Title : **Modeling of polarized ligth interaction with the uterine cervix**		
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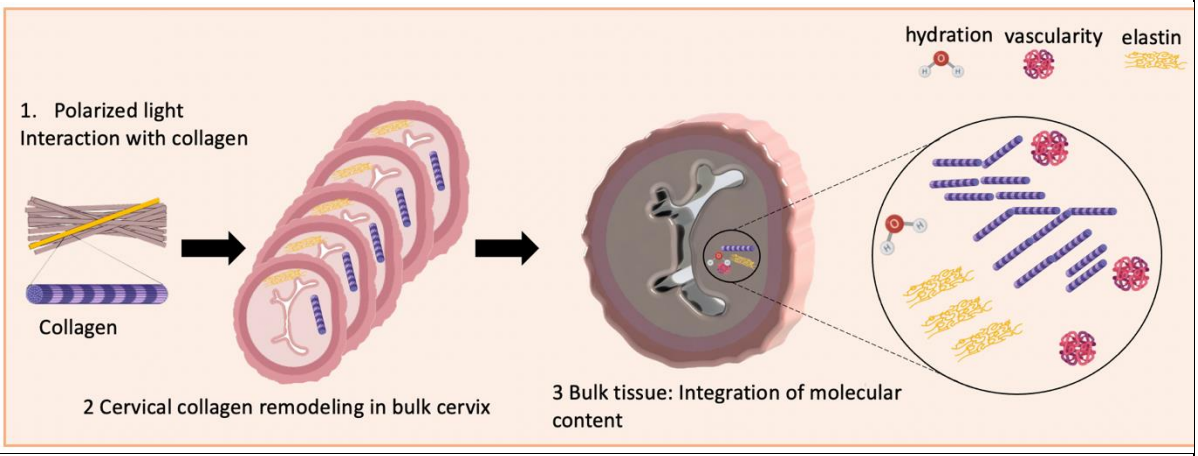
Research Area: **Mathematical Physics, Optics**		
Methods: Monte Carlo modeling, polarized optical imaging		

PhD track subject: Cervical remodeling, the process of uterine cervix transformation from a closed rigid structure to the structure that allows safe passage of fetus, is an essential feature of normal parturition. Understanding the remodeling process is critical to define therapeutic targets and develop clinical tools for early detection of preterm labor. In this project we will study cervix remodeling process in animal models of preterm labor through a set of optical techniques supported by a strong computational framework based on polarized light transport calculations. New polarization sensitive Monte Carlo models will be devised to account for cervix collagen structure and composition (water and hemoglobin)



References:

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2. 2. P. Li, H. R. Lee, S. Chandel, C. Lotz, F. Kai Groeber-Becker, S. Dembski, R. Ossikovski, H. Ma, and T. Novikova "Analysis of tissue microstructure with Mueller microscopy: logarithmic decomposition and Monte Carlo modeling", J. Biomed. Opt., 25(1), 015002 (2020) 10.1117/1.JBO.25.1.015002