Probabilistic Genotyping: Undoing Wrongful Convictions
Greg Hampikian and Gianluca Peri
Boise State University

More than 350 wrongfully convicted people have been freed through DNA analysis. Until recently most of those cases involved testing evidence that had not undergone previous DNA analysis. This talk will describe recent cases where the authors have used probabilistic genotyping, expanded Y-STR testing, and SNP analysis to reexamine DNA evidence and change previous conclusions, providing exonerating evidence. The authors will highlight past and current forensic practices that can lead to wrongful convictions, and show how reanalysis can overturn these wrongful convictions.

   The first use of probabilistic genotyping to overturn wrongful convictions was the exoneration of Darryl Pinkins and Roosevelt Glenn in 2016. This was a case the authors worked on for 10 years with Frances Watson (Wrongful Conviction Clinic, Indiana University Robert H. McKinney School of Law). In 2016, Dr. Mark Perlin using TrueAllele software analysis was able to completely exclude Pinkins and Glenn from the semen evidence in a multiple perpetrator sexual assault. Both men were cleared of the crime after 23 years, and the case received international press attention including an episode of the "48 Hours" television show.

   Since 2016, the authors have been funded by a DOJ Bloodsworth Grant to use probabilistic genotyping (TrueAllele) and other DNA analysis methods to help free the wrongfully convicted. They have helped overturn 3 convictions (a 4th expected soon). Working with the Montana Innocence Project, the authors helped exonerate two men in 2018 who were convicted of murder and had each served more than two decades in prison. In that case, new DNA analysis has led police to investigate a man who is already serving time for a similar crime.

   The authors will also discuss the importance of separating evidence and reference samples, of photographing all serology and microscopy results, and avoiding potentially misleading jargon such as "sperm fraction," and "very weak positive" without clear documentary evidence.