

EXHIBIT 13

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**UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF LOUISIANA**

KATHLEEN MOLLER,
Plaintiff,

v.

**MARTIAN SALES, INC.; JOPEN,
LLC; JOHNSON FOODS, LLC; LP
IND., LLC; CAG HOLDINGS, LLC;
RMH HOLDINGS, INC.; ABC
INSURANCE COMPANY and John
Does 1-4,**
Defendants.

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CIVIL ACTION NO. 2:24-cv-228-WBV-DPC

THE HONORABLE WENDY B. VITTER

**MAGISTRATE DONNA PHILLIPS
CURRAULT**

EXPERT REPORT OF MARILYN A. HUESTIS, PH.D.

1. I was retained by the counsel for Defendant to render an opinion in the above captioned case. I am compensated at a rate of \$500 per hour for any deposition or trial testimony, \$450 per hour for any other work, plus any actual, reasonable out-of-pocket expenses that I incur. My compensation is neither contingent on the outcome of this matter nor the conclusions reached in this report.

2. My opinions below are based on my background, education, training, experience; randomized, placebo-controlled, double blind kratom administration studies and the information available to me as of the date of this report. The opinions in this report are given to a reasonable

degree of scientific certainty. I reserve the right to amend or supplement my opinions to the extent that new information becomes available.

3. A copy of my current curriculum vitae is attached as Appendix A, and a list of all cited references and records and documents reviewed in relation to this case is attached as Appendix B.

QUALIFICATIONS

4. I am the author of 593 peer-reviewed manuscripts in high-impact scientific journals, am currently a member of five scientific editorial boards including Forensic Science Research, Cannabis and Cannabinoid Research, Therapeutic Drug Monitoring, Forensic Science International and the Journal of Analytical Toxicology and perform expert reviews for dozens of scientific journals. The journal Clinical Chemistry featured me as an “Inspiring Mind”. My research program focuses on the neurobiology and pharmacokinetics of cannabinoid agonists, kratom/mitragynine, oral fluid drug testing, and driving under the influence of drugs. Recent prestigious awards include the 2025 Distinguished Service, Society of Forensic Toxicologists (SOFT), the 2025 International Council on Alcohol, Drugs and Traffic Safety (ICADTS) Widmark Award, 2023 International Cannabinoid Research Society (ICRS) Mechoulam Lifetime Award, 2023 CMCR Pioneer in Medicinal Cannabis Research Award, 2021 Distinguished Service to Safety Award, National Safety Council, 2021 Alexander O. Gettler Award, Toxicology Section, American Academy of Forensic Sciences, 2021 AACC Outstanding Lifetime Achievement Award Distinguished Service, Society of Forensic Toxicologists (SOFT), 2018 Robert F. Borkenstein Award, Alcohol, Drugs and Impairment Division, National Safety Council, 2016 Victorian Institute of Forensic Medicine Orator, Melbourne, Australia, 2016 Marian W. Fischman Lectureship Award, The College on Problems of Drug Dependence, Palm Springs, CA, and the 2015 Distinguished Fellow of the American Academy of Forensic Sciences Award. I am also past president of the International Association of Forensic Toxicologists (TIAFT), past president of the Society of Forensic Toxicologists (SOFT) and past Chair of the Toxicology Section and Board of

Directors of the American Academy of Forensic Sciences (AAFS). I was an Adjunct Professor, University of Maryland School of Medicine, Baltimore, MD from 1999-2017. Currently, I am a Senior Fellow at the Institute for Emerging Health Professions, Thomas Jefferson University, and honorary professor at Barts & London School of Medicine & Dentistry, Queen Mary University of London, England, and adjunct professor at the University of New Mexico, College of Pharmacy and president of Huestis & Smith Toxicology, LLC. I currently serve on the World Anti-Doping Agency's Expert List Group, and the National Safety Council's Alcohol, Drugs and Impairment Division Executive Board.

