## B108 Validation of SE33: A DNA-Based Screening Method

*Carol J. Ritter, MS*, Lawrence Quarino, PhD, Kristen Johnson, BS*, Jennifer Sears*, Robin Shick*, and Katherine Henkelman*, Cedar Crest College, 100 College Drive, Allentown, PA 18104*

Attendees will learn of a single STR locus, SE33, that can be used as a DNA-based screening method for heavily bloodstained evidence.

A single STR locus such as SE33 can be used to screen heavily bloodstained evidence thus greatly reducing the number of samples requiring a full 16 loci profile. This presentation will impact the forensic community and/or humanity by providing a faster and more cost effective method for forensic laboratories.

Forensic laboratories typically identify biological fluids and then, if warranted, the analyst performs DNA analysis to generate a 16 loci genetic marker profile. In most cases this is the most efficient way of processing the case; however, in cases where a large amount of bloodshed has occurred it is time consuming, costly, and it may not be necessary to generate a full 16 loci profile for every stain. In these types of cases it is often necessary to test numerous stains to find the one most probative stain for DNA testing. A faster and more cost effective method would be to screen heavily bloodstained evidence with a single DNA locus to determine if the stain is probative and warrants the full 16 loci testing. HUMACTBP2 (SE33) located on chromosome 5 or 6 is a highly polymorphic STR locus (AAAG repeat sequence) with 32 alleles in the range of 202-323 bp and is one of the loci included in the European STR database, EDNAP. SE33 has numerous microvariants; therefore, it is crucial to fine tune the procedure with regards to the proper gel concentration needed to allow the 1-bp separations. In this study SE33 (Promega's kit) was extensively validated utilizing the ABI 377 and ABI 310 instrumentation. One hundred buccal swabs were collected and extracted with Chelex, quantitated with QuantiBlot, amplified on an ABI 2700 using 10/20 cycles, and separated on the 377 and 310. This validation included reproducibility/precision, sensitivity, mixture studies, past proficiency samples, and environmental studies. The reproducibility portion of the validation consisted of within-gel and between-gel analysis. The sensitivity study included several sets of samples in the range of 0.03125ng to 5ng. The SE33 types obtained from samples in five proficiency tests were compared to results obtained on the FMBIO II. The mixture study included several mixtures with the following ratios: 1:0, 1:1, 1:2, 1:4, 1:9, and 1:19. In the environmental study ten different blood samples were applied to five substrates (denim, leather, silk, cotton, polyester blend) and exposed to a full year, including rain and snow, of northeastern Pennsylvania weather. The results presented will include the finetuned procedure and a comparison of samples analyzed on the 377 and 310. Future work in this validation will include analysis of samples from nonprobative/no analysis casework. The SE33 types obtained from the samples used in this validation will also be verified at a different laboratory.

**SE33, HUMACTBP2, DNA**

 ** Presenting Author*