



## Laurel Stell

Research Engineer, Biomedical Data Science

### Bio

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#### BIO

Extensive experience in statistical modelling, inference, and multiple hypothesis testing for a wide variety of data types, including genetic and clinical. Before I started working as a biostatistician at Stanford in 2013, I was an applied mathematician conducting research in a wide variety of fields, from hunting submarines to designing the "highway system" for air traffic.

#### CURRENT ROLE AT STANFORD

Investigating non-glycemic genetic effects on HbA1c using the Veterans Administration Million Veteran Program (MVP). HbA1c is a widely used test that reflects average blood sugar level for the past two to three months. It is well known that certain genetic blood conditions, such as sickle cell disease, can cause HbA1c to be a misleading indicator of blood glucose levels. I am investigating the extent to which genetic variants can have this effect even without a diagnosis of one of these conditions. I am also investigating whether these effects are impacting clinical diagnosis and treatment of diabetes, and whether such impacts are reflected in health outcomes.

The impact of these variants has potentially been overlooked because they are very rare in populations with European genetic ancestry. As with the variant for sickle cell disease, they only persist when they provide an evolutionary advantage, such as protecting against malaria infection and its symptoms. Consequently, the genetic variants that I am analyzing do not appear in most genetic biobanks frequently enough to enable my analyses. MVP, however, includes genetic data for over 100,000 Veterans with African genetic ancestry, making it an ideal resource for this research. Since these variants are common among individuals with African genetic ancestry but practically non-existent in European genetic ancestry, this research may provide insight into racial health disparities in the US, particularly in T2D prevalence and outcomes.

I've also been a member of the department's JEDI Committee since its inception in 2021, providing assistance wherever I can.

#### EDUCATION AND CERTIFICATIONS

- MS, Stanford University , Statistics (2014)
- MS & PhD, Cornell University , Applied Mathematics (1993)
- BS, New Mexico Institute of Mining & Technology , Mathematics (1985)

### Publications

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#### PUBLICATIONS

- Plasma proteomic signatures of a direct measure of insulin sensitivity in two population cohorts. *Diabetologia*

- Zanetti, D., Stell, L., Gustafsson, S., Abbasi, F., Tsao, P. S., Knowles, J. W., Zethelius, B., Ärnlov, J., Balkau, B., Walker, M., Lazzeroni, L. C., Lind, L., Petrie, et al  
2023
- **Referral patterns for infantile cataracts in two regions of the United States.** *Journal of AAPOS : the official publication of the American Association for Pediatric Ophthalmology and Strabismus*  
Huang, L. C., Kumar, P., Fredrick, D. R., Alcorn, D. M., Koo, E. B., Stell, L., Lambert, S. R.  
1800
  - **Implicit Bias and the Association of Redaction of Identifiers With Residency Application Screening Scores.** *JAMA ophthalmology*  
Pershing, S., Stell, L., Fisher, A. C., Goldberg, J. L.  
2021
  - **Immunoprofiling of Nonarteritic Anterior Ischemic Optic Neuropathy.** *Translational vision science & technology*  
Mesentier-Louro, L. A., Stell, L., Yan, Y., Montague, A. A., de Jesus Perez, V., Liao, Y. J.  
2021; 10 (8): 17
  - **Topographic Quadrant Analysis of Peripapillary Superficial Microvasculature in Optic Disc Drusen** *FRONTIERS IN NEUROLOGY*  
Yan, Y., Zhou, X., Chu, Z., Stell, L., Shariati, M., Wang, R. K., Liao, Y.  
2021; 12: 666359
  - **Hypoxia-induced inflammation: Profiling the first 24-hour posthypoxic plasma and central nervous system changes.** *PloS one*  
Mesentier-Louro, L. A., Rangel, B. n., Stell, L. n., Shariati, M. A., Dalal, R. n., Nathan, A. n., Yuan, K. n., de Jesus Perez, V. n., Liao, Y. J.  
2021; 16 (3): e0246681
  - **Phase 1b randomized controlled study of short course topical recombinant human nerve growth factor (rhNGF) for neuroenhancement in glaucoma: safety, tolerability and efficacy measure outcomes.** *American journal of ophthalmology*  
Gala, B., Laurel, S., Sohail, H. M., Mariana, N., Lilia, P., Bac T, N., Sylvia L, G., Amy, D., Zhongqiu, L., Melissa, A., Tom, K., Sophia Y, W., Robert, et al  
2021
  - **Corneal Light Scatter After Ultrathin Descemet Stripping Automated Endothelial Keratoplasty Versus Descemet Membrane Endothelial Keratoplasty in Descemet Endothelial Thickness Comparison Trial: A Randomized Controlled Trial.** *Cornea*  
Hirabayashi, K. E., Chamberlain, W., Rose-Nussbaumer, J., Austin, A., Stell, L., Lin, C. C.  
2020
  - **Vision loss in optic disc drusen correlates with increased macular vessel diameter and flux and reduced peripapillary vascular density.** *American journal of ophthalmology*  
Yan, Y. n., Zhou, X. n., Chu, Z. n., Stell, L. n., Shariati, M. A., Wang, R. K., Liao, Y. J.  
2020
  - **Exome sequencing of Finnish isolates enhances rare-variant association power.** *Nature*  
Locke, A. E., Steinberg, K. M., Chiang, C. W., Service, S. K., Havulinna, A. S., Stell, L., Pirinen, M., Abel, H. J., Chiang, C. C., Fulton, R. S., Jackson, A. U., Kang, C. J., Kanchi, et al  
2019
  - **Multiregion Quantification of Extracellular Signal-regulated Kinase Activity in Renal Cell Carcinoma.** *European urology oncology*  
Hoerner, C. R., Massoudi, R., Metzner, T. J., Stell, L., O'Rourke, J. J., Kong, C. S., Liliental, J. E., Brooks, J. D., Sabatti, C., Leppert, J. T., Fan, A. C.  
2018
  - **Exposure to NO<sub>2</sub>, CO, and PM<sub>2.5</sub> is linked to regional DNA methylation differences in asthma** *CLINICAL EPIGENETICS*  
Prunicki, M., Stell, L., Dinakarparndian, D., de Planell-Saguer, M., Lucas, R. W., Hammond, S., Balmes, J. R., Zhou, X., Paglino, T., Sabatti, C., Miller, R. L., Nadeau, K. C.  
2018; 10: 2
  - **Genetic Variant Selection: Learning Across Traits and Sites** *GENETICS*  
Stell, L., Sabatti, C.  
2016; 202 (2): 439-?