Elizabeth A. Johnson, Ph.D.
Forensic Science Consultations
1534 N. Moorpark Road, No. 364
Thousand Oaks, CA 91360
Phone 805-553-0445

Supplemental Summary Report
State of California v. Paul Flores
J210971

June 18, 2022

This report is a supplemental report to one dated May 30, 2022. My qualifications are summarized in that report as well as in my cv.

Paul Flores is accused of murdering Kristin Smart, who disappeared in May, 1996, while both were students at California Polytechnic State University at San Luis Obispo. I have been retained by attorney Robert Sanger to assist in the case review of this matter regarding forensic biology issues

I have reviewed laboratory reports, notes and data of examinations and testing performed by Serological Research Institute (SERI) on items of physical evidence submitted to them in this case as well as various supporting laboratory documents including laboratory Standard Operating Procedures (SOPs) and validation studies.

This report contains a summary of opinion of Elizabeth A. Johnson, Ph.D. and is limited to the testing of a canvas mattress cover designated as item 11 by SERI. This mattress cover was allegedly collected from the dorm room that had been occupied by Paul Flores. The state intends to introduce evidence to connect Paul Flores and Kristen Smart to this mattress cover through DNA testing. In particular, the state seeks to connect Kristen Smart to a brownish stain designated 11A which tested presumptively positive for blood. The opinions provided in this summary report should not be considered all-inclusive since not every issue can be anticipated prior to cross-examination.

Findings from my review:

The DNA data from sample 11A is not probative and cannot be used to associate either Kristin Smart or Paul Flores with this mattress cover. The stain itself has not been confirmed to be blood and has not been established to be from a human body fluid.

Angela Butler from SERI examined a canvas mattress cover, SERI item 11, and noted the presence of "rust-like stains and gray stains". One small brownish stain, designated 11A, was located and was further tested with presumptive test chemicals for the presence of blood. The

results were positive, however a confirmatory test for blood was not performed and species testing was not performed. Sample 11A appears to be the only sample from the canvas mattress cover that was tested for the possible presence of blood. It was reported as "blood was indicated but not confirmed".

The DNA testing results SERI obtained on the brownish stain 11A was limited in data even with an extended injection time. The sample contained a relatively small amount of DNA, appeared to be degraded and showed signs of extensive allelic dropout. Several loci had no reportable results. It appears to have been originally interpreted as a mixture of two contributors based on allele count, but after uploading the data to a modeling program the number of contributors assigned was three. SERI ran the data for the samples they tested through a probabilistic genotyping program in order to generate a statistical value called a likelihood ratio (LR). This program was asked to interpret the observed mixture in 11A, assuming three contributors, and compare the reference profile of Paul Flores or Kristen Smart individually, not together, to determine if either could be a possible contributor to the observed DNA mixture.

The statistical program returned a LR value slightly above 1.0 for each comparison. An LR between 0.01 and 2 falls in the "uninformative" range according to SERI's protocols. Even SERI's report dated May 10, 2022 states that the LR for this sample does not provide sufficient support to either include or exclude Paul Flores or Kristen Smart as a contributor to this sample.

Additional considerations:

Ms. Butler portioned the canvas into grids for the purpose of swabbing each section that she designated 11B-11I. The location of stain 11A is shown to be within area 11D but is very close to section 11B.

SERI obtained interpretable results for samples 11C, D, F, I, G and H. Each of these samples consisted of DNA mixtures from three or four contributors. Both Paul Flores and Kristen Smart were excluded as a possible contributor to these DNA mixtures. SERI obtained results for areas 11B and 11E, but the mixture results were not given a statistical interpretation due to the number of DNA contributors exceeding the laboratory's interpretation limit of four contributors.

The majority of alleles that were detected in stain 11A were also detected in the swabbings from areas 11B and 11D, the two areas closest to the brownish stain 11A. Therefore, the DNA results reported for stain 11A cannot reliably be associated with the stain as opposed to the background DNA in nearby areas.

The results from stain 11A were the most limited of any of the samples tested from the canvas mattress cover. The less data the statistical program has available to consider the less probative the statistic usually is. It is possible that due to limited data, the LR returned for this sample was "uninformative" as opposed to "excluding" Paul Flores and Kristen Smart as was the result for all of the other interpreted samples from this item.

The statistical program must be told the number of contributors to a mixed sample, and that cannot always be reliably determined. The number designated will have an effect on the final LR generated for a sample.

The statistical program that SERI used also gives an estimate of the contributor proportions in a mixture. The program estimated that if Kristen Smart were a contributor to 11A, she would be present as the lowest order contributor. The program made the same finding if Paul Flores were a contributor to 11A. Still, the program found no support for the inclusion or exclusion of either, and the results are uninformative with respect to either being a DNA contributor to stain 11A.

The program makes assumptions about undetected alleles otherwise known as allelic dropout. In stain 11A a total of 14 autosomal loci returned reportable data. Alleles that Kristen Smart has were completely missing at 6 loci and partially missing at an additional 4 loci. *If* the DNA of Kristen Smart were present in stain 11A it would be at such a low level that it experienced extensive allelic dropout, and the DNA of unknown individuals is present in greater abundance. Alleles that Paul Flores has were completely missing at 5 loci and partially missing at an additional 5 loci. *If* the DNA of Paul Flores were present in stain 11A it would be at such a low level that it experienced extensive allelic dropout, and the DNA of unknown individuals is present in greater abundance.

Conclusion:

The DNA testing failed to establish an association of either Kristen Smart or Paul Flores with mattress cover 11.

Stain 11A was not confirmed to contain blood, and it was not tested for the presence of human blood. DNA results for sample 11A are uninformative. Considering the vast majority of alleles that are detected in the visibly stained area 11A are also present in the adjacent unstained areas 11D and 11B, the DNA that was detected in stain 11A cannot be assumed to be associated with blood or any bodily fluid that may be causing the visible stain.

Elizabeth A. Johnson, Ph.D.