cause of the nonatopic IgE-mediated diseases (eg, urticaria-angioedema and anaphylaxis).

Conclusions:

- Atopic patients (those with allergic asthma, allergic rhinitis, and atopic dermatitis) commonly have IgE antibodies to molds as part of polysensitization.
- Allergic responses to inhaled mold antigens are a recognized factor in lower airway disease (ie, asthma).
- Currently available studies do not conclusively prove that exposure to outdoor airborne molds plays a role in allergic rhinitis, and studies on the contribution of indoor molds to upper airway allergy are even less compelling.
- Exposure to airborne molds is not recognized as a contributing factor in atopic dermatitis.
- Exposure to airborne molds is not recognized as a cause of urticaria, angioedema, or anaphylaxis.
- Patients with suspected mold allergy should be evaluated by means of an accepted method of skin or blood testing for IgE antibodies to appropriate mold antigens as part of the clinical evaluation of potential allergies.

ALLERGIC BRONCHOPULMONARY ASPERGILLOSIS AND SINUSITIS

Allergic bronchopulmonary aspergillosis (ABPA) is a well-recognized clinical entity affecting individuals with asthma or cystic fibrosis.[21] A variety of fungi in addition to *Aspergillus fumigatus* can produce a similar clinical picture. The critical element in ABPA is an underlying anatomic change in the lung and not a specific mold exposure because at-risk individuals will have ongoing exposures caused by the ubiquitous nature of the fungi involved. Exposure to *A fumigatus* can occur both from indoor and outdoor sources.

Allergic fungal sinusitis is similar to ABPA in that it is a localized hypersensitivity condition resulting from fungal growth in an area of abnormal tissue drainage.[22] Although originally attributed primarily to *A fumigatus*, other fungi, particularly mitosporic (formerly known as Deuteromycetes or imperfect fungi) fungi are more commonly implicated (eg, *Curvularia* and *Bipolaris* species). Almost uniformly there is allergic sensitization to multiple allergens, including the fungus implicated in the affected sinus. Criteria for this condition have been well delineated, and it is generally readily distinguishable from typical chronic sinusitis. Specific criteria for diagnosis include eosinophilic mucus demonstrating noninvasive fungi, type 1 hypersensitivity (history, positive skin test result, or positive *in vitro* test result to allergens), nasal polyposis, and characteristic radiographic findings.

It has recently been proposed that most cases of chronic rhinosinusitis (CRS) are attributable to sensitivity to fungi. In particular, *Alternaria* species were suspected because most patients had these organisms recovered by means of culture from sinus surgery specimens. However, these organisms are frequently recovered from the nasal cavities of healthy individuals. Although some evidence for an immune response to these fungi in patients with CRS has been presented, clear-cut evidence for this as the cause of CRS is still lacking, and treatment with intranasal antifungal agents (eg, amphotericin) has not been conclusively demonstrated to be an effective treatment.[23]

Conclusions:

- ABPA and allergic fungal sinusitis are manifestations of significant hypersensitivity to fungi, particularly A*spergillus* species.
- Data supporting the role of fungi in CRS are lacking at this time.

HYPERSENSITIVITY PNEUMONITIS

HP, also referred to as extrinsic allergic alveolitis, is a disease that exists in acute, subacute, and chronic forms but with considerable overlap. It is an allergic disease in which the allergen is inhaled in the form of an organic dust of bacterial, fungal, vegetable, or avian origin. Both sensitization and the elicitation of the disease state generally require high-dose exposure, prolonged exposure, or both to the causative allergen. Many cases are, in fact, occupational because of this. There are reports of a similar, if not identical, disease from workers exposed to inhaled chemicals, especially isocyanates. A few instances of the disease have been attributed to systemically administered drugs.

HP is rare, and most cases have been reported in certain occupations, such as farming, and in hobbyists, such as persons who raise pigeons. It is not a reportable disease, and therefore prevalence and incidence are difficult to estimate. The immunopathogenesis of the disease is believed to be cell-mediated (delayed) hypersensitivity. Allergen-specific precipitins are often present in serum and are important is establishing exposure. Precipitins might also play a role in the mechanism of the acute phase of the disease. HP results in acute episodes of noninfectious, immunologically mediated interstitial pneumonitis (ie, alveolitis), which might eventually produce restrictive irreversible lung disease.

The diagnosis requires a clinical and environmental history, relevant physical examination findings, chest radiography or computed tomographic scanning, high-resolution computed tomographic scanning, pulmonary function testing, bronchoalveolar lavage, and transbronchial or open lung biopsy. Specific diagnosis of the responsible allergen is performed by testing for IgG antibody to the allergen extract, typically by testing for the presence of precipitins in the Ouchterlony double-diffusion assay. In some instances provocation inhalation challenge to the suspected allergen extract might be necessary to replicate pertinent clinical and laboratory responses. Finally, a favorable response to the elimination of the inhaled antigen, administration of prednisone, or both is confirmatory. Because a differential diagnosis covers a number of respiratory diseases, an accurate diagnosis of HP demands that the clinical diagnosis be ensured.

Exposure to domestic specific indoor fungal spores is an extremely unlikely cause of HP, except in highly unusual circumstances, such as workplace exposure.

Conclusions:

- HP is an uncommon but important disease that can occur as a result of mold exposure, particularly in occupational settings with high levels of exposure.

INFECTION

Superficial mold infections (eg, tinea cruris, onychomycosis, and thrush) are common in healthy individuals and result primarily from local changes in the cutaneous or mucosal barrier, resident microflora, or both.[24,25] These infections are not the result of environmental exposure, except occasionally as related to certain animal vectors. Indeed, molds of the *Malassezia* genus are resident on the vast majority of human subjects and only become evident as ''tinea versicolor'' during periods of more exuberant growth. A limited number of molds (eg, coccidiomycosis, histoplasmosis, and blastomycosis) are aggressive pathogens in otherwise healthy persons. Acquisition of these infections is generally related to specific outdoor activities-exposures. Individuals with recognized primary and secondary immunodeficiency disorders are at increased risk for infection with a wide range of opportunistic fungi, with the risk varying with the degree and nature of the specific immunodeficiency. Opportunistic fungal infections are typically associated with cellular rather than (isolated) humoral immunodeficiencies. Generally, host factors, rather than environmental exposure, are the critical factor in the development of opportunistic mold infection in immunocompromised individuals because exposure to potential fungal opportunistic pathogens (eg, *Aspergillus* species) is ubiquitous in normal outdoor and indoor environments. Accepted histologic and microbiologic methods should be used to make the diagnosis of fungal infection.

Conclusions:

- Common superficial fungal infections are determined by local changes in the skin barrier, resident microflora, or both.
- A very limited number of aggressive fungal pathogens can be acquired through specific outdoor exposures.
- Host factors, rather then environmental exposure, are the main determinant of opportunistic fungal infection.

TOXIC EFFECTS OF MOLD EXPOSURE

Ingestion

Ingestion of mycotoxins in large doses (generally on the order of a milligram or more per kilogram of body weight) from spoiled or contaminated foods can cause severe human illness.[26] Toxicity from ingested mycotoxins is primarily a concern in animal husbandry, although human outbreaks do occur occasionally when starvation forces subjects to eat severely contaminated food. Specific adverse effects from a given toxin generally occur in a narrower and better-defined dose range than for immunologic or allergic effects that might vary across much broader dose ranges. Some mycotoxins, such as ocratoxins and aflatoxins, are commonly found in food stuffs, including grain products and wines, and peanut products, respectively, such that there are governmental regulations as to the amounts of allowable aflatoxin in foods.[27,28] Acute high-intensity occupational exposures to mixed bioaerosols have given rise to a clinical picture called ''toxic dust syndrome.'' The nature of the responsible agent or

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agents in that condition remains undefined, and the observed adverse effects reported have been transient. Such exposures are highly unlikely in nonoccupational settings.

Toxicity caused by inhalation

The term *mold toxicity* as used here refers to the direct injurious effects of mold-produced molecules, so-called mycotoxins, on cellular function. Toxicity should not be used to refer to changes related to innate immune responses (eg, nonspecific inflammation caused by mold particulates) or to adaptive immune responses (eg, induction of IgE or IgG antibodies). Mycotoxins are low-molecular-weight chemicals produced by molds that are secondary metabolites unnecessary for the primary growth and reproduction of the organisms. In-depth review of the toxicology of mycotoxins and their potential for adverse health effects can be found elsewhere.[1,2] It is important to emphasize key principles of toxicology relevant to patient concerns about possible toxic effects from mold exposure.

Only certain mold species produce specific mycotoxins under specific circumstances. Importantly, the mere presence of such a mold should not be taken as evidence that the mold was producing any mycotoxin. For a toxic effect to occur in a subject, (1) the toxin must be present, (2) there must be a route of exposure, and (3) the subject must receive a sufficient dose to have a toxic effect. In the nonoccupational setting the potential route of exposure is through inhalation. Mycotoxins are not volatile and, if found in the respirable air, are associated with mold spores or particulates. They are not cumulative toxins, having half-lives ranging from hours to days depending on the specific mycotoxin. Calculations for both acute and subacute exposures on the basis of the maximum amount of mycotoxins found per mold spore for various mycotoxins and the levels at which adverse health effects are observed make it highly improbable that home or office mycotoxin exposures would lead to a toxic adverse health effects.[1,29]

Thus we agree with the American College of Occupational and Environmental Medicine evidence-based statement and the Institute of Medicine draft, which conclude that the evidence does not support the contention that mycotoxin-mediated disease (mycotoxicosis) occurs through inhalation in nonoccupational settings. Furthermore, the contention that the presence of mycotoxins would give rise to a whole panoply of nonspecific complaints is not consistent with what is known to occur; when a toxic dose is achieved (eg, through ingestion of spoiled foods), there is a specific pattern of illness seen for specific mycotoxins.

Conclusions:

- The occurrence of mold-related toxicity (mycotoxicosis) from exposure to inhaled mycotoxins in nonoccupational settings is not supported by the current data, and its occurrence is improbable.

IRRITANT EFFECTS OF MOLD EXPOSURE

The Occupational Health and Safety Administration defines an irritant as a material causing ''a reversible inflammatory effect on living tissue by chemical action at the site of contact.'' Irritant effects are dose related, and the effects are transient, disappearing when the exposure has decreased or ceased.

Molds produce a number of potentially irritating substances that can be divided into volatile organic compounds (VOCs) and particulates (eg, spores, hyphae fragments, and their components). The threshold level of irritant response depends on the intrinsic properties of the specific material involved, the level plus length of exposure, and the innate sensitivity of the exposed tissues (eg, the skin versus nasal mucosa).

VOCs made by molds (MVOCs) are responsible for their musty odor. MVOCs include a wide range of alcohols, ketones, aldehydes, esters, carboxylic acids, lactones, terpenes, sulfur and nitrogen compounds, and aliphatic and aromatic hydrocarbons.[30] Although levels causing irritant effects have been established for many VOCs, MVOC levels measured in damp buildings are usually at a level so low (on the order of nanograms to micrograms per cubic meter) that exposure would not be expected to cause complaints of irritation in human subjects.[31] Because there are other sources of VOCs indoors, measurement of indoor airborne concentrations of MVOCs is rarely done.

Mold particles (spores, hyphal fragments, and their structural components) are not volatile. These structural mold compounds (particulates) have been suggested to cause inflammation through deposition on mucus membranes of their attached glucans and mannans. However, whether such effects occur clinically remains unproved. In fact, subjects exposed to airborne concentrations of between 215,000 and 1,460,000 mold spores/m^3 at work showed no differences in respiratory symptoms at work versus while on vacation nor was there evidence of increased inflammatory markers in their nasal lavage fluids related to their mold exposure at work.[32] Thus mold particulates generally found indoors, even in damp buildings, are not likely to be irritating.

It should be emphasized that irritant effects involve the mucus membranes of the eyes and upper and lower respiratory tracts and are transient, so that symptoms or signs persisting weeks after exposure and those accompanied by neurologic, cognitive, or systemic complaints (eg, chronic fatigue) should not be ascribed to irritant exposure.

Conclusions:

- The occurrence of mold-related irritant reactions from exposure to fungal irritants in nonoccupational settings are theoretically possible, although unlikely to occur in the general population given exposure and dose considerations.
- Such irritant effects would produce transient symptoms-signs related to the mucus membranes of the eyes and upper and lower respiratory tracts but would

not be expected to manifest in other organs or in a systemic fashion.
- Further information about thresholds for irritant reactions in at-risk populations is needed to better define the role of molds, mold products, and other potential irritants in such individuals.

IMMUNE DYSFUNCTION

The question has been raised as to whether mold or mycotoxin exposure can induce disorders of immune regulation. At this time, there is no credible evidence to suggest that environmental exposure to molds or their products leads to a state of clinically significant altered immunity expressed as either immunodeficiency or autoimmunity. The published literature in this regard is of particularly poor quality and should not be relied on as scientifically valid.[33,34] Individuals who have had intense occupational mold exposures do not manifest opportunistic infections or other findings of immunodeficiency, and thus even the most intense form of airborne mold exposure is not a recognized cause of secondary immunodeficiency in human subjects. Some mycotoxins are immunosuppressive and used for this purpose clinically (eg, cyclosporine). However, the doses involved are not relevant to what might have been found in the environment. Doses that might be seen in environmental exposures are discussed in other sections of this article (toxicity and environmental sections). Testing of a wide range of nonspecific immunologic parameters, such as immunophenotyping of lymphocytes beyond those parameters having known clinical utility (eg, total B and CD3, CD4, and CD8 cells) or measurement of serum cytokines is not appropriate for assessing subjects for immunodeficiency in general and for mold-induced immune dysregulation specifically.[35]

There is also no reliable evidence for mold exposure in any setting being a linked to the induction of autoimmune diseases in human subjects. Although certain viral and bacterial infections appear to have a relationship to the induction-precipitation of autoimmune diseases, such an association has not been established for any known mold exposure. The measurement of clinically useful tests of autoimmunity (eg, antinuclear antibody), much less testing of a broad array of nonvalidated autoantibodies (eg, putative antibodies to central or peripheral myelin), is not indicated, and such testing should not be used to indicate mold exposure or mold-related disease.

This practice of testing many nonvalidated immune-based tests, as has been done previously to suggest an immunologic basis for idiopathic environmental intolerance (multiple chemical sensitivity), is expensive and does not provide useful information that will be of benefit in diagnosis, management, or both of disease and is to be discouraged.

Conclusions:

- Exposure to molds and their products does not induce a state of immune dysregulation (eg, immunodeficiency or autoimmunity).
- The practice of performing large numbers of nonspecific immune-based tests as an indication of mold exposure or mold-related illness is not evidence based and is to be discouraged.

LABORATORY ASSESSMENT

Patient assessment

Measurement of IgE antibodies to mold proteins. Assessment for IgE antibodies to mold antigens has clearly been validated as a measure of potential allergic reactivity to mold. This assessment can be done through either *in vivo* or *in vitro* testing. The relative strengths of these different forms of testing have been reviewed recently.[36,37] In general, there is a weaker correlation between *in vivo* and *in vitro* testing for IgE antibodies to mold antigens than for other antigens, partly as a result of the heterogeneity of extractable mold proteins. A positive IgE antibody level to mold proteins without appropriate clinical evaluation should not necessarily be taken as an indicator of clinical disease. In addition, the presence of IgE antibodies to a mold cannot be used to determine the dose or timing of prior exposures. Although IgE antibodies to *Stachybotrys* species can be detected through *in vitro* or *in vivo* testing, such testing should be discouraged. *Stachybotrys* species is unlikely to be a relevant clinical allergen in human subjects because it is poorly aerosolized and far less common than other well-established mold allergens.

Measurement of IgG antibodies to mold proteins. Assessment of IgG antibodies to mold proteins can be performed through immunoprecipitation–double diffusion or solid-phase immunoassays.[37] Such testing has demonstrated value in assessment of individuals with suspected HP or allergic bronchopulmonary mycosis. Immunoprecipitation assays have been classically used for the assessment of HP, and although they measure all classes of antibodies present, they are primarily detecting IgG antibodies. Such testing (immunoprecipitation or solid-phase IgG testing) is appropriate to perform only in the setting of a clinical picture, including history, physical examination, imaging studies, and other laboratory assessments, suggesting HP or allergic bronchopulmonary mycosis as part of the differential diagnosis. Use of these tests as screening procedures for these diseases in the absence of an appropriate clinical picture is discouraged.

Immunoprecipitation testing remains the standard approach because the presence of precipitating antibodies is strong supportive evidence in the appropriate clinical setting. However, as many as half of highly exposed individuals might have precipitating antibodies in the absence of any clinical disease. Solid-phase immunoassays have not been widely used for the specific diagnosis of these diseases. Although newer assays are quantitative, the actual level of IgG antibody that would be associated with either HP or ABPA has not been defined. Therefore a level of mold antigen–specific IgG antibody above a statistically defined reference range cannot be taken as evidence for HP or ABMA with the same strength as immunoprecipitation testing. Limited studies suggest that

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the level of a specific IgG antibody that would be associated with HP could be 5-fold or greater than the upper limit of the nondiseased group reference range. Use of older-generation, semiquantitative, solid-phase immunoassays is not recommended.

Testing for IgG antibodies to mold proteins cannot be used as a surrogate to assess either the level or timing of specific mold exposures.[38] This is not surprising given the widespread occurrence of molds in the environment.

Measurement of antibodies of isotypes other than IgG (eg, IgA and IgM) to mold is not useful to assess mold exposure. However, the differential response of IgM and IgG antibodies is useful in diagnosis with specific organisms (eg, coccidioidomycosis). IgM levels have not been shown to relate to specific airborne exposures to molds in the absence of infection because mold exposure is common and generally ongoing. Measurement of IgA antibodies to airborne molds has not been shown to be related to a specific timing of exposure, and the claim that increased IgA antibodies to mold represents a more recent exposure than IgG antibodies is not supported by scientific evidence. Measurement of salivary IgA to mold as a marker of mold exposure has not been shown to have scientific validity.

Measurement of antibodies to mycotoxins. Mycotoxins are not proteins but low-molecular-weight chemicals. There is no scientific basis to support measurement of alleged naturally occurring antibodies to various mycotoxins as a marker of exposure to mycotoxins. Evidence of natural exposures from ingestion in human subjects and animals and use of these compounds in clinical medicine does not support the concept of naturally occurring antibodies. Such testing has not been validated and cannot be relied on as an indication of exposure to any mycotoxin.[39]

Conclusions:

- Measurement of antibodies to specific molds has scientific merit in the assessment of IgE-mediated allergic disease, HP, and allergic bronchopulmonary mycosis.
- Measurement of antibodies to molds cannot be used as an immunologic marker to define dose, timing, and/or location of exposure to mold antigen inhalation in a noninfectious setting.
- Testing for antibodies to mycotoxins is not scientifically validated and should not be relied on.

Measurement of molds and mold product exposure in the patient's environment

An in-depth analysis of methods to measure fungal organisms, mold products, and mycotoxins in the environment is outside the bounds of this article. Such information is reviewed in depth elsewhere.[40,41]

Measurement of fungi in the subject's environment. Measurement of airborne fungal spores in the subject's environment by using culture methods, nonculture methods, or both is commonly used. Air testing provides the most relevant measure of exposure and is usually reported as colony-forming units or spores per cubic meter of air. However, this testing suffers from the drawback that it is a snapshot that does not integrate exposure over time and provides data only about the location of sampling. Indoor testing must be compared with outdoor testing and preferably with more than one outdoor sample. Currently there are no standards as to what constitutes acceptable levels of outdoor or indoor airborne fungal spores.

Given these caveats, the levels of airborne fungal spores found in an indoor setting can be considered in relative and absolute terms. Indoor fungal spores arise from outdoor sources present within soil and vegetation. Therefore an increase in indoor-outdoor concentrations of specific fungi indicates the presence of an indoor source. Depending on clinical or other indications, it might be necessary to locate the source and, if necessary, take appropriate action. Total fungi spores that are greater in concentration in indoor than outdoor air might be potential evidence of increased fungal presence indoors. However, in normal indoor environments xerophillic fungi, such as *Aspergillus* and *Penicillium* species, might be found indoors at levels above those measured outdoors on a given day. Even when the fungal levels are greater indoors than those outdoors, health risks would be limited in most cases, except to the subject specifically allergic to the mold in question. Absolute fungal spore levels indoors can be put into context when one realizes that outdoor levels can reach tens of thousands of fungal spores per cubic meter and hundreds of thousands per cubic meter or higher around rotting vegetation compost or in agricultural settings, such as in grain elevators.

Bulk, surface, and within-wall cavity measurements of fungi, although sometimes indicating the presence of fungi, do not provide a measure of exposure. Fungi found in these places require a route of exposure through air (aerosolization and entry into the patient's respirable air) that involves many factors not included in these measurements. Such testing should not be used to assess exposure.

Measurement of fungal products in the patient's environment

Another approach to measure of potential fungal exposure is to test for fungal products in the environment.

Structural fungal materials. Testing for the levels of general mold structural material (eg, β-glucans in settled dust) has been used to try to integrate levels of potential exposure to molds in general over time. Although an interesting research avenue, such testing does not provide any information as to the nature of the specific fungi involved or their source (indoor or outdoor), is not useful for predicting health effects, and has not found general acceptance, as discussed elsewhere.

Mycotoxins. Specific molds can produce, under some conditions, a variety of mycotoxins or none at all. Thus measurements of spores cannot be used as surrogates of mycotoxin exposure. Mycotoxins can be measured directly. A variety of methodologies based on mass

spectroscopy have been applied to bulk samples with heavy fungal growth to identify the presence of mycotoxins; however, potential levels of mycotoxins in nonagricultural air samples are too low to be measured practically with this technology. The occurrence of mycotoxins in bulk sampling does not provide evidence of exposure because mycotoxins themselves are nonvolatile. Thus exposure requires inhalation of mycotoxin-containing spores or fungal fragments in the respirable air. For example, satratoxin H can be found in a sample of material with heavy *Stachybotrys chartarum* growth, but *Stachybotrys* species are not easily aerosolized. Testing with crude cytotoxicity of extracted bulk materials suffers from a lack of sensitivity and specificity. Such testing cannot be relied on to predict or evaluate health effects.

VOCs. See section on irritant effects above.

Conclusions:

- Sampling of both indoor and outdoor air for mold spores provides a measure of potential exposures and can be useful in certain clinical conditions, but it has many shortcomings.
- Bulk, surface, and within-wall cavity measurement or molds or mycotoxins, although having potential relevance for other purposes, cannot be used to assess exposure.
- Testing for airborne mycotoxins in nonagricultural environments cannot be used to diagnose mold exposure.

REMEDIATION

Issues regarding remediation of mold are beyond the scope of this article. Indoor mold growth should be addressed. These matters are reviewed at length in the Institute of Medicine 2004 report ''Damp indoor spaces and health.'' For an overview, the reader can refer to the Occupational Health and Safety Administration document ''A brief guide to mold in the workplace.''[42] The true challenges of mold remediation are currently being addressed in the flood-ravaged areas struck by hurricane Katrina, which will unfortunately provide a rich environment for the study of both mold-induced disease and mold remediation.[43,44]

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Correction

With regard to the February 2006 article entitled "Position paper: The medical effects of mold exposure" (2006;117:326-34): Declaration of conflict of interest information was provided by the authors prior to publication but was inadvertently omitted at the time of publication. The following should have appeared in the footnote on page 326:

Disclosure of potential conflict of interest: R. Bush is an employee of the US Department of Veteran's Affairs and University of Wisconsin Medical Foundation and has received grant support from the US Department of Veterans Affairs and the National Institutes of Health. J. Portnoy has received grant support from Clorox Corporation. A. Saxon has served as an expert witness for the defense in mold litigation and has received compensation for this testimony. A. Terr has served as an expert witness in mold litigation and has received compensation for this testimony. R. Wood has declared that he has no conflict of interest.

ICD–11 Fact Sheet

Key facts

- **The global standard for health data, clinical documentation and statistical aggregation.**
- **Multiple uses, including primary care**
- **Thoroughly and scientifically updated, and designed for use in a digital world.**
- **State-of-the-art technology reduces the costs of training and implementation.**
- **Multilingual design facilitates global use while the proposal platform allows stakeholder participation in keeping ICD–11 up-to-date.**
- **Countries have already commenced preparing for the implementation of ICD–11, with Arabic, Chinese, English[1] ,French and Spanish versions online.**

What is ICD–11?

ICD–11 is the international standard for systematic recording, reporting, analysis, interpretation and comparison of mortality and morbidity data. This 11th revision is the result of an unprecedented collaboration with clinicians, statisticians, classification and IT experts from around the world, making it useable by these groups, as well as by coders.

ICD–11 allows countries to count and identify their most pressing health issues by using an up-to-date and clinically relevant classification system. Health conditions and accidents are assigned ICD–11 codes, resulting in data that can be used by governments to design effective public health policies, and measure their impact, or used for clinical recording.

For the first time, ICD is fully electronic, currently providing access to 17 000 diagnostic categories, with over 100 000 medical diagnostic index terms. The index-based search algorithm interprets more than 1.6 million terms. ICD–11 is easy to install and use online or offline, using free 'container' software.

Improvements in ICD–11

ICD–11 is a vast improvement on previous revisions. It reflects critical advances in science and medicine, aligning classification with the latest knowledge of disease treatment and prevention. There is more meaningful clinical content than ICD–10.

A significant feature of ICD–11 is the improved ease and accuracy of coding requiring less user training than ever before, together with the availability of online and offline functioning. ICD–11 is digital health ready, for use in multiple IT-environments, with a new API. It is presented together with a suite of web services, including multilingual support and in-built user guidance.

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[1] Icd.who.int/en

A proposal platform allows all interested parties to suggest changes or additions to ICD–11 and to viewed and discussed transparently. The ICD–11 translation tool ensures internationally consistent translations and the addition of locally used terms.

New core chapters include 'Diseases of the immune system', 'Sleep-wake disorders', and 'Conditions related to sexual health'. New supplementary chapters and sections permit the assessment of functioning, and the optional recording of traditional medicine diagnoses.

All concepts for recording and reporting in primary care are included.

Overall coding improvements in ICD–11 allow more precise and more detailed data recording and collection. However, newly available clinical precision is possible. Examples include:

- Codes for antimicrobial resistance, in line with GLASS[2]
- Codes for full documentation of patient safety, in line with the WHO patient safety framework
- Necessary detail for cancer registration is fully embedded in ICD–11
- Specific coding for clinical stages of HIV
- More clinically relevant coding for complications of diabetes.
- Codes for common skin cancers basalioma, and melanoma subtypes. Classification of heart valve diseases and pulmonary hypertension, now matching current diagnostic and treatment capacity.
- Coding for traffic accidents and causes of injuries is now consistent with current international practice for data documentation and analysis.

The creation of extension codes allows flexible addition of detail relevant for clinical documentation, and device or substance safety. Extension codes provide for the recording of medicaments with WHO INN[3] and WHO Medical Device nomenclature, as well as documenting the severity of conditions, anatomy or histopathology.

Why WHO is interested in countries moving to ICD-11

Meaningful data for prevention, resourcing or evaluation are best produced with a standardised classification that is based on the latest medical and scientific knowledge.

ICD–10 is scientifically and technologically outdated; it is missing content for several de-facto uses of ICD, like primary care or clinical decisions.

ICD–11 is a flexible system which eliminates the need for local variants and allows to document all kind of clinical detail. In such a way, and in combination with the simplified coding, it can be integrated seamlessly in the routine of clinical documentation.

ICD–11 lowers the costs for using ICD because correct use requires less training and less time for coding, and as such allows the implementation of standard reporting in places where it has not been possible to use ICD before. It is free for use in all countries, as a package with user guides and tools, providing inexpensive coding of patient encounters in the clinical setting.

[2] The Global Antimicrobial Resistance Surveillance System (GLASS) https://www.who.int/initiatives/glass

[3] WHO International Nonproprietary Names (INN) facilitate the identification of pharmaceutical substances or active pharmaceutical ingredients. Each INN is a unique name that is globally recognised and is public property. A nonproprietary name is also known as a generic name. https://www.who.int/teams/health-product-and-policy-standards/inn/

There are other applications for ICD–11

ICD–11 is flexible in the level of detail captured, it can be adapted to the primary care setting, for surveillance of rare conditions, to generate adverse event reporting inpatient quality and safety management, and to the use of casemix for reimbursement and resource allocation is possible.

Alternative applications include using ICD–11 as a multilingual dictionary, or as a terminology server for studies, surveys and other areas of recording of health information.

WHO response

In response to Member State needs for moving to ICD–11, WHO is providing technical assistance to help countries develop their national implementation plans and to strengthen their health and surveillance systems. WHO has already undertaken training workshops in several WHO Regions. Early adopters start implementation, providing valuable information to other countries for that process. Technical support by WHO includes instructions on the use of the translation platform and integration of the ICD–11 coding tooling in a local information system.