5. I previously testified as an expert witness (1) at the Court of Arbitration for Sport in a deposition for a confidential proceeding; (2) in Phoenix, Arizona in 2023 Mustedanagic v. Nissan North America, Inc., No. 2022-CC-00244-01; (3) in a deposition in 2025, in Weber v. Martian Sales, Inc. et al., Case No. 23EV000485, Fulton County, Georgia, and in a deposition in Ottawa, Canada on September 8-9, 2025 and October 7-8, 2025, in Teamsters Canada Rail Conference – RCTC, International Brotherhood of Electrical Workers– System Council #11, Unifor Local 101R and United Steelworkers Local 1976 vs Canadian Pacific Kansas City. I have no other testimonial history in the last five years.

FACTUAL BASIS FOR OPINIONS

Factual Background on Kratom

6. Kratom is legal in the United States and in most countries worldwide. The kratom tree from Southeast Asia is related to the coffee tree, with kratom leaf powder ingested traditionally as a tea to increase energy and improve mood, like coffee. Kratom users also self-report using kratom for analgesia and to help in managing their opioid or other drug use disorder and drug withdrawal (Henningfield 2023). Kratom contains multiple alkaloids, with the primary alkaloid being mitragynine, representing approximately 2% of the plant weight (Hassan 2013).

7. Basic research, epidemiological and surveillance kratom data, and recent clinical kratom research indicate that kratom has a diverse and complex pharmacology and is not an opioid based on its chemistry, structure, or pharmacology (Kruegel 2016).

8. Scientific evidence indicates that kratom should not be scheduled. After a thorough review of the evidence, the Assistant Secretary of the Department of Health and Human Services (“DHHS”), Admiral Giroir, rescinded the Food and Drug Administration (“FDA”) request to schedule kratom, mitragynine, and 7-hydroxy-mitragynine (Giroir 2018). He refuted the claims of an imminent public health risk, refuted claims of mitragynine as cause of death in FDA-cited overdoses and stated that opioid overdoses and deaths would likely increase if kratom was scheduled.

9. In a recent independent review of kratom, mitragynine, and 7-hydroxy-mitragynine, the Expert Committee on Drug Dependence, as part of the United Nations Commission on Narcotic Drugs also determined that these substances should not be scheduled due to the lack of data supporting harm (United Nations Commission on Narcotic Drugs, 2021).

10. The scientific evidence on the abuse potential of kratom, mitragynine, and 7-hydroxy-mitragynine is like many other non-scheduled compounds (Henningfield 2022a). These authors updated the 8-factor analysis for kratom, finding that there was no evidence of an imminent risk to public health, and that a Schedule I listing (the only option for substances that are not FDA-approved for therapeutic use) could produce a public health risk by increasing drug overdoses by people using kratom to abstain from opioids. We concluded that public health was better served by assuring continued access to kratom products by consumers. Kratom alkaloids and derivatives are also in development as safer and/or more effective medicines for treating pain, substance use disorders, and mood disorders. Scheduling kratom would criminalize consumers, seriously impede research, and could increase drug overdose deaths.

11. When taken responsibly, kratom offers a harm reduction tool for opioid use disorder. Dr. Nora Volkow, Director of the National Institute on Drug Abuse, testified before the U.S. Congress in May 2022 on the importance of kratom as a harm reduction tool amid the opioid overdose epidemic. In addition, individuals self-report use of kratom to help manage their opioid or other drug use disorders (NIDA 2025). Individuals who frequently consume large doses of kratom can develop kratom dependence and experience withdrawal during abstinence; however,

the withdrawal is considered much milder than opioid withdrawal and is generally self-managed (Henningfield 2022a).

