Ovarian cancer is the leading cause of death from female reproductive cancers. In medical school, Dr. Krimmel-Morrison started research in the Risques laboratory in effort to identify a screening test. Together, they detected frequent somatic TP53 mutations, which occur in most high grade serous ovarian cancers, in peritoneal fluid of patients with ovarian cancer (PMID 27152024).

Interested in developing a less invasive, and therefore more acceptable, screening test, Dr. Krimmel-Morrison built on his research during residency. Supported by a grant from the Mary Kay Foundation, he used highly accurate Duplex Sequencing technology, developed in Dr. Lawrence Loeb’s U.W. laboratory, to deeply sequence the TP53 gene in DNA extracted from Papanicolou smear samples from 9 women with cancer and 21 cancer-free controls.

Dr. Krimmel-Morrison and colleagues found the sensitivity of detecting tumor-specific TP53 mutations is too low for clinical application. They also found low frequency TP53 mutations (<1 mutant per 1000 wild type alleles) in samples from nearly all women with and without cancer. This work provides insight into carcinogenesis and has potential to be exploited as a biomarker.

Dr. Krimmel-Morrison presented this work at the Northwest Gynecological Cancer Symposium and Society for General Internal Medicine Northwest Regional Meeting. A manuscript is in preparation. Dr. Krimmel-Morrison will be chief resident at University of Washington Medical Center next year and plans to continue research in academic general internal medicine.

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“This project is interesting for the same reason that it is possible – it is an interdisciplinary collaboration of basic scientists, data scientists, and clinicians.”