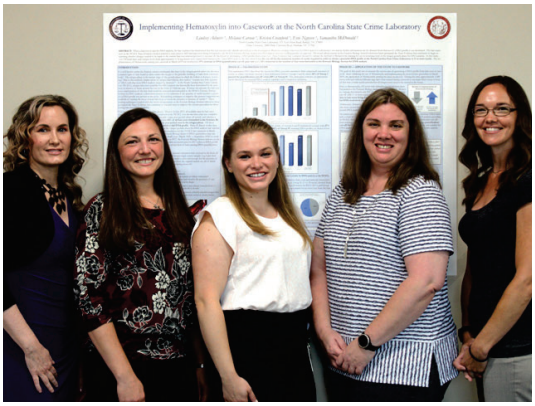
Efficiency and Innovation



(From left) *Tricia Daniels, Kristen Crawford, Evie Nguyen, Lindsey Admire and Melanie Carson*

STATE CRIME LAB GROUP AWARD

Department of Justice, DNA and Trace Evidence Sections

Five forensic scientists in the DNA and Trace Evidence sections of the State Crime Laboratory within the Department of Justice changed the future of crime scene investigations through their work. Lindsey Admire, Melanie Carson, Kristen Crawford, Tricia Daniels and Evie Nguyen went above and beyond their job duties by innovating the way DNA profiles can be obtained through forensic analysis of hair root samples.

Historically, the process of determining hair root DNA suitability by the presence or absence of root tissue has been largely ineffective in obtaining a DNA profile. The team of forensic scientists conducted an internal study and found that using hematoxylin, a common dye for nuclear staining, to stain hair roots had significant impacts on the DNA extraction process.

The results revealed a 37 percent increase in roots passing the DNA qualification cut-off. Through this methodology, only roots with the best potential to develop a DNA profile are sent for testing, thereby decreasing DNA caseload, cost and time of analysis. Hematoxylin staining also preserves hairs not meeting the passing threshold for future examinations. Because of the team's work, hematoxylin was incorporated into casework at the State Crime Laboratory in March 2019.

The use of hematoxylin has not only improved DNA casework efficiency in terms of time and cost of analysis but has allowed examiners to be more selective in the roots submitted for DNA analysis. Implementing hematoxylin has increased the success rates of the hair root samples tested while ensuring nonviable hair roots are preserved for future analyses as technology advances.

Lindsey Admire, Melanie Carson, Kristen Crawford, Tricia Daniels and Evie Nguyen have reshaped crime investigations in North Carolina and beyond. Their work will lead to more crimes being solved correctly and efficiently, with more criminals being brought to justice. The State of North Carolina thanks them for helping make North Carolina a leader in forensic analysis.