12. Recent preclinical data showed no respiratory depression in rats that received doses much higher than equivalent human kratom doses. Drs. Henningfield, Rodricks, Magnuson and I conducted research on the high kratom doses (up to 400 mg/kg) orally administered to rats and compared its effects to those administered oxycodone, a potent opioid (Henningfield 2022b). Oxycodone administration produced significant dose-related respiratory depressant effects and pronounced sedation with one death each at 60 and 150 mg/kg. Mitragynine did not yield significant dose-related respiratory depressant or life-threatening effects, even at the highest doses. Sedative-like effects, milder than produced by oxycodone, were evident at the 400 mg/kg dose. Consistent with mitragynine's pharmacology that includes partial μ -opioid receptor agonism with little recruitment of the respiratory depressant activating β -arrestin pathway, mitragynine produced no evidence of respiratory depression at equivalent doses many times higher than taken by humans.

13. Recent human controlled kratom administration data established the safety and lack of abuse liability of 4000 mg oral dried kratom leaf powder doses containing up to 53.2 mg mitragynine in the first large-scale randomized, placebo-controlled, escalating single and multiple 15-day oral kratom double blind administration study in 200 healthy normal participants (Huestis 2024a). Four thousand mg dried kratom leaf powder containing 6.65 to 53.2 mg mitragynine was administered as a single dose or as 15 consecutive daily doses. As the dose of mitragynine increased, the peak concentrations of mitragynine and its metabolite, 7-hydroxy-mitragynine, increased dose-proportionally. Following a single 53.2 mg mitragynine dose in 4000 mg dried kratom leaf powder, the mean mitragynine concentration in 12 healthy normal volunteers was 130 ng/mL (range 34.2-204 ng/mL).

14. There was extensive safety monitoring of the participants throughout the 47-day study that found no serious adverse events following active single or multiple dose dried kratom leaf powder or placebo (Huestis 2024b). Treatment emergent adverse events (TEAE) were recorded if a study participant's pre-existing condition or state changed or worsened at any time

during the study regardless of whether they received a placebo or test article, therefore, TEAE may or may not be related to the study intervention. TEAE generally increased as dose increased. Steady state mitragynine and 7-hydroxy-mitragynine concentrations were achieved within seven to nine days, and drug concentrations did not accumulate greater than two-fold after multiple dosing. Dizziness, nausea and feeling of relaxation were the most common TEAE following the single kratom leaf powder dose. For context, the dietary supplement melatonin can also potentially cause dizziness, nausea, and feelings of relaxation (Mayo Clinic melatonin 2025). After multiple kratom leaf powder doses, headache, feeling hot, increased alanine transaminase concentrations and nausea were the most common TEAE (Huestis 2023). Overall, oral kratom was well-tolerated without significant cardiovascular, neurological, or hepatic adverse events. There were no seizure events in any participant across the study. The TEAE that is most closely aligned with abuse potential is euphoric mood, or an exaggerated feeling of physical and emotional well-being and optimism. Although there were sporadic, single reports of euphoric mood, there was no dose-abuse liability relationship following single kratom doses. Following the highest multiple kratom dose, there were no reports of euphoric mood, suggesting low abuse potential at the investigated doses. This study provides new safety data in humans and shows a low abuse potential at kratom doses up to 4000 mg kratom leaf powder.

15. There are few reports of kratom poisonings and overdoses in which kratom is the sole cause or a contributing cause of injuries in the United States over the past ten years based on the 2022 National Poison Data System report (Gummin 2023). In 2022, 2,064,875 human drug exposures were reported, with analgesics representing 29.6% of drug-involved exposures. Kratom/mitragynine was not classified as an analgesic in this report. Of over two million human exposures, 2,622 resulted in death that was judged to be drug-exposure related. Of these 2,622 drug exposure deaths, mitragynine was listed in only one death report (0.04%): a 25-year-old female died of a propranolol overdose with a 2000 ng/mL highly toxic propranolol blood concentration. Mitragynine was listed as contributory with a 330 ng/mL blood concentration.