The ICD–11 implementation package includes all information, tools, training materials, mapping tables and more in support to use of ICD.

The ICD–11 Proposal platform and translation tool is open to all interested parties and facilitates the ongoing update process, and the translation tool allows translations by the clinical community who uses ICD.

General aspects of implementation

The time and amount necessary for the implementation of ICD-11 largely will depend on two factors:

1. Whether a previous version has been in use

2. Level of penetration of ICD use in the national information infrastructure

As as an estimate, a Member State newly introducing ICD-11 in a simple information system may need 1-2 years. Member States with a highly sophisticated information system where earlier versions of ICD are already in use calculate 4-5 years time necessary for the implementation of a new version of ICD.

In the cause of death coding, ICD-11 facilitates the transition from ICD-10, and the ICD Startup Mortality List (SMoL).

WHO Family of Classifications

ICD is part of the WHO Family of International Health Related Classifications (WHOFIC).

ICD, the International Classification for Health Interventions (ICHI) and the International Classification for Functioning, Disability and Health (ICF) are the core classifications that are complemented by Classifications for Nursing, Primary Care or Medicaments (ATC/DDD).

Primary care has been incorporated in ICD-11, and the Medicaments, as well as cancer histopathology (ICD-O), have been embedded in ICD-11

Related Links

International Classification of Diseases 11th revision homepage https://icd.who.int

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF CALIFORNIA

VICTORIA PHIPPS, an individual;

Plaintiff,

vs.

CAMP PENDLETON & QUANTICO HOUSING LLC, a Delaware limited liability company; LPC PENDLETON QUANTICO PM LP, a Delaware limited partnership; and DOES 1 through 50, inclusive,

Defendants.

Case No. 3:21-cv-01514-DMS-AHG

Job No. CRCC5847421

DEPOSITION OF ANDREW HEYMAN, MD

Conducted Virtually

April 3, 2023

Reported by Gina Marie De Luca, CSR No. 6973, RMR, CRR

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF CALIFORNIA

VICTORIA PHIPPS, an individual;

Plaintiff,

vs.

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Defendants.

Case No. 3:21-cv-01514-DMS-AHG

DEPOSITION OF ANDREW HEYMAN, MD, conducted virtually, commencing at the hour of 11:01 AM on Monday, April 3, 2023, before Gina Marie De Luca, Certified Shorthand Reporter in and for the State of California.

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I N D E X

WITNESS: ANDREW HEYMAN, MD

E X H I B I T S

E X H I B I T S (continued)

E X H I B I T S (continued)

MARKED FOR IDENTIFICATION		PAGE
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MR. CLARK: I agree to move forward with the deposition remotely and have it reported despite the witness not being in California.

Agreed?

MS. DeHART: Yeah, so stipulated. That's acceptable to us as well.

-oOo-

ANDREW HEYMAN, MD,

having been first duly sworn, testified as follows:

-oOo-

EXAMINATION

BY MS. DeHART:

Q. Good morning, Dr. Heyman.

A. Good morning.

Q. Could you please state and spell your full name for the record for the court reporter, please.

A. Andrew Heyman, A-n-d-r-e-w, last name H-e-y-m-a-n.

Q. And, Dr. Heyman, you understand you're here today to provide testimony in a matter called Phipps vs. Camp Pendleton & Quantico Housing, et al., that's pending in the Southern District of California.

Is that your understanding?

A. It is my understanding.

Q. And you understand you're specifically here to

testify regarding Victoria Phipps and the report that you prepared regarding her as an expert witness in this case?

A. I do.

Q. Okay. Are you alone there in the room where you're presently located?

A. I am.

Q. And do you have any documents or materials before you for reference?

A. I do.

Q. What are those?

A. I have a case list of prior cases that I've been involved with. I have the Dr. Ross neuropsychiatry report. I have Victoria Phipps's symptom list that she tracked during her experience in the -- in the home of question. I have the mold reports package of all the environmental testing that was performed. And I have a -- just a window open so I can easily access any additional relevant documents to the case.

Q. Okay. That's -- that's -- that's acceptable.

Dr. Heyman, we were here probably about two months ago in a -- in a different case for your deposition.

Do you have the basic admonitions relating to a deposition in mind, or would you like me to go through

those with you again today before we really get started?

A. Could you remind me what those are.

Q. Absolutely. No problem.

So, first of all, of course, we're all appearing virtually by Zoom or by Veritext's virtual platform.

We have a court reporter here just as if we were doing this live. She's taking down all of the testimony that you'll be giving today: the questions that I ask, if Mr. Clark has any questions, any objections he might have. And she's reporting that all into what will ultimately be a transcript, a booklet, that will be sent to you ultimately for your review in the case.

Do you understand that?

A. I do.

Q. And especially because we're appearing virtually -- sometimes there can be delays with sound and things like that -- it's even more important to try to speak slowly. Wait until I finish my question or Mr. Clark, if he's the one asking the question, just to make sure that the record's as clear as possible with what the question is, possibly pause, see if there's any objections before you answer just so that we keep a clean record here today.

Does that make sense to you?

A. I understand.

Q. Okay. Great.

And you're doing a very good job so far giving verbal answers, like "Yes" or "No" or "I understand" instead of "Uh-huh" or "Huh-uh," things of that nature, nodding your head because that really can't be translated by the court reporter.

So if I remind you at any point during the deposition to, you know, answer "Yes" or "No" or something along those lines, I'm not trying to be rude or anything. We just are trying to capture what your actual testimony here is today and what your answer to the question is.

Does that make sense?

A. I understand.

Q. Okay. And even though this is a more informal proceeding -- there's no judge here. We're not sitting in a courtroom -- the oath that the court reporter gave you at the beginning of the deposition is the same as if you were being sworn in by a judge in a courtroom or a more formal setting.

Do you understand that?

A. I understand.

Q. Okay. And it's possible that some of the

questions you're asked here today by myself, possibly by Mr. Clark, might call for you to give an educated guess, but we don't want you to speculate as to anything.

So if the answer to the question would require pure speculation, you don't have a basis for providing an answer, we don't want that because that's not admissible in court. But if you do have a basis to provide an answer, then we are entitled to that, your best estimate.

And the typical example that we use in depositions is you could estimate the length or size of the desk or table you're sitting at there in Florida, but you couldn't do so with respect to the desk that's here in my office because you've never been to my office here in California.

And that's kind of just a quick illustration of the difference between an "estimate" and a "guess."

Does that make sense to you?

A. It does.

Q. Okay. Great.

Is there any reason why you feel you can't give your best testimony today in this matter?

A. No.

Q. Okay. Now, Dr. Heyman, as far as work as an expert witness, am I correct that the only other time

you've had your deposition taken as an expert witness in a case was when we were here about two months ago, and I took your deposition in a case called "Clover"? Is that correct?

A. That's correct.

Q. Okay. But I think you did tell me at that time you had had your deposition taken a couple of times as a treating physician in some other cases.

Is that accurate?

A. That's correct.

Q. Okay. So this would be your second deposition as an expert witness, actually retained as an expert, in a litigation case; correct?

A. That's correct.

Q. Okay. Now, how many cases have you been retained as an expert witness, aside from this case and the "Clover" case, where perhaps you haven't given your deposition testimony yet but there has been a retention of you as an expert?

A. Seven total, including this one and "Clover."

Q. Okay.

A. So five -- five additional that I've not yet -- I have not yet participated as a -- in a -- in a deposition.

Q. Have you issued reports in any of those cases

to date?

A. Yeah, I have in -- one, two, three -- four of those cases.

Q. Are all five -- so there's this case and the "Clover" case.

So there's five other ones that -- that exist.

Are those all currently pending right now?

A. Correct.

Q. Okay. Do any of those cases involve the Webb Law Group where Mr. Clark is affiliated?

A. They do.

Q. Which ones -- or what is the name of the case?

A. Okay. Let me -- Childs --

Q. Okay.

A. -- would be -- Childs would be one. I think -- I think that's it. I think it's those two.

Q. You only mentioned Childs?

A. Oh, Childs -- correct. So it must -- it must just be Childs. It must just be that one.

Let me look up real quick one other.

That's it.

Q. Okay. The other four cases -- do those cases involve a situation where there are tenants of housing complaining of mold or moisture conditions?

A. They are. All of them.

Q. Okay. Where are those cases located?

Well, actually, let me ask you this: In your -- in your CV or your materials that you have to produce in this case -- and we'll get to those questions in a minute -- are those cases listed among your -- your past cases that you've been involved in in the past several years like as common and expert reports -- or expert documentation that gets produced?

A. No. So I have a -- I have a separate list that I made just of cases that I've participated in, and then I have a separate file of cases that are -- that are pending.

Q. I see.

A. But I have not created an entire sheet for the ones that are upcoming as its own separate document. I'd have to look through each case separately and identify the law firm and where.

A number of them I have not received any -- you know, like a subpoena or additional identifying material. I've just been given access to a medical record and begun -- and was asked to begin to formulate an opinion based on that.

So some of these cases I don't have a lot of detail other than I know it's coming and I've seen, let's say, some information about the case, but much of

the legal detail is still pending.

Q. Do you recall offhand the names of the cases where you've actually provided an expert report?

A. Well, I have the name of the -- the client or patient, if you want to call them that.

Q. Oh, okay. That's fine.

A. Do you want the names of all of those people?

Q. Well, there would only be -- I guess there's -- there's four -- there's four of those -- or four sets of those?

A. Well -- well, one -- one was the -- you know, the Childs case with Webb Law, and then the rest would be individuals with other law firms.

Q. Okay.

A. I can give you the -- I can give you the names of those people.

Q. Yeah, no, that would -- that would be helpful, yes.

A. Okay. So the first would be China Armstrong.

Q. Okay.

A. And the second would be the Childs case.

Now, the Childs case, my understanding is it's an entire family.

Q. That's correct.

A. And the last name is with an S at the end. So

there's Lena, Don, Arianna, and Tianna. I've not been given much of their medical evaluation. So I've not done much work for that -- on that case yet. I'm still waiting.

You have the information on Clover.

Q. Yes. You don't have to provide anything.

A. Yeah.

And then there is the Johnson family: Lindsey; Scott; Taylor; Skylee, S-k-y-l-e-e; and finally Scottlynn, all one word, S-c-o-t-t-l-y-n-n.

There's Peden: Elena Peden, E-l-e-n-a, last name P-e-d-e-n. Elena Peden.

And then finally Anthony Rice, spelled the way it sounds, R-i-c-e.

Q. Okay. Thank you.

Is it your understanding that each of those -- if you know, that each of those plaintiffs or groups of plaintiffs or individuals are -- are plaintiffs in a litigation that's pending right now?

A. They are.

Q. Okay. And aside from the Clover case and this case, Phipps, and the Childs case you just mentioned, have you done any work for Webb Law Group in any other cases?

A. No.

Q. Okay. At this point, as of today, as of the time you're sitting here right now, approximately what percent of your work, would you say, is expert work?

A. 5 percent.

Q. Okay. And then how much --

A. It's a small amount at this point.

Q. And how much would you categorize as patient-oriented work, like, with your clinic in Virginia?

A. So it will be 3/5 time. I'm in -- I'm in clinic three days out of five each week.

Q. And then as far as -- are you still doing work with George Washington University in the educational sector as well?

A. I am.

Q. And then would that be the other two days of the week that you're devoting to that or some other amount?

A. I would say at most it would be a half day a week for George Washington University. It would be a half day a week for the American Academy of Anti-Aging Medicine. I have a responsibility for teaching and developing curriculum for them. I would say another half day a week for research.

Q. Okay. All right. Dr. Heyman, let me share my

screen with you and the others.

MS. DeHART: It says, "Host disabled participant screen sharing."

That is how I always share exhibits at depositions.

THE REPORTER: Shall we go off the record?

MS. DeHART: Yeah, let's go off the record.

(Discussion off the record)

MS. DeHART: Let's go back on the record.

THE REPORTER: All right.

MS. DeHART: Can everyone see the -- looks like it says it's the notice of deposition of Dr. Heyman.

Is that visible to everyone?

MR. CLARK: Yeah.

MS. DeHART: Okay. Okay. Good.

THE WITNESS: Yes.

BY MS. DeHART:

Q. All right. I'll mark as Exhibit 1 to your deposition, Dr. Heyman, the Notice of Deposition and Request for Production of Documents or Records.

(Exhibit 1 marked)

BY MS. DeHART:

Q. Have you seen this document before?

A. I have.

Q. Okay. And let me just scroll to the second

page to the category of "Documents to be Produced."

And, Dr. Heyman, have you gone through and searched for various documents in these categories here on pages 2 and 3 of the deposition notice and provided those to Webb Law Group for the production in this case?

A. I have.

Q. Okay. And when we were here earlier -- or when we were here a couple of months ago in the Clover case, I knew you mentioned something about there being shared files or something along those lines as part of the records or how you received records in the case.

Do you recall that testimony?

A. I do.

Q. Was it -- was it a similar type of situation with the -- this case with Ms. Phipps as with the Clover case with the shared files that you were discussing, or were the files transmitted in a different fashion to you this time?

A. They were shared, and then I downloaded all of those files to my computer.

Q. Okay. All right. Here. Let me -- well, I'll stop sharing the screen.

Did you talk to anyone in preparation for your deposition today?

A. No.

Q. Okay. When were you initially retained to be an expert witness in this case involving Ms. Phipps?

A. Let's see. February 2023.

Q. Okay. Were you retained directly by Webb Law Group?

A. I was.

Q. Okay. So was it someone from Webb Law Group who reached out to you directly regarding your retention in the Phipps case?

A. I'd have to look back at my email, but I would imagine it was probably Christian, Mr. Clark, yes.

Q. Was Shayne Lashley or Mr. Lashley involved at all in your retention as an expert in this case?

A. I believe because this is a patient of his, that, yes, he alerted Clark law and they reached out to me.

Q. Okay. I don't recall, from -- from your prior deposition, if -- if you were certain as to Mr. Lashley's specific role, but I did see in Dr. Ross's report there was a reference to Lashley Health Systems LLC.

Do you have any understanding as to whether that's Mr. Lashley's business that he works through?

A. My understanding is that he is an owner or maybe part owner of the Environmental Brain Health

Clinic in Texas. Maybe that LLC is the business name of the clinic.

He's not a clinician himself. He works more as an owner and administrator. And I would imagine that, you know, as part of that process, he, you know, has been in touch with -- with Clark law group -- or Webb Law Group, you know, as kind of arranging these relationships.

Q. I see.

Is it your understanding that Mr. Lashley -- he's not a medical doctor; is that correct?

A. That's correct.

Q. Okay. So do you have an understanding as to whether Ms. Phipps first made contact with Mr. Lashley at Environmental Brain Health Clinic or someone else when she started her treatment there?

MR. CLARK: Calls for speculation.

BY MS. DeHART:

Q. If you know.

MR. CLARK: Go ahead, Doctor.

THE WITNESS: I don't know.

BY MS. DeHART:

Q. Is it Webb Law Group, then, that's paying you for your expert work in this case?

A. They are.

Q. Okay. And have you already been paid for your work to date? Does that happen, like, on an ongoing basis?

A. It has.

Q. Okay. Are you being paid by any other entity, other than Webb Law Group, for being an expert witness in this case?

A. No.

Q. Approximately when were you first sent files relating to Ms. Phipps for this matter?

A. Early February.

Q. And were those sent to you by Mr. Clark or Webb Law Group, or did those kind of come through Mr. Lashley and Environmental Brain and Health Center [sic]?

A. Both.

Q. Okay. So is there one set that came from Webb and then there was additional records that came from Environmental Brain?

A. Correct.

Q. Okay. Aside from those two entities, did anybody else send files to you relating to Ms. Phipps for your work on the case?

A. No.

Q. Okay. And were those files, then, put into the shared file type of situation that, then, you

downloaded? Is that -- is that how it occurred?

A. The groups of files that I have access to are kept separate. So there's one set of files that are in kind of an online shared folder through Webb Law, and then separately I'm able to access files through the Environmental Brain Health group, and there are additional files there.

Sometimes there's quite a bit of overlap, both files -- there might be a file that exists in both categories in, you know, sort of both repositories of information, and occasionally there's a file or two that only exists in one or the other.

So I have to make sure that I review both thoroughly to ensure that I don't miss anything, because I can't assume that each group has a full set of all the files.

Q. Okay. Were there any specific documents that you asked for from either Webb Law Group or Environmental Brain Health Clinic for Ms. Phipps in this case?

A. No.

Q. Okay. You basically -- would it be fair to say you left it to them, to each of those entities, to provide you with the pertinent documents?

A. That's correct.

Q. Okay. And just back to Mr. Lashley for a minute, so it's your understanding he might have some sort of ownership role with Environmental Brain Health Clinic or at least some sort of administrative or managerial role with that entity; is that right?

A. That's correct.

Q. Do you know how long he's been affiliated with Environmental Brain Health Clinic?

MR. CLARK: Calls for speculation.

MS. DeHART: Yeah.

THE WITNESS: I don't.

BY MS. DeHART:

Q. If you know.

A. I don't.

Q. Okay. Have you worked with Mr. Lashley prior to or aside from this case and the Clover case?

A. I would say the term "work" is loose. He was a student of mine in one of my courses. That's how I know him.

Q. Okay. Approximately when did you first meet Mr. Lashley? Approximation is fine or best estimate is --

A. Maybe two years ago.

Q. Okay. And he was taking one of your courses at George Washington University?

A. Actually through the American Academy of Anti-Aging Medicine.

Q. Okay. And I recall you mentioning that -- that entity previously.

How long have you been affiliated with the American Academy of Anti-Aging Medicine?

A. My formal role as director of curriculum started in 2013, although I've been lecturing for them since 2010.

Q. Okay. And if you know, aside from working in administration or management for Environmental Brain Health Clinic, do you know if Mr. Lashley does anything -- what other roles he has with that entity, if any?

A. I believe that's it. I mean, I -- you know, he's an owner/operator. He pays close attention to, you know, the -- the quality of care that's offered. You know, like any business owner, he's looking to grow the practice and establish expertise; and, you know, that's why I think he's been seeking to not only develop a -- sort of a concentrated effort in this category overall of people who may have been affected by mold but to work, in a sense, as an advocate for them too within the legal context as well.

Q. Do you know if Mr. Lashley was one of the

founders of Environmental Brain Health Clinic or if he just came to be a part owner at this point?

A. I don't know.

Q. Again. If you know. If you know.

A. Yeah. I don't know.

Q. Okay. Do you know if Mr. Lashley is being provided any compensation for his role relating to Ms. Phipps on this case?

MR. CLARK: Calls for speculation.

THE WITNESS: I don't know.

BY MS. DeHART:

Q. Okay. Do you know if Mr. Lashley's been directly involved with Ms. Phipps's care at Environmental Brain Health Clinic?

A. I don't know.

Q. Okay. Do you know who at Environmental Brain Health Clinic has been directly involved with Ms. Phipps's care?

A. I do.

Q. Who is that?

A. Allison Remy, R-e-m-y. She's a physician assistant.

Q. Okay. And I believe, if I'm recalling correctly from your deposition before, she -- was she also a former student of yours at one point in time?

A. She was through the same program.

Q. Okay. And approximately how -- in what time frame was she involved in that program?

A. Within the last two years.

Q. Okay. And do you know -- do you recall when she started working for Environmental Brain Health Clinic?

A. I don't know.

Q. Okay. Do you know whether Mr. Lashley and Ms. Remy are involved in any other litigation cases, aside from this case and the Clover case, out of -- in doing their work with Environmental Brain Health Clinic?

A. Some of the other cases that I've mentioned were also -- they are cases as well but they were -- but working with a different attorney.

Q. Okay. Would it be all of the other ones that you mentioned or only a subset of those?

A. It would be all of them.

Q. Okay. Do you know whether Mr. Lashley has an affiliation with Dr. -- with Dr. Ross at all?

MR. CLARK: Calls for speculation.

THE WITNESS: I don't know.

BY MS. DeHART:

Q. Okay. Do you know if Ms. Remy has a relationship with Dr. Ross?

A. I don't know.

MR. CLARK: Calls for speculation.

BY MS. DeHART:

Q. With respect to the Childs case, was that a case that you were also contacted by Webb Law Group regarding?

A. That's correct.

Q. Okay. All right. I'm going to go over some of your background, Dr. Heyman, although I do recall some of this from your prior deposition, but I do want to make sure that we get some items onto the transcript for this case. So some of it might be -- repeat a few things from -- from previously; but, you know, bear with me on that. But I'll try to -- I'll try to be more expedient this time around.

So you're still working with your clinic, the Virginia Center for Health and Wellness; correct?

A. Correct.

Q. Okay. And you said a few minutes ago you worked there approximately three days a week.

A. That's correct.

Q. Okay. And you did mention you're still -- you're still involved with -- with teaching or on the faculty at George Washington University.

And that's about a half a day of your time per

weight -- per week?

A. On average.

Q. Okay. And then another half day for the anti-aging -- I'm forgetting the full name of it, but the anti-aging entity as well.

A. Correct.

Q. Okay. Are there any other clinics that you work out of?

A. There's -- there are no clinics that I -- that I work out of, but there's one clinic in California that I oversee some care in California.

Q. And what -- what clinic is that?

A. That is Precision Metabolix, M-e-t-a-b-o-l-i-x, as in "X-ray"; and it is based in San Clemente.

Q. And approximately how long have you been involved with that clinic?

A. Since 2019.

Q. And you mentioned you oversee some things having to do with that clinic; is that correct?

A. I used to live in California and see patients at that practice. But since I've moved, the nurse practitioner and other providers offer care, and then I offer backup for them, and I oversee them as needed on -- on their difficult cases, for example.

Q. Okay.

A. But I do not have any active patients there at this point.

Q. Would you say all your active patients are with your -- your own clinic in Virginia?

A. Correct.

Q. Okay. And I recall last time you discussed -- I believe you said you were a board member or you had -- you had some other affiliations with organizations, or I might be -- I might be thinking of the anti-aging entity as opposed to something different.

But let me just ask you the question: Do you -- do you hold any board member or officer-type positions with any organizations?

A. I'm the chief medical officer of a private company called the Metabolic Code.

Q. Okay. And how long have you held that position?

A. 2013.

Q. And where is the Metabolic Code located, or is it a nationwide-type organization?

A. Administrative offices are in Cincinnati, Ohio.

Q. What do you -- what do you do as the chief medical officer for that organization?

A. I teach, and I help with product development and some technology development as well.

Q. On average, how much of your time would you say you devote to that entity, say, a month?

A. Two hours.

Q. Okay. And then with respect to the California -- the California entity we talked about a minute ago, approximately how much of your time a month would you say you devote to that entity? The Precision Metabolix; is that right?

A. That's correct.

30 minutes.

Q. Okay. All right. And, Dr. Heyman, we went over some of this last time.

But where did you get your MD from again?

A. University of Michigan.

Q. And what year was that in?

A. 2004.

Q. And it was prior to your MD that you got your master's in -- was it health science or health services; is that correct?

A. That's correct. In 1998.

Q. Okay. And where was that from?

A. University of Michigan.

Q. Okay. And I'm correct that you don't presently hold any board certifications in any specialties; is that correct?

A. Board certified in integrative medicine.

Q. Okay. Am I correct that you used to be board certified in another area, but you didn't -- you didn't -- you let that lapse or you didn't take the test for it? Am I recalling that correctly?

A. That's correct. I let my family medicine boards lapse in 2017, I believe.

Q. Okay. And you've never had a board certification in immunology; correct?

A. That's correct.

Q. And you've never had a board certification in neurology; correct?

A. That's correct.

Q. Okay. You also don't have any certifications or specialization in psychiatry; correct?

A. Correct.

Q. Okay. And you're not a toxicologist; correct?

A. Correct.

Q. And you are not a certified industrial hygienist; correct?

A. That is correct.

Q. Okay. And the last time we spoke briefly about a couple of public reprimands that you received in 2020, and I just wanted to get that briefly on the transcript for this case and show you those documents for this

case.

(Exhibit 2 marked)

BY MS. DeHART:

Q. So let me bring up Exhibit 2.

Can you see that, Dr. Heyman?

A. I can.

Q. Okay. And was this the -- this was the same document I showed you previously in the Clover case; correct?

A. It is.

Q. And you recognize this document?

A. I do.

Q. Okay. And this related to a public reprimand from the -- from the State of Virginia; is that correct?

A. That's correct.

Q. Okay. And this is your signature, I believe, here on the final page of the document; is that correct?

A. That's correct.

(Exhibit 3 marked)

BY MS. DeHART:

Q. Okay. All right. And then let me switch over to Exhibit 3.

Do you see that? Did that hopefully go smoothly and you can see the new document now?

A. I can.

Q. Okay. And you recognize this document as well?
A. I can.
Q. Okay. And this was a Public Letter of Reprimand you received from the Medical Board of California in 2020; is that correct?
A. Yeah. It was based on the same incident in Virginia. It's just a repeat.
Q. Right. Right. Correct. Okay. All right.
A. So it's not separate, because you said there were two. There aren't two. There's only one.
Q. Oh, I meant there were two different documents, but I understand.
It's relating to the same item, just from two different states; correct?
A. Correct.
Q. Okay. All right. Let me stop sharing.
And I'm correct there have been no other -- you've received no other public reprimands or disciplinary actions at any other time; is that correct?
A. Correct.
Q. Okay. Now, Dr. Heyman, in this case, you understand that you are evaluating Victoria Phipps -- correct? -- for -- and provided a report for her use in this litigation that she's bringing against Camp Pendleton & Quantico Housing and LPC Pendleton

Quantico relating to a prior home she lived in on Camp Pendleton? Is that your understanding?

A. That's my understanding.

Q. Okay. And is it your understanding that home she lived in was located at 261-01 Palma Court, Oceanside, California? Is that correct?

A. That's correct.

Q. And her -- it's your understanding that -- that that's the only home that's at issue in her lawsuit; is that correct?

A. That's correct.

Q. And is it your understanding she lived there for about nine months from March of 2020 to December of 2020?

A. That's correct.

Q. Okay. Now, do you have an understanding that Ms. Phipps, after the leak and mold at issue in the case was discovered by her in early November 2020, moved from out -- was relocated out of the home to a different location? Is that your understanding?

A. That is my understanding.

Q. Okay. And then would you agree that then she didn't return to the home until sometime in December 2020 shortly before she moved out; is that correct?

A. That's correct.

Q. Okay. Do you have any understanding about whether Ms. Phipps reported any concerns to I'll call them "Lincoln Military Housing" but basically the entities that are the defendants in this case prior to November of 2020 about mold or leak concerns that she had about the property?

A. I think that's correct. I think the first complaint was more so for pest control in the beginning of November 2020.

Q. Okay. So you agree that you're not aware that she made any specific complaints to the defendants about leaks or mold or smelling mold, anything like that, before November of 2020?

A. I believe -- actually, in reading the record -- and, again, this is always secondhand -- around September Ms. Phipps asked the leasing company if she could move into a different building or terminate her lease.

But they said that she couldn't.

She was claiming that she was feeling sicker and sicker and she did not know why, in which also increased her depression.

Q. Do you --

A. So there was some -- there was -- I think there

was some overture to the leasing company as early as September.

Q. Do you -- do you recall where that information is coming from that you're looking at right now?

A. This is in the report by Dr. Ross.

Q. Does it appear that that was something that Ms. Phipps conveyed to Dr. Ross or someone at his clinic when she was seen there?

A. He did interview her directly. I did not. So this would have come as a self-report from her. I can say, in the documents that I have available, I did not see any formal correspondence between Ms. Phipps and Lincoln Military Housing to that effect.

Q. Okay. So would it be fair -- in this case, you do recall receiving and reviewing some documents from Ms. Phipps's tenancy file relating to the time that she was living at the Palma Court residence; is that correct?

A. You would have to maybe describe differently what you mean "a tenancy file."

Q. Sure. Sure.

I can break it down too because you just mentioned that -- that you didn't recall seeing any, like, formal documentation of what she had apparently perhaps orally reported to Dr. Ross, you know, in a

document that you saw.

Was that --

A. Correct.

Q. -- correct?

Okay. Did you review -- or -- or do you recall? Among the documents that you were provided in this case, were you provided the work orders relating to Ms. Phipps's tenancy?

A. No.

Q. Okay. You don't recall reviewing those as part of your work on this case?

A. I don't see them in my file. This is all I have access to.

Q. Okay. Do you recall seeing anything that looked like tenancy memos or notes that you were provided relating to Ms. Phipps's tenancy?

A. No.

Q. Okay. Do you recall whether you were provided any email correspondence between Ms. Phipps and Lincoln relating to her tenancy in your files?

