

## **Determination of LOXL1 and Fibulin-5 Levels in the Vaginal Secretions of Women With and Without Pelvic Organ Prolapse**

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### **Abstract:**

Pelvic Organ Prolapse (POP) defined descent of the vaginal walls, apex of the vagina, or uterus is a potentially devastating condition that affects up to 50% of women with a lifetime risk of 20% to undergo a reconstructive procedure. The etiology has not been fully elucidated, but it is believed to be multifactorial in origin with vaginal childbirth and aging cited as major risk factors. Recently investigators have focused on the role of elastin in the development of POP. Lysyl oxidase-like 1 (LOXL1) and Fibulin-5 are crucial in the assembly and remodeling of elastin fibers. LOXL1 is a copper-dependent amine oxidase that functions to cross link tropoelastin monomers to create elastin polymers and Fibulin-5 helps to transfer elastin aggregates to microfibrils. Animal models lacking the Fibulin-5 gene developed POP spontaneously while those lacking LOXL1 developed POP 1-2 days postpartum. These findings have prompted investigators to evaluate LOXL1 and Fibulin-5 levels in human subjects but the results thus far have been heterogeneous as different biopsy sites have been used. The invasive nature of obtaining biopsy specimens has also limited the sample size of previous studies. We propose a translational feasibility study to determine if LOXL1 and Fibulin-5 can be extracted noninvasively from vaginal secretions. We will then compare the levels of these two proteins in patients with and without POP. Finally, we would like to correlate the levels of these biomarkers found in the vaginal secretions with those obtained from a vaginal biopsy. The overall aim of this project is to create a noninvasive standard for the measurement LOXL1 and Fibulin-5, which would lay the foundation for our ultimate goal of developing a screening test for POP.