16. NMS Labs (Horsham, PA) performs most mitragynine impaired-driving and postmortem analyses in the United States and recently published data on mitragynine concentrations in driving under the influence of drugs (DUID) and postmortem death investigations (Papsun 2023). In 127 mitragynine impaired-driving cases in living individuals, mean and median blood mitragynine concentrations were 133 and 62 ng/mL (8.8–1000 ng/mL). In 5413 postmortem cases, mean and median mitragynine were 360 and 120 ng/mL (5.4–11,000 ng/mL). Prior to these published NMS Labs data, many deaths with mitragynine concentrations far less than 1000 ng/mL listed mitragynine as the cause of death, leading many to overestimate the toxicity of kratom/mitragynine. The Papsun 2023 manuscript suggests that blood mitragynine concentrations alone up to 1000 ng/mL are unlikely to cause death. There are no scientific data available to suggest what mitragynine concentration produces toxicity.

17. Currently, there are no scientific data available to suggest what blood mitragynine concentration produces lethality. In addition, in our controlled kratom administration study (Huestis 2024a), we dosed healthy normal participants with up to 89.2 mg mitragynine isolate, achieving concentrations of mitragynine after 15 multiple doses of median 336 ng/mL with a maximum of 753 ng/mL (Huestis 2024b). After 15 daily multiple 59.2 mg kratom extract doses, the median C_{max} was 304 ng/mL with a range from 207–317 ng/mL at 2.0 h (range 1.33–2.33 h). Doses were well tolerated, there were no serious adverse events or seizures in the study, and all participants were gainfully employed or students who returned to their schools or jobs after each observed dose administered for 15 consecutive days.

18. Recently documented postmortem redistribution of mitragynine presented at the 2025 The International Association of Forensic Toxicologists' meeting in Auckland, New Zealand, presented by Kai Osawa from the Tarrant County Medical Examiner's Office, showed that mitragynine concentrations could increase after death and be higher than antemortem concentrations obtained just prior to death due to postmortem redistribution (Osawa 2025).

Factual Background on Ms. Harmony Moller

19. Ms. Harmony Moller was born on February 18, 1986 to her mother, Kathleen Moller and father Albert Ivan Moeller. Little background information is provided prior to her death other than she spent multiple years abroad, including in Vietnam, where she was employed as a teacher. Her father, Mr. Ivan Moller served in Vietnam and had health problems due to Agent Orange exposure. Ms. Harmony Moller returned to her parent's home in Mandeville, LA approximately two years before his death in 2023 to help care for him (Facebook Posts. pdf p.7).

20. At the time of Ms. Harmony Moller's death on February 6, 2023, she was employed by Mande's Restaurant in Mandeville, LA (2025-09-09 PL SX RSP JOpen RFP.pdf p.8). Ms. Moller returned home from work at the restaurant on February 5, 2023 and told her mother that she didn't feel well and was vomiting (2023-001310__Incident_R.pdf p.3). Ms. Harmony Moller told her mother, Ms. Kathleen Moller, that she ingested a hydrocodone tablet and that she might have food poisoning. Ms. Harmony Moller stated that she wanted to take a shower to help with her vomiting symptoms. Ms. Harmony Moller was a cannabis user, substantiated by her mother's report, and the investigator's finding of a nuERA bottle with cannabis residue in her room that appeared to be from a cannabis prescription. Furthermore, Δ 9-tetrahydrocannabinol (THC) and its metabolite, 11-nor-9-carboxy-THC (THCCOOH) were quantified in her postmortem femoral blood at 8.6 ng/mL for Δ 9-THC and 10 ng/mL for its inactive metabolite 11-nor-9-carboxy- Δ 9-THC (2023-001310__Incident_R.pdf p.16). It is unclear if Ms. Moller may have felt unwell with nausea and vomiting from cannabinoid hyperemesis syndrome. Hot showers are helpful to reduce nausea and vomiting associated with cannabinoid hyperemesis syndrome.