A. No.

Q. Okay. Did you -- were you provided Ms. Phipps's deposition testimony in this case as part of the documents for you to review?

A. I don't see them in my -- I don't see her

deposition in my file.

Q. Okay. Do you have -- strike that.

Let me -- let me ask you this: Were you provided anything that appeared to be, like, a move-in report or, like, a move-in/walk-through document relating to Ms. Phipps's tenancy that she would have filled out around the time that she moved into the Palma Court property in March of 2020?

A. I actually believe I -- I -- there was a comment -- and I have so many documents -- that there was a comment, I believe, in the rebuttal.

Let me open that. I apologize.

Q. No problem.

A. So this would have been by -- I believe it was -- oh, boy. Let me scroll through. I don't want to speak out of turn.

I am aware of what you are referencing, that when she -- and this is just by recall right now, that she filled out a form that basically said when she moved in, she did not note any issues with the -- with the home.

Q. Okay.

A. I'm going to try and give you a bit more specific -- specifics on where I saw that. If I recall, I think it was referenced by -- in Exhibit C. Well,

here's -- yeah. Okay. So this was George Davie, and it looks like he was the property manager.

Q. You might be -- are you looking at another expert report in this case?

A. I'm looking at a report that was submitted by George Robert "Bob" Davie. He was the residential property manager, and he made a statement about her moving in. And let me see if it was -- yep.

So he answered certain questions, and the first question was "Was there any evidence of mold preexisting as of the date of possession by Ms. Phipps?"

And he says, "No. As indicated on the move-in condition form, there are numerous opportunities contained in the document for the resident to either indicate or inform" --

(Reporter clarification)

THE WITNESS: "'There are numerous opportunities contained in the document for the resident to either indicate or inform' the management team of any preexisting mold or preexisting indication that a water intrusion may be present and that could cause mold to appear."

Are you familiar with this document?

BY MS. DeHART:

Q. Yes. I know -- I know what you're referencing.

So that's where you're getting the -- your understanding --

A. Correct. Right.

Q. -- that there was --

A. I don't have any other -- I don't have the actual form that she filled out when she moved in. I just have a reference to the form that he wrote in his statement.

Q. I understand. Okay. Thank you. Thank you for making that clarification. I appreciate it.

When you -- when you were retained for your assignment in this case in February, was any direction given to you specifically about what your focus was going to be in doing your expert report for this case on Ms. Phipps?

A. Generally, the expectation is to look at the medical record, first and foremost, to identify "Does she meet a case definition clinically where she has developed an illness due to exposure to a water damaged building?"

That's first and foremost.

And then to examine the circumstances around that situation to further understand "Is it likely or not that this particular building may have contributed to her illness?"

(Exhibit 4 marked)

BY MS. DeHART:

Q. Okay. Let's go over to your expert report, Dr. Heyman.

So let me -- let me share the screen again with you.

And -- and, Dr. Heyman, if you need to take a break at any time -- I didn't say this at the beginning, but I'll try to -- we've been going almost an hour, but maybe I'll go just a little bit more, but then we can take a quick break for any reason, but we can also press on. It's -- I'm okay with either.

I don't expect your deposition's going to be anywhere near as long as it was last time. We only have one person to talk about. So it's -- it's -- but feel free to say if you need to take a call or need to go get more coffee or anything like that.

A. Thank you.

Q. Okay. Can you see the -- can you see the screen with the header of your correspondence here, Dr. Heyman?

A. I can.

Q. Okay. All right. And does this -- I'll scroll through it a little bit more.

But does this appear to you to be the expert

report which you did on Ms. Phipps for this case?

A. That's correct.

Q. Okay. So I am just going to scroll down quickly. I did notice there aren't page numbers on the report. So I'll try to do the best I can with -- you know, when we go through it to direct you to the -- to the right pages. So let me just scroll down fairly quickly towards the end.

Okay. So here -- my question really is here -- this is kind of towards the end. You have, like, the conclusion to your report.

Do you see that?

A. I do.

Q. And then it goes into references.

Do you see that here?

A. I do.

Q. Okay. I just want to make sure I'm not missing a page of the report because I didn't see a page with your signature on it.

And I recall from last time you did sign your report.

So, first of all, does it -- does it appear like this is a full copy of your report and we're not missing a page?

A. I have it open simultaneously, and it is a full

copy.

Q. Okay. All right. This one just didn't -- it didn't have a signature block on it for whatever reason.

A. Yes.

Q. Okay. All right. Let me scroll back up to the beginning, then.

Let's see. Did you -- did you prepare this report yourself and type it up yourself, Dr. Heyman?

A. I did.

Q. Okay. Did anyone else assist you in preparing this report on Ms. Phipps?

A. No.

Q. Okay. And did you talk with Dr. Ross as you were preparing portions of this report?

A. I did not.

Q. Okay. Did you have Dr. Ross's report in hand when you prepared your report?

A. I did.

Q. Okay. Because -- and we'll go through it, but it appears there's portions of your report which reference Dr. Ross's report and are taking certain materials from his report, like, with his analysis of the NeuroQuant/NeuroGage, and then you used those in your report.

Is that a fair statement?

A. That's correct.

Q. Okay. All right. So starting here on page 1, you list a number of different documents and records that you were provided, and that goes onto page 2 as well.

Do you see that?

A. I do.

Q. Okay. And I'm going to ask you about those in just one second.

Just really quickly, I'm going to go back to this first opening paragraph.

You say that, [as read] "Ms. Phipps here presented to the Environmental Brain and Health Clinic in July -- or on July 2022 due to fatigue, neuropsychiatric symptoms, and head pain."

Do you see that?

A. I do.

Q. Is that the -- is that the first visit that Ms. Phipps made to the Environmental Brain Health Clinic, to your understanding?

A. That's my understanding.

Q. Okay. And did you get that information from the records that you were provided from Environmental Brain Health Clinic?

A. I did.

Q. Okay. And so this is what she reported to them as of July 2022, as you understand it?

A. That's correct.

Q. Okay. From your review of the various medical records you were provided in the case, would you agree that Ms. Phipps suffered from migraines for a number of years, including prior to living at the property on Camp Pendleton?

A. I agree.

Q. Okay. And are you aware that Ms. Phipps -- or is it your understanding that Ms. Phipps was medically discharged from the Army a number of years before she lived at the property on Camp Pendleton?

A. Yes.

Q. Okay. And would you -- would you agree or are you aware that she has 30 percent of her disability rating is due to migraines?

A. Yes.

Q. Okay. Are you aware that Ms. Phipps also reported neuropsychiatric symptoms prior to living at the property, including PTSD?

A. I'm aware.

Q. Okay. And are you also aware that she reported brain trauma or brain damage from a severe car accident she suffered when she was in the military?

A. I'm aware.

Q. Okay. And would you agree, then, that 70 percent of her military disability rating is due to PTSD?

A. That's my understanding.

Q. Okay. So you were -- you were provided some of those documents amongst the various medical records that you were given in the case either from Webb Law Group or from Environmental Brain Health Clinic; is that correct?

A. That's correct.

Q. Okay. Before we go through some of these specific items here on page 1 and 2 of your report of the documents you received, do you recall whether you specifically reviewed any of Ms. Phipps's medical records from the 2018 to 2019 time period?

A. I don't believe I saw any direct medical records from that. Gosh. Let me -- let's see. (Sotto voce.) Medical. Let me -- let me see. (Sotto voce.)

There's -- no, that's not it.

I do not see in my repository medical records that cover -- wait. Here's Scripps. Yeah, no, these -- these are also more recent. Wait. Yeah.

I don't. I don't have medical records that go back that far.

Q. Okay. Let me -- let me just -- and I might

show some of them to you a little later just to make sure -- or to see if you -- they look familiar to you.

But --

A. Yeah.

Q. -- just generally speaking, do you have any understanding that Ms. Phipps made complaints to health care providers as of 2018 or 2019 regarding anxiety?

A. I do.

Q. Okay. How about depression? Do you have an understanding that she was making complaints to health care providers prior to living at the property about depression issues?

A. I do.

Q. Okay. And I think you said a few minutes ago you were also aware that she complained to health care providers at least as of 2018 or 2019 or before living at the property regarding having migraines?

A. I do.

Q. Okay. And the same question with PTSD? You're aware that she made complaints to health care providers about PTSD or was diagnosed with PTSD prior to living at the property; correct?

A. I do.

Q. Okay. Are you aware or do you have an understanding that Ms. Phipps made complaints to health

care providers prior to living at the property about body pain or body aches that she was having?

A. I do.

Q. Okay. Are you aware that Ms. Phipps made complaints to health care providers prior to living at the property about insomnia problems?

A. I don't recall.

Q. Okay. Do you have an awareness or understanding that Ms. Phipps had been suffering from issues with obesity or -- and conditions stemming therefrom prior to living at the property?

A. I am aware that she was labeled as obese, but the BMI that I saw was 29, but obviously that fluctuates. So maybe at some point she did qualify for obesity.

Q. And that was based on a record that you do recall reviewing at some point, but that --

A. At some point --

Q. -- but that might have --

A. -- for what it's worth, yeah.

Yeah.

Q. Would it be fair to say that might have postdated her living at the property or been a more recent record, though?

A. Correct.

Q. Okay. Do you have any awareness or understanding that Ms. Phipps had any health treatment prior to living at the property?

A. I believe she did.

(Exhibit 5 marked)

BY MS. DeHART:

Q. Okay. Just really quickly let me show you a couple of documents just to see if you received them as part of what you were provided.

Let me jump from your report to what I've marked as Exhibit 5. And it's not the best copy. It's titled "Certificate of Release or Discharge from Active Duty."

Do you see that on the screen?

A. I do.

Q. Do you recall if you were provided this document as part of the records that you were given in the case?

A. I was not.

Q. Okay. And it is very hard to read, but it's -- it does relate to Ms. Phipps.

But you -- this doesn't look familiar to you, though?

A. It does not.

Q. Okay. All right. Let me jump over to what

I've marked as Exhibit 6. And this is a medical record -- actually, if we scroll down a little bit -- oh, you know what? Actually, it's not 6. It's 16. Hold on. Let me mark this one out of order. Sorry.

Let me show you what -- oh, you know what? Do I not have that one up? Hold on one second.

MS. DeHART: Can we go off the record for a minute. Maybe we could take a five-minute break because I am going to have to find what I wanted to show you next, Dr. Heyman.

MR. CLARK: Sure. No problem.

MS. DeHART: Okay. All right. Let's go off the record for a few minutes.

MR. CLARK: Okay.

(Recess)

MS. DeHART: Okay. We'll go back on the record after a short break.

(Exhibit 16 marked)

MS. DeHART: Let me share my screen with you all again. And this -- I've actually marked this as Exhibit 16 because I didn't have it already pulled up.

BY MS. DeHART:

Q. Let me -- can you see -- can you see this document, Dr. Heyman?

A. I can.

Q. It says, "Consult Requests," on the top.

So have you -- I know it's probably hard to say whether or not you've seen something like this before, but it's a document from February of 2020 where Ms. Phipps, it appears, has gone in for some sort of a sleep study.

Do you recall seeing something like this before --

A. I have not.

Q. -- or this document?

Okay.

A. I have not seen this document.

Q. All right. So the main reason I wanted to bring it up was on the document it gives, towards the bottom of this first page and into the second page, kind of like a laundry list of her various medical disabilities where she was -- as she was rated them by the military.

Do you recall the document where you saw her various medically, like, rated disabilities kind of like how it's presented here where it says, like, "Percent: 100 percent," and then kind of lists out the different items with percentages assigned to them?

A. I do not. It was more of a written --

Q. Okay.

A. It was a written comment by someone. It could have even been secondhand. But it was not a formal document from, you know, let's say, the military that listed it like this, no.

Q. Okay. All right. But would it be fair to say -- do you have any issue --

Do you have any reason to take issue with these being Ms. Phipps's medically rated disabilities that she received from service that are listed here with the percentages assigned, like "Post-trauma stress neurosis (70 percent)."

This one actually says, "Migraine (50 percent)," as opposed to 30. I think I mentioned that before.

And then there's various other ones, including the knee, tinnitus, motion of wrist.

Do you have any reason to doubt that these are Ms. Phipps's medically rated disabilities that she had received from her military service?

A. No, I do not.

MR. CLARK: Calls for speculation.

BY MS. DeHART:

Q. Okay. And you were aware, through other documents, even if you haven't seen this one, that she had either represented or it had been listed in other

documentation that she had various service-related disabilities; correct?

A. Generally speaking, yes.

Q. Okay. All right. Here, let me -- actually, let me go back to your report, then, on Ms. Phipps.

Okay. So back to -- this is still page 1 of your expert report, Dr. Heyman.

And you list here and going onto the following page that you reviewed various documents and medical records.

Do you see that?

A. That's correct.

Q. Okay. The first one listed is "Mold Reports Packet."

Do you see that?

A. I do.

Q. Do you recall what all was included within that packet?

A. I do. In fact, I have that document open on my computer currently.

Q. Okay. Can you tell me what all was contained in that -- in the "Mold Reports Packet" that you were provided?

A. They were several different -- it was a compilation of several different mold testing attempts

at the, you know, place in question.

Q. Okay.

A. And it was just compiled into a single .pdf. So it included PE Labs, Pure Maintenance, Mold Armor --

Q. Okay.

A. -- and Paradise Environmental.

Q. Okay. All right. And then for the medical records for Ms. Phipps, would those have been the medical records from Environmental Brain Health Clinic, or were those different medical records that you were provided, say, directly from Webb Law Group?

A. Both.

Q. Okay.

A. So, you know, they were -- they were records -- and I think I probably listed it out -- yeah, I did -- listed it out separately that Heather Sandison, you know, had also offered medical care prior to Environmental Brain Health.

So that line would probably, I would say, directly indicate my access to the Environmental Brain Health records in particular.

Q. Okay. All right. And then My Health -- or HealtheVet -- is that also related to Environmental Brain Health Clinic, or is that something different?

A. I believe so. It's a separate type of

assessment that they do.

Q. Okay. Do you -- do you recall -- is it like a test -- a certain kind of test that they do?

A. Yeah. I think -- let's see.

MR. CLARK: And, Counsel, I'll go ahead and send you the -- the file so you have the reliance materials in front of you. That might help.

MS. DeHART: Okay. Yeah, that's fine. Yeah, that would be good because we haven't received that yet.

THE WITNESS: Okay. No. Actually, this is -- okay. So this -- this is a series of encounters, and it's -- wait. It looks like it was -- yeah.

Okay. So this was a series of encounters that she had as -- it looks like maybe as an outpatient to the VA. It looks like the first note of date is February 24th, 2021, with Sherryl Yancey, who, I believe, is a nurse practitioner.

BY MS. DeHART:

Q. I think you're correct.

Okay. So these are -- these are, like, Scripps or VA or --

(Simultaneous colloquy/Reporter clarification)

MS. DeHART: Oh, I think I said, "I think you're correct."

THE REPORTER: Okay. Yes.

MS. DeHART: And then --

THE REPORTER: "So these are -- these are, like, Scripps or VA" -- and that's where you were cutting off.

MS. DeHART: Okay.

BY MS. DeHART:

Q. So, Dr. Heyman, these records in this one folder are either Scripps or VA or TRICARE records that start approximately in 2021; is that correct?

A. That's -- that's correct.

Q. Okay. Going down to the next bullet, the Labcorp records -- do those relate to -- to medical records, or are those related to something different?

A. Medical records found within the Environmental Brain Health.

Q. Okay. Current medications -- is that a list or document relating to Ms. Phipps's medications that she's on today presently, if you recall?

A. That's correct. I believe it's also listed in the Environmental Brain Health medical record.

Q. Okay. My Health Summary -- is that also an Environmental Brain Health Clinic document?

A. I believe so. Yes, it is.

Q. Okay. Real Time Lab -- do you know if that's an Environmental Brain Health document or something

different?

A. That is a test that was ordered by Dr. Sanderson -- Sandison.

Q. Sandison.

Okay. And she's also mentioned here separately here at the bottom bullet point.

So you did recall receiving at least some, if not all, of the medical records relating to Dr. Sandison?

A. I did.

Q. Okay. VA Health Visit -- do you recall? -- was that just one visit in particular that was called out?

A. It was a single document, not -- it was just a single encounter --

Q. Okay.

A. -- very brief.

Q. Do you recall from when that was?

A. Oh, gosh. Let's see. I don't. I remember it's a very short document. It didn't feel very relevant to me. I'd have to look back and see.

Q. That's fine.

Do you recall --

A. Yeah.

Q. Do you recall if it was more recent -- it was a more recent document?

A. I think so.

Q. Okay. Going down to San Diego Imaging, do you recall what that referenced or what that was relating to? Was that a Sandison-related document, for example?

A. I believe these were breast imaging studies that were performed -- yeah, San Diego Imaging -- around 2021. There were several related imaging studies that were performed around that time.

Q. Okay. Did you consider those to be relevant to your work in this case?

A. I did -- I read them, but I don't consider them relevant to my specific perspective.

Q. Okay. And then at the top of the next page, page 2 of your report, there's a reference to "MyScripps Diagnostic Testing: Ultrasound, Mammography."

Is that something that was also related to some breast imaging studies that were done on Ms. Phipps more recently?

A. That's correct.

Q. Okay. And would it be fair to say that those weren't also -- you didn't find those very pertinent to your assignment in this case?

A. I did not.

Q. Okay. Just moving down quickly, I feel like most of these on this page might relate to Environmental

Brain Health Clinic with the possible exception of the "Pure Maintenance Reports."

Do you see that there the second bullet?

A. I do.

Q. And was that a reference to that one -- I think it was a mold report.

A. It was. I had it both given to me as its own separate document and then also included in the compilation document for, quote, "Mold Reports."

Q. Okay. Now, the rest of these bullets here -- do those all relate to records from Environmental Brain Health Clinics, to your knowledge?

A. Only some: GI Map --

Q. Okay.

A. -- Quicksilver, Vibrant America, Genova NutrEval.

Those all would have been ordered by Dr. Sandison prior to Environmental Brain Health.

The CIRS Symptom Questionnaire, the visual contrast studies, the Max Pulse, the Evoke Neuroscience -- those are all related to her encounter with Environmental Brain Health.

Q. Okay. And it's your understanding that Ms. Phipps went physically in person to Environmental Brain Health Clinic in July of 2022; is that correct?

A. That's correct.

Q. Okay. And that would have been when she had the brain scan and did these -- had some of these other various tests done or work -- lab work done, would have been at that visit, to your understanding?

A. That's correct.

Q. And then it also says -- and I believe I saw it in Dr. Ross's report as well -- that she had a follow-up appointment with Environmental Brain Health Clinic in November of 2022; is that correct?

A. That's correct.

Q. Was that where she went in person again to Environmental Brain Health Clinic, or was that a televisit or Zoom-type visit, if you know?

A. I don't know.

Q. Okay.

A. I can look it up, if you'd prefer.

Q. If -- if you have it somewhere handy.

A. I do. I do.

It must have been telehealth because it says, "Location of Patient: California."

Q. Okay. Do you know whether Ms. Phipps has gone back in person to Environmental Brain Health Clinic since last July of 2022?

A. It does not appear so. It looks like she had

one physical encounter with them and then one telehealth visit in November that we just described with no other encounters.

Q. Okay. And would it be fair to say you received -- did you restart -- did you receive these records that you have listed here on or about -- sometime in February 2023?

A. That's correct.

Q. Okay. Do you know whether there's a treatment plan that Environmental Brain Health Clinic has come up with for Ms. Phipps?

MR. CLARK: Calls for speculation.

BY MS. DeHART:

Q. If you know, Dr. Heyman.

A. Yes, to the extent that based on -- let's see.

So if I -- if I can infer, it looks like they recommended some treatment between July and August of 2022.

Q. Do you know what the treatment consisted of?

A. Yes. It looks to be they prescribed the medication Welchol.

Q. Okay.

A. And -- I apologize. They -- they -- they sort of hid -- not "hid," but they made it hard to find the original note. So I'm just clicking through -- here we

go. Is this it? No. That's November.

Here. I think this is it. Here we go.

So the plan -- yeah. So they had -- they had a -- they recommended the Welchol, and then they recommended the, you know, referral to Dr. Ross and the NeuroQuant. They also recommended a variety of different over-the-counter let's call them "natural compounds" as well as some additional testing that they do at the clinic itself.

Q. And when you say, "at the clinic," that's Environmental Brain Health Clinic?

A. That's correct.

Q. Okay. Do you know whether Ms. Phipps has been taking the Welchol and the other "supplements," let's call them, since the time they were recommended or prescribed in July of 2022?

A. She has been consistently taking the Welchol, at least per the note, in November.

Q. Okay. But you're not aware of her doing another follow-up visit with Environmental Brain Health Clinic since November of 2022?

A. She did not do a follow-up visit, but we do have follow-up tests, and the most recent of which is -- there were two visual tests -- visual contrast study tests that were performed and submitted, one in December

and then this -- the most recent one in February, which she passed the visual test in February.

And I can only assume -- and this is an assumption -- that, you know, she eventually passed the test because of consistently taking the Welchol.

Q. But is it fair to say -- have you ever spoken with Ms. Phipps directly yourself?

A. No, I have not.

Q. And you haven't ever seen her in person in your clinic --

A. I haven't.

Q. -- for example?

A. I have not.

Q. Okay. Do you know whether she saw Dr. -- did she see Dr. Ross in person, if you know?

A. I -- I don't know if she saw him in person, but they -- they had a visit because he performed the -- the full forensic report, which usually indicates a visit.

Q. Okay. An in-person visit?

A. Generally speaking, yes. That's my understanding, yeah.

Q. Okay. Do you recall whether any of the medical records you were provided on Ms. Phipps included records from a physician named Dr. Zuraw? Z-u-r-a-w. Does that sound familiar to you?

A. No.

Q. Okay. And generally speaking, would you say that the medical records which you do have on Ms. Phipps, aside from the various Environmental Brain Health-related records, were from the '21 -- 2021 to 2022 time frame?

A. Mostly, yes.

Q. Okay. All right. Let's scroll down a bit into your report, and I'm on page 2 under "Background."

So you note here -- there's a date 7/7/2022.

Do you see that?

A. I do.

Q. Is that information that you took from what she related at her visit with Environmental Health Brain -- or Environmental Brain Health Clinic in July of 2022?

A. That's correct.

Q. Okay. So this would have been from what she might have reported to them or a questionnaire or something that she filled out when she went there?

A. That's correct.

Q. Okay. Do you recall whether or not you've seen any reference to Ms. Phipps having allergy symptoms before she lived in the apartment at issue or the unit at issue?

A. I don't recall.

Q. Okay. All right. I'm going to show you a few different exhibits largely to ask you if you've seen them or not, although it sounds like you might not have been provided documents from the 2018 and 2019 time frame.

(Exhibit 6 marked)

BY MS. DeHART:

Q. But let me pull up what I've marked as Exhibit 6 to your deposition.

This is just an excerpt from Ms. Phipps's medical records, and the date here is June 16th, 2018.

Do you see that?

A. I do.

Q. Do you recall -- do you recall seeing any records that kind of have this similar appearance? Because all of these kind of do have a similar appearance, probably which stems from where they were generated.

But does this look familiar at all to you as something that you would have reviewed? It's just a couple of pages long.

A. Yes. So we had discussed this before. The HealtheVet personal health record --

Q. Um-hmm.

A. -- which -- which starts, it looks like, 2021,

has the same format.

Q. Okay. But -- so the -- the records you have from 2021 and 2022 look similar to this in presentation, but you don't recall having any that go back to the 2018 time frame?

A. I do not.

Q. Okay. All right. I'm just scrolling down quickly. It appears that Ms. Phipps presented to the emergency room and she's having edema issues.

Under the "PMH" -- does that stand for prior medical history in medical parlance, Dr. Heyman?

A. Past medical history.

Q. Past medical history.

So she lists there -- or it lists there migraine; allergic rhinitis; back, knee, neck, shoulder pain; depression; and PTSD.

Do you see that?

A. I do.

Q. So would you agree, assuming that this medical record is correct, that she did have -- Ms. Phipps did have that history as of June of 2018?

A. That's correct.

(Exhibit 7 marked)

BY MS. DeHART:

Q. Let me go over to what I've marked as

Exhibit 7. And, again, it has a similar appearance; and it's from July of 2018.

Do you see that?

A. I do.

Q. Okay. And, again, you don't believe that you have records from this time frame or reviewed this record in your work on this case?

A. I do not.

Q. Okay. So this one, just scrolling down -- it appears that Ms. Phipps had a depression screening during this visit where she reported:

"Little interest or pleasure in doing things."

"Nearly every day."

And "Feeling down, depressed, or hopeless."

"Nearly every day."

Do you see that?

A. I do.

Q. And you agree, I believe you testified before, that Ms. Phipps did have depression problems prior to living at the unit at the property; correct?

A. She had depression prior. That's correct.

Q. Okay. Let me see if there was something else on this record.

One thing I wanted to ask, here on page 2, it does have a reference to her weight here as of 2018 as

being 206 pounds.

Do you see that?

A. I do.

Q. And her height was listed at 64 inches.

Do you see that?

A. I do.

Q. With those numbers in mind, would you consider that at least as of this time in 2018, that Ms. Phipps would have been considered clinically obese?

A. Yes.

Q. Okay. Do you have any understanding as to how physically active Ms. Phipps was prior to living in the unit at Camp Pendleton?

A. My understanding -- my understanding is that, if I recall from the record, she actually liked to be physically active.

Q. Do you recall that she reported -- and perhaps it was to Dr. Ross -- that before -- before she lived at the unit, that she was exercising fairly frequently or something along those lines? Is that your recollection?

A. That's my recollection.

(Exhibit 8 marked)

BY MS. DeHART:

Q. Okay. All right. Let me go over to what I've marked as Exhibit 8. It's just a different record, also

from July of 2018. And this is a -- it's called a "Mental Health/Addictions Integrated Intake Assessment" on Ms. Phipps.

Do you see that there?

A. I do.

Q. Is that up on your screen now?

Okay. Let me scroll down. I believe it's the second page.

So under "History of Present Illness," it states here, "Veteran has no history" --

I'm in the first paragraph under the section "History of Present Illness."

It says, [as read] "Veteran has no history of MH treatment in the VA but has participated in MH treatment with private therapist."

In medical parlance, is "MH" mental health?

A. I assume so.

Q. Okay. And it notes here in the next quasi paragraph that she had [as read] "individual therapy 2012 to 2016 and psychiatric medication (Cymbalta) managed by private community PCP."

Do you see that?

A. I do.

Q. What kind of medication is Cymbalta, if you know?

A. It's an antidepressant medication, and sometimes it's used for chronic pain as well.

Q. Okay. (Sotto voce.) Actually -- hold on. Wait.

And it states here -- actually, here, we're still on page 2 -- that she stopped the medications apparently because of how they made her feel.

Do you see that?

A. I do.

Q. Do you -- do you have any understanding of whether or not she ever got back onto any psychiatric-related medications, like Cymbalta or something else, prior to the time that she -- during -- or prior to or during the time that she was living at the property on Camp Pendleton?

A. I'd have to look back. I don't know.

Q. Okay. If she was, would that have been something that would likely be noted in Dr. Ross's report?

A. That or maybe --

MR. CLARK: Calls for speculation.

THE WITNESS: Yeah. I'd have to look back and see.

BY MS. DeHART:

Q. Okay.

A. There is a -- there is a list of medications in his report, but it doesn't necessarily give the timing in terms of, you know, when she started certain medications.

Q. Do you have any reason to take issue with the history in this document that she was taking -- she was undergoing individual psychiatric therapy and treatment for a period of time prior to living at the property?

A. I have no issue with it.

Q. Okay. Let me see if there was anything else in here I wanted to ask you about.

Okay. So on page 3 under the "Depression" heading, do you see that, Dr. Heyman?

A. I do.

Q. Okay. So it says here, [as read] "Depressed mood: an average three to five times weekly."

And she does say that she likes exercising.

But then it goes down a little further and says, "I used to be" -- do you see that? -- "I used to be the person who worked out two to three times a day. It just felt good. Now a couple times a month maybe. It feels like I'm weighed down now."

Do you see that?

A. I do.

Q. Okay. So do you have an understanding of that

immediately prior to her moving into the unit, she had decreased her prior exercise ability -- exercising regimens already due to her depression problems?

A. I can't say for certain.

Q. Okay.

A. But to me, that's speculation.

Q. Okay. But as of July 2018, do you have any reason to doubt her relation of how she's feeling in this medical document, that she's not exercising as much as she used to due to being weighed down or having depression problems?

A. I guess all we can infer on this document is around the time in 2018, but she moved into the unit in 2020, two years later.

