## Workshop in Biostatistics

### MSOB X303

<table>
<thead>
<tr>
<th>DATE</th>
<th>October 10, 2019</th>
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<tbody>
<tr>
<td>TIME</td>
<td>1:30-2:50pm</td>
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<tr>
<td>TITLE</td>
<td>Genetic variation in the SIM1 locus is associated with erectile dysfunction</td>
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| SPEAKER    | Eric Jorgenson, Ph.D.  
Research Scientist at the Division of Research (DOR), Kaiser Permanente Northern California (KPNC) |

### Abstract:
Erectile dysfunction affects millions of men worldwide. Twin studies support the role of genetic risk factors underlying erectile dysfunction, but no specific genetic variants have been identified. We conducted a large-scale genome-wide association study of erectile dysfunction in 36,649 men in the multiethnic Kaiser Permanente Northern California Genetic Epidemiology Research in Adult Health and Aging cohort. We also undertook replication analyses in 222,358 men from the UK Biobank. In the discovery cohort, we identified a single locus (rs17185536-T) on chromosome 6 near the single-minded family basic helix-loop-helix transcription factor 1 (SIM1) gene that was significantly associated with the risk of erectile dysfunction (odds ratio = 1.26, P = 3.4 × 10⁻²⁵). The association replicated in the UK Biobank sample (odds ratio = 1.25, P = 6.8 × 10⁻¹⁴), and the effect is independent of known erectile dysfunction risk factors, including body mass index (BMI). The risk locus resides on the same topologically associating domain as SIM1 and interacts with the SIM1 promoter, and the rs17185536-T risk allele showed differential enhancer activity. SIM1 is part of the leptin–melanocortin system, which has an established role in body weight homeostasis and sexual function. Because the variants associated with erectile dysfunction are not associated with differences in BMI, our findings suggest a mechanism that is specific to sexual function.

### Suggested Reading:
- “Genetic variation in the SIM1 locus is associated with erectile dysfunction”
  [https://www.pnas.org/content/115/43/11018](https://www.pnas.org/content/115/43/11018)

### Brief Bio:
Eric Jorgenson, PhD, is a research scientist at the Division of Research (DOR), Kaiser Permanente Northern California (KPNC) and is the associate director of the Kaiser Permanente Research Program in Genes, Environment, and Health. His research interests focus on the genetics of common, complex diseases and their treatment. Dr. Jorgenson received his master's degree in statistics and his doctorate in genetics, both from Stanford University.