21. On February 6, 2023, Ms. Kathleen Moller, Harmony's mother and a nurse, saw her alive at 13:15 (2023-001310__Incident_R.pdf p.5). Fifteen minutes later at 13:30, she observed Ms. Harmony Moller unresponsive on the floor. Ms. Kathleen Moller immediately began CPR on her daughter and asked her husband, Mr. Ivan Moller, to call 911. The Emergency Medical Records indicate the call was received at 14:08, and CPR initiated at about this time. Emergency Medical Services personnel attempted all lifesaving measures but Ms. Harmony Moller, 36 years

old, was declared deceased at 14:58. Different records contain different timings on when she was found unresponsive, when CPR was started, and when she was declared dead.

22. Forensic Technician Jonathan Smith from the medical examiner performed the death investigation. He described a cluttered bedroom, with pill bottles, drug paraphernalia, and trash found on the bureau (2023-001310 __Incident_R.pdf p.9). The prescription pill bottles were all empty and included acyclovir prescribed to her mother Ms. Kathleen Moller (9/26/22), Concerta (methylphenidate- for ADHD) prescribed to Trenton McNab (4/12/22), Hydrocodeine-acetaminophen prescribed to Kathleen Moller (12/16/15), and Gabapentin with half label missing prescribed to J Houser (12/8/21). There also was an empty bottle labeled nuEra, that appeared to be a marijuana prescription (Photos.pdf). Mr. Smith found five empty Jameson and other liquor bottles in several drawers and a glass pipe in a pouch, marijuana grinding apparatus, a lighter, and vaping devices for inhaling cannabis. On the floor was a Rouse bag with over the counter drugs, a Knob Creek whiskey bottle and 1 bag of Maeng Da kratom (30 capsules containing 7.8 mg mitragynine per capsule) (MOLLER_000023.pdf) and 1 4 oz. bag of Maeng Da silver kratom powder (containing 13 mg mitragynine per gm kratom powder) (MOLLER_000025.pdf). Ms. Kathleen Moller stated in her response to defendant's interrogatories that kratom products were purchased usually, but not necessarily exclusively, at the Ra shop in Mandeville, LA and she has no personal knowledge of the dates of kratom purchases by her daughter, Ms. Harmony Moller (2025-01-02 Pltf's Answers to Def JOpen's 1st ROGs.pdf.) Ms. Kathleen Moller also stated in response to other interrogatories that she had little knowledge of what medications her daughter took because Ms. Harmony Moller was a grown woman who did not disclose this information to her.

23. Mr. Jonathan Smith's initial clinical impression in the Fire Department EMS Report was "Primary Impression: Cardiac arrest. Pulseless and apneic. Dead without resuscitation efforts. Administered Phenergan (promethazine), epinephrine, naloxone" (St. Tammany FD EMS Records Responsive to Def JOpen's SDT.pdf p.1). In Mr. Jonathan Smith's investigation report of Ms. Harmony Moller's death, he included a history of spina bifida that her mother, Ms. Kathleen

Moller, believed she may have had (2025-09-09 PL SX AN to JOpen OG.pdf p.6). Ms. Kathleen Moller generously donated her daughter's organs after her death. Evaluation of Ms. Harmony Moller's heart by the Jesse E. Edwards Registry of Cardiovascular Disease heart donor review on 2/10/2023 disclosed a high origin of left coronary artery (St. Tammany Parish Coroner's Office Records.pdf p.11). Ms. Kathleen Moller was unaware of these medical issues prior to Ms. Harmony Moller's death (2025-09-09 PL SX AN to JOpen OG.pdf p.6). Ms. Harmony Moller had a heart abnormality termed an abnormally high left coronary ostia. This is a rare congenital heart defect where the left coronary artery originates from the aorta much higher than normal. In Ms. Harmony Moller's case, the left coronary artery originated 5 mm above the sinotubular junction. In addition, based on her heart examination, Ms. Moller's heart was enlarged at 421 grams (normal heart weight reference range for her body height, 173-411 grams and for her body weight 191-411 grams) with mild biventricular hypertrophy. Furthermore, the autopsy report noted hypertrophic atrial and ventricular myocytes and scattered hypereosinophilic myocytes. A section from the posterior wall of the left ventricle had hypertrophic myocytes and scattered hypereosinophilic myocytes. Subendocardial arteries had medial hypertrophy and there was a mild increase in interstitial and perivascular fibrosis. The diffuse distribution of hypereosinophilic myocytes is consistent with global myocardial hypoperfusion.