Q. Okay.

A. So I don't know what her habits were at that time, two years later.

Q. Okay. That's -- that's fair enough.

Let me see if there's anything else here.

Would you agree that her -- on page 4, she -- there is some discussion about her car accident in 2006.

And you agree that she had a fairly severe car accident in 2006 when she was still in the military; is that correct?

A. Correct.

Q. But you didn't -- or I'm presuming there aren't any actual medical records that anyone has relating to that specific situation dating back to 2006; is that correct?

A. Other than descriptions and discussion by Dr. Ross where he asked her about it to some degree, but there --

Q. Right.

A. -- I don't have any direct records from that time.

Q. Do you have any reason to doubt that -- I believe she was hospitalized; is that correct?

A. That's my understanding.

Q. Okay. And it states, in this document, "I had TBI, brain bleed. My pelvis was fractured in three places."

Do you have any reason to doubt that that was -- that that summarizes her injuries from the car accident --

A. That is correct.

Q. -- that she had?

A. Yes.

Q. Okay. Let me see if there's anything else here.

Do you recall whether she was -- she had

continued issues with pain in various parts of her body that stemmed from the car accident?

A. I don't recall.

Q. Okay. Do you recall that she reported at various points in time and possibly to Dr. Ross that she was exposed to burn pits when she was in the military?

A. I don't remember reading that. I'd have to look back through Dr. Ross's report.

Q. Okay. Do you recall if she reported, whether it was to Dr. Ross or otherwise, that she was exposed to radiation when she was in the military?

A. No, I don't recall anybody making a statement in that regard --

Q. Okay.

A. -- from the documents that I've read.

Q. Okay. Could being exposed to radiation cause changes to somebody's brain?

A. I'm not familiar with that literature. I can't make a determination on that.

Q. Okay. Without knowing what was actually being burned in the burn pits that she may or may not have been exposed to, is there a way to know whether that could have caused any impact on her brain?

A. Again, I would have to look at the literature to see if there are certain areas of the brain that are

more vulnerable than others.

You know, there are certain patterns of injury that can be detected.

So, for example, there's a pattern for traumatic brain injury that's slowly being uncovered. There's a pattern for a water-damaged building. There's a pattern for stress.

But I'm not aware of a pattern specifically for organic chemicals, basically burning organophosphates.

Q. And you're not certain if there's a pattern, say, if somebody was exposed to radiation for a period of years either?

A. Correct.

Q. And last time when we talked, I know we had talked briefly at least about COVID and whether that could have any impact on how a brain might present in imaging.

Am I recalling correctly that -- that it could have the -- having COVID could have an impact on somebody, how somebody's brain looks on various imaging scans?

A. Correct. Different than traumatic brain injury, different than water-damaged building. I believe it's looking like it too has its own unique pattern.

Q. Is this something that's still kind of being, like, developed or discovered, from reviewing the different scans, that there's actual -- that there's differences that -- or patterns that you see that are associated with different things? Is this kind of like a developing science that's happening in that respect?

A. Well, all -- I mean, all science is developing to some degree; but, you know, I think the science has matured in terms of seeing the distinctions that now we can measure in granular detail, you know, with tools like NeuroQuant whereas before NeuroQuant we didn't have the kind of precise accuracy to show volume-related changes and the patterns that go with them.

We know that, you know, in the categories that we've mentioned, especially traumatic brain injury, it has its own pattern. A water-damaged building has its own pattern. And we -- we can't find any other overlap in the neurology literature that says, "Here's another exposure that creates the same changes."

Each one of these appear to be somewhat unique, almost like a fingerprint in the way that it appears to injure the brain.

(Exhibit 9 marked)

BY MS. DeHART:

Q. Let me show you what I've marked as Exhibit 9

really briefly. Let's see.

Dr. Heyman, were you aware that Ms. Phipps had at least a history of having a pituitary adenoma at one point in time?

A. I was. And my understanding is she was treated with medications; and then as this note says, you know, the MRI showed it "did not detect a pituitary adenoma" after, you know, several years of therapy.

Q. Do you know whether the more recent scans that she had at Environmental Brain Health Clinic showed any evidence of that?

A. They did not when I reviewed it.

Q. Okay. All right. I think that was all I wanted to ask you about on that page.

(Exhibit 10 marked)

BY MS. DeHART:

Q. Let me show you what I've marked as Exhibit 10. This is a document from October 2019.

Again, you don't believe that you've seen any records that look like this from prior to 2021; correct?

A. Correct.

Q. Okay. Let me see if there is -- so on the top of this page, it appears that she -- or sorry.

On page 1, it actually references that this was an "Urgent Care Visit" for a "Migraine."

Do you agree that?

A. Correct.

Q. Okay. And then at the top of the next page, it's talking about her migraine history and that she's [as read] "had migraines since 2006."

And you'd agree with that generally; correct?

A. That's correct.

Q. Going down a little bit in this first paragraph, though, it says, [as read] "However, over the past six months, they've increased in frequency from one to two times per week to every day."

Do you see that?

A. I do.

Q. So would you agree that prior to living at the unit, as recently as a few months before, her migraines had worsened in severity to almost an everyday occurrence for her?

A. It's hard to tell -- when -- when is this note from?

Q. This note is from October --

A. When is this dated?

Q. -- October 2019.

A. Well, that's a year before or so.

Q. Well, it's --

A. Maybe a half -- yeah, six months. Six months.

You know, these are, you know, symptoms that can have flares.

Q. Do you know whether she was taking medication for migraines consistently?

A. I believe she was.

Q. Was she taking daily medication, like preventative medication; or was it more like once you're starting to get the migraine, you take the medication type of situation, if you know?

A. I don't know.

Q. Okay.

A. Let's see.

Q. It's -- if you can't find it, Dr. Heyman, that's fine.

A. I can't. Yeah, I can't.

Q. At least on here --

A. All -- I mean, all I have is a list from Dr. Ross, then also from Environmental Brain Health; and it doesn't look like there was a -- a baseline medication for migraine prevention, as far as I can tell, that she would just take an abortive when needed, like the sumatriptan.

Q. Right. Right. Yeah.

On page 3 of this document, it appears to be recommending that she just start taking sumatriptan.

A. Correct.
Q. Is that what that appears --
A. Yeah.
Q. -- to you as well?
And then --
A. Yeah. That's an abortive, yeah. Correct.
Q. And then going down to -- let's see.
I think I missed it.
Also, on page 3, it says, [as read] "Counseled patient that preventative therapy is warranted. The patient's not interested at that -- at this time."
Do you see that?
A. I see that.
Q. So does that suggest she was probably just taking I guess you call it an "abortive" versus a preventative medicine for migraines; is that correct?
A. Correct.
Q. All right. And then just going down briefly to --
Here at the top of page 4, this would have been October 2019 that she has a body mass index of 31.
Would that be considered obese?
A. It is.
Q. Okay. I think that's all I have on this document.

(Exhibit 11 marked)

BY MS. DeHART:

Q. Now, Exhibit 11 -- I think this is the last one -- this is from November of 2019.

So about a month after that, Ms. Phipps is having an urgent care visit where she is going in for migraines and various other related symptoms for three days.

Do you see that?

A. Yes.

Q. Okay. What is -- what's "arthralgias" mean, Dr. Heyman?

A. Just joint aches.

Q. Okay. I see.

[As read] "Patient states her hips, elbows, and shoulders have an achy feeling, not associated with movement."

Do you see that?

A. I do.

Q. Do you have an understanding of what that stemmed from at all with Ms. Phipps?

A. I do not.

Q. Okay. But you'd agree she was having those kinds of sensations prior to living at the property; correct?

A. Correct.

Q. All right. Let me go back to -- to your report.

All right. Going back to the "Background" section, you'd agree it was in early November of 2020 when Ms. Phipps discovered the mold and leak in her apartment during a pest control visit.

Is that your understanding?

A. That's my understanding.

Q. Okay. And is it your understanding that she moved out of the unit -- or was moved out of the unit within a day or two of that finding occurring?

A. Yeah, that's my find- -- that's my understanding.

Q. Okay. Do you have any understanding or have you seen any documents relating to her going back into the unit after she had been relocated to get an item or two and then feeling ill afterwards? Something along those lines?

A. Yeah. She apparently made mention of that. I believe I saw that referenced in a couple of places, but specifically I know I can reference it out of Dr. Ross's interview with her, that she went back for some items and there was some sort of chemical smell that induced a migraine, I believe, and she sought care for that in

either urgent care or an emergency room.

Q. Do you have any understanding or have you seen any documents in this case suggesting that Ms. Phipps had been told by Lincoln to not return to the unit or that she signed a document saying that she would not return to the unit unless she got permission to go back in?

A. I don't have any records to that effect.

Q. Okay. Now, Ms. Phipps moved into the unit in March 2020; correct?

A. Correct.

Q. And you'd agree within -- probably it was a little over a week after she moved in that that's when California locked down due to COVID -- correct? -- or that's --

A. I believe so, yes.

Q. Okay. Do you have an understanding that Ms. Phipps wasn't employed yet when she moved to San Diego, that she didn't have --

A. As far as I know.

Q. Okay. Do you have any opinions regarding whether or not any of the stress, depression and anxiety, or other symptoms Ms. Phipps reported after moving into the unit were due to -- due to or related to stress and anxiety from COVID?

A. I don't have any mention anywhere of her saying that. In fact, there's a couple of statements I believe that she made, that she was looking forward to going back to work as a massage therapist, I believe, over the summer but felt that she couldn't because of her clinical state. But I don't recall much mentioned around her feelings of COVID itself.

Q. Do you re- -- do you -- do you know or have the ability to -- strike that.

Do you know whether it would have been possible in the summer of 2020 in California for Ms. Phipps to have gone back to work as a massage therapist based on the state of how California was locked down due to COVID?

A. I don't know.

MR. CLARK: Calls for --

THE WITNESS: I was -- I don't know.

MS. DeHART: Okay.

MR. CLARK: Calls for a legal conclusion.

BY MS. DeHART:

Q. Do you have any opinions about whether Ms. Phipps going back into her unit, as she described, after she was relocated, could have exposed her to mold?

A. Certainly, based on the findings at the time that mold was there if she went back in, she could have

been reexposed. Sure.

Q. Do you fault her for going back into her unit after she was relocated out of the unit?

A. No.

Q. Why not?

A. I treat a lot of patients who are in similar positions as her. And, you know, life -- life has demands; and, you know, sometimes we have to go back into those environments for whatever reason. And sometimes these sort of unavoidable -- unavoidable events.

So, you know, we -- we -- once the -- once the issue's identified -- you know, what I wish would have happened and she wasn't, you know, under the proper care yet, there are some things that you can do to protect yourself better, you know, once going back into that environment, and I don't -- I don't suppose that, you know, she was offered that sort of education.

So, you know, these sorts of things happen all the time where a patient has to go back into a contaminated building for whatever reason.

Q. But if she was told by Lincoln to not go back in unless it was cleared with Lincoln first, then would you fault her for going back into the unit?

A. I don't know the circumstances. I can't

comment on that.

Q. Okay. And you haven't seen any of those documents relating to her relocation at the time that the mold was found or anything that she would have signed in that respect; is that correct?

A. I have not seen any of those documents.

Q. Okay. On page 3 of your report, you have a sentence here that talks about [as read] "Victoria reports she moved into a hotel (which was also affected)."

Do you see that?

A. I do.

Q. Where did the information come from, the hotel or wherever she moved was also affected?

A. That was a report by Ms. Phipps herself to Environmental Brain Health.

Q. Okay. Is it fair to say you haven't seen any actual documentation, like a mold report or anything like that, for the hotel or whatever residence she moved into to support that that was actually the case or not?

A. That's correct.

Q. Okay. Do you have an understanding that Ms. Phipps, immediately prior to being relocated from her unit, commissioned two mold tests on the property on or about November 5th of 2020 on her own?

A. I'm aware.

(Exhibit 13 marked)

MS. DeHART: Okay. So let me go over to what I've marked as Exhibit 13. These are a little out of order from what I've marked but --

BY MS. DeHART:

Q. Can you see that, Dr. Heyman?

A. I can.

Q. Okay. And this says, "Pure Maintenance of California LLC"; and it says, "MoldREPORT," on the page.

Do you see that?

A. I can.

Q. Is this one of the reports that you were provided that was in that folder -- I think it was called "Mold Reports Packet" -- that was provided to you by either Environmental Brain Health Clinic or Webb Law Group?

A. Yes.

Q. Okay. And is it your understanding that Ms. Phipps hired Pure Maintenance of California to do this report on the property or an inspection of the property on November 5th, 2020?

A. That's correct.

Q. And it says here up at the top on page 2 that it was sampled on November 5th, 2020.

A. Um-hmm. That's correct.

Q. Okay. And it appears there were only two samples taken.

You'd agree with that?

A. Yes.

Q. Okay. So there was an outside sample and then a kitchen sample; correct?

A. Correct.

Q. All right. And would you agree that with the exception of the Cladosporium and the penicillium/aspergillus, the other samples were actually higher outside than in the kitchen; is that correct?

A. I would agree.

Q. And -- or, actually, the Cladosporium was higher outside as well. I think I meant -- oh, the Chaetomium was the same, and the Cladosporium was higher outside. The penicillium/aspergillus was a bit higher inside.

You'd agree with that?

A. I do.

Q. Okay. And you'd agree -- would you agree that the difference between the 370 and the 800 is not a striking difference?

A. It is not.

Q. Okay. And you'd agree that on this occasion no

Stachybotrys was detected in either sample; correct?

A. For this test, correct.

Q. Okay. It says here, down in the "Comments," "penicillium/aspergillus types: Penicillium and aspergillus are among the most common molds found growing both indoors and outdoors (even in relatively clean, mold-growth-free, indoor environments)."

Do you see that?

A. I do.

Q. Do you agree with that?

A. You know, it's a general statement.

Q. Do you agree that at least based on this report, it doesn't appear that there was a considerable amount of mold spores in the air in Ms. Phipps's unit as of November 5th, 2020?

A. I -- you know, I -- to me, I think this points to the failure of air sampling in general and the unreliability given the fact that, you know, two weeks later visible mold is all over the kitchen. It's measured in the bedroom. Tape pull showed the same thing.

To me, this is a failure of whoever did this testing as opposed to the -- in addition to the unreliability of air sampling in general.

But, sure, this is -- you know, taken on its

own out of context, it is a report that says, "It doesn't look like there's mold growing in the home."

But I think there's a bigger story here and one that, you know, has to be mentioned.

Q. And you're referencing a couple weeks later the Paradise Environmental testing; is that correct?

A. Correct.

Q. But you'd agree that as of the time that the Paradise Environmental testing took place, Ms. Phipps wasn't living in the unit; is that correct?

A. That's my understanding.

Q. Yeah.

And you'd agree that the conditions could have changed in those two weeks between when she moved out on or about November 5th or 6th and when the Paradise Environmental sampling took place; right?

A. No, I don't agree -- I do not agree to that. I think that's an overstatement and quite frankly an impossibility given the degree of contamination they found once a proper assessment was performed.

There is no way that you can have the amount of growth that you can see in the kitchen based on the photos in a two-week period of time.

Q. But can't mold -- would you agree with the statement that "Mold can grow within 48 hours"?

A. Mold can certainly grow within 48 hours, but you wouldn't see that level of contamination, the degree of spread, the surfaces covered, the findings that were identified within a two-week period.

Q. And the photos that you're referencing -- those are the photos from the Paradise Environmental report; is that correct?

A. Correct.

(Simultaneous colloquy)

THE WITNESS: If you notice, there -- there are no photos taken by this company. There's no paper pulls by this company either.

BY MS. DeHART:

Q. So you'd agree there were no photos that were from on or about the November 5th, 2020, time frame that you saw in performing your evaluation?

A. As far as I can tell. I mean, this is the same report that I have, and unless there were photos that were taken that were not submitted, my understanding is they basically just did one air sampling and that was it.

And I -- you know, look, I'm not an expert in, you know, environmental quality assessment; but I am familiar enough with the literature to know that air sampling as an approach has been completely called into

question as the best way to assess an environment.

And I think the differences between these samples show the degree of variability that can occur not because something new grew but because of the nature of the testing itself.

(Exhibit 14 marked)

BY MS. DeHART:

Q. Okay. Let me show you what I've marked as Exhibit 14.

Was this -- sorry.

This is Precision Clean Air Solutions' report that Ms. Phipps procured.

Do you see this?

A. I do.

Q. Is this one of the ones that you were also provided?

A. I have Precision Mold Testing.

Q. Let me see if it's called something else.

A. This is it.

Q. Okay. This is -- so this is -- you have it starting on this page right here.

A. I do.

Q. Okay. All right. You'd agree this one was also taken on November 5th, 2020?

A. I agree.

Q. Okay. And going down to the chart, it, again, looks like only the outdoor and the kitchen were tested; correct?

A. That's correct.

Q. And according to this report, there were even less spores found.

You'd agree with that; correct?

A. Correct.

Q. And what was found was higher outside than inside; correct?

A. Correct.

Q. Okay. Well, it says air spores in kitchen.

It looks like the actual location of the sample was taken -- do you read that as [as read] "inside the cabinet right next to the stove"?

A. That's how it's reported.

Q. Okay. Did Paradise Environmental also take air samples, if you recall?

A. They did. They did.

Q. All right. Let me go back to your report, Dr. Heyman.

Although, you know what, before we go back, does -- do you want to take a five-minute break or a quick break, or are you good to keep going?

A. Let's keep going.

Q. Okay. That's fine with me.

All right. There we go.

Just a couple of questions on this section before we move on.

You have here 11/3/2022 here, this paragraph.

Do you see that?

A. I do.

Q. Was this discussion taken from Ms. Phipps's follow-up visit with Environmental Brain Health Clinics?

A. It does.

Q. Okay. So this is what she would have related to them on that occasion --

A. Correct.

Q. -- to your understanding?

A. Correct.

Q. Okay. What is Hashimoto's thyroiditis, if you -- if you know?

A. It is an autoimmune condition where the immune system is inappropriately attacking the tissue of the thyroid.

Q. Do you have an understanding, from any of the medical records you reviewed, as to when and where Ms. Phipps was actually diagnosed with this condition?

A. I believe it was mentioned -- maybe initially mentioned when she saw Dr. Sandison in 2021.

Q. Was this something that Dr. Sandison diagnosed her with, to your knowledge, or --

A. To my knowledge. But, again, I don't have the records going back further. So maybe it was identified prior to.

Q. Do you -- were you provided Dr. Sandison's deposition testimony in this case?

A. Not the deposition, but I have what appears to be all of her medical records.

Q. Do you have an understanding if Ms. Phipps stopped seeing Dr. Sandison at some point in time, or is she still seeing Dr. Sandison, if you know?

A. I don't know. I assume that she stopped and she switched to Environmental Brain Health, but she very well could still be seeing her simultaneously.

Q. Okay. Do you know whether -- or recall whether -- or what Dr. Sandison had prescribed as a treatment program for Ms. Phipps?

A. I do. Basically a very low dose of a medication called cholestyramine and then a variety of natural compounds.

Q. Do you have any opinions regarding whether that was a proper treatment plan that Dr. Sandison had put Ms. Phipps on or not?

A. It is not how I would treat this patient.

Q. Can you tell me just briefly what's "hyperlipidemia"?

A. Just high cholesterol.

Q. Okay. And quickly -- sorry.

Going -- jumping back to that prior paragraph before, the November 3rd, 2022, paragraph, it says, in the middle of the page, [as read] "At the recommendation of a functional medicine doctor, Victoria moved out of the hotel and went camping. She relates she ended up camping for two months and thereafter started living in her car and has been doing so for the past year."

Do you see that?

A. I do.

Q. Do you know -- was the functional medicine doctor -- if you know, are they talking about Dr. Sandison?

A. I believe so, yes.

Q. Did you see in the medical records that Dr. Sandison actually made that recommendation to Ms. Phipps?

A. It wasn't clear to me whether or not she agreed with the idea or suggested the idea. I know that Ms. Phipps ended up camping for a period of time. And I think Dr. Sandison sort of endorsed the idea, but I'm not so sure whose inspiration it was.

Q. Do you have any understanding as to whether Ms. Phipps is still living out of her car or not?

A. I do not know.

Q. Okay. Would it be fair to say the last you heard that she still was living out of her car?

A. As far as I know.

Q. Do you have any opinions or -- or comments -- well, actually, strike that.

Do you have any opinions regarding Ms. Phipps electing to live out of her car and not seek another residence?

A. I would have to talk to her about why she's making these choices. There just wasn't a full explanation in any of the records at this point to say one way or the other.

I know that individuals, in -- in my experience, feel like they're ending up in dire straits and homes, apartments, potential places to live start to feel very threatening. And so it's not uncommon for people to retreat to places where they maybe feel better.

I haven't heard, one way or the other, whether or not she actually felt better in the car, but it would not be surprising if she said that.

Q. Do you have any criticism of Ms. Phipps for

deciding to live in her car, which, if she still is, would have been the last two years?

A. No, I don't have any criticism of that.

Q. And is that because you don't really know or understand her full rationale for doing so, like you just described?

A. I don't know the full circumstances.

Q. Going down a little further on this page, there's the reference to taking her binder with the name Welchol in parentheses.

Do you see that?

A. Correct.

Q. And I know we talked about the binder before.

And so the binder -- that is the Welchol.

That's just another term that's used for that medication?

A. Correct.

Q. And that was prescribed by Environmental Brain Health Clinics, to your understanding?

A. Correct.

Q. Okay. And you haven't -- you haven't prescribed any kind of a treatment plan or medications to Ms. Phipps; correct?

A. Correct.

Q. And do you have any understanding as to whether

Dr. Ross has come up with any kind of a treatment plan for Ms. Phipps?

A. He did not.

Well, no. He -- let me clarify. He did make some recommendations -- or, let's say, suggestions of, you know, cognitive rehab and brain rehab based on -- based on his findings of his assessment and review of the NeuroQuant data, based on, you know, the determination that, you know, she did sustain a brain injury from a water-damaged building in addition to the finding of traumatic brain injury too.

And the conclusion is the extent of the injuries that -- that had been discovered, you know, sort of begged the question of "Is she permanently disabled because of, you know, these sorts of exposures?"

And so he did make recommendations based on that. But -- but they're not --

Q. And --

A. But they're not prescriptive. I think they're just generally suggestive.

Q. And is it your understanding -- and we'll probably get into this a little bit more.

But is it your understanding that Dr. Ross concluded that it appears that she has brain symptoms or

the brain imaging showed symptoms related to both mold exposure and a traumatic brain injury?

A. He did. He asserted both --

Q. Okay.

A. -- in his report.

Q. Okay. And we'll go back to that in a few minutes, but since you mentioned that.

Let's see. And I think you said before we only have the one -- or you only have the one -- are aware of just the one scan or the one set of imaging that was done of Ms. Phipps from July of -- would that have been from July of 2022?

A. For the NeuroQuant data?

Q. Yes.

A. Correct.

Q. Okay. And would it be fair to say you haven't seen any images of Ms. Phipps's brain that existed prior to that time; correct?

A. That's correct.

Q. Okay. So you don't -- you can't say whether her brain would have been similar or different or how it would have appeared back in 2019 or 2020; correct?

A. I have no comparison.

Q. All right. So let me scroll down in your report a little bit here.

And you did mention the VCS, or the visual contrast study, previously.

And it appears that Ms. Phipps took it several times; correct?

A. Correct.

Q. Would that have been her own election, if you know; or was that something that Environmental Brain Health Clinics told her to repeat several times?

A. They asked her to keep repeating it while under their care to determine when she'd eventually pass from therapy.

That's, you know, kind of a standard with respect to both using the visual test to display the kind of unique brain inflammation that typically occurs due to a biological exposure, but also we use it to track improvement and reduction in that inflammation with proper therapy.

And so, you know, she didn't pass that test until February of 2023. She had already been on the Welchol since the summer of 2022.

Q. And we talked about the tests at your prior deposition.

But let me ask you, do you know where Ms. Phipps was or, like, the circumstances under which she took each of these tests?

A. I do not.

Q. Okay. Is it -- but I believe we talked last time and you said, "This could be a test that she could have taken on her own."

She didn't necessarily, for example, have to be physically located at Environmental Brain Health Clinics or a physician's office; is that correct?

A. That's correct.

Q. And it's a test that's, like, on a -- it's on a computer; is that correct?

A. That's correct.

Q. And I think, if I'm recalling correctly, you said, it was -- "It's, like, a 15-minute test," something along those lines, where you're looking at different images, and then you respond to questions or prompts or something along those lines like that?

A. That's correct.

Q. Okay. Is there -- is there -- let me call it an "ideal circumstance" or a "more-favored circumstance" under which somebody would take this test? Like, say, a quiet room? By themselves? You know, things of that nature? Is there something like that that guides what would be the preferred circumstance under which someone would take the VCS test?

A. Really only under, you know, natural or bright

light, sitting 18 inches from the computer screen. Aside from that, it's an easy test to perform. So as long as there isn't major distractions, you know, this is -- this is something that can be done almost anywhere, even in a public setting.

Q. Is it something that you could do on your phone, or do you really need a computer screen and to be sitting 18 inches from it?

A. Yeah. We suggest a computer screen.

Q. Okay. And if we go down further, the Labcorp data -- that would have been taken when she went to Environmental Brain Health Clinics in July of 2022?

A. That's correct.

Q. Okay. And we talked about the HLA -- the HLA data previously at your last deposition. So, again, it says, "1-5 and 13-6-52A."

Do you see that?

A. I do.

Q. So are those both haplotypes that she has, that -- that, I guess, influence her ability to identify and eliminate toxins from mold, or is -- or is only one of those a haplotype?

A. They're both haplotypes.

Q. Okay.

A. She only -- you know, under the kind of -- the

conditional state, she only needed one present to be susceptible to exposures. What it really means is the person is vulnerable to producing excessive inflammation and also the body has a hard time resolving that inflammation over time even if she moves out of the environment.

And so -- so even though she might currently be -- or at the time that she did the testing, in, let's say, July of 2022, even if she was in a -- by that time, a, quote, "mold free" environment, her body will have a very hard time reducing that inflammation on its own just by virtue of being out of the exposure. And I think that's why we still see her failing the visual test and she has elevated inflammatory markers that are consistent with the idea of an exposure.

And I think that kind of gets back to the original idea you have a couple mold tests that were negative. You have, you know, a set of mold findings that were positive. But, you know, these -- these -- this data set suggests that, you know, she has had a significant mold exposure. The brain scan shows that she had a mold exposure.

You know, so, to me, the weight of all of this suggests at some point she's had a significant event that not only ignited the inflammation but literally

changed her brain. And, you know, as -- as you stated, if the mold only grew after she left the apartment, you know, that -- that would suggest somehow she had an exposure in her car, for example, or some other place, which is pretty highly unlikely.

You know, so these are pretty significant findings in that regard. She's significantly inflamed, you know, based on these results.

Q. Would it be more unlikely for Ms. Phipps to have been exposed in her car, even though she's been living there for two years now?

A. You know, I think the compelling -- it's a good question. I think the compelling point of this case, from my perspective, is that "Yes, she had prior issues of depression and anxiety and emotional trauma and a traumatic brain injury." I don't think anybody argues that.

But what really struck me was how clear she was around sort of acknowledging that she was feeling worse within two or three weeks of moving into, you know, the -- the place in question and that she kept a very assiduous list of symptoms that were blossoming and increasing sort of throughout that time.

And so when you begin to put the pieces together of her sort of recognition that she was feeling

worse in a very specific set of ways that she documented -- because not a lot of patients do that.

I mean, I was impressed with her list of how she went month by month and demonstrated how she was feeling in sort of partnership with eventually the recognition that it was likely the place itself that was triggering her, and it wasn't only until the very end in November that she discovered the mold growth, and everybody agreed she needed to -- to get out.

And, you know, so I think when you put all those pieces together of when she started to feel worse, how she documented it, the fact that we're showing she has the kind of inflammation and brain-related changes due to an exposure, to me, it all starts to make sense and the pieces begin to fall into place.

Q. Just going to the haplotype data briefly.

But you'd agree, with respect to that, that doesn't necessarily say that, "You've been exposed to mold." That just says that, "You are -- you have a susceptibility to molds or toxins"; is that correct?

A. That's correct. And the susceptibility is the persistence of inflammation that arises as a result of the -- of these sorts of exposures.

Q. And then the symptom -- oh, sorry. Go ahead, Dr. Heyman. I didn't mean to cut --

A. And just to -- you know, just to sort of put the fine point that how we measure that inflammation is the visual test and the blood labs and the residual changes in the brain. So you're right that just by virtue of presence of these gene sequences, it doesn't mean the person is sick. It just means they have a predisposition.

Q. And the symptom list that you've talked about -- is it your understanding that she actually was -- Ms. Phipps was actually creating this in real time while she was living at the unit; or was this something, if you know, that she put together after the fact?

