



# YALE NATIONAL INITIATIVE

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Curriculum Units by Fellows of the National Initiative  
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## **DNA in Forensic Science: genetic engineering applications in forensics**

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The TV shows CSI, House, and Elementary dramatize the forensic analyst. In watching forensic scientists at work, we believe, "I too can be Sherlock Holmes." However many of us do not have Sherlock's deduction skills and must rely on the study of genetics, forensics, and biotechnology to solve real world cases. "DNA" is used in everyday language but few understand the elegance of its construct or power to reveal our internal machinery. Students at Mt. Pleasant High School struggle with connecting science to the real world. They do not connect DNA structure, DNA replication, and protein synthesis to genetic engineering, biotechnology or medicine applications. My unit is written to help students make real-world applications of science tangible and address Common Core State Standards. Students will understand DNA structure, restriction enzymes, DNA purification, DNA amplification through PCR (polymerase chain reaction), and separation through gel electrophoresis in a mock-crime case setting. Students will be assessed through laboratory writings and a final essay which summarizes their findings and conclusions. Finally, students' ability to articulate their overall understanding of DNA use in forensics will be assessed in mock-trial setting. This unit can be adapted for high school Biology courses but intended for forensic science.

Grade Level: 11<sup>th</sup> -12<sup>th</sup> grade Forensic Science

(Developed for Forensic Science/Science, grades 11-12; recommended for Forensic Science/Science, grades 9-12, and Biology/Science, grade 9)

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