24. A further complication is that multiple organs, including important cardiac components were removed prior to the autopsy, hindering critical evaluation of cardiac function (D-23-213, LifeNet 2311242, LA Organ Procurement Agency 2302-0334). Ms. Kathleen Moller posted on Facebook on August 6, 2023 that her daughter, Ms. Harmony Moller, died of a physical flaw in her heart (Facebook Posts, pdf p.2); "Despite medications and every attempt possible to save her live, her heart just stopped beating and she passed away...." Furthermore, Ms. Kathleen Moller also posted "It was a long 5 months before we found out that her death was caused by a cardiac anomaly that caused her heart to suddenly stop beating from lack of blood flow in a cardiac artery. Nobody was aware of this condition. We tried to save her, but the damage couldn't be reversed" (Facebook Posts, pdf p.10). A further post indicated that "Ivan's daughter, Harmony,

also suffered the effects of Agent Orange she inherited. She also was quiet about it but the struggle was real and never compensated by our military” (Facebook Posts, pdf p.12).

25. Dr. Michael DeFatta, M.D. performed the autopsy and signed the final report on June 6, 2023 with the listed cause of death “Abnormally high left coronary ostia takeoff exacerbated by mitragynine use.” Dr. DeFatta also listed pulmonary edema and congestion, chronic passive congestion of the liver, and mild nephrosclerosis (2025-03-31 St. Tammany Parish Coroner's Office Records.pdf Postmortem Forensic Medical Examiner Report). NMS Labs, Horsham, PA, performed the toxicology analysis on Ms. Harmony Moller’s postmortem femoral blood (NMS Labs Records.pdf). As previously mentioned above, 8.6 ng/mL for Δ 9-THC and 10 ng/mL 11-nor-9-carboxy- Δ 9-THC were found indicating cannabis intake, and 64 ng/mL diphenhydramine, 18 ng/mL promethazine, and 150 ng/mL mitragynine (NMS Labs Records.pdf p.4). The diphenhydramine and promethazine concentrations were within therapeutic ranges based on the NMS report. The mitragynine concentration was within the range of concentrations 34.2-204 ng/mL found in healthy normal volunteers after receiving a single oral 53.2 mg mitragynine dose of dried kratom leaf powder (Huestis 2024). After observed ingestion of 53.2 mg kratom powder, participants returned to work or school without problems. The measured concentration of the 7-OH-mitragynine metabolite found in Ms. Harmony Moller’s postmortem femoral blood was below the limit of quantification of the method.

26. Ms. Harmony Moller’s postmortem femoral mitragynine blood concentration may have increased after her death due to postmortem distribution. Data were recently presented on large postmortem mitragynine redistribution noted in several cases from the Tarrant County Medical Examiner’s Office in Fort Worth, TX (TIAFT 2025). These data suggest that postmortem redistribution could falsely increase the concentration of mitragynine in blood after death compared to the true concentration in antemortem blood just prior to death.

OPINIONS

27. The opinions in this report are based on my review of the materials provided to date, the currently available published literature and my knowledge, education and experience in

the field. I reserve the right to change those opinions should additional information become available.

28. The concentration of mitragynine in Ms. Harmony Moller's postmortem femoral blood (150 ng/mL) was within the range of mitragynine concentrations measured in healthy normal mitragynine users after a single 53.2 mg mitragynine dose contained within 4000 mg dried kratom leaf powder (mean 130 ng/mL, range 34.2-204 ng/mL). These healthy normal participants returned to work or school without problems or incidents after receiving these doses (Huestis 2024). Ms. Harmony Moller's postmortem femoral blood concentration is not associated with toxicity.

