



**Assoc. Prof. Rebecca
Rakow-Penner**

University of California San Diego, USA

Host

Assoc. Prof. Moti Freiman
Faculty of Biomedical
Engineering

RTICC & Faculty of Biomedical Engineering INTERNATIONAL GUEST SEMINAR

22nd October
14:00-15:00



**Auditorium 201, Silver Building,
Faculty of Biomedical Engineering**

- Light refreshments will be served

"Latest in Women's Health Imaging"

Women present with a distinct spectrum of conditions, from chronic pelvic pain and benign gynecologic disease to breast, cervical, and ovarian cancers. These processes require imaging tools optimized for women's unique anatomy and pathophysiology. Despite this need, advanced imaging technology has historically underserved women's health, leaving significant diagnostic gaps. This talk presents state-of-the-art imaging techniques addressing those gaps across both benign and malignant disease.

The talk will begin with benign pelvic conditions. Chronic pelvic pain affects a significant number of women and carries an annual healthcare burden exceeding \$39 billion. We present how advanced MRI protocols improve detection and characterization of endometriosis, pelvic venous disorders, and pelvic floor dysfunction, alongside emerging applications in pelvic nerve imaging and placental imaging.

The second portion of the lecture focuses on gynecologic and breast oncology, with emphasis on an advanced diffusion MRI framework that decomposes the signal into biologically distinct compartments, enabling superior tissue characterization over conventional ADC mapping. Clinical applications include breast cancer detection with reduced unnecessary biopsies, quantitative probability mapping for cervical cancer staging and treatment response assessment, and ovarian lesion classification distinguishing benign, borderline, and malignant pathology. Collectively, these tools establish a foundation for imaging biomarkers capable of predicting tumor grade, guiding treatment, and expanding the role of MRI in cancer screening and surveillance in women's health. The overarching goal is a precision imaging framework, quantitative, non-invasive, and biologically grounded, that meaningfully improves outcomes for women across the full spectrum of pelvic and breast disease.