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SUPERIOR COURT OF WASHINGTON FOR KING COUNTY

STATE OF WASHINGTON,

Plaintiff,

vs.

EMANUEL FAIR,

Defendant.

No. 10-1-09274-5 SEA

DECLARATION OF DR. GARY SHUTLER

I, Gary Shutler, hereby declare as follows:

1. I am over 18 years of age and I am competent to make this declaration.
2. I hold the following academic degrees: I graduated with a Ph.D. (Microbiology and Immunology) from the University of Ottawa, in 1993, a M.Sc. (Microbiology) from the University of Manitoba in 1977 and a B.Sc. (Honours) from the University of Manitoba in 1975.
3. Since May 2002, I have been employed as the DNA Technical Leader for the Washington State Patrol Crime Laboratory Division (W.S.P. C.L.D.). From May 1977 to May 2002 I was employed by the Royal Canadian Mounted Police (R.C.M.P.) in various postings. From October 1995 to May 2002 I was in charge of the Biology Section

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of the R.C.M.P. Forensic Laboratory in Winnipeg, Manitoba. From October 1992 to October 1995 I was a Molecular Genetics Specialist with the R.C.M.P. Central Forensic Laboratory in Ottawa.

4. As DNA Technical Leader, I manage the technical operations of the W.S.P. C.L.D. DNA laboratories. My core responsibility as DNA Technical Leader is to oversee the DNA laboratories compliance with the Quality Assurance Standards For Forensic DNA Testing. Compliance with these standards is mandatory to maintain accreditation with the American Association of Crime Laboratory Directors/Laboratory Accreditation Board and to be eligible as a participating laboratory in the FBI's National DNA Index System (i.e. the DNA databases). This includes oversight over validation studies, the introduction of new technology, the DNA STR Procedures, DNA Training and DNA Quality Assurance manuals. I am also a WSPCLD project manager for the National Institute of Justice (NIJ) grant awards including DNA Backlog Reduction and Postconviction DNA Testing.

5. I am a member of the DNA Technical Working Group (TWG) which advises NIJ on research needs and requirements for the forensic science practitioner community and reviews the current forensic science research projects funded by NIJ, and a past member of the Scientific Working Group in DNA Analysis Methods (SWGDM) which advises the FBI on the Quality Assurance Standards For Forensic DNA Testing. I am a fellow of the American Association of Forensic Science, a member of the International Society for Forensic Genetics, the Northwest Association of Forensic Scientists and the Canadian Society of Forensic Science. I am also a past member of the American Society of Human Genetics.

1 6. The WSPCLD currently uses well established methods for mixture interpretation and
2 statistics that can be explained using a standard mathematical approach (i.e. estimating
3 contributor proportions for deconvolution, Likelihood Ratios or LR's for results with no
4 drop out risk, and Random Match Probabilities or RMP's for Major contributors).

5 However, for more complex mixture interpretation we are moving towards probabilistic
6 genotyping software because the approach uses more information from the forensic DNA
7 typing profile, makes better use of the available information, and is a more powerful tool
8 for supporting the inclusion of true contributors and the exclusions of false contributors.

9 7. The training for and acquisition of probabilistic software is very costly. The WSPCLD
10 resources are limited to only maintaining current DNA typing service levels and recent
11 legislation to expand sexual assault kit DNA testing has increased that demand for
12 testing. Until additional funds and resources can be acquired, development of an in-house
13 probabilistic genotyping capability remains a future goal. As a first step, it was decided to
14 recommend probabilistic genotyping for important DNA profiles too complex for our
15 procedures. A contract was established with Cybergenetics for probabilistic genotyping
16 interpretation of complex mixtures. Cybergenetics successfully met the State's sole
17 source purchasing requirements of being the only vendor at that time which could
18 provide service to interpret complex DNA mixtures using probabilistic software for
19 forensic DNA analysis using an approach that has been accepted by courts at various
20 levels in the US and had successfully passed admissibility hearings meeting the Frye
21 standard.

22 8. I have attended several conferences where probabilistic genotyping has been discussed.
23 In September of 2012, Dr. Mike Coble, a Forensic Biologist from the Biochemical
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1 Science Division Applied Genetics at the National Institute of Standards and Technology
2 (NIST), presented an introduction of probabilistic genotyping using TrueAllele as the
3 example software. The program also included discussion on mixture interpretation results
4 from three WSPCLD provided complex mixtures obtained using Combined Probability
5 of Inclusion (CPI), Likelihood Ratio (LR), Random Match Probability (RMP) and
6 Probabilistic Genotyping using TrueAllele (TA). On November 21, 2013, at a DNA
7 Technical Leader Summit held by NIST and funded by NIJ, probabilistic genotyping was
8 presented to about 170 DNA Technical Leaders from across the country as the way
9 towards improving mixture interpretations. At the University of Washington Summer
10 Institute Forensic Genetics Module July 7-9, 2014, organized by Dr. Bruce Weir,
11 probabilistic genotyping software was identified as the way forward for mixture
12 interpretation. I have surveyed much of the literature on probabilistic genotyping as
13 additional preparation for eventually bringing the service in-house and have not seen a
14 validation plan that includes an analysis of the source code as a requirement.

- 15 9. Other processes with software in use at the WSPCLD such as the ThermoFisher/Life
16 Technologies/Applied Biosystems GeneMapper IDX program for interpreting DNA
17 profiles, FBI CODIS Popstats program for calculating probabilities and the SDS System
18 program plus the Plexor-Forensics program for DNA quantitation with the
19 ThermoFisher/Life Technologies/Applied Biosystems 7500 Real-Time PCR System
20 instrument have underlying source code. These technologies have all been validated by
21 my lab and labs all around the country. I have not reviewed the underlying source code
22 on any of these technologies and I have never considered it necessary to review the
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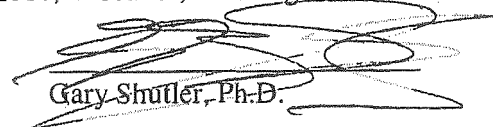
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source code to establish validation. Review of source code for forensic science technology is not generally accepted as a practice in the scientific community.

10. Guidelines for Validation of Probabilistic Genotyping Systems were approved by SWGDAM on June 15, 2015. These guidelines essentially recommend a performance based approach for validating probabilistic software and do not mention anything about looking at the source code of the program. There are published validation studies for the TrueAllele software. I am aware that the Virginia Department of Forensic Science has validated TrueAllele software and uses it for their casework.

Under penalty of perjury under the laws of the State of Washington, I certify that the foregoing is true and correct to the best of my knowledge and belief.

Signed and dated by me this 31st day of March, 2016, at Seattle, Washington.



Gary Shutler, Ph.D.