A. I do not know. My experience has been it would be very hard for a patient to go back in time and month by month describe an accumulation of symptoms. You know, for most of us, we can't remember what we had for breakfast this morning let alone what a symptom was two years ago in June.

Q. Okay. But you don't know, at least sitting here right now, one way or the other, if -- which it was? This was -- this was among the documents you were provided?

A. Correct.

Q. Okay.

A. That's correct. Although, you know, she did assert the statement that whatever prior symptoms she had -- and she has every right to have, you know, all sorts of medical conditions and symptoms -- that she noted a significant worsening of her state of health, you know, after -- soon after moving into the apartment.

Q. Were you provided -- because I kind of left out this time frame.

Were you provided any medical records of Ms. Phipps during the 2020 time frame? Because I think I was asking earlier on more about 2018 and 2019, and I knew you said your records, you believed, started around 2021.

A. Correct. So 2020 would be a gap. You know, I don't see any -- I don't have any records around that time. I have the Dr. Sandison records, but I don't have any, let's say, you know, VA records from 2020 specifically.

Q. Okay. So those weren't provided to you by either Environmental Brain or Webb?

A. No.

THE REPORTER: At a convenient point, may we take a quick restroom break.

MS. DeHART: Absolutely, yes. Yeah, we can. We can stop now and go off the record. Why don't we --

MR. CLARK: Off the record.

MS. DeHART: Yeah. Why don't we take five or ten minutes. That's fine with me.

MR. CLARK: Sure. Yeah, that's agreeable.

(Recess)

MS. DeHART: All right. Let's go back on the record.

BY MS. DeHART:

Q. Dr. Heyman, of the patients where you evaluated them for having CIRS, have any of those patients not had any of these haplotypes that indicated susceptibility to "inflammogens" or toxins?

A. Some, that's correct. You can -- you can be in a category where you don't have the haplotype and still react to the environment.

The real difference is, I would say, dose response relationship where much smaller amounts of the exposure can ignite a very large fire, lots of inflammation if the haplotype is present.

If the haplotype is not present, you can still get there inflammatory-wise, but it usually requires a larger exposure, or a more sort of contaminated environment.

Q. Okay. Can you tell me briefly what some of the other "inflammogens" or biotoxins are that people can be

more susceptible to aside from mold.

A. Actinomycetes, which is a bacteria that can grow in a living space; endotoxins, which can grow in a living space. You can have infections such as Lyme disease or, you know, other -- other bacterial exposures.

Algae can do it if you swim in a body of water that has a, you know, blue-green algae bloom like Pfiesteria. So there is a list of, you know, what can trigger this inflammation, but we also know that, you know, there's only one characteristic set of changes to the brain based on, you know, a water-damaged environment, which she has.

So while you could argue that maybe there were other exposures in other places, we do know that, you know, she's been exposed to a water-damaged environment.

Q. As to CIRS itself, is it correct CIRS doesn't actually have a ICD-10 diagnosis code in the medical community?

A. No. But mold does. It's a Z77.

Q. Okay. And I think you testified the last time you were deposed you've diagnosed, would you say, over a hundred patients with CIRS in your career?

A. I have.

Q. Okay. Would that be an approximate number, the

hundred; or is there a different number that is more accurate or approximation that you can give?

A. I would say over a thousand.

Q. Okay. And I believe you started using this as a diagnosis around 2014; is that correct?

A. That's correct.

Q. Okay. And on how many occasions where you diagnosed someone with CIRS was it related to mold versus something else, approximately?

A. 80 percent -- approximately 80 percent of the time.

Q. Okay. Let me reshare your report.

Do you see that there?

A. I do.

Q. Okay. And under "Differential Diagnoses" --

Do you see that on this page? I think it's technically page 5 of your report.

A. Um-hmm.

Q. -- what's the -- what's the purpose of this section of your report?

A. So this is actually from Environmental Brain Health.

Q. Oh, okay.

A. And so this is part of the initial intake that they put into the medical record and basically

describing, you know, what are all the different ways that, you know, a person potentially can -- can we explain why they have the symptoms or clinical findings that they do?

So this is -- this sort of attempt to sort of say, "Well, we're going to think about everything, not just mold, not just a water-damaged building. We know she's got a history of traumatic brain injury." "How much of this is ascribed to that?" "Does she have evidence that she's been exposed to a water-damaged building?" "Can we see other changes, let's say, in her MRI unrelated to any of those topics?"

So that's the purpose of the evaluation process and to -- you know, to run the MRI and the other tests to see if we can find any other cause for why she has the symptoms that she has.

Q. Okay. And these -- and these were items that were listed by Environmental Brain in --

A. Correct.

Q. -- the documentation?

A. That's correct.

Q. Okay.

A. This would have been generated by Allison Remy.

Q. Okay. And for this one that says, "CIRS-COVID," did Ms. Phipps have COVID; and was that,

if you know, why they put that on this list?

A. Not to my knowledge. I don't remember reading anything about her acquiring COVID; but, you know, there appears to be some overlap in the inflammation and the symptoms that COVID can generate in the broad category of CIRS.

We've published one small research study to that end, but it's -- you know, our data is limited at this point.

Q. Okay. Are you aware of Ms. Phipps having any cognitive symptoms prior to living in the unit, say, following her traumatic brain injury from the car accident?

A. Not that I'm aware of. I think everything was mostly described as either migraines or anxiety, depression, sort of mood-related issues.

You know, I do think there was some memory findings that she described in the past maybe related to PTSD.

Q. Okay. That sounds familiar to you, that there was something along those lines that you read somewhere?

A. Yeah. Yes.

Q. What is a -- briefly, what's a "demyelinating brain disorder," if you know?

A. Multiple sclerosis. It would have been seen on

the brain MRI.

Q. Okay. And what is "neoplasm of the brain"?

A. A cancer. That also would have been found on the brain MRI.

Q. Okay. And under "Previous Medical History," was this something that she also provided to Environmental Brain Health Clinic, to your knowledge?

A. That's correct. That's her self-report of her prior diagnoses.

Q. Do you recall, from your review of her medical records, whether any of the medical records reflected that she had or was diagnosed with Epstein-Barr virus in 2021?

A. I think this was something that had come up with Dr. Sandison, I believe.

Q. Okay. Would that be the same for chronic fatigue, that that might have been related to Dr. Sandison's treatment of Ms. Phipps?

A. Correct.

Q. Do you recall whether Dr. Sandison actually diagnosed Ms. Phipps with chronic fatigue -- fatigue?

A. I'd have to go back and look at the record. I know she asserts the condition of fatigue.

Q. Okay.

A. But whether or not it's, quote, "truly chronic

fatigue," which has its own distinction.

Q. Okay. And do you recall any medical records that mentioned -- or diagnosed Ms. Phipps with fibromyalgia from 2022 that you saw?

A. I don't remember -- you know, I'd have to go back. Again, fibromyalgia, kind of like chronic fatigue, is a very specific label. Oftentimes, in medical records when people self-report physical aches and pains over a long period of time, which we've discussed -- you brought up arthralgia, for example -- people end up getting the label of fibromyalgia which may or may not be correct.

But it -- it -- when I see the term, I generally think this is a person who's had some physical aches and pains over a long period of time, whether or not she, you know, specifically meets the diagnostic criteria of fibromyalgia.

Q. Okay. Let's go on to page 6 of your report.

Under the "Medications," do you see that section there?

A. I do.

Q. Did that also come from Environmental Brain Health Clinics' records?

A. It did.

Q. And so, to your understanding, are these the

various items which Environmental Brain Health Clinic has prescribed or -- which is a part of their treatment plan for Ms. Phipps, to your knowledge?

A. Well, actually, I think if we compare this list to what Dr. Sandison recommended, I think there's some overlap. So my sense is she came to Environmental Brain Health with at least some of these dietary supplements. And, you know, moving forward, I think there were some additional -- you know, there were additional recommendations.

So I don't think these were -- this list was a recommendation by -- by Allison. I think this is what -- what Ms. Phipps came to the clinic already taking.

Q. I see.

And as you're sitting here right now, do you know if she's still taking any of these medications or supplements?

A. I -- I think there was a note in her sort of follow-up in November that she had stopped many of her supplements. She was still taking the Welchol, the binder, but I believe she is not on much of these at this point.

Q. Okay. And then some of these other, like, history sections were the "Allergies" and then their

"Social History," "Family History," "Environmental History."

Did that also come from her Environmental Brain Health record intake?

A. Yes.

Q. Okay. So this is what she would have reported to them in July of 2022 most likely?

A. That's correct.

Q. Okay. Here, under "Environmental History," it says, "Reports exposure to radiation from PATRIOT missile radar."

Do you see that?

A. I do.

Q. Okay. So is that possibly where you -- where you saw the reference to her report of radiation in the records?

A. Correct. And if you notice, it says, "toxic chemical exposure," but it doesn't say burn pits. So --

Q. Okay.

A. Right. So I don't think I had heard that piece that you had mentioned.

Q. Okay. All right.

A. I also, you know, was thinking about your comment of "Is it possible that" -- if you don't mind, I'd like to --

Q. No. Go ahead.

A. Yeah. I was just thinking about your comment of the car, and it's a good one. My thought was "She probably would not have passed the visual test even being on treatment if the car was contributing to her inflammation."

It's very hard for most people to pass the visual test unless they're in a clean environment. So my sense is that -- you know, I had said it anyway, but I kind of wanted to, you know, give a little more clarity to my comment, because I don't think I was clear enough, that if she was being exposed in the car and she's still living in the car, it would be extremely unlikely that she'd pass the visual test.

Q. Okay. And we talked before about -- a little bit at least, about her traumatic brain injury from the car accident, and Dr. Ross's conclusion about there being indications of both mold and traumatic brain injury.

So is it fair to say that -- is the traumatic brain injury also a cause of CIRS as well as the mold in the circumstance with Ms. Phipps?

A. A traumatic brain injury does not cause the -- does not cause the CIRS complex. CIRS is sort of unique to a biological exposure to an organism or a fragment of

an organism, although there's a -- there can be quite a bit of overlap in terms of symptoms. There's even overlap to some degree, and Dr. Ross points this out, and -- with respect to the brain-related changes.

But at the end, we're able to parse the two apart because we can see there are distinct patterns in the NeuroQuant for both. So we accept that she's clearly had traumatic brain injury and she's had exposure to a water-damaged environment, but she would not mount the kind of inflammation that we detected, for example, failing the visual test or the sort of blood markers that we've uncovered, from traumatic brain injury.

That would not instigate this sort of unique inflammatory process. It's got to be from an organism of some sort.

Q. Would the treatment for what the symptoms are or what's being seen on the images be the same --

A. No.

Q. -- that is --

"No"?

A. "No."

Between traumatic brain injury and CIRS?

Q. Yes.

A. No, they're not the same.

Q. Okay. Do you know whether there are certain of Dr. Ross's suggestions in his report where he, you know, provides -- I think we talked about this earlier -- different suggestions of things that she's going to need or might need and things of that nature, if she would need some of those just because of the traumatic brain injury versus the mold exposure/CIRS, or do you not have an opinion on that?

MR. CLARK: Calls for speculation.

Go ahead, Doctor.

THE WITNESS: I don't have an opinion. I would say -- yeah, it's hard to parse the two. You know, she's got a brain injury from CIRS, and she's probably never going to get back some of that architecture no matter what's done.

You know, we're never going to be able to fully heal her brain, but it's hard to for me to know what -- you know, how much would be for the traumatic brain injury versus CIRS.

BY MS. DeHART:

Q. All right. Hold on just one second. Let me see if I can move down some of my questions for you.

And so now I'm on page 7 of your report, Dr. Heyman; and you're talking about -- about CIRS more specifically.

And you might have answered some of these questions for me before in your prior deposition.

But is the VCS test something that's used and accepted by clinical immunologists to evaluate immune responses in patients, if you know?

A. It certainly has for years. Now, I don't know if it's common in, you know, current day practice, but it was developed by the Air Force and, you know, well validated in the literature, and there's lots of research on its usefulness in various situations.

Now, whether or not it's, you know, used by immunologists currently, I don't know. But it's been certainly an invaluable test for us, and we're sort of forever grateful that it was -- it was developed for this sort of purpose, and it's incredibly reliable in that regard.

Q. And with respect to the NeuroQuant, was that also developed by the Air Force, if you know --

A. No. It was developed by --

Q. -- or was that something different?

A. That's something different. NeuroQuant was developed -- you know, it came out of the research world, but eventually it was, you know, brought to market by a company called "Cortex" and approved by the FDA in 2007 originally to detect brain-related changes

specific to both Alzheimer's disease and Parkinson's disease.

Since then it has found wide application in a variety of different brain-related disorders and diseases. So we have been applying it to, you know, our patient population in CIRS. Dr. Ross has been published as well in TBI. He's a real expert in traumatic brain injury, and he just published another study on the unique changes that we can see in the brain based on head trauma.

And so, you know, the literature continues to grow and get firmer in this regard. So it's actually been a -- it's been a -- kind of a technology, if you will, that's been around and -- and matured since 2007.

Q. Do you know if the NeuroQuant is used and accepted by clinical immunologists or not?

A. It is, yeah. I mean, I -- you know, there are hundreds of NeuroQuant centers all over the country now that are used by a variety of different experts for a variety of different conditions, mostly, you know, neuroimaging, neuroinflammation, neurodegeneration, brain damage.

So, sure, you know, there's -- there's certainly -- the conventional community has sort of widely accepted NeuroQuant as one tool among many to

image the brain.

Q. Now, what about NeuroGage? Now, that's -- that's Dr. Ross's overlay to NeuroQuant, if you know?

A. I don't know if that's actually his -- you know, if it's based, you know, on his research per se. Because, you know, when you run NeuroQuant, you get a variety of different reports, but you would have to ask him whether or not that's, you know, uniquely sort of his research that's been published versus, let's say, others' research that is -- that's been published.

Q. Okay. Is it your understanding, though, that he used the NeuroGage in Ms. Phipps's case in his evaluation of her brain scans in being able to differentiate, for example, mold impacts for -- or water-damaged building impacts versus traumatic brain injury and things of that nature?

A. Correct.

MR. CLARK: Calls for speculation.

THE WITNESS: Yeah, I --

BY MS. DeHART:

Q. Okay. But it's fair to say you didn't -- you personally yourself -- you didn't evaluate the NeuroQuant or the NeuroGage.

That's something that Dr. Ross did?

A. That's correct.

Q. And then you took his findings -- or are reporting his conclusions and findings within the body of your report; is that correct?

A. That's correct.

Q. Okay. Do you know? Was Ms. Phipps's MRI or imaging first analyzed by Environmental Health -- or Environmental Brain Health Clinic before Dr. Ross evaluated it by, say, like a radiologist?

A. Correct. So typically the process -- and I believe that -- we'd have to go to the top of the document, but I believe it was a radiologist named Dr. Chandler.

But, basically, what happens is the brain MRI is evaluated by a standard radiologist. They also give some attention to the NeuroQuant. They're trained to look at very specific results of NeuroQuant, which I believe he commented on as well. But the deep analysis obviously occurs by -- by Dr. Ross.

So the initial sweep by standard radiologists gives us comfort in terms of ruling out some of the conditions that were previously listed, like multiple sclerosis or cancer or some other reason that could be found on the MRI that would claim precedent over CIRS or TBI or something else.

And the read was this MRI actually looks okay,

you know, based on the initial evaluation. That's why we need Dr. Ross to go deeper into the analysis to be more precise.

Q. Okay. So when it was first reviewed by Dr. Chandler, he found that it looked -- it looked generally normal or generally okay.

A. Correct.

Q. And then it was Dr. Ross which -- who did the more thorough evaluation.

A. That's correct.

Q. Okay. Do you have any knowledge as to whether Ms. Phipps ever did any of the VCS tests before the summer of 2022 at any point in time?

A. I have no knowledge of that. I didn't -- I did not see -- if there were a practitioner who was likely going to make that recommendation, it would have been Dr. Sandison, which as far as I can tell, it was completely absent from the record both in terms of a mentioned suggestion as well as a separate finding that would have been part of that experience.

Q. Okay.

A. So I believe this is probably the first time that she did the visual test.

Q. Okay. All right. Let me go on over to page 8 of your report.

All right. Now I'm on the section "NeuroQuant Findings," and then you have "Dr. Ross NeuroGage" in parentheses.

Do you see that?

A. Correct.

Q. And so this section of your report -- is it fair to say -- so this is -- this is basically taken from Dr. Ross's findings and his evaluation of Ms. Phipps's MRIs and brain scans?

A. That's correct.

Q. Okay. So we talked earlier -- so based on what he found, he found evidence of both abnormalities that he can attribute to mold exposure and abnormalities that can be attributed to traumatic brain injury; is that right?

A. That's correct.

Q. Okay. Do you know personally yourself which of the abnormalities go with what, or is that something that -- that Dr. Ross is the expert in?

A. He's the expert.

Q. Okay.

A. I would not venture to make those assertions. That's why we have Dr. Ross.

Q. Okay. And so this discussion -- there was some language I was a little unclear about, but I think

you've answered it by saying that both -- it was basically both of those findings were there.

And that's -- to your understanding, that's kind of what this discussion in this section is going through; is that correct?

A. That's correct.

Q. Okay. So in this one paragraph here -- let me see.

So if you go -- you've got the bullet points here at the top of the page, and then if you go three paragraphs down to the paragraph that starts "In general."

Do you see that?

A. I do.

Q. So it says, [as read] "In general, it's possible that acute effects of mold-related illness cause inflammation, edema, and enlargement; and chronic effects cause atrophy. However, if a patient was in between the acute and chronic stages, her brain volume could be normal. This possibility would explain her modest number of abnormal volume findings despite a strong history of neuropsychiatric symptoms due to mold-related illness."

Do you see that?

A. I do.

Q. Was -- is -- are these your words, or are these Dr. Ross's words?

A. They're Dr. Ross's words.

Q. Okay. If you know, is what he's basically saying is there are less abnormal findings than he would expect on Ms. Phipps's MRI or Ms. Phipps's scans, if you know?

A. Certainly, it would be, you know, better to ask him. But, basically, what he's saying is that when the initial insult occurs from mold, for example, the inflammation causes areas of the brain to swell, and that would be considered the acute stage.

Over time, just like an enlarged balloon, as the brain starts to remodel, the balloon starts to lose volume, but it will continue to lose volume until those areas of the brain now become too small and they've scarred or, as we say, "atrophied."

So you could imagine if you capture a patient at the right time, maybe you've sort of missed the enlargement phase and you're capturing them as they're passing through what looks like normal volume and then down into, you know, a more atrophied phase. So let's say we imaged her in another year. We might see areas of more volume lost.

So you go through this phase of enlargement,

and then that area starts to shrink and shrivel and scar, and then it becomes too small.

So some of it could be timing. And what he's saying is that given the degree of symptoms that she has, she has sort of a modest number of physical things to her brain still consistent with mold, still consistent with TBI.

But, you know, when you correlate her clinical picture with the brain scan, you know, he's saying, "Well, the brain scan does look bad. But does it really match the symptoms that she's having?"

And he says, "Yes, they do. But, you know, is there an intensity level here that correlates?"

And he's saying, "I'm just not sure. Maybe if we waited a little longer, we would say -- we would see areas of the brain that would be small and -- and certainly correlate with her clinical findings as well."

Q. Okay. So he's basically saying he --

A. Does that make sense?

Q. Yeah.

So he's basically saying he can't say, one way or the other, right now because there's not enough data to say?

A. Well, no, not that it's enough data. It's just that this is a -- this is a dynamic situation where

given her recent exposure, we're taking a snapshot of the brain; but if we take another snapshot of her brain in the future, it could look different or even worse as the brain continues to remodel.

Q. Or it could look better; correct?

A. No, no. It's not going to look better. It's only going to look worse based on these findings unfortunately. The brain does not have a great capacity to heal unfortunately. It has some but not a great.

And our experience has been once these exposures occur, you know, to a water-damaged building or traumatic brain injury, for example, you know, those -- the impact accumulates over time, and the brain just starts to look worse and worse.

Q. Do you know if there's any plan for Ms. Phipps to have another MRI or have another set of brain scans?

A. He suggested in his plan to repeat it, I believe, in six months or maybe a year.

Q. But to your knowledge, that hasn't happened --

A. No.

Q. -- or you're not aware of that?

A. No. There -- no, there hasn't been a follow-up MRI. I think it would be too soon given -- given the fact that she just started clinical care under Environmental Brain Health. I mean, she's only

six months in essentially, maybe a little longer. It would be too soon to repeat a brain MRI.

Q. Okay. And is this Dr. Ross -- in the same paragraph that starts "In general," would it be Dr. Ross who would be the one making the conclusion that her neuropsychiatric symptoms are due to mold-related illness versus something else?

A. Correct.

Q. Okay. And in the next paragraph that starts "Another possibility" where it says, "Another possibility is her TBI on 1/14/07 may have predisposed her to mold-related illness," is that something that's just a possibility to you at this point?

A. Honestly --

Q. You can't say one way or the other?

A. -- I can't say. That one in particular -- I'm not sure where he came up with that idea. You're going to have to ask him.

Q. Okay. And that -- those are all -- so that's basically also something that he's stating that you've just put into your report?

A. Correct.

Q. Okay. And would that be the case for this paragraph below as well regarding the PTSD?

A. That's correct.

Q. Okay. So that -- those are questions for him about whether it was clear or not if the PTSD worsened due to psychological factors or effects of mold illness?

A. Correct. And it's hard -- it's hard to parse because, you know, when you look at the symptoms related to PTSD and traumatic brain injury and CIRS, there is a tremendous amount of overlap, you know, with respect to the anxiety and the depression and the cognitive impairment and, you know, the sort of general irritability. And, you know, they -- you know, we -- we start to get a little confused.

What we -- thank goodness we have something like NeuroQuant to say, "Well, we can see the changes for traumatic brain injury. We can see the changes for water-damaged building."

We also know that when you add in the biological markers, like the visual tests and some of the blood labs that we did, those are unrelated to PTSD and unrelated to TBI. So we can say with some assurance that at least part of what we're looking at is due to an exposure.

Q. Okay. So let me go on to page -- what I'm calling page 10 of your report. I think it's page 10.

And am I correct the discussion that continues here on page 10 is also from Dr. Ross?

A. That's correct.

Q. Okay. Okay. And -- okay. Including his last paragraph -- his paragraph here on the migraine headaches and what might be related to migraines in the -- in the scans as well.

Is that -- if you know, is that what he's saying in this paragraph, that migraine headaches can also be -- are also sometimes associated with some volume abnormalities?

A. That -- that is the case. In fact, the last sentence says that specifically.

Q. Okay. All right. It's your understanding that's something that he evaluated when he did his evaluation of the -- of her brain scans, then, was the migraines as well and whether there were any findings that were consistent with that?

A. Correct.

Q. Okay. All right. Let me see how much more I have, Dr. Heyman. I'm getting close to being done.

A. Okay.

Q. On page 11 of your report, just the CIRS criteria really briefly, do you have any opinions about how long Ms. Phipps was exposed to a water-damaged building, or is all you're able to say that she discovered the -- the leak and mold, you know, on or

about early November of 2022?

A. I think there are two additional pieces of information that infer some length of time of exposure. Again, Number 1 -- and it's certainly by her self-report -- that, you know, she starts documenting what feels to be a real change in her health three weeks or so into moving into the apartment.

And -- you know, and then she continues to document that. Whether that was retrospective or not, again, you know, we all have the kind of segmented symptom list that she laid out month by month, you know, as she was sort of going through that experience. So I think there's that -- that one piece.

The other is the NeuroQuant itself, that you can't get these brain-related changes from a two-week exposure; that if it all happened in November, let's say, would that have been enough to create the changes that we see in NeuroQuant?

And we know that's not long enough. There has to be a more extended exposure or period of time by which the individual sustains or is living in, you know, the contaminated environment. It's -- it's months. It's not weeks.

And so, you know, we can say, with reasonable certainty, that, you know, whatever led to the symptoms,

whatever led to the changes in NeuroQuant, it had to be something lengthier than a very compressed, quote, "two-week period of time."

Q. Could it also have been from a location where Ms. Phipps lived before moving to the property?

A. It certainly could have, although there's nothing in her record anywhere where she was concerned about exposure. I mean, there's no mention by her, by another provider, you know, that she discusses. You know, so while anything is possible, it appears the narrative really started with this particular home.

Q. Okay. But it's fair to say you haven't seen any actual documentation before November of 2020 that there was a leak found or mold found in Ms. Phipps's unit; correct?

A. Correct. We have symptoms, and we have a NeuroQuant. You know, and then before that, you know, basically that's proving a negative, which is impossible to do. So we just don't know what her exposure history was prior to, but she never made mention of it to anybody. So, you know, we take her on her word.

Q. Now, under Number 2 under "CIRS Criteria" where you say, [as read] "Other diseases are ruled out via differential diagnosis workup" --

A. Um-hmm.

Q. -- is that referencing the Environmental Brain Health Clinics' "Differential Diagnosis" section that we saw earlier in your report?

A. That and also just going back through the medical record that I -- that I had. I think everybody agrees that, you know, she's had a mood disorder. She has the label of PTSD and traumatic brain injury. You know, all of these things were present, but now we're getting down to causative factors. And, you know, what Environmental Brain Health did was a deeper workup. She had never had a brain MRI before, for example.

And so we were beginning to be able to parse, you know, what -- you know, what's the biology that underpins her symptoms? And I think we can now at least say confidently, "We saw brain-related changes for TBI, for CIRS, for migraines."

And a lot of that also potentially explains her -- her mood-related symptoms too.

(Exhibit 15 marked)

BY MS. DeHART:

Q. Let me jump over to your rebuttal report briefly. And I think -- let's see. I've marked this as Exhibit 15.

Is this your rebuttal report in this matter, Dr. Heyman?

A. It is.

Q. Okay. Actually, you know what, while it's on my mind before I get into this, were you ever provided a report by Dr. Ellen Stein relating to Ms. Phipps in this case?

A. Is that the psychologist?

Q. Yes.

A. I did. That was part of the -- the rebuttal reports, and I read through that as well. But I chose not to respond to that because I'm not a psychologist, and I made mention that, you know, if anybody is better suited for that, it would be for Dr. Ross to respond to her.

Q. Setting aside her rebuttal report which she did more recently, were you ever provided her report that she did on Ms. Phipps which, I believe, would have been in July or August of 2022 when she did an IME on Ms. Phipps? Do you recall receiving something like that? It was quite long. It was probably about 40 or 50 pages long, I believe.

A. No. No, I don't have that.

Q. Okay.

MR. CLARK: And, Counsel, I'm not sure that I have that either.

Do you know whether that has been sent over?

MS. DeHART: Yeah. We produced that shortly after it took place actually.

MR. CLARK: Okay. I'll have to -- I'll have to look around. Sorry to derail.

MS. DeHART: We probably would have produced it again in -- when we did expert disclosures as well, but it would have been pro- -- it would have been pro- -- I think we produced it in real time as well.

BY MS. DeHART:

Q. Dr. Heyman, I just have a couple of questions for you on your rebuttal report.

A. Sure.

Q. So going down -- I think it's just on page 1 -- in this paragraph that you have is a response to something from Dr. Geng's report.

Do you see that?

A. I do.

Q. Okay. And you've got a couple of items enumerated here. There's four of them. Going to Number 3 where it says, "Are objective, measurable findings present similar to the peer-reviewed literature?"

Do you see that?

A. I do.

Q. Okay. Just so that I'm clear, what are the

objective, measurable findings that you're referencing here?

A. The -- the failing of the visual test, the meeting criteria of the symptoms --

Q. Okay.

A. -- basically at least one symptom; right? -- the blood labs, the NeuroQuant -- all of those are objective findings that together form the basis of the -- of that, of Number 3, yes.

Q. Okay. And then when you reference the peer-reviewed literature, are -- what specifically are you referencing? Are there certain specific documents that you're referring to there?

A. Correct. So our research group has published about 50 peer-reviewed papers. There's a larger grouping than that that we can pull from --

Q. Uh-huh.

A. -- you know, other researchers as well. We're now in two medical textbooks. There's a pretty good foundation now of -- of evidence for the way in which the body becomes inflamed from these exposures.

Q. And what's the name of the research group?

A. It's just me and Dr. Shoemaker and others. We don't have a name.

Q. Okay. Okay. And are those -- are those listed

in your references --

A. They are.

Q. -- to your expert report?

A. They are.

Q. Okay. All right. Good.

And then under Number 4 where it says, [as read] "Did the patient experience clinical improvement and resolution of objective findings based on proper therapy?" do you see that?

