From:	Ananya Goyal
Subject:	Ananya"s Ph.D. Defense
Start:	Monday, February 2, 2026 1:00:00 PM
End:	Monday, February 2, 2026 2:15:00 PM
Location:	AllenX 101X

Hi everyone,
Hope you're all doing well! I'm excited to share that I'll be defending my thesis soon and would love to invite you to attend. I've been incredibly fortunate to be supported by so many wonderful people during my time at Stanford, and I'm deeply grateful for the role each of you has played over the past six years.
Hope to see you there! Thank you again and wishing you all a very happy New Year!

Advanced Quantitative PET–MR Imaging of Structural, Metabolic, and Functional Changes in Joint Aging and Osteoarthritis

Advisor: Dr. Feliks Kogan
Date & Time: February 2nd, 2026, 1:00-2:00 PM PST
Location: AllenX, 101X | Zoom Link <https://stanford.zoom.us/j/99107839515?pwd=mmIv7qTcfDNeHFai6eId76NRgoQuZn.1>

Osteoarthritis (OA) and age-related joint changes are leading causes of pain and disability, yet disease-modifying treatments remain limited, in part due to a lack of sensitive biomarkers that capture early changes across the entire joint. Quantitative magnetic resonance imaging (MRI) can measure microstructural changes in cartilage, muscle, fat, and meniscus, while [18F]NaF positron emission tomography (PET) is highly sensitive to bone metabolism. However, these techniques are often time-intensive, technically complex, and not optimized for integrated whole-joint evaluation.
In this thesis, I address these challenges through three aims. First, I developed and validated accelerated PET–MRI approaches for multi-tissue and multi-joint imaging, combining faster image acquisitions with automated, scalable pipelines for image processing and quantitative biomarker extraction. Second, I applied these tools to study knee aging, pain, and osteoarthritis, characterizing interrelated changes across cartilage, subchondral bone, meniscus, muscle, and fat, to better understand how joint tissues remodel with age, sex, BMI, and disease status. Finally, I extended these approaches to multiple joints, including the hip and spine, to begin exploring systemic patterns of musculoskeletal aging across the body.
Together, this work establishes efficient, quantitative whole-joint PET–MRI methods that improve sensitivity to early disease-related changes and enable more precise phenotype assessment, monitoring, and treatment planning in OA and related musculoskeletal conditions.

Best wishes,
Ananya

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Zoom Link:

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