

# Using the Virtual World Second Life for a Polymerase Chain Reaction Laboratory Simulation

DONALD LEHMAN

## ABSTRACT

With the growing emphasis on molecular biology assays in medical science, it is critical that students learn the principles and procedures of these assays. However, teaching these methods in a hands-on laboratory can be cost-prohibitive. In forensic science, DNA profiling uses the polymerase chain reaction of short tandem repeats. A laboratory simulation was developed to introduce students in an introductory forensic science course, many of whom do not have a strong science background, to this relatively complex topic. The free, online virtual site Second Life was used to simulate a laboratory environment. Students represent themselves with avatars and work in teams to complete the DNA analysis. In the simulation, students interact with laboratory instruments and answer questions about the procedures. For example, they must know what solutions

to use and their correct volumes, which instruments to use, and what parameters to use on the instruments. After successfully completing the simulation, students receive results that they must analyze in a written report. In course evaluations, students found the simulation helpful. Most students (34 of 54 [63%]) responded agree or strongly agree to the statement: "After participating in the Second Life crime scene assignment, I increased my knowledge about how to correctly implement the laboratory procedure to conduct a DNA profile on a blood sample." The Second Life laboratory simulation is an effective method to introduce students to the polymerase chain reaction and could be adapted to other complex assays that require expensive instrumentation.

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**Donald Lehman**, University of Delaware

**Address for Correspondence:** Donald Lehman, University of Delaware, [dlehman@udel.edu](mailto:dlehman@udel.edu)