A. I do.

Q. Is that a reference to her passing her -- her VCS test in February of 2023?

A. It is. That's correct.

Q. Is there anything else that that's referring to --

A. No.

Q. -- or just that?

A. It is just that.

Q. Okay. Do you have any understanding of why any prior treating physicians of Ms. Phipps didn't order the VCS test or do an MRI and NeuroQuant with respect to her evaluation or treatment with them?

MR. CLARK: Calls for speculation.

THE WITNESS: I can't answer for --

MS. DeHART: Okay.

THE WITNESS: -- how other physicians think.

MS. DeHART: Okay. Dr. Heyman, I think that's all the questions I have for you today.

THE WITNESS: Great.

MR. CLARK: I do just have a few follow-up questions. (Audio breakup.)

THE REPORTER: I'm sorry, Counsel. You're breaking up.

MR. CLARK: Oh, hold on one second.

MS. DeHART: Hold on. Let me -- let me stop my "Screen Share." I apologize.

MR. CLARK: Can you hear me a little bit more clearly now?

MS. DeHART: Yes. That's better.

THE REPORTER: Yes.

THE WITNESS: Yes. That's much better.

MR. CLARK: Wonderful.

-oOo-

EXAMINATION

BY MR. CLARK:

Q. All right. Dr. Heyman, just a couple of quick questions. I want to follow up on a few of the things that we were talking about earlier today.

First, I want -- I believe earlier -- much, much earlier you indicated that you had open in front of

you the, like, Dropbox link that our office had sent you; is that correct?

A. I had opened my files that I downloaded. I didn't have the link itself up. I had -- right, I had accessed the link in the past. I took everything that was in there and then I put it into a folder on my computer. So I haven't accessed that link probably until you first sort of sent it to me.

Now, if you had updated -- so if you had updated that since and maybe added, you know, other fol- -- you know, other items that I wasn't aware of, then, you know, there are things that I wouldn't have seen, if, let's say, there were things that you had added since you had sent me the link unfortunately.

Q. Sure. Sure. I understand.

And I don't think that is the case but -- so if --

Are you sitting in front of your computer where you have those documents downloaded?

A. I am.

Q. Okay. And I -- I would like -- if you can, can you tell me if you were transmitted a document that starts with the words "DO NOT PRODUCE" in all capital letters and then "-Client Docs 5293 through 5843-HealtheVet Personal Health Record."

A. Yeah, I have that.
Q. Okay.
A. That was the 2000-, I think, -21, what looked to be kind of almost like a VA record --
Q. Right.
A. -- of just kind of standard medical -- you know, it's -- it's -- and it's quite a large document. I think it's over 200 pages -- yeah, it's 550 pages. That's it.
Q. Right.
And can you see my screen right now?
A. I can.
Q. Is this the same document that you're -- you're looking at on your computer?
A. It is identical. That's correct.
Q. Okay. So I just want to refresh your recollection really quick. I know there's a lot of documents, there's a lot of pages, but I'm going to go ahead and scroll down.
For example, on page -- let's see. Let's take page 409, for example. It looks like the date and time on page 409 is for a visit from July of 2018.
Do you see that?
A. I see that.
Q. Does that refresh your recollection as far as

the periods of time for which you received documents to review?

A. It does. It's just that it was 400 pages, and it actually goes in reverse order, which makes no sense. But --

Q. I certainly agree. But, anyhow, I just wanted to clarify.

So having refreshed your recollection, is it -- is it your understanding that you did have this --

A. I do.

Q. -- particular document to review before putting together your report?

A. Correct.

Q. Okay. Great.

And then I'm going to go ahead and -- I think -- excuse me, if I may just for one moment.

We were talking about that 2018 time period. We also briefly talked about a 2020 time period.

Do you see -- just take Phipps 5570, that's page 278 of 551, for example.

Do you see here the date and time of 26 May 2020 --

A. Correct.

Q. -- for this -- looks like a COVID-19 visit?

A. Correct.

Q. Does that refresh your recollection -- excuse me -- concerning the -- that 2020 time period in the records that you had concerning that time period?

A. It does.

Q. Okay. Understood.

Let's go ahead -- and I'm going to stop sharing that.

I'm going to go ahead and start sharing this .pdf really quickly here.

Okay. Can you see this on your screen?

A. I can.

Q. Have you seen this document before?

A. I think so. So I believe that is -- that was part of the expert witness defendant's submission. I'd like to pull it up.

Q. Right.

A. If you'd give me just one minute, I need to scroll through Dr. Geng's --

Q. Take your time.

A. And if I recall, it was -- I just want to make sure we're -- we're talking about the same exact document.

Q. Sure. And it --

A. This is it. I read through this too. Correct.

Q. Okay. Yeah.

And it starts on page 28 of that .pdf?

A. Correct. Um-hmm.

Q. All right. So this -- scrolling down here, it's a -- you know, Dr. Stein's opinion that she submitted in this matter, and as Ms. De Hart mentioned it's pretty lengthy.

A. Yes. I read it.

Q. Okay. So you did have the chance to read this?

A. I did.

Q. But you didn't generate any -- any rebuttal opinions on this; correct?

A. I'm not a psychologist. So I -- you know, this -- this felt a little outside of my domain of expertise.

Q. Understood.

I'm going to go ahead and stop sharing that for one moment.

Earlier we were -- we were also talking about another document. I want to show it to you. And I apologize. I can't remember which exhibit it was. So bear with me for one moment.

Okay. Okay. Dr. Heyman, do you recall looking at this document earlier today?

A. I do.

Q. All right. And this was part of the packet of

materials that you received before generating your opinion; correct?

A. Correct.

Q. Okay. And if I'm not mistaken, I want to say this was introduced earlier today as --

MS. DeHART: Let me see what -- I can tell you which one -- this one's Precision Mold. I think this was Exhibit 14.

MR. CLARK: 14. Okay. Thank you so much.

MS. DeHART: And I'll circulate all the exhibits afterwards too.

MR. CLARK: Got it. Understood.

BY MR. CLARK:

Q. All right. So Exhibit 14 -- you recall taking a look at this, Dr. Heyman.

I want to draw your attention really quickly to this page here.

Do you recall talking about how this says, "3 - Kitchen (Inside Cabinet - Next to Stove)"?

A. Correct.

Q. Okay. Up here it says, "Swab," just above that.

Does that indicate to you that this was a swab or an air quality sample that was taken?

A. It's a swab. It's not a tape pull. It's a

swab.

Q. Okay. And over here next to the "Swab" portion, it lists "Organism," "Spore Estimate," and "Mycelial Estimate."

Next to "Cladosporium," it says, "Very Heavy."

Do you see that?

A. I do.

Q. So based on that, does it appear as though Mr. Okin's testing found, you know, essentially unremarkable results from the air quality testing but very heavy levels of Cladosporium based on the swab sampling?

A. That's correct.

Q. And does that -- do you have any opinions concerning that?

A. You know, it could -- Cladosporium potentially contributes to, you know, human illness. You know, I think it was glossed over because of the type of mold it is and, you know, whether or not it's found in plants and soil versus, you know, other, you know, water-contaminated environments.

You know, there is some debate about its contribution. You know, I think when you see something that's very heavy, you could assert that, you know, maybe this was a -- an indicator, you know, maybe this

was a signal that something was wrong with the -- with the -- with the environment.

You know, obviously, setting it against the air sampling from outdoor and the kitchen, this stands out a little bit in that regard, but it really wasn't sort of made mention in, you know, their conclusions with this test in particular.

But as I said, this kind of gets into, I think, the failure of this kind of testing. And when you compare it against when her symptoms began, the fact that she has NeuroQuant changes, we know that she's inflamed and then finally they, quote, "found it," you know, I think the pieces start to fall together.

Q. Sure. Understood.

Just a couple quick questions for you, and then obviously if Ms. De Hart has any follow-ups.

We were talking earlier about the distinction and some of the intricacies of NeuroQuant and NeuroGage.

And I wanted to ask do you know, sitting here today, one way or the other, the extent to which Dr. Ross relied upon NeuroQuant versus NeuroGage in coming to his opinions generated in his report?

A. Well, my -- I mean, NeuroQuant is basically raw data. You know, so you get these tables of volumes for different areas of the brain; and then I think, you

know, NeuroGage is a deeper interpretation of those raw findings.

So he's relying on both, but the richness comes from NeuroGage where we're starting to see the patterns. So they're related in that regard.

Q. I see.

And perhaps, as you indicated, it's best directed towards Dr. Ross himself.

But do you -- is NeuroGage a tool to help parse through that data that NeuroQuant generates?

A. It is, yes. So it gives even more specificity to the data.

Q. Understood.

And then, lastly, we were talking a lot today about Ms. Phipps and some of the work that she did with the Environmental Brain Health Clinic.

Do you know the nature of the engagement between Environmental Brain Health Clinic and Ms. Phipps?

A. I'm not so sure I understand the nature of your question other than to say she's a patient of that --

Q. Sure. Yeah. Sure. Let me rephrase. I apologize. That was a bad question.

Do you know whether Ms. Phipps is paying Environmental Brain Health Clinics or if, for example,

my office is paying?

A. I have no idea.

Q. Do you know whether the nature of the relationship between Ms. Phipps and Environmental Brain Health Clinic is specifically one for treatment or one for asserting -- essentially gathering data? labs? things of that nature?

A. It's for treatment. My understanding is she's a patient there.

Q. Okay.

A. It's not just for gathering data.

Q. And where -- what do you base that -- that on? That opinion?

A. Well, I assume if it was just data collection, they would not have recommended a treatment plan or asked her to follow up on the visual tests.

Q. Sure. Okay. That's fair.

Let's see. And have you spoken with anyone from Environmental Brain Health Clinic concerning Ms. Phipps specifically?

A. I have not.

MR. CLARK: Okay. All right. I think that's all I have.

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FURTHER EXAMINATION

BY MS. DeHART:

Q. I just have, like, two quick follow-ups, Dr. Heyman.

When we were talking about Exhibit 14 and the Precision Mold Testing and Mr. Clark pointed out that there was that one swab sample, do you recall his questions just a few minutes ago on that?

A. I do.

Q. You agree that Cladosporium is not considered to be a toxic mold; correct?

A. Correct. That's why I made the comment that it -- you know, it's relatively common. It's found in soil and plants, and it's not one of the ones that we typically worry about all that much. I was much more convinced with the follow-on testing, you know, that was done by PE. I forget the name of the -- you know.

Q. The Paradise Environmental testing --

(Simultaneous colloquy)

THE WITNESS: Correct. Yeah.

BY MS. DeHART:

Q. Okay.

A. That was much more convincing to me that they, quote, "finally found it." It happens all the time.

You know, we assess an environment. We don't see it. We're convinced it's there. We assess it again. We don't see it. And, eventually, you know, the testing comes back, and we say, "Ah, okay. We finally found it." This is not an uncommon scenario in that regard.

Q. And just going back to the Exhibit 14 and the Precision Mold Testing, you'd agree there wasn't any Stachybotrys that was found in the swab sample that Precision took either; correct?

(Simultaneous colloquy)

THE WITNESS: -- about that.

BY MS. DeHART:

Q. Not Paradise. Precision, the --

A. Oh, right. Yeah, there was, I believe, in Paradise.

Q. Correct. Correct.

A. Yeah.

Q. Yeah.

But I was just talking about Exhibit 14, the Precision one that Mr. Clark --

A. Correct. It was measured at zero.

Q. Okay.

A. Yeah.

MS. DeHART: That's all the questions I have. Thank you, Dr. Heyman.

THE WITNESS: You're welcome.

MR. CLARK: Yes. Thank you, Dr. Heyman.

MS. DeHART: All right. Let's go off the record.

THE REPORTER: And, Mr. Clark, do you want a copy?

MR. CLARK: I think we'll follow up about ordering a copy. I won't order one right this second. Thank you, though.

THE REPORTER: Sure. Thank you.

MS. DeHART: I would like one, though, please. Thank you.

(Whereupon, the deposition concluded at 2:51 PM)

* * * * *

I, Andrew Heyman, MD, do hereby declare under penalty of perjury under the laws of the State of California that I have read the foregoing transcript; that I have made such corrections as noted herein, in ink, initialed by me, or attached hereto; that my testimony as contained herein, as corrected, is true and correct.

Executed this _____ day of _____, _____, at _____, _____.

city state

_____

Andrew Heyman, MD

: : : CERTIFICATE OF REPORTER : : :

I, GINA DE LUCA, a Certified Shorthand Reporter, holding a valid and current license issued by the State of California, CSR No. 6973, duly authorized to administer oaths, do hereby certify:

That the witness in the foregoing deposition was administered an oath to testify to the whole truth in the within-entitled cause;

That said deposition was taken down by me in shorthand at the time and place therein stated and thereafter transcribed into typewriting, by computer, under my direction and supervision.

(X) Reading and signing was requested.

( ) Reading and signing was waived.

( ) Reading and signing was not requested.

Should the signature of the witness not be affixed to the deposition, the witness shall not have availed himself/herself of the opportunity to sign or the signature has been waived.

I further certify that I am neither counsel for nor related to any party in the foregoing depositions and caption named nor in any way interested in the outcome thereof.

Dated: This 15th day of April 2023

at San Diego, California.

Gina Marie De Luca

CSR No. 6973, RMR, CRR

CHRISTIAN B. CLARK, ESQUIRE
cclark@webblawgroup.com

April 19, 2023

RE: Phipps, Victoria v. Camp Pendleton & Quantico Housing
4/3/2023, Andrew Heyman , MD (#5847421)

The above-referenced transcript is available for review.

Within the applicable timeframe, the witness should read the testimony to verify its accuracy. If there are any changes, the witness should note those with the reason, on the attached Errata Sheet.

The witness should sign the Acknowledgment of Deponent and Errata and return to the deposing attorney. Copies should be sent to all counsel, and to Veritext at litsup-crcc@veritext.com

Return completed errata within 30 days from receipt of testimony.

If the witness fails to do so within the time allotted, the transcript may be used as if signed.

Yours,

Veritext Legal Solutions

Phipps, Victoria v. Camp Pendleton & Quantico Housing LLC, Et Al

Andrew Heyman , MD (#5847421)

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Andrew Heyman , MD Date

California Code of Civil Procedure

Article 5. Transcript or Recording

Section 2025.520

(a) If the deposition testimony is stenographically recorded, the deposition officer shall send written notice to the deponent and to all parties attending the deposition when the Original transcript of the testimony for each session of the deposition is available for reading, correcting, and signing, unless the deponent and the attending parties agree on the record that the reading, correcting, and signing of the transcript of the testimony will be waived or that the reading, correcting, and signing of a transcript of the testimony will take place after the entire deposition has been concluded or at some other specific time.

(b) For 30 days following each notice under subdivision (a), unless the attending parties and the deponent agree on the record or otherwise in writing to a longer or shorter time period, the deponent may change the form or the substance of the answer to a question, and may either approve the transcript of the deposition by signing it, or

refuse to approve the transcript by not signing it.

(c) Alternatively, within this same period, the deponent may change the form or the substance of the answer to any question and may approve or refuse to approve the transcript by means of a letter to the deposition officer signed by the deponent which is mailed by certified or registered mail with return receipt requested. A copy of that letter shall be sent by first-class mail to all parties attending the deposition.

(d) For good cause shown, the court may shorten the 30-day period for making changes, approving, or refusing to approve the transcript.

(e) The deposition officer shall indicate on the original of the transcript, if the deponent has not already done so at the office of the deposition officer, any action taken by the deponent and indicate on the original of the transcript, the deponent's approval of, or failure or refusal to approve, the transcript. The deposition officer shall also notify in writing the parties attending the deposition of any changes which the deponent timely made in person.

(f) If the deponent fails or refuses to approve the transcript within the allotted period, the

deposition shall be given the same effect as though it had been approved, subject to any changes timely made by the deponent.

(g) Notwithstanding subdivision (f), on a seasonable motion to suppress the deposition, accompanied by a meet and confer declaration under Section 2016.040, the court may determine that the reasons given for the failure or refusal to approve the transcript require rejection of the deposition in whole or in part.

(h) The court shall impose a monetary sanction under Chapter 7 (commencing with Section 2023.010) against any party, person, or attorney who unsuccessfully makes or opposes a motion to suppress a deposition under this section, unless the court finds that the one subject to the sanction acted with substantial justification or that other circumstances make the imposition of the sanction unjust.

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the Virginia Center for Health & Wellness

February 13, 2023

Re: **Phipps Case Review**
Phipps DOB 11/30/1981

To Whom It May Concern:

I have been asked to review the case of the Ms. Phipps who presented to the Environmental Brain Health Clinic on July 2022 due to fatigue, neuropsychiatric symptoms and head pain.

I have been retained in this matter to review and analyze whether chronic mold and mycotoxin exposure cause chronic inflammation, immune system dysfunction, and neurological difficulties and whether they did so for Ms. Phipps.

I was asked to provide my opinion to a reasonable degree of medical certainty, based on information made available to me and in the public domain, and the application of my years of education, experience, and training as an expert on the health effects of molds and mycotoxins, public health, and epidemiology.

I reviewed documents and medical records from the following sources:

- Mold Reports Packet
- Medical Records for Ms. Phipps
- My HealtheVet
- Lab Corp
- Current Medications
- My Health Summary
- Real Time Lab
- VA Health Visit
- San Diego Imaging
- Solcere/North County Naturopathic Medicine Heather Sandison, ND

39070 John Mosby Highway, Aldie, VA 20105
Office (703) 327-2434 Fax (703) 3272729

- MyScripps Diagnostic Testing: UltraSound, Mammography
- Pure Maintenance Reports
- GI Map
- CIRS Symptom Questionnaire
- Visual Contrast Studies
- Quicksilver report
- Symptom List Since Moving into Home Victoria Phipps
- Vibrant America
- Subpoena Rebecca Han, MD
- VA Lab Results
- Genova NutrEval
- Max Pulse
- Environmental Brain Health Clinics of America: Allison Remy, PA
- NeuroQuant Reports Multi Structure Atrophy Report; Brain Development Report; Hippocampal Asymmetry Report; General Morphometry Report; and Triage Brain Atrophy Report
- Forensic Neuropsychiatric Evaluation Dr. Ross
- NeuroGage
- NeuroQuant General Report Adam Chandler, MD
- Evoke Neuroscience, Inc
- Follow up appointment Environmental Brain Health

Background

7/7/2022 Victoria reports that she moved into an apartment in March 2020 and within weeks, started noticing allergy symptoms, increasing fatigue, migraines, sensitivities to smells/foods/medications and worsening depression/anxiety (that included suicidal ideation/imagery, which 'weren't an issue' prior to moving into the affected apartment). She relates that the apartment didn't have air conditioning and as a result of a neighbor that smoked, she kept the windows and doors closed and used fans to ventilate the apartment. Victoria reported that her symptoms continued to get worse and indicates that an exterminator discovered a large patch of visible 'black mold' on the wall of her apartment after pulling out her stove while evaluating the residence for rodents.

Three environmental tests were performed, according to Victoria, which revealed Aspergillus, Chaetomium and Stachybotrys. Within days of finding the mold, Victoria reports that she moved into a hotel (which was also affected). At the recommendation of a functional medicine doctor, Victoria moved out of the hotel and went camping. She relates that she ended up camping for 2 months and thereafter started living in her car and has been doing so for the past year.

11/3/2022 Victoria is a 40 y/o biracial female with a history of PTSD, depression, anxiety, Hashimoto's thyroiditis, mixed hyperlipidemia, migraines, seizures, TBI, chronic fatigue and fibromyalgia who presents via telehealth visit to go over lab results. Within the last few months, Victoria reports that her car broke down and she doesn't have the money to fix it. As a result, she is having to use public transportation to get anywhere but has access to the car at night (in order to sleep in the car).

She relates that she has incurred significant debt as a result of many unfortunate circumstances and has been unable to afford any supplements since August of this year. She is only currently able to afford prescribed medications. She further reports that she has been able to consistently' take her binder (Welchol) and reports that she is not feeling much difference, with regards to her symptoms.

She reports feeling more 'tired and moody' and indicates that it may be due to the fact that she isn't taking any other supplements currently (other than her prescribed binder). She doesn't feel like she is in 'active exposure.'

Worst Symptoms: 1. Fatigue 2. Brain Fog 3. Multiple chemical sensitivities 4. Stress incontinence 5. Chest pain – during stressful situations only.

Medical Record Review

I reviewed available medical records for Victoria Phipps. I also reviewed records from Environmental Brain Health Clinic, which began on July 7, 2022 including initial intake and first follow up occurred on November 3, 2022.

As set forth below, I find that Ms. Phipps has suffered from immune dysfunction, complex systemic inflammation, and neurological challenges attributable to her exposure from her water damaged home.

Recent Reported Symptoms (CIRS Symptom List)
June 21, 2022
Total Positive symptom clusters: **12**
Total Positive symptoms: **26**

Visual Contrast Study
6/21/2022 Failed
9/01/2022 Failed
10/22/2022 Failed
12/03/2022 Failed
2/09/23 **Pass**

LabCorp: Laboratory data 7/7/2022
Trans. Growth Fact. Beta 1 8108 (<2380)
VEGF plasma 44 (40-86)
ADH 2.0 (1.0-13.3); Osmolality 285 (280-300)
Leptin 55.3 (25-141)
ACTH 21.9 (8-77)
MMP-9 594 (85-332)
MSH <8 (35-81)
Hs-CRP 0.63 (0-3.0)
Thyroid peroxidase: 60 Free T3: 2.6 TSH: 2.0 Free T4: 1.02 Reverse T3: 16 BUN: 15 Cr: 1.08 Leptin: 55.3 Vit D: 75.7 Vit B12: >2000

HLA-DR Haplotype Definitions. 1-5 and 13-6-52A. Possessing these haplotypes do not signify the presence of mold, mycotoxins or other related elements within the body nor was it an indication of past or present exposure. Rather, it had been suggested that the immune system of those with this haplotype may be unable or less able to properly identify and eliminate toxins from mold.

Analysis of Ms. Phipps lab tests indicates that each carries gene sequences (Human Leukocyte Antigen – HLA) on chromosome 6 that confer immunologic vulnerability to CIRS. When foreign antigens are presented to T lymphocytes by antigen presenting cells, the complex process that leads to antibody production begins. If the antigen presentation process is defective, as seen in CIRS, there will be limited production of protective antibodies and therefore nothing to stop the expanding inflammatory cascade. As a result, the normally protective innate immune response becomes destructive.

Given how common these HLA alleles are in the general population (22% of the population), it is estimated that up to 40 million people in the United States are vulnerable to CIRS. Use of HLA typing becomes important for epidemiologic risk assessment, but it also is important in considering who else in a family might be predisposed to heightened inflammatory responses following exposure to biotoxins and inflammagens.

Ms. Phipps passed her VCS tests as of 2/23.

Differential Diagnoses

Early onset cognitive decline CIRS-WDB
CIRS-COVID
Traumatic Brain Injury
Demyelinating brain disorder
Degenerative brain disorder
Neoplasm of the brain
Metabolic disease

Previous Medical History: G0P0Ab0; remote hx of blood clots (2011 - no clots since), mixed hyperlipidemia, IBD, pre-diabetes,Hashimoto's thyroiditis, Migraines, Seizures, TBI (2007 2/2 MVA), Depression, PTSD, Osteoarthritis, Mononucleosis (1998), EBV (2021), Chronic fatigue (2021), Fibromyalgia (2022), Acne (2020), ovarian cysts, fibrocystic breast disease

Previous Surgical History: Appendectomy, Deviated septum surgery

Medications: Progesterone (100 mg Q HS), NP Thyroid (60 mg Q day) Supplements: (not currently taking) GI Detox: 1 cap daily Chlorella 200 mg: 2 caps daily Liver Detox Factors: 2 caps BID B Complex Plus: 2 caps daily Kona Gold Trace Minerals: 2 caps daily Vitamin D/K2: 5,000 IU daily Monopure - 3 caps daily Probiomax 100b: 1 cap daily with a meal IgG Caps: 2 caps twice daily Sacchromyces b.: 5 billion daily with a meal ALA: 2 caps daily with food 5 HTP: 1-2 caps BID PRN Adrenal complex: 2 caps with first meal Methyl B12: 10,000 mcg daily Phosphatidyl serine: 2-6 caps PRN for high stress Phosphatidyl choline: 3 caps twice daily

Allergies: Amoxicillin

Social History: Profession: unemployed currently (has doctorate in Chinese Medicine but has been unable to take licensing exam secondary to symptoms. Single and bisexual, lives in her car currently
EtOH: rarely, last drink was New Year's Eve 2021
Tobacco: Denies
Recreational Drugs: Denies

Family History: Mother: living; age 70; CAD Father: living; age 70; DM II, multiple myeloma Significant Family CVD Hx: Significant Family Cancer Hx: Other Significant Family Hx: polycythemia vera (brother)

Environmental History: Reports exposure to radiation from PATRIOT missile radar, secondhand smoke exposure, toxic chemical exposure (during/after mold remediation). Denies exposure to radon, asbestos, lead, mercury, coal and artificial sweeteners.

Health Effects of Toxic Mold Exposure

It is well established in the literature, as well as in my own medical experience treating hundreds of patients who have been exposed to toxic mold, that toxic mold can generally cause immune suppression, systemic inflammation, and neurological challenges. Toxic mold creates a cytokine storm that is almost identical to long-Covid. In Covid,

we call the syndrome Multi-System InflammatorySyndrome. For toxic mold exposure, we have long called the same illness "Chronic Inflammatory Response Syndrome."

Chronic Inflammatory Response Syndrome

CIRS is defined as a multi-symptom, multi-system illness caused by exposure to biotoxins or neurotoxins derived from a biological source (Shoemaker, House, Ryan, 2013). It is associated with a well-defined set of abnormal biochemical disorders and test results in genetically susceptible individuals.

CIRS may result from exposure to amplified microbial growth in water damaged environments that contain toxic amounts of inflammagens, endotoxins and cell wall fragments released from pathogenic mold and bacteria. To date, there are over 1700 scientific articles on this condition.

CIRS: A Brain on Fire

A dominant clinical feature of CIRS is the common cognitive complaints by patients, including memory loss, mood disorders, brain fog, loss of executive function and fatigue. This is not a surprise considering that key components of the innate immune response, including TGBF1, MMP9 and VEGF have been shown to bridge the blood brain barrier, igniting microglial cells to produce inflammatory cytokines and neurotoxic compounds such as oxygen free radicals as they shift into a more aggressive phenotypic expression.

High levels of cytokines can also result in increased levels of important compounds such as IL-1 and clotting factors such as elevations in von Willebrand's factor, D-Dimer and anti-cardiolipin antibodies. Of importance in cardiovascular health, MMP-9 delivers inflammatory elements from the blood into sensitive tissues and can combine with PAI-1 to increase clot formation and arterial blockage resulting in microinfarcts in the brain and potentially causing a vascular dementia.

CIRS results in altered innate and adaptive immunity, peripheral hypoperfusion at multiple sites (brain, lungs, heart; and multiple hypothalamic- pituitary-end organ dysregulations (Shoemaker, House, Ryan, 2013). So how do we measure the presence of inflammation in the brain? We have two answers: 1) Visual Contrast Sensitivity Test and 2) NeuroQuant.

The visual contrast sensitivity (VCS) test has been used clinically for years and remains the most accurate assessment for functional vision. Contrast is one of the seven main functions of the optic nerve that provides the neurologic basis of vision. When testing for contrast, control of the other elements of vision must occur, such as near vision, far vision, static, motion, peripheral vision and night vision.

The VCS test can be completed in person or online under the correct conditions in about 10 minutes and offers an immediate score of pass or fail. When combined with positive symptoms (8 of 13 clusters), the diagnosis of CIRS reaches 98.5% sensitivity. The VCS test is also used to verify therapeutic progress and detect when re-exposure may have occurred.

Additionally, volumetric analysis of the central nervous system with NeuroQuant, has emerged as a new tool in the effort to measure structural brain changes in neuroinflammatory conditions. This software program applies a mathematical model to the standard brain MRI to rapidly identify microscopic interstitial edema, atrophy and patterns of brain injury accurately.

NeuroQuant (NQ) has made (i) identification and (ii) separation of CIRS-WDB, CIRS-PLS, traumatic brain injury, PTSD, ciguatera and multi-nuclear atrophy straightforward. When added to an MRI of the brain, NQ is found to be an illness-specific indicator. Use of sequential NQ testing has shown there is much more plasticity of the capacity of injured brain to heal than once thought.

NeuroQuant Findings (Dr. Ross NeuroGage)

In contrast to the results based on simple visual inspection, she had several brain volume abnormalities. This finding was consistent with previous reports that NeuroQuant® and NeuroGage® are more sensitive for detecting brain volume abnormalities than is the traditional method of simple visual inspection (Ross, Ochs et al. 2013, Ross, Ochs et al. 2015).

