Evaluation of methods for determining secretor status from different specimen types

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Background
Secretor status describes the secretion of human blood group antigens (HBGAs) in bodily fluids and intestinal mucosa. Various methods are available for determining secretor status, which detect FUT2 alleles or HBGA products. Recent studies on secretor status and disease susceptibility show conflicting results, possibly attributable to method choice.

Methods
Two common methods were evaluated for determining secretor status: a) real-time PCR detection of a prevalent SNP involved in non-secretor phenotypes (G428A) from dried blood spots or buccal swabs, and b) ELISA assay for detection of the phenotypic presence of UEA-I Lectin and ABO/Lewis antigens (HBGA secretions) in saliva specimens. Two cohorts were utilised. The first cohort were children ≤2 years of age attending a crèche in Soweto. With parental consent, non-invasive specimens (saliva, buccal swabs and stool) were collected. The second cohort were adult volunteers; dried blood spot, saliva, and buccal swab specimens were collected.

Results
Preliminary results indicate that results from PCR and ELISA methods are mostly concordant. In the child cohort (n=8), 6 secretors and 2 non-secretors were observed with concordant ELISA (phenotype) and PCR (genotype) results. In the adult cohort (n=14), all but two results were concordant; for the two discordant results, UEA-I Lectin was not detected (indicating a non-secretor phenotype), but PCR results classified them as secretors, detecting functional FUT2 gene(s). These volunteers were both of Indian descent, which suggests the presence of a SNP at another location in the FUT2 gene. Further sequencing will be performed to confirm this finding.

Conclusions
Preliminary results indicate that ELISA methods are effective for detection of HBGA products in saliva, and can be used to determine secretor status phenotypes. Studies suggest that genotypes and phenotypes in young children may differ, as gene expression and HBGA production are developmentally regulated. However, results from this pilot study are not indicative of this, and further testing will be done to further elucidate this.