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**Abstract Title::** Variability in Von Willebrand Factor (VWF) Glycan Profile in a Racially Diverse Healthy Control Population

**Abstract: 500 word max:** Background: Glycosylation accounts for ~20% of VWF's mass and influences VWF structure, function, and clearance. While detailed glycan analysis has been reported for pooled VWF from healthy donors, VWF glycan variation in individual healthy controls has not been studied.

Aims: To determine VWF glycan variation in racially diverse healthy controls.

Methods: A novel, high-throughput fluid phase lectin-binding assay for VWF glycan detection was developed that eliminates the high background signal observed for many lectins in traditional plate-based assays. A panel of 16 lectins recognizing specific glycan structures (eg. sialic acid, fucose, galactose, mannose, GalNAc, GlcNAc) was optimized. Plasma samples from 291 healthy controls (Caucasian, African American, Asian) recruited through the Zimmerman Program were analyzed to determine reference intervals and any sex, age, blood group, and race-related differences in VWF glycan profile.

Results: VWF from male subjects had slightly lower VWF:Ag with marginally increased sialic acid (lectin MAL1) and mannose (NPL) than female controls, though other VWF structures were similar. While age group had little influence on the majority of VWF glycan structures, minor increases in mannose (NPL) and GalNac (SBA) were observed in those >55 years. Not unexpectedly, differences in VWF glycan structures were observed between blood groups. However, variances were noted for nearly all lectins, many of which have no blood group specificity. In addition, many differences in VWF glycan structures were observed between Caucasians, African Americans, and Asians including galactose, GalNAc, GlcNAc, sialic acid, and mannose binding lectins (ECA, MALI, PHA-E, SBA, WGA, SNA, MALII, and NPL). These differences may potentially be related to differences in VWF:Ag levels observed between races (African American > Caucasian > Asian).

Conclusions: Using our novel VWF lectin binding assay we demonstrate variability in VWF glycan structures in individual healthy controls. Differences in VWF glycan structure are related to age, sex, blood group, and race.