NeuroQuant® 3.0 analyses (see appended reports) revealed the following:

- The left cerebral white matter was abnormally large.
- The right isthmus cingulate region was abnormally small.
- The right inferior frontal cortex was abnormally small.

NeuroGage® 3.0 analyses revealed the following:

- The 3rd ventricles had abnormal asymmetry (R>L).
- The caudate regions had abnormal asymmetry (R<L).
- The superior frontal cortices had abnormal asymmetry (L<R).
- The inferior parietal cortices had abnormal asymmetry (L<R).

She had no volume findings consistent with the diagnosis of TBI according to the TBI Table. She had two volume findings that were opposite the known TBI pattern: abnormally large cerebral white matter and abnormally small isthmus cingulate region.

Despite the lack of NeuroQuant® volumes matching the known TBI pattern, the NeuroGage® asymmetries and the NeuroQuant® volumes that were almost abnormal and consistent with the TBI pattern likely contributed to the TBI Biomarker test being positive for TBI.

In general, it is possible that acute effects of mold-related illness cause inflammation, edema, and enlargement, and chronic effects cause atrophy. However, if a patient was in between the acute and chronic stages, her brain volume could be normal. This possibility would explain her modest number of abnormal volume findings despite a strong history of neuropsychiatric symptoms due to mold-related illness.

Another possibility is that her TBI on 01/14/07 may have predisposed her to mold- related illness. If the effects of TBI or mold-related illness caused both atrophy and enlargement, her brain volume could be normal. This could also explain Ms. Phipps's modest number of abnormal volume findings despite a history of TBI and mold-related illness.

She had a diagnosis of posttraumatic stress disorder (PTSD) that likely worsened after exposure to mold, but it was not clear if it was due to psychological factors and/or direct effects of mold-related illness. It was also not clear if previous PTSD was due to psychological factors and/or direct effects of TBI. More generally, and independent of TBI and/or mold-related illness, PTSD has been associated with abnormal brain volume (small or large for parenchymal regions) in the prefrontal cortex (small) (Moyer 2016), anterior cingulate (small) (Moyer 2016), hippocampus (small) (O'Doherty, Chitty et al. 2015, Ahmed-Leitao, Spies et al. 2016, Moyer 2016), and amygdala (large or small) (Ahmed-Leitao, Spies et al. 2016). She had no findings consistent with PTSD independent of TBI and/or mold-related illness.

She had a diagnosis of generalized anxiety disorder (GAD) due to mold-related illness. It was not clear if the generalized anxiety disorder was due to psychological factors or direct effects of mold-related illness. More generally, and independent of mold-related illness, generalized anxiety disorder is characterized by abnormal volume of the following regions: dorsolateral prefrontal cortex (small), ventral inferior prefrontal cortex (small), orbitofrontal cortex (small), anterior cingulate cortex (small), posterior cingulate cortex (small), precuneus (large) and amygdala (large) (Kolesar, Bilevicius et al. 2019). She had no volume findings consistent with generalized anxiety disorder independent of TBI and/or mold-related illness.

She had a diagnosis of recurrence of major depression due to mold exposure. It was also not clear if the depression was due to psychological factors or direct effects of mold-related illness. More generally, and independent of mold-related illness, major depression has been associated with by abnormally small volume of the prefrontal cortex (PFC)—including the dorsolateral PFC, medial PFC, and ventrolateral PFC—orbitofrontal cortex, hypothalamus, and limbic areas (including the hippocampus, amygdala, anterior cingulate cortex and isthmus cingulate cortex) (Lener and Losifescu 2015, McLaren, Szymkowicz et al. 2016, Schindler, Schmidt et al. 2019). She had abnormally small volume of the isthmus cingulate cortex but no other findings consistent with major depression independent of mold-related illness.

She had a previous diagnosis of migraine headaches due to TBI that worsened due to direct effects of mold-related illness. More generally, and independent of TBI or mold-related illness, migraine headaches have been associated with abnormal volume in the periaqueductal gray matter in the brainstem (large), anterior cingulate (small), superior frontal regions (small), middle frontal gyrus (small) (Rocca, Ceccarelli et al. 2006, Goadsby, Holland et al. 2017), inferior frontal gyrus (small), precentral gyrus (primary motor cortex) (small), superior temporal gyrus (small) (Rocca, Ceccarelli et al. 2006, Valfre, Rainero et al. 2007, Goadsby, Holland et al. 2017), middle temporal regions (small), and inferior temporal regions (small) (Rocca, Ceccarelli et al. 2006, Goadsby, Holland et al. 2017).

She had an abnormally small right inferior frontal cortex but no other findings consistent with migraine headaches independent of TBI or mold-related illness.

CIRS: Diagnostic Criteria

While there is no ICD 10 code for CIRS specifically, there is coding for the exposure to mold (Z77.120). In fact, the Government Accountability Office (GAO) issued their case definition of exposure to a water damaged building in 2008 and Medical Consensus Statement 2015.

CIRS Criteria

I have applied the CIRS criteria above to Ms. Phipps, and I found the following:

1. The patient must have an exposure to a biotoxin causing illness verified by the presence of visible mold or mycological testing.
    a. *Known exposure to a water-damaged building*.
2. Other Diseases are ruled out via a thorough differential diagnosis workup. Patients with CIRS are often misdiagnosed as having depression, anxiety, PTSD, somatization, Alzheimer's, allergy, ADD/ADHD, fibromyalgia and Chronic Fatigue Syndrome. (Ryan, Shoemaker, 2016).
    a. *In addition to hermedical diagnosis upon presentation, Ms. Phipps has had extensive contact with the medical system, VA in particular.*
    b. *I have also ruled in CIRS February 2023 based upon this review*.
    c. *I then conducted a differential diagnosis, reviewed her medical history, and have ruled out any other cause for her respective chronic inflammatory condition, immune suppression, and neurological challenges.*
3. Multiple symptoms from multiple body systems similar to peer-reviewed published research.
    a. Symptoms must be allied with the clinical picture in numerous publications.
    b. Symptoms associated with CIRS (37 in number) are grouped into 8 organ system categories.
    c. Symptoms in at least 8 out of the 13 organ system categories (below) are considered diagnostic:
        i. General fatigue and weakness
        ii. Muscles – aches, cramps (claw-like cramping of hands and feet), joint pains, morning stiffness, ice-pick pains
        iii. General – headache, frequent urination and increased thirst, night sweats, static electricity or shocks, appetite swings.
        iv. Eyes – light sensitivity, red eyes, blurred vision, tearing
        v. Respiratory – sinus congestion, cough, shortness of breath
        vi. Gastrointestinal – abdominal pain, diarrhea

vii. Neurological – numbness, tingling, metallic taste, vertigo, temperature regulation, dizziness, tics, atypical seizures, fine motor skill problems.

viii. Cognitive – memory loss, concentration difficulties, confusion, learning difficulties, difficulty finding words, disorientation, mood swings, anxiety, panic.

d. She *meets criteria by* **expressing symptoms in at least 8 categories** *noted above*.

4. Indication of neuroinflammation

a. In the setting of a biotoxin exposure, patients will have difficulty passing the VCS test due to underlying neuroinflammation. About 9% of CIRS patients will pass the test.

b. ***Failed the VCS test multiple times, now passing***

5. Lab abnormalities similar to those published in multiple peer-reviewed literature:

a. Matrix Metallopeptidase 9 (MMP-9): an enzyme activated by macrophages inducing inflammatory cytokines of the innate immune system that destroys the basement membrane of endothelial cells. With high MMP-9, as when the immune system is chronically stimulated, the basement membrane is porous, allowing inflammatory compounds/chemokines to penetrate tissues such as muscles, joints, brain, lungs, peripheral and autonomic nervous system (Shoemaker, 2005).

b. TGFB1 is a protein that has important regulatory effects throughout innate immune pathways. This protein helps control the growth and division (proliferation) of cells, the process by which cells mature to carry out specific functions (differentiation), cell movement (motility), and the self-destruction of cells (apoptosis). The TGF Beta-1 protein is found throughout the body and plays a role in development before birth, the formation of blood vessels, the regulation of muscle tissue and body fat development, wound healing, and immune system function (especially regulatory T-cells).

TGF Beta-1 can impair T-regulatory cell function, which in turn contributes to the activation of autoimmunity, yet TGF Beta-1 also plays a role in suppressing autoimmunity. TGF Beta-1 has become important in the exploding incidences of childhood asthma, raising the tantalizing issue of remodeling due to biotoxin exposure. The EPA says that 21% of all new cases of asthma are due to exposure to Water Damaged Buildings. If an individual develops wheezing after exposure to a water damaged building, we look for remodeling to be the cause. Remodeling means "something" happens that the airway changes to be more reactive and in need of medications to reduce wheezing. Neurologic, autoimmune and many other systemic problems also are found with high TGF Beta-1. (Shoemaker, 2005).

c. Melanocyte Stimulating Hormone (MSH): MSH is a critical neuroregulatory peptide hormone and a potent anti-inflammatory compounds in the body; it regulates the innate immune system. Low MSH causes dysregulation of T regulatory cells leading to inflammation, pain syndromes *(*which began after her exposure) and autoimmune disorders . MSH has been shown to regulate the inflammatory cytokines (TNF and nitric oxide) found in inflammatory bowel disease (Rajora, 1997).

d. Vascular endothelial growth factor: VEGF is a substance made by cells that stimulates new blood vessel formation and increases blood flow in the capillary beds. VEGF is a polypeptide. Deficiency of VEGF is quite common and is a serious problem in biotoxin illness patients that must be corrected.

e. Antidiuretic hormone (ADH), or vasopressin, is a substance produced naturally by the hypothalamus and released by the pituitary gland. The hormone controls the amount of water the body removes. Osmolality is a test that measures the concentration of all chemical particles found in the fluid part of the blood. Symptoms associated with dysregulation of ADH include dehydration, frequent urination, with urine showing low specific gravity; excessive thirst and sensitivity to static electrical shocks; as well as edema and rapid weight gain due to fluid retention during initial correction of ADH deficits.

f. Ms. Phipps *met laboratory criteria in 2022 with abnormal values in MMP9, TGFB1, MSH, and presence of HLA susceptibility.*

6. Improvement with proper therapy
    a. She is now passing the VCS after receiving proper treatment

Prognosis

Ms. Phipps has been debilitated from exposure to a water damaged building. Under typical circumstances patients can recover completely from this condition, and our research group has published 2 randomized controlled trials to this end. There are no guarantees though, and recovery and resolution takes months to years under the best circumstances. I hope that she does not become permanently disabled as a result of his CIRS illness.

Toxic mold causes brain injury. While many of their acute symptoms can resolve, Victoria may continue to face lasting neurological symptoms. This is common in my practice. As with long-Covid, it is the neurological challenges that are most long-lasting and challenging to remedy.

Conclusion

In summary, Victoria Phipps meets diagnostic criteria for CIRS, has only recently begun evidence-based therapies, and could be permanently disabled due to this medical condition. While she may have suffered from other medical illnesses prior to seeking medical care at Environmental Brain Health, there is no dispute that she developed a biotoxin based illness as indicated by:

1. Known exposure
2. Positive Review of Systems
3. Multiple lab abnormalities
4. Genetic susceptibility
5. Positive NeuroQuant findings
6. Improvement on VCS with proper treatment

Even a cursory review of the medical literature demonstrates over one thousand research studies describing the role mold, mycotoxins and inflammagens play in human illness. They also elucidate the complex proteomic and genomic pathways triggered by biotoxins in the susceptible individual, and 2 randomized controlled trials define proper diagnosis and treatment of this patient population.

CIRS is a common, debilitating illness that can have devastating effects on an individual. Ms. Phipps unfortunately falls into this category, has suffered a significant medical injury as a result of biotoxin exposure, and will require long term, proper medical care to stabilize her condition.

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February 27, 2023

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Attn.: Kristin Reyna-DeHart, Esq.

Subject: Opinion Summary
Victoria Phipps v. Camp Pendleton & Quantico Housing, LLC, et al.
Your Client: Camp Pendleton & Quantico Housing, LLC
Superior Court of California-San Diego County Case No.: 37-2021-00031277-CU-PO-CTL
Complaint Filed: July 21, 2021

Dear Ms. Reyna-DeHart:

Pursuant to Expert Disclosure Rule 26(a)(2)(B), I offer the following regarding the above referenced matter.

COMPLAINT-SPECIFIC DOCUMENTS REVIEWED

The following Discovery documents were reviewed to support the opinions offered in this report:

- Legal documents, including:
  - Complaint- Victoria Phipps v. Camp Pendleton & Quantico Housing, LLC, et al., Filed July 21, 2021.
- Discovery documents, including:
  - Plaintiff's Document Production-Bate Stamp Nos. "Phipps 5000 thru 6529."
  - Defendant's Document Production-Bate Stamp Nos. "Phipps-CPQH-LPC 000001 thru 001027."
- Environmental reports regarding the subject matter, including (in chronologic order):
  - *Analysis Report #20041839* (and related invoicing) for Precision Mold Testing, LLC, dated November 9, 2020;
  - *Mold Report* (and related correspondence and invoicing) for Pure Maintenance of California LLC, dated November 10, 2020;
  - *Mold Armor-Mold Identification Report** (self-testing kit), Sample ID#10344799, prepared for Victoria Phipps, 261 Palma Court Apt 1, Oceanside, California

92058, sample dated November 21, 2020 (Sample Received date December 4, 2020);

- *Mold Armor-Mold Identification Report** (self-testing kit), Sample ID#10345099, prepared for Victoria Phipps, 261 Palma Court Apt 1, Oceanside, California 92058, sample dated November 21, 2020 (Sample Received date November 30, 2020);
- *Mold Armor-Mold Identification Report** (self-testing kit), Sample ID#10344673, prepared for Victoria Phipps, 261 Palma Court Apt 1, Oceanside, California 92058, sample dated November 21, 2020 (Sample Received date November 30, 2020);
- *Mold Armor-Mold Identification Report** (self-testing kit), Sample ID#10345135, prepared for Victoria Phipps, 261 Palma Court Apt 1, Oceanside, California 92058, sample dated November 21, 2020 (Sample Received date November 30, 2020);
- *Limited Mold Survey/Mold Testing* Report related to the property located at 261 Palma Court Unit #1, Oceanside, CA for Webb Law Group from Paradise Environmental, dated November 24, 2020;
- *Post Remediation Verification Assessment, 261-01 Palma Court, Oceanside, California 92058* for Lincoln Military Housing by Apex, dated December 15, 2020;
- *Post Remediation Verification Assessment, 261-01 Palma Court, Oceanside, California 92058* for Lincoln Military Housing by Apex, dated February 12, 2021;
- *Post Remediation Verification Assessment, 261-04 Palma Court, Oceanside, California 92058* for Lincoln Military Housing by Apex, dated February 12, 2021;
- *Moisture/Microbial Assessment, 276-22 Wafer Court, Oceanside, California 92058* for Lincoln Military Housing by Apex, dated February 12, 2021.

- Deposition transcripts of Victoria Phipps, Ryan Taylor and Timothy Nishio.
- Summary Resume and Professional Experience of Joshua M. Rachal (i.e., Plaintiff's designated Expert)-Discovery from another current matter involving the same Defendant.

SITE INSPECTION

I performed an inspection of the Plaintiff's former residence located at 261 Palma Court, Unit #1, Oceanside, California concurrent with Plaintiff's expert's inspection of the same on January 13, 2023 (i.e., nearly two years after Plaintiff reportedly vacated the residence). The inspection was accommodated by the current occupants of the residence, whom are not a party to this action.

I reviewed these Discovery documents and performed the site inspection as a Certified Industrial Hygienist (CIH) specializing in exposure and contamination forensics to opine on the reasonability of the Plaintiff claims, specifically relative to their alleged adverse exposures to mold (not simply that mold may have been present in her living environment). My assessment was limited to the referenced Discovery and inspection date without the benefit of an on-site assessment of existing conditions at the time that Plaintiff occupied the subject home. Thus, my opinions relative to the complaint are limited by the content of Plaintiff's and Defendant's production and the interpreted professional merits of assessments performed by others; i.e., those environmental related reports listed above. While you have made it clear that you are representing the interests of Defendant CPQH, you have not requested that I render opinions exclusive to their interests.

FACTS INDICATED IN THE REFERENCED DOCUMENTS

The referenced Complaint indicates the following (in specific regard to environmental impairment issues):

- That *"Plaintiff lived at … the Leased Property …March 19, 2020 through the present."*
- That Plaintiff "… *began to experience exacerbated symptoms of depression and anxiety, an inability to concentrate, exacerbated symptoms of PTSD, and physical symptoms of some form of illness. Between March 19, 2020 and November 19, 2020 Plaintiff began to experience horrible physical and psychological symptoms including, but not limited to frequent and intense (migraines) and head pain, exacerbated anxiety, exacerbated depression, heart palpitations, chest pain, graphic images of Plaintiff's own death, premenstrual spotting, night sweats, numbness, fatigue, inability to concentrate, exhaustion, foul odors, itchiness, dizziness, nausea, neck pain, watery eyes, sinus congestion, runny nose, sneezing, dry (skin), earaches, cramping, and frequent urination."*
- That Plaintiff "…*began to experience guilt, shame, confusion, and emotional distress between March 19, 2020 and November 19, 2020 as a result of the psychological and physical symptoms she was experiencing*."
- That "*mold would develop quickly on food or organic materials left out of the refrigerator. Plaintiff also frequently saw black rings develop on the inside of her toilet bowl despite frequent cleaning*."
- That the home possessed "*severe mold and water damage on the cabinet and floor near the stove*."
- That a Defendant representative "*wrapped the cabinet in plastic and indicated to Plaintiff not to unwrap the plastic because the mold contained therein was dangerous*."
- That the home experienced a "*significant leak, water intrusion, and mold issues prior to the beginning of Plaintiff's tenancy on the property*."
- That Defendants referenced mold issues as "*water damage*."

- That a "*wall between Plaintiff's home and her next door neighbor's home had severe water intrusion and mold issues that were never properly fixed*."
- That "*Plaintiff decided to schedule two (2) professional mold tests in order to determine whether the mold spores located behind and around the stove had spread throughout the air in the home*."
- That "*Plaintiff conducted a walk-through inspection of the temporary home with (Defendant) and immediately noticed water stains throughout the closet*" and "*a sickly smell on the property*."
- That "*on November 6, 2020 Plaintiff began to develop a worsening headache and nausea*."
- That on "*November 10, 2020 Plaintiff received the results from the professional mold tests Plaintiff had conducted on the property*" and that "*the tests revealed high levels of (Chaetomium), Penicillium/Aspergillus, Cladosporium, and Basidiospores*."
- That "*Plaintiff noticed that the Leased Property… had a foul odor*."
- That "*fans were set up (by Defendants) inside of the Leased Property… in order to remove evidence of mold inside the Leased Property*."
- That a report by Paradise Environmental dated November 24, 2020 indicated that "*the Leased Property contained unacceptable spore count levels and types and visible mold*" and that "*Paradise Environmental indicated high spore count levels and visible mold in their report*."
- That Paradise Environmental also indicated that the "Leased Property had high moisture levels" and "*visible mold throughout the kitchen*."
- That "*various physical and psychological symptoms*" asserted by the Plaintiff "*were caused or exacerbated by the toxic mold on the Leased Property, and Plaintiff's exposure to the toxic mold*."
- That "*Plaintiffs will suffer ongoing and future medical damages as a result of their exposure to toxic mold*."
- That Defendants "*negligently owned, leased, rented, operated, managed, maintained, and repaired the Leased Property so as to cause it to be uninhabitable and unfit, unhealthy, and unsafe for human occupation in that the Leased Property suffered from design and construction defects and deficiencies, causing and allowing water and moisture intrusion into the living spaces of the Leased Property, causing and allowing the Leased Property to become contaminated with excess moisture and humidity*"…"*which materially affect the health and safety of the Plaintiffs as tenants and their invited guests*."
- That Defendants "*improperly, negligently, carelessly and in a reckless disregard for Plaintiff's safety and rights, disturbed and/or caused to be disturbed microbial growth and contamination at the Leased Property, in such a manner so as to expose Plaintiffs to such contamination and cause injury to Plaintiffs*…"

- That Defendants "*(failed) to provide Plaintiff with a reasonably safe and habitable premises in which to live*."
- That Defendants "*(failed) to provide, recommend, or require containment, protective clothing, hoods, respirators, ventilators or other apparatus for the protection of Plaintiffs*."
- That Defendants "*(failed) to cure defects and deficiencies in the Leased Property which were known or should have been known, which led to increased moisture, odors, and pervasive microbial growth and contamination*."
- That Defendants "*(failed) to consult, read and utilize current literature regarding microbial contamination, indoor air quality and "sick building syndrome" and other materials, including those produced by the EPA and federal and state agencies for landlords, residential building owners and managers*.

Information revealed in, and/or interpreted from, the remaining Discovery include the following:

<u>Environmental Reports</u>

- The laboratory *Analysis Report #20041839* for Precision Mold Testing, dated November 9, 2020, reveals that two air samples were obtained for the benefit of the Plaintiff; one from an unspecified location in the kitchen and one from outdoors (presumably for comparison purposes). The results of the kitchen sample are unremarkable and depict a normal distribution of total spores and individual spore types between the kitchen and the outdoors. The sample did not exhibit mold indicative of either abnormal ambient conditions or conditions that would warrant additional sampling.

  The report also reveals that a swab sample was obtained in the kitchen, reportedly from a square centimeter area inside a cabinet next to the stove. The results indicate the presence of Ascospores and Cladosporium, both of which are very common molds. Unfortunately, and contrary to an indication in the invoice, the lab report was not accompanied by an interpretive report by Precision and, thus, there is no qualifying information regarding the surface from which the sample was obtained (e.g., Was the sample obtained from a stain? How large was the stain? *De minimis*? Etc.). Regardless, the above-referenced air sample from the same proximate location supports a reasonable conclusion that a condition inside the cabinet or in proximity was not substantial enough to have resulted in a negative impact to the ambient air inside the home.

- The laboratory *Mold Report* for Pure Maintenance, dated November 10, 2020, reveals that two air samples were obtained, again, for the benefit of the Plaintiff; one from an unspecified location in the kitchen and one from outdoors (again, presumably for comparison purposes). Once again, the results of the kitchen sample are unremarkable relative to the outdoors. While the sample exhibited the presence of Penicillium/Aspergillus types slightly higher than the outdoor

sample, the concentration is still within the means of normal ambient concentrations for those types in any environment. As with the data report above, there was no interpretive report that accompanied this data report.

- Each of the *Mold Armor-Mold Identification Report*s were for the Plaintiff and reveal what would be expected in any living environment; i.e., the existence of mold and, more specifically, Cladosporium, the most common indoor mold. As mold is known to be ubiquitous in the environment (see opinion elaboration, below), detections would be expected and are, therefore, unremarkable, as reported. It is worthy to note that these types of over-the-counter tests have very limited, if any, value in assessing indoor environments and the reported findings can't be used to assess significance, risk or health effect potentials as the test manufacturer and each report appropriately qualifies, in writing.

- The *Limited Mold Survey/Mold Testing* Report from Paradise Environmental, dated November 24, 2020, reveals that four air samples were obtained for the benefit of Plaintiff's legal counsel; one from a bedroom, one from the kitchen, one from the living room and one from outdoors (presumably for comparison purposes). The results of the three indoor samples reveal concentrations greater than outdoors, though only slightly higher than what could be found in indoor environments. The total burdens are substantially comprised of Cladosporium and Epicoccum. The Cladosporium exists at concentrations statistically the same as outdoors and is considered unremarkable. The Epicoccum is an unusual finding, as it is typically derived from soil and plant debris. While the report doesn't indicate such, I would hypothesize that the home may have contained house plants. While this can't be concluded, the mold type is not one that is a typical consequence of a defective structure or neglected water release.

  The presence of other spore types in the home are not ignored, but all at concentrations considered unremarkable and within the normal means at which they could be detected indoors. Of greatest remarkability, albeit minor, is the detection a couple of "water indicating" species, Chaetomium and Ulocladium, which would suggest the presence of some cellulosic material in proximity that has been repeatedly exposed to water or dampness. The finding suggests that some water damage may exist in proximity and would be worthy of further investigation (and repair, if determined). The report does not offer any explanation for the findings and, thus, cannot be used to assert cause or responsibility even if some damage exists.

  The report also reveals that tape lift samples were obtained from various surfaces in the home. While there is little qualifying information related to the surfaces and/or stains from which the samples were obtained, a few photos in the report reveal stains (e.g., on the side of the stove) and/or slightly impaired conditions (e.g., dust accumulations on a fan blade and undiscernible growth/accumulation in a cabinet). Similar to what I've stated above, the report does not offer any explanation of cause, does not acknowledge that the findings may be related to other factors (e.g., substandard cleaning) and, thus, cannot be used to assert

responsibility on the Defendant. At best, the finding supports a recommendation for further investigation and/or cleaning/remedy (which eventually occurred, as acknowledged below), only, and certainly can't be used to substantiate an exposure source claim.

- The *Post Remediation Verification Assessment* of the subject property by Apex, dated December 15, 2020, on behalf of the Defendant, is reportedly based on an inspection performed on the same day. It reports that the subject unit had reportedly "experienced a minor water loss event" related to a leaking water heater in the kitchen and included impacted drywall, baseboard and cabinetry.

  The report reveals that a portion of the kitchen cabinets and approximately 6 ft^2 of drywall in the kitchen were removed and that base drywall in the water heater closet was removed. The report further "concludes that microbial remediation was successful."

- The *Post Remediation Verification Assessment* of the subject property by Apex, dated February 12, 2021, on behalf of the Defendant, is reportedly based on an inspection performed on November 19, 2020, though no explanation is provided for the report delay, especially in regard to the prior report, above. Again, it reports that the subject unit had reportedly "experienced a minor water loss event" related to a leaking ABS drainpipe in the wall and ceiling of the kitchen and included impacted drywall, baseboard and cabinetry.

  The report reveals that a portion of the kitchen cabinets, the kitchen sink and approximately 20 ft^2 of drywall comprising the rear wall and a portion of the ceiling in the kitchen were removed. The report presents the same conclusion as the prior report.

  It is worthy to note that the header of Appendix A of the report suggests that the appended photos represent Unit 261-04, not 261-01. I cannot conclude if this is a typographical error or a misrepresentation of the photos, though numerous typos were noted in this and the prior report, including an unintelligible second sentence which might support a "typo" conclusion.

- The *Post Remediation Verification* Assessment of 261-04 Palma Court, Oceanside, CA by Apex, dated February 12, 2021, on behalf of the Defendant, is reportedly based on an inspection performed on November 19, 2020, though again, no explanation is provided for the report delay. It reveals that the subject unit had experienced a water loss related to a plumbing failure of the kitchen sink, and impacted drywall, baseboard and cabinetry. The report reveals that a portion of the kitchen cabinets were removed and approximately 10 ft^2 of drywall in the kitchen. The report further "concludes that microbial remediation was successful."

- The *Moisture/Microbial* Assessment of 276-22 Wafer Court in Oceanside, CA by Apex, dated February 12, 2021, on behalf of the Defendant reveals that the subject unit had experienced a minor moisture impact episode related to the

water heater. The event resulted in the Defendant requesting a formal assessment of damages by Apex, but none were discovered, as reported. Accordingly, no mitigative actions were recommended.

Other Plaintiff and Defendant Discovery

- Both Plaintiff and Defendant Discovery support that water damage events occurred at the subject unit and required remediation. While unfortunate, the events reported are a common occurrence in structures, as indicated by a substantial flood response industry which equally relies upon assessment professionals like me. The Discovery supports that the remediation was performed by an industry-recognized reputable firm (ATI), that the Plaintiff was moved out of the unit and into temporary housing during the same period (i.e., November 6 thru December 18, 2020) and that the unit was cleared of any mold impact prior to being restored and prior to the Plaintiff moving back into the unit.
- Discovery reveals photos and a video depicting apparent Plaintiff personal belongings and home supplies that had been discarded in a dumpster outside the unit after she moved back into the unit after remediation. The Discovery suggests that the Plaintiff believed (and stated) that all of the contents in her unit were contaminated by "black mold." However, evidence of such contamination/damage does not exist in the Discovery reviewed. Thus, the actions of the Plaintiff conveyed in the photos, if her doing, were unsubstantiated and reflective of irrational behavior, especially considering that the unit had just been remediated and restored.
- The resume of Plaintiff's designated "Expert" Joshua Rachal (Rachal) indicates/supports the following:
    - That Rachal lacks any formal education or degrees related to environmental science, industrial hygiene, microbiology, structural engineering or construction.
    - That Rachal lacks any environmental/mold certifications or licenses that would be considered relevant in the State of California (or that I recognize as a 40+-year environmental and industrial hygiene professional).
    - That Rachal lacks a General Contracting (GC) license in the State of California. Further, it is not apparent that he possesses a GC license in any state.