29. Ms. Harmony Moller's postmortem femoral blood also contained THC at 8.6 ng/mL. THC is a cardiac stimulant and could contribute to tachycardia and potential arrhythmia. However, the THC was not included in the report as a drug that could exacerbate cardiovascular effects.

30. Ms. Harmony Moller's postmortem femoral blood also contained therapeutic concentrations of promethazine and diphenhydramine.

31. Recently documented postmortem redistribution of mitragynine presented at the 2025 The International Association of Forensic Toxicologists' meeting in Auckland, New Zealand, presented by Kai Osawa from the Tarrant County Medical Examiner's Office, showed that mitragynine concentrations could increase after death and be higher than antemortem concentrations obtained just prior to death due to postmortem redistribution (Osawa 2025). Therefore, although Ms. Harmony Moller's reported blood concentration of 150 ng/mL was within the expected range of participants taking 53.2 mg mitragynine per day in 4000 mg kratom, her antemortem femoral blood mitragynine concentration could have been even lower since the measurement was in postmortem blood.

32. It is inappropriate to add to the cause of death "exacerbated by mitragynine" based on Ms. Harmony Moller's postmortem femoral blood mitragynine concentration due to the low concentration and without also considering THC with known tachycardia effects as a contributing factor.

33. Ms. Harmony Moller died on February 6, 2023 due to an “Abnormally high left coronary ostia takeoff exacerbated by mitragynine use” according to the Tarrant County Medical Examiner, Fort Worth, TX. The medical examiner failed to include the other drugs present in Ms. Harmony Moller’s postmortem blood that included THC, diphenhydramine and promethazine. The medical examiner provided no references for exacerbation of Ms. Moller’s cardiovascular abnormalities by mitragynine use. Furthermore, the Medical Examiner did not appear to be aware of our publication detailing mitragynine and 7-hydroxy-mitragynine concentrations following controlled kratom/mitragynine administration of a well-characterized dried kratom leaf powder to healthy normal participants that was published in January 2024 (Huestis 2024).

34. When Ms. Harmony Moller’s donated heart was examined after her death on February 10, 2023 by the Jesse E. Edwards Registry of Cardiovascular Disease expert cardiologists her cardiac abnormality was termed an abnormally high left coronary ostia. This is a rare congenital heart defect where the left coronary artery originates from the aorta much higher than normal. In Ms. Harmony Moller’s case, the left coronary artery originated 5 mm above the sinotubular junction. In addition, based on the autopsy report, Ms. Moller’s heart was enlarged at 421 grams (normal heart weight reference range for her body height, 173-411 grams and for her body weight 191-411 grams) with mild biventricular hypertrophy. Furthermore, the autopsy report noted hypertrophic atrial and ventricular myocytes and scattered hypereosinophilic myocytes. A section from the posterior wall of the left ventricle had hypertrophic myocytes and scattered hypereosinophilic myocytes. Subendocardial arteries had medial hypertrophy and there was a mild increase in interstitial and perivascular fibrosis. The pathologist determined that diffuse distribution of hypereosinophilic myocytes was consistent with global myocardial hypoperfusion.

CONCLUSION

35. Ms. Harmony Moller died of a cardiac abnormality termed high left coronary ostia according to the Tarrant County Medical Examiner. It was inappropriate for the Medical Examiner to add “exacerbated by mitragynine” because a postmortem femoral blood mitragynine concentration of 150 ng/mL is within the range observed in a controlled administration study of a

single 53.2 mg dried kratom leaf powder dose administered to normal healthy volunteers who experienced no serious toxicity.

Sincerely,

Marilyn A. Huestis, Ph.D.

Professor Dr. Dr. (h.c.) Marilyn A. Huestis