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To whom it may concern:

I Bruce Budowle have prepared the following report upon request of Theodore Simon, Carlo Dalla Vedova, and Maria Del Grosso regarding the use and interpretation of DNA typing results obtained from a knife (item 28669-01-036) that was evidence in the case of Amanda Knox. I base my opinion and findings on my years of experience in the field of forensic human DNA analyses, presumptive test results, the electropherograms of DNA profiles (which provide some indication of the quantities of DNA obtained from the evidence), photographs of the knife, and general case information that has been translated into English. I have assumed that the information provided is accurate. However, I note and understand that the prosecution did not provide the standard operating procedures or the standard protocols, nor did the prosecution provide the sample handling protocols in the crime laboratory that performed the analyses, and the specific handling of samples in this case.

I am Executive Director of the Institute of Investigative Genetics, Vice Chair and Professor in the Department of Forensic and Investigative Genetics, University of North Texas Health Science Center at Fort Worth Texas. Prior to these appointments I was employed for 26 years at the Federal Bureau of Investigation's Laboratory Division where I was involved in the research, development, and validation of numerous DNA methods. I ended my tenure at the FBI in 2009 as the Senior Scientist in the Laboratory Division. I have extensive experience in all aspects of forensic DNA analyses including analyses of low level samples, mixture analyses, population genetics, statistical interpretations, and numerous genetic marker systems. My qualifications are summarized in my resume (see attached).

Over my career I have been an advocate of the use of DNA technology, interpretation and statistical analyses and have testified in well over 200 cases predominately in the United States, but also in Canada, Australia and the United Kingdom. I have published more than 480 scientific articles and given more than 500 scientific presentations describing the development, validation, application and interpretation of most of the forensic DNA technologies that have been used over the past 20+ years.

I have reviewed some of the evidence that is related particularly to the conviction of Amanda Knox and would like to express my concern that the findings are over-weighted. Caution should

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be taken regarding placing significance on the DNA found on the knife (item 28669-01-036) and suggestions that this is indicative of Knox's committing a murder. First, sample B from the handle of the knife yielded a negative result for the presumptive test for human blood known as tetramethyl benzidine (TMB). This test is extremely sensitive. Reports in the scientific literature show that blood can be diluted 1,000,000 times and the test can still detect the presence of blood. Given the peak heights in the electropherogram for sample B, I estimate that if the sample did derive from blood (and assuming no degradation occurred and all the sample was consumed for DNA analysis) approximately one hundredth to two hundredth of a microliter of blood could have yielded the DNA from sample B. The knife was collected only 12 days after the crime was committed and given the sensitivity of detection of TMB and the stability of hemoglobin in blood, it is peculiar and difficult to reconcile that the TMB was negative. The amount of blood that would have been present if the DNA was from blood should have been sufficient to yield a positive result. This raises some concerns that should have been considered. There are very plausible alternate explanations for the presence of DNA consistent with that of Kercher (the victim). I understand that it was suggested that the knife may have been washed and that is why the presumptive test was negative. However, it would seem extremely unlikely to have been able to wash away all traces of hemoglobin and preferentially left behind solely DNA. An alternate explanation is that DNA from sample B does not derive from blood. It is to be expected that people who frequent or habitate in areas will leave their DNA on items in that environment. A person's DNA will be found on his/her items in his/her home, place of work, and other places. That DNA also can be picked up by others and passed on to other items. This process is known as secondary and tertiary transfer and is well-established in the scientific literature. In my opinion, the material that is transferred can be from epithelial cells from skin, but a more likely material is saliva (which is rich in DNA). Thus, the negative result from the TMB test could be interpreted as being consistent with the DNA source not being blood but from another body tissue. Since there was routine contact between those who lived in both apartments, and items were moved back and forth between apartments it is expected that DNA would be transferred as well. Therefore, DNA consistent with Kercher could have been easily transferred onto the knife by secondary and/or tertiary transfer by any number of individuals or objects.

Because of this issue of routine handling of items and deposition of DNA a more prudent practice would have been to test several knives in the drawer where item 28669-01-036 was found. In essence a background DNA investigation should have occurred. If any other knives had yielded human DNA profiles and were negative for the TMB test, then the findings from item 28669-01-036 would have been dismissed as insignificant. The findings would have been

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entirely irrelevant if an evidence DNA profile consistent with that of Kercher was observed on another knife in the kitchen drawer in the apartment of Sollecito. Clearly, a better, more responsible approach would have been to collect other knives and test them. The fact that this was not done and the results were TMB negative casts a pall over any reasonable inference that the DNA evidence supports that the knife was used in committing the murder of Kercher.

Lastly, it was conveyed to me that there was a scratch on the blade of the knife in question and that was the area that the forensic analyst swabbed because a biological sample may have been concentrated in the scratch. I do not question this action and support the approach. However, it is strange that the same concept was not applied to the knife handle. There is a seam on the handle which would approximate the physical nature of a scratch. DNA could have been equally concentrated in the handle seam. The forensic analyst should have followed the same protocol. The handle seam was an opportune site to see if any blood and/or DNA of Meredith Kercher was present. The failure to properly test the handle seam casts additional and significant doubt as to the conclusions of the prosecution.

In conclusion, the data derived, lack of collection of proper evidence, and the well-known concept of secondary and tertiary transfer cast doubt on the value of any indications of the knife in question being the weapon used in the murder of Kercher.

Sincerely yours,

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