

Midwestern Association of Forensic Scientists Response to PCAST Report- December 12th, 2016

The President's Council of Advisors on Science and Technology (PCAST) has issued a Report to the President on Forensic Science in Criminal Courts: Ensuring Scientific Validity of Feature-Comparison Methods, hereinafter referred to as PCAST Report. The PCAST report broadly defines Forensic Science, but quickly characterizes its goal to help close gaps "for the case of forensic 'feature-comparison' methods" and chooses to narrowly focus mainly on six forensic disciplines, (1) DNA analysis of single-source and simple-mixture samples, (2) DNA analysis of complex-mixture samples, (3) bite-marks, (4) latent fingerprints, (5) firearms identification, and (6) footwear analysis.

The Midwestern Association of Forensic Scientists (MAFS) would like to first acknowledge that the PCAST report makes some very good points that should be commended. Among many of the reports suggestions to the forensic science and legal communities are to strengthen "foundational validity", strengthen the measurement of uncertainty in conclusions, increase clarity in testimony, avoid scientifically indefensible claims, abate contextual bias and eliminate conformational bias. These suggestions are noteworthy and common goals of not only MAFS, but we would posit, all Forensic Scientists.

Where we believe the report fell short is to first not recognize the valuable contribution forensic science has provided to the criminal justice system. Many lives have been saved and victims vindicated by the work forensic scientists do every day. Secondly, as with any scientific profession we recognize that our science can always be improved, but for PCAST to broadly characterize it as lacking foundational or scientific validity is capricious. PCAST might not agree with the approach of much of the foundational research, but that does not discount that a considerable amount of research has been completed in each one of the disciplines targeted by this report.

More specifically, with regard to scientific research methods and validity, the PCAST report is replete with suggestions and assertions that "evaluations of validity and reliability must therefore be based on 'black-box studies'. Where we agree that black box studies can be useful or perhaps even essential, they certainly are not the only scientific way to ensure validity and reliability.

With regard to Proficiency testing, again MAFS would agree that proficiency testing can be improved and perhaps be more rigorous. While we can tacitly agree with the statement that "the only way to establish scientifically that an examiner is capable of applying a foundationally valid method is through appropriate empirical testing to measure how often the examiner gets the correct answer" we would disagree with the statement that "Such empirical testing is often referred to as 'proficiency testing'". MAFS does understand that PCAST and the Forensic Community may have differing opinions on the definition of Proficiency Test; however empirical testing is commonly known in the sciences as originating in or based on observation or experience and it is our opinion that the PCAST report is too quick to discount experience. Empirical testing of an examiner's abilities should be defined to include training exercises, mock cases, competency tests, validation studies, and case work experience, in addition to proficiency testing. These are all components of training and case work that are continually performed in forensic laboratories. Experience and daily observation should not be discounted since the accumulation of training, testing and experience adds to the empirical knowledge of our particular discipline. Medical Doctors are not "proficiency tested" in their ability to diagnose the common cold, or even cancer; instead they rely on their experience and training. Moreover, where PCAST suggests "a forensic examiner's 'experience' from extensive casework is not informative—because the 'right answers' are not typically known'", we would posit that when a physician diagnoses the common cold, the right answer is "not known" either but he or she is relying heavily on experience (as well as other factors, seasonal, etc.).

MAFS strongly disagrees with the characterization that the "forensic community prefers that tests not be too challenging". This is an assertion based on one comment, and an opinion at that, by one president, from one test provider. This report is fraught with rhetoric about rigorous research, reproducibility, repeatability, etc. and it appears contradictory and careless to make such a hyperbolic statement based upon one person's opinion.

Regarding funding, we again agree with the PCAST report that in order to move forward with their suggestions to strengthen the science, more funding is needed; however, we disagree with their specific recommendations. PCAST recommends \$4 million to support efforts to make methods "established as foundationally valid" which is predominately what the entire report is about; on this we marginally agree; however, then PCAST recommends "\$10 million to support increased research activities in forensic science, including on complex DNA mixtures, latent fingerprints, voice/speaker recognition, and face/iris biometrics." With all due respect to the DNA community, a considerable amount of funding is already available through the current DNA Capacity Enhancement and Backlog Reduction (CEBR) Program. Perhaps the more egregious recommendation regarding funding is that of voice/speaker recognition, and face/iris biometrics. We find it puzzling to suggest funding for voice/speaker recognition, and face/iris biometrics when neither technology is mentioned as a concern in this report. We assert that the funding should go to research in the forensic science disciplines that are in fact the cause of the concern.

Lastly, with regard to many of the recommendations, for example establishing foundational validity and proficiency testing, PCAST recommends the involvement of independent scientists without direct forensic science experience or as stated in the report "which has no stake in the outcome". Where we would welcome more involvement from the academic community, statisticians, etc. and believe their involvement can only strengthen our science, we all know that science is about collaboration, discussion and debate. To not include practitioners in the discussion would be irresponsible.

Although we may disagree on many points that the PCAST report makes, the Midwestern Association of Forensic Scientists would like to thank PCAST for its work. We understand that the undertaking was immense and that we are not always going to agree, but we do stand united and ready to strengthen our science whenever and wherever the opportunity arises.