

Authors' Response

Sir:

Krane et al. (1) in general appear to support the opinions outlined in the paper by Budowle et al. (2) on issues of bias (as well as other issues) which fosters continued community-wide discussion on such issues. However, the authors express disappointment that Budowle et al. (2) did not have greater enthusiasm for their proposed sequential unmasking concept. I still support what was stated that it is not easy to reconcile where to draw the line on what should be disclosed and that placing disclosure control with one individual is not productive. However, I also am glad to read that Krane et al. (1) are not so draconian in their view about addressing bias.

Krane et al. (1) criticize Budowle et al. (2) for their opinion that bias impacting forensic casework outcomes "is not a serious pervasive concern." The experience of Budowle et al. (2), which is based on extensive community interaction and substantial casework review, tends to support such a position. But I agree that Budowle et al. (2) did not quantify the experience as it is not readily quantifiable; it was stated as a belief of the authors. But Budowle et al. (2) did not profess to quantify it and called for such data to be collected and documented. As an example of part of the data to collect, in the immediate following sentences Budowle et al. (2) say "The forensic science community should consider documenting the numbers of 'inclusions,' 'exclusions,' and 'inconclusives' (or whatever terms are used for the comparison process) of their laboratory results. Such data, if it were to be published, would likely support the proposition that forensic scientists are not overly biased and do provide substantial testing that can benefit either accused individuals or the government." More importantly, Budowle et al. (2) do not dismiss the concern about bias and state that it should be recognized (as there are examples of bias problems), discussed, and addressed.

However, Krane et al. (1) practice what they criticize; they make unsubstantiated statements that are not quantifiable and are biased (and do not call for it to be quantified as did Budowle et al. [2]). For example, Krane et al. (1) state "several of us review work from forensic laboratories on a daily basis and have had occasion to observe first hand the workings of forensic laboratories nationally and internationally. In our experience, the opportunity for, and the realization of, subconscious bias is more pervasive and insidious than Budowle et al. seem to believe." Krane et al. (1) do not offer any statistics on what an "occasion to observe" constitutes and in what percentage of cases they have such concerns. They do not provide any insight into the number and type of cases where bias resulted in a false inclusion. Krane et al. (1) also do not consider that they likely are observing a biased sampling of cases and that some of them have taken on advocacy roles in the adversary system which may lead to their concerns to be overstated. Indeed, they soften their hyperbole by stating "Additionally, even if bias substantively affects only a small subset of forensic case outcomes, the issue still merits serious concern." In that bias can impact negatively on interpretation even in a small number of cases, I do support that we all need to be ever vigilant to guard against such proclivities.

Krane et al. (1) state "Budowle et al. suggest that 'The best way to overcome and prevent potential biases in judgment is through peer review,' specifically 'blind verification' as a favorable

alternative to proactively minimizing the risk of inadvertent error by implementing sequential unmasking type protocols. First, the term "peer review" properly applies to a specific process through which a manuscript submitted for publication in a professional journal is anonymously reviewed by several individuals in the same field to determine its suitability for publication. Co-opting this term as a synonym for the internal technical review performed in a forensic laboratory is inappropriate and misleading. It implies greater weight and authority to an internal technical review than is merited, conferring upon it a false sense of autonomy and independence."

Krane et al. (1) take the Budowle et al. (2) support for the peer review process out of context and have ignored other parts of the process that were advocated. Budowle et al. (2) stated "The best way to overcome and prevent potential biases in judgment is through peer review. Blind verification is a form of internal peer review that can reduce the chance of error and is complementary to the external review that is inherent in the adversarial legal system." While "peer review" is used to discuss submitted manuscripts, it is more broadly defined as a mechanism to "evaluate professionally a colleague's work" (<http://www.wordnetweb.princeton.edu/perl/webwn>). Thus, Budowle et al.'s use of peer review is consistent with this concept. Moreover, Budowle et al. (2) advocated a two-pronged approach that includes both internal and external review, in the latter of which several authors of Krane et al. (1) have been involved. Clearly, the use of peer review is not being supported to convey greater weight. I am not sure how this conveys a false sense of autonomy and independence, when the recommendation supports review both internally and externally. Perhaps, the biases of Krane et al. may have some impact in their interpretation of the Budowle et al. (2) paper.

Indeed, bias is a problem. It can be inadvertently inserted directly into protocols (3) and thus become part of the laboratory infrastructure (4). I am not convinced that even the structured sequential unmasking process that Krane et al. (1) advocate would address this manifestation of bias. For example, some current pervasive practices of low copy number typing which reverse condition on the suspect's allelic profile are serious examples of bias. Yet, little is known about this misuse regarding low copy number typing (4,5). The community should be concerned and made aware.

So where do we go from here? We all need to recognize that bias exists and it needs to be addressed effectively. I strongly urge Krane et al. to lead the way by practicing what they preach. I have reviewed cases and presentations of which some of the authors of the Krane et al. (1) letter have been involved, and there are clearly examples of advocacy by them (such as calling peaks as alleles well below laboratory-established thresholds for detection and interpretation). More so, in cases of which I have intimate knowledge, none of the Krane et al. authors have instituted (and/or documented) anything similar to the sequential unmasking procedure they advocate. In fact, the approach they suggest would be impractical to implement following the reporting of original laboratory results, where all information in a case would be available to them initially. In my experience it is rare that they advocate re-testing to resolve whether or not an error of false inclusion has occurred in a specific case (as recommended by the National Research Council Report [6]), but instead overwhelmingly adhere to solely reviewing case notes. It leaves one to ask the question "How do Krane et al. protect against the inherent biases that they harbor?"

In conclusion, we should all try to reduce bias that impacts negatively on the quality of casework interpretation. My fear is that as long as scientists take advocacy roles in the adversary setting, little will be resolved. As stated by Budowle et al. (2) “the courtroom can pervert the evaluation of science.” It is time to move forward constructively.

References

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