OBSERVATIONS/CONDITIONS REVEALED DURING THE SITE INSPECTION

- Evidence of prior drywall repairs and/or replacement were noted at the base of the water heater closet, as indicated by a different texture on the drywall. Indicators of existing water damage, including staining or mold, were not apparent.

- Plaintiff's expert Rachal obtained air samples from varying wall cavities while concurrently banging on the proximate wall. Such samples would have to be interpreted as biasedly influenced and certainly could not be used to opine on current or past ambient conditions in the living spaces of the home.

- With exception to the evidence of a prior repair in the kitchen and water heater closet referenced above, conditions in the home were totally unremarkable relative to indicators of current or past mold contamination. Despite this finding, there's no way to correlate existing conditions to conditions that may have existed in the home during the Plaintiff's tenancy over two years earlier.

OPINIONS

Based on the referenced Discovery and above-stated interpretations of the same, I offer the following opinions:

1. As indicated in the referenced resume, Plaintiff's expert Rachal lacks any recognized qualifications to assess structure assemblies and/or defects related to the same. Thus, it is my opinion that Rachal should be disqualified as an "expert" in the disciplines for which he has been retained.
2. As part of my regular forensic work as a CIH, I can testify that mold is ubiquitous in the ambient environment, including indoor ambient environments (i.e., mold is nearly always present in some capacity). This opinion is supported by numerous publications by laboratories and research professionals specializing in bioaerosols that provide data compilations of mold concentration ranges for indoor environments. These include, among others:
    - "Airborne Mold Spore Interpretation Guidelines," Environmental Analysis Associates, Inc., 2013;
    - "Indoor Airborne Mold and Dust-Suggested Exposure Classification Guidelines, Air Sample Database," Environmental Analysis Associates, 2017-2018;
    - "A Regional Comparison of Mold Spore Concentrations Outdoors and Inside "Clean" and "Mold Contaminated" Southern California Buildings," Baxter…, JOEH 2:8-18, 2005;
    - MoldRANGE™ California Climate, EMLab P&K (evolving and current database);
    - IAQ Pocket Reference Guide-7th Edition, EMLab P&K, 2012.

    My assessment of data remarkability relative to the Discovery in this matter, as summarized above, is based partly on these data compilations.

    I can also testify that there are published guidelines for assessing mold in indoor environments, including the following from two preeminent associations that govern the industrial hygiene profession (industry):

- The American Conference of Governmental Industrial Hygienists (ACGIH) publication "Bioaerosols: Assessment and Control," 1999;
- The American Industrial Hygiene Association (AIHA) publication "Recognition, Evaluation, and Control of Indoor Mold," 2008;
- AIHA publication "Field Guide for the Determination of Biological Contaminants in Environmental Samples-2nd Edition," 2005;
- AIHA publication "Assessment, Remediation, and Post-Remediation Verification of Mold in Buildings," AIHA Guideline 3-2004.

The above-referenced publications provide data interpretation guidelines that clearly differentiate data indicative of *contamination* from data indicative of *exposure* and health risk. Specifically:

- Data indicative of "contamination" is location- and period-specific and merely "a basis for evaluating the need for improved maintenance or remediation in a preventative context." It cannot be used to assess "exposure." The data from bulk or surface (swab, wipe or tape) samples are examples of "contamination" source data.
- Data indicative of "exposure" must be representative of a potential for exposure (e.g., inhalation), including "in descending order of accuracy:
  - i. *Personal air sampling over a time period that covers a representative range of potential exposures to a biological agent (e.g., mold);*
  - ii. *Ambient air sampling in the immediate vicinity of a (person) over a time period that covers a representative range of potential exposures to (mold);*
  - iii. *Personal or ambient air sampling during worst case conditions;*
  - iv. *Personal or ambient grab air sampling;*
  - v. *Source sampling;*
  - vi. *Observation of environmental contamination."*

  According to the industry guidelines, "*Unfortunately, most* (mold) *data fall into the last three categories and poorly represent individual exposure. The weakest evidence is that in number six (vi)-assumption of exposure based only on the visible presence of* (mold) *growth or other contamination*."

As the basis of the Plaintiff's complaint is that they were "exposed" and harmed by adverse conditions at the subject property, only "exposure" criteria apply. A mere finding of mold or water damage in a structure is irrelevant to an "exposure" claim unless the amount and type of mold found qualifies as a condition that is adversely impairing the ambient indoor (breathing) environment and that an adverse "exposure" can occur or has occurred. If such conditions can't be qualified, a mere finding of mold

constitutes nothing more than a basis for concluding a surface impact to some *de minimis* or remarkable degree.

The fact that Plaintiff's Expert, Rachal, is apparently not familiar with the difference between the base criteria for assessing "contamination" versus "exposure," as implied by his willingness to accept the "expert" assignment and perform the assessment with an understanding that his findings would need to be relevant to Plaintiff's complaint, speaks to his interpreted bias, his lack of objectiveness and his lack of qualifications as an apparent expert in mold "contamination" and "exposure" assessment.

3. The above-referenced publications collectively advise that interpretation of possible indoor aerosol (mold) exposure be completed by using 3 factors: (1) indoor/outdoor total ambient mold concentration ratios; (2) comparisons of the (ambient mold) species compositions indoors and out, and; (3) the presence of indicator species in the indoor ambient environment. For each of these "exposure" assessment factors, the "indoor" mold concentration relates to ambient air to which one could breathe or be "exposed;" i.e., habitable (home) space and not non-habitable space (such as wall cavity).

   The fact that Plaintiff's Expert, Rachal, is likely planning to assert or suggest that data from a wall cavity air sample could represent air to which one could (or did) breathe, and has ignored industry-recognized data sets reflecting average or normal mold concentration ranges for indoor environments, is professionally irresponsible and, again, indicative of his interpreted bias, his lack of objectiveness, and his lack of qualifications as an apparent expert in mold "contamination" and "exposure" assessment.

   Consistent with the guidelines referenced above, samples obtained by Rachal from inside of a wall cavity, a "non-habitable environment," cannot be used to assess "exposure" and health risk and would not serve to substantiate the Plaintiff's claim. The Plaintiff would not have been, and could not be, exposed to any mold spores located within the wall cavity unless air samples taken outside of the wall cavity (at the time that Plaintiff lived in the home) supported such a causal connection. In my opinion, none has been established.

   It is worthy to point out that, during wall cavity sampling, Rachal would pound on the proximate wall, presumably to release any mold spores attenuated to the interior of the wall while performing air sampling for the purposes assessing exposure. This methodology is a breach of the standards of care for assessing indoor air quality unless a pre-determined purpose is to replicate normal conditions in the environment and such disturbance is/was indicative of the environment being assessed. Such cannot be substantiated for this complaint.

4. As already stated above, any surface sample, wipe or otherwise, does not, and cannot, scientifically support a claim of "exposure" or a claim of Defendant negligence. Therefore, while surface data may support that some biological component comprises the stains or dust on the substrates tested in the subject property and might support a recommendation for a corrective response (e.g., cleaning, further investigation, etc.), it is not a basis for an "*uninhabitable…unfit, unhealthy, and(or) unsafe*"" characterization.

5. Discovery does not include any data to substantiate Plaintiff's assertion that "*various physical and psychological symptoms were caused or exacerbated by the toxic mold on the Leased Property, and Plaintiff's exposure to the toxic mold*" or that mold existing in the home (kitchen) constituted an adverse "*toxic*," "*uninhabitable…unfit, unhealthy, and unsafe*" environment. Even if one was to disregard my opinion that any finding two years after-the-fact could never defensively represent conditions during Plaintiff's tenancy, the ambient living space data presented above is generally unremarkable relative to conditions that could typically be found in indoor and outdoor environments in southern California (per the data compilation references presented above). While there appears to be a slight elevation of a few mold types in the data generated by Paradise Environmental, the levels detected still fall within the means of reasonably normal occurrences per the data compilations referenced.

6. Discovery does not include any substantiation that the environment in the home "*…exacerbated symptoms of depression and anxiety, an inability to concentrate, exacerbated symptoms of PTSD, and physical symptoms of some form of illness*, including "*frequent and intense (migraines) and head pain, exacerbated anxiety, exacerbated depression, heart palpitations, chest pain, graphic images of Plaintiff's own death, premenstrual spotting, night sweats, numbness, fatigue, inability to concentrate, exhaustion, foul odors, itchiness, dizziness, nausea, neck pain…earaches, cramping, and frequent urination*" nor that mold is even a catalyst the same. Further, Discovery did not include substantiating evidence that a physician has attributed the same to mold in the home.

7. Discovery did not include any substantiation that conditions in the home accelerated and/or exacerbated any mold growth on food left out of the refrigerator and I can testify that such mold growth is common and would be expected. For the Plaintiff to further equate black rings in a toilet as an indication of environmental impairment in the home is absurd and both assertions support that Plaintiff became grossly irrational.

8. I can testify that, when surface impairment from mold is discovered on a surface in a habitable structure, covering it with plastic until it can be formally remedied conforms with general standards of care for mold damage response. This action is intended to impede dispersion of the surface impact, not because the stain is "*dangerous*." It is my opinion that this assertion was likely made by Plaintiff or Plaintiff's counsel for self-serving purposes.

9. It is my opinion that Discovery overwhelmingly supports that Defendant's remedied the water damages in the subject home, when discovered, and did not fail "*to cure defects and deficiencies in the Leased Property...*"
10. I can testify that photos in Discovery do not support an assertion that the mold stains on the stove and/or cabinets qualified as "*severe*." The Discovery supports that the damages were restricted to a limited area in the home (i.e., one portion of wall/ceiling in the kitchen) and a typical versus "severe" consequence of a leak in a home. The leak never apparently resulted in accumulated water in the home.
11. I can testify that mold issues in a home are often described as "water damage," as water is a necessary component of mold growth. Thus, Plaintiff's concern regarding Defendant's reference is unreasonable.
12. As qualified above, Plaintiff's assertion that tests performed on her behalf "*revealed high levels of (Chaetomium), Penicillium/Aspergillus, Cladosporium, and Basidiospores*" is unsubstantiated and a self-serving exaggeration of the factual data.
13. Plaintiff's deposition transcript conveys a remarkable degree of irrational hysteria and supports a reasonable impression of "constructive association" between the subject home and their apparent compromised emotional and physical health. Despite asserting connections between those issues and the subject home, no reasonable or scientifically defensible substantiation was offered in the referenced Discovery, and the referenced air data obtained while she was in the home qualifies the same. In consideration that she was moved out of the unit and into temporary housing during the remediation activities, which would have been the time that the wall and ceiling impacts presented the greatest probability for exposure, the actual probability of her being adversely exposed in the home is unremarkable and unreasonable.
14. While the findings of the Plaintiff's site inspection, including sampling and analysis for mold, have not been offered into Discovery for evaluation yet, any assertion that a finding two years after the Plaintiff last occupied the subject unit could be representative of conditions during Plaintiff's tenancy is ludicrous and a compromise of all scientific standards of care. Accordingly, the inspection findings, regardless of what they support or don't support, should be disregarded in totality.
15. Based on the referenced Discovery, mold "exposure" can't be concluded simply because mold impacts occurred in the home. "Exposure" can only be concluded with relevant data (e.g., air data for respiratory exposure allegations). Accordingly, there is no evidence to conclude that Defendant's exposed Plaintiff to mold.

QUALIFICATIONS

- I am a career environmental and health science consultant with over 40 years of experience specializing in exposure evaluations, contamination

assessment/remediation and hazardous materials health and safety. A true and correct copy of my C.V. is attached hereto as Exhibit A.

- I am the principal owner of C Young Associates, a consultancy which provides forensic environmental investigation services including indoor air quality assessments and exposure evaluations in civil, toxic/tort and workers' compensation matters involving alleged environmental contamination from, and human exposure to, hazardous materials and environmental impediments, including mold.
- I am a Certified Industrial Hygienist (CIH), No. 3987, by The Board for Global EHS Credentialing (BGC, formerly the American Board of Industrial Hygiene [ABIH]). I hold a B.S. in Environmental Science from the University of Massachusetts, Amherst, MA and a Certificate of Risk Analysis in Environmental Health from the Harvard School of Public Health, Boston, MA. I taught Industrial Hygiene at the University of California, San Diego from 1992 to 2003.
- I have performed over two thousand qualitative and quantitative environmental contamination and exposure assessments, including assessments where mold was the contaminant of concern. I regularly review and interpret laboratory data, including mold analysis reports of surface, bulk and air samples obtained in support of an assessment.

Note: No publications authored in the last 10 years.

Four-Year Case Testimony Summation

- 2822 State Street, LLC v. Marshall Sylver, et al.
- Armendariz, et al. v. Kittyhawk Realty
- Blackburn, et al. v. Trinity Management
- Charvat, et al. v. San Diego Family Housing
- Clemons v. HTRCE/Jackson & Blanc
- Clover, et al. v. Camp Pendleton & Quantico Housing, LLC, et al.
- Curtis v. 424 Market Advisors, LLC
- Damavandi v. Carson, et al.
- Dixon v. AutoNation-Newport Beach Cars
- Executive Dynamics v. Lawrence
- Gbelay v. Bolmer Restoration
- Gigliotti v. Allegis Residential Services
- Ginder v. CSE Safeguard
- Herrera v. Langley

- Hope v. Servpro
- Hubbard v. 424 Market Investors
- Marshall/Littfin v. Ghaemmagamih
- Morency v. LM Insurance
- Rausch v. Kornblum, et al.
- Savar v. Servpro
- Shirley v. Allstate Insurance
- Tamura v. Campbell
- World Mechanical, Inc. v. Bernards Builders, Inc.

Fee

- $400 per hour for technical reviews and reporting.
- $600 per hour to provide deposition and trial testimony.

LIMITATIONS

The interpretations and opinions presented in this report are based on a review of the Discovery documents referenced and single site inspection, only. They are conclusive only with respect to the same. Should additional documents or information be provided for review and consideration, I reserve the right and opportunity to reassess these interpretations and opinions and to publish a supplemental report, as deemed appropriate or warranted.

If you have questions, please call me at (858) 945-7029.

Sincerely,

Colin P. Young, CIH
Principal

Exhibits:
Exhibit A-C.V. of Colin P. Young, CIH

EXHIBIT 1

Curriculum Vitae (CV) of

COLIN P. YOUNG, CIH

PROFESSIONAL HISTORY

Current

- C Young Associates (CYA), La Jolla, California, 1996-2000, 2003, 01/2009-Present

Previous

- ERM-West, Inc., San Diego, California, Partner-Managing Principal, San Diego Office, 12/03-01/09
- Geocon, Inc., San Diego, California, Vice President/Southern California Operations Manager, 2000-2003, Project Manager/ Marketing Coordinator, 1989-1991
- Metcalf & Eddy, Inc., San Diego, California, Associate/Business Manager-Environmental Services Division, October 1994-1996
- University of California, San Diego (UCSD), Instructor for Occupational Medicine/Public Health & Safety Extension Certificate Program, 1992-2003
- Brown & Root Environmental/Halliburton NUS Corporation
  - San Diego, California, West Region Manager-Western Division Operations, 1991-1993
  - Boston, Massachusetts, U.S. EPA, Region 1 FIT Public Health Specialist, 1982-1985
- Westec Services, Inc./ERCE, San Diego, California, Project Manager/ Manager of Corporate Health & Safety, 1986-1989

PROFESSIONAL EXPERIENCE and QUALIFICATIONS-Academic

- UCSD, Course Instructor for Occupational Medicine Certificate Program, *Industrial Hygiene for the Occupational Health Nurse*, 1992-1995
- UCSD, Course Instructor for Occupational Health & Safety/ Hazardous Materials Certificate Program, *Principles in Industrial Hygiene*, 1995-2003

PROFESSIONAL EXPERIENCE and QUALIFICATIONS-Technical/Expert

Industrial Hygiene

Provide, or have provided, forensic investigation, human health assessment and exposure/injury prevention related services, including the performance of "sick-building"/indoor air quality evaluations, worker exposure assessments, biological contamination (e.g., bioaerosol/mold) studies, litigation support, workers' comp. investigations, asbestos and lead assessments, industrial process safety evaluations, health & safety training and support programs for environmental, hazardous waste, industrial and construction projects and activities. Services have been provided to legal, insurance, industrial, commercial and governmental (e.g., Navy, DOE, regulatory, etc.) clients, alike. Experience representations are summarized, as follows:

- Frequently retained Expert on civil and exposure/toxic tort matters involving alleged impairment to indoor environments from, and human exposures to, hazardous materials in

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residential, commercial, industrial and public settings. Contaminants have included chemicals and bioaerosols (including mold). To date, more than 350 legal matters have been supported in an "Expert" capacity.

- Provided industrial hygiene/health & safety support and programs for more than 400 environmental and hazardous waste investigations and remediation programs for the U.S. EPA and private entities. Typical projects involved the handling of, and/or potential for exposure to, biological contaminants, fuel and chlorinated hydrocarbons, pesticides, PCBs, asbestos, lead and explosive materials.
- Performed numerous surveys of commercial, industrial and residential structures believed to contain unhealthy and/or potentially hazardous indoor air-quality conditions, including chemical and bioaerosol (mold) intrusion. To date, more than 650 mold and chemical contamination assessments have been performed in residential and commercial/industrial settings, alike.
- Performed numerous industrial process safety evaluations in support of both Workers' Compensation claim-reduction (i.e., limitation of liability) programs and impending Workers' Compensation claims. The services have been provided for the benefit of employers, property owners and business/property insurers and legal counsel.
- Provided health and safety training and developed corporate health and safety programs for more than thirty industrial facilities, environmental laboratories and/or engineering consulting firms.
- Performed a Job Safety Analysis (JSA) of more than 300 aerospace manufacturing processes in support of client's existing and developing Industrial Health & Safety Programs.
- Developed and managed a complex health and safety program for a multi-million dollar remediation project for the Department of Energy at Oak Ridge National Laboratory (ORNL) in Oak Ridge, Tennessee. The remedial and site safety program innovatively employed the use of remotely operated vehicles (i.e., submarines) to retrieve and decommission over 7000 containers of explosive, water-reactive and radiologically contaminated materials.
- Developed and managed a health & safety/quality assurance-quality control (QA/QC) program for a study involving the assessment of 15 uncontrolled disposal sites at the Naval Air Weapons Station (NAWS) in China Lake, California. The studies evaluated the degree of environmental impact from chemical, biological and live ordnance wastes in the (typical) 115°F area climate.
- Contributed to the development of health and safety Standard Operating Procedures and training protocols used by U.S. EPA FIT offices.

Environmental Engineering

Provide, or have provided, forensic studies, environmental site assessments; remediation programs; environmental litigation support, and; regulatory compliance support and permitting.

- Occasionally retained Expert on civil matters involving alleged environmental impairment to and condemnation of commercial and industrial properties. To date, more than 25 legal

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matters have been supported in an “Expert” capacity.

- Developed and managed a multimillion-dollar burn dump remediation project for a client that was redeveloping a former Navy facility. Provided project management and oversight, data interpretation, training, and HASP development. The contaminants of concern included burn ash, lead, asbestos, PCBs, chlorinated and/or petroleum hydrocarbons.
- Managed multiple environmental assessments and mitigation programs of former agricultural properties. Many possessed impairment by the historic and legal application of pesticides and/or natural occurrence of arsenic. In all situations, the impairment was managed on-site by controlled burial of the impaired soils resulting in no need for costly or wasteful removal, transport and treatment/disposal of the same.
- Provided technical support for an underground storage tank (UST) investigation at San Diego International Airport's (Lindbergh Field) tank farm. The project was performed for the local Port Authority and involved the in situ inspection of the interior of numerous fuel tanks throughout the fuel farm. This activity required the use of Level B PPE in confined space environments.
- Provided management of a million-dollar environmental design contract for Naval Public Works Center (PWC), San Diego, California. Services included the development of SPCC Plans, preparation of RCRA Part B permits, performance of cathodic protection evaluations and the design of TSD facilities.
- Planned and managed a multitude of UST investigations for the Department of Defense at MCB Camp Pendleton, North Island NAS and 32nd Street Naval Station, California. The results of each investigation were used to develop remediation specifications for MCON projects planned at each site. The remedial programs were subsequently implemented using fixed or unit-cost pricing structures dependent on the prepared specifications. Remediation technologies applied included controlled aeration, vapor extraction (VES), pump and treat, and dig and dispose.
- Provided operations management of a multi-million dollar fuel recovery/remediation project at the fuel farm at Naval Air Station North Island (NASNI), California. Groundwater at the site had been impaired by a 2-3 foot thick layer of fuel hydrocarbon, released from a multitude of concrete USTs on the base. The remediation technology applied to date included pump and treat.
- Provided Delivery Order management of a large-scale asbestos survey project at Naval Amphibious Base, Coronado for Southwest Division NAVFACENGCOM.
- Planned and managed an assessment and remediation project at Fire Fighting Training Areas at Pacific Missile Test Center (PMTC) in Point Mugu and CBC Port Hueneme, California, for the Western Division NAVFACENGCOM. The remedial programs were subsequently implemented using fixed or unit-cost pricing structures dependent on the prepared specifications. Remediation technologies applied included VES and dig and dispose.
- Removed, and performed an investigation of, multiple USTs located on agricultural property owned by the Viejas Indian Reservation. The property was slated for Casino and

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Resort expansion, which has since occurred.

- Performed a UST investigation at several commercial service stations. Determined MTBE impacts to beneficial-use ground water. Data used to initiate a ground water investigation and remediation plans.
- Provided environmental support and waste characterization services for engineering (i.e., clean-out) projects performed within lead-impacted storm water basins throughout San Diego County.
- Provided technical and environmental management support on more than 100 engineering projects performed within lead-impacted areas along the highways of California. Prepared a similar number of Lead Compliance Plans (LCPs) for the engineering/utility contractor providing the construction services for Caltrans.
- Provided environmental compliance support services to supplement an aerospace manufacturing company's environmental department. Products supported included a Hazardous Materials Business Plan, Storm Water Pollution Prevention (SWPP) Plan, Underground Storage Tank (UST) Program, Compliance Audit Program, etc.
- Prepared more than 200 Phase I and II Environmental Site Assessments per ASTM Standards and Industry Standards of Care.
- Facilitated several Brownfield developments into low income housing facilities.
- Prepared more than 25 Property Condition Assessments for clients evaluating a potential acquisition of a property or whom have control over a property in receivership.

ACADEMIC HISTORY

- University of Massachusetts, Amherst, Massachusetts, B.S., School of Environmental Science and Public Health, 1982
- Harvard School of Public Health, Boston, Massachusetts, Certificate of Risk Analysis in Environmental Health, 1985

PROFESSIONAL CERTIFICATIONS

- Certified Industrial Hygienist (CIH) No. 3987, American Board of Industrial Hygiene (ABIH)/Board for Global EHS Credentialing (BGC), 1988; Recertified 1995, 2001, 2006, 2011, 2015, 2020
- Certified Safety Specialist/Executive (CSS/CSE), World Safety Organization (WSO), 1986 (inactive)
- AHERA-Certified Asbestos Inspector-California No. 855, U.S. EPA/UC Berkeley, 1989 (inactive)

PROFESSIONAL TRAINING

- Certificate in Professional Engineering Practice, ASFE/Institute for Professional Practice, 1990

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  - Program Facilitator, 1991
- Professional "Loss Prevention" Training, ASFE, 1989
- Professional Management Training, Management Action Programs (MAP), 1990
- HazWOpER (29CFR 1910.120) Training, 1982; - Trainer, 1986-Present
- Guidelines for the Assessment of Microbiological Contamination in Indoor Environments, AIHA, 2002
- Risk Management & Insurance Primer for Industrial Hygienists (2005)
- Indoor Air Quality-HVAC Systems and Mold Control (2005)
- Toxic Inhalation Exposure (2004)
- Ethics in the Workplace/Ethics for the EHS Professional (2004, 2015, 2017)
- Noise Control (2010)
- Applied Epidemiology for Industrial Hygienists (2006)
- Introduction to Risk Assessment for the Industrial Hygienist (2006)
- Advancement in Exposure Assessment (2011)
- Biosafety (2011)
- Mold and Health Effect Sampling and Data Interpretation (2012)
- Bacteriology (2011, 2012, 2014, 2015)
- Advancements in Exposure Assessment (2012)
- USP 797 & Environmental Sampling (2013)
- Air Filtration, Air Cleaning Devices and Indoor Air Quality (2014)
- Hazardous Waste Management (2015)
- Allergens and Allergic Disease (2015)
- Infection Control and Environmental Sampling (2015)
- Risk Assessment (2015)
- Strategies for Mold Investigations and Sampling (2015)
- Sewage Contamination: Microbiology, Health Risks and Remediation (2015, 2018, 2021)
- Hazardous Materials in Transportation (2018)
- Legionella and Legionellosis: New Regulations and Detection Methods (2018)
- Health Effects of Airborne Mold Exposure (2020)
- Legionella Risk Management-Reopening Buildings Safely (2020)
- Simplification: A Respirable Crystalline Silica Overview (2020)
- Mold Matters: The Effects of Fungi on Building Materials (2020)

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- Current Issues in the Assessment of Respiratory Protective Devices… (2020)

PUBLICATIONS

- Fung M.D., F. Y., Young CIH, C. P., Mold-Associated Asthma, IAQ 2001, ASHRAE

PROFESSIONAL AFFILIATION HISTORY

- American Industrial Hygiene Association (AIHA), Fairfax, VA
- American Academy of Industrial Hygiene (AAIH), Lansing, MI
- American Lung Association, San Diego and Imperial Counties, CA, Member-Board of Directors, 2002-2006, Board Chair 2006
- ASFE, Silver Spring, MD
  - "Loss Prevention Education" Committee (1990-1991)
  - “Mold in Professional Practice” Committee (2001-2003)
- American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)
- Association for Environmental Health and Sciences (AEHS), Amherst, MA
- American Conference of Governmental Industrial Hygienists (ACGIH), Cincinnati, OH
- Institute for Professional Practice (IPP), Silver Spring, MD
- Society of American Military Engineers (SAME), San Diego, CA
- American Indoor Air Quality Council
- National Ethics Association

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EXHIBIT 2

PHIPPS v. CPQH, LLC

Case No.: 3:21-cv-01514-DMS-AHG

INDEX OF DOCUMENTS REVIEWED BY EXPERT YOUNG

DOC DATE	DESCRIPTION	BATES LABELED	DATE SENT
07/21/21	Complaint	N/A	06/10/2022
Various dates	Plaintiff's Production	PHIPPS 5000-6529	06/10/2022
11/06/20	Plaintiff's Production 4 video recordings	N/A	06/10/2022
Various dates	CPQH Production	PHIPPS-CPQH-LPC 000001-001027	06/10/2022
05/31/22	Deposition transcripts and exhibits of Timothy Nishio	N/A	06/10/2022
04/19/22	Deposition transcripts and exhibits of Ryan Taylor	N/A	06/10/2022
06/15/22	Deposition transcripts and exhibits of Victoria Phipps	N/A	06/24/22

Case 3:21-cv-01514-DMS-MMP Document 76-8 Filed 09/29/23 PageID.3539 Page 24 of 24

Gordon Rees Scully Mansukhani, LLP
101 W. Broadway, Suite 2000
San Diego, CA 92101

PROOF OF SERVICE

I am a resident of the State of California, over the age of eighteen years, and not a party to the within action. My business address is Gordon Rees Scully Mansukhani, LLP 101 W. Broadway, Suite 2000 San Diego, CA 92101. On **September 29, 2023**, I served the within document(s):

1. **DEFENDANTS' DAUBERT MOTION TO EXCLUDE TESTIMONY OF ANDREW HEYMAN, MD;**
2. **DECLARATION OF KRISTIN N. REYNA DEHART.**

☒ **BY ELECTRONIC FILING.** I hereby certify that on September 29, 2023, a copy of the foregoing document was filed electronically. Notice of this filing will be sent by operation of the Court's electronic filing system to all parties indicated on the electronic filing receipt. All other parties will be served by regular U.S. Mail. Parties may access this filing through the Court's electronic filing system.

☐ **ELECTRONIC TRANSMISSION:** By transmitting a pdf format version of the document(s) via electronic mail to the party(s) identified on the service list using the email address(es) indicated.

Lenden Webb, Esq. (236377)
Christian B. Clark, Esq. (330380)
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gpachie@webblawgroup.com

Attorneys for Plaintiff
VICTORIA PHIPPS

I declare under penalty of perjury under the laws of the United States of America that I am employed in the office of a member of the Bar of this Court at whose direction the service was made. Executed on **September 29, 2023.**

Jackie Finn

JACKIE FINN