

# Principles and Applications of Biological Imaging (PABI) (Biology 5146)

## Washington University School of Medicine

Fall, 2015

Monday and Wednesday, 11:30 A.M. – 1:00 P.M.

Location – Medical School Campus: FLTC - 213

**Course masters:** Monica Shokeen, Ph.D. ([mshokeen@wustl.edu](mailto:mshokeen@wustl.edu)) (362-8979); Joseph P. Culver, Ph.D. ([culverj@mir.wustl.edu](mailto:culverj@mir.wustl.edu)); and Joshua Shimony, M.D., Ph.D. ([shimonyj@mir.wustl.edu](mailto:shimonyj@mir.wustl.edu))

Principles and Applications of Biological Imaging (PABI) will focus on the interdisciplinary nature of imaging sciences and will include a comprehensive survey of modalities that define biological imaging. Topics will include basics, scope and applications of optical, magnetic resonance, and nuclear imaging modalities. Lectures will be contributed by experts in the relevant fields.

\*Lectures are subject to change.

### Introduction:

08-24-15 (M): Introduction to Biological Imaging (**Monica Shokeen**)

### Optical Imaging:

08-26-15 (W): Overview of Microscopy-I (**Tim Holy**)

08-31-15 (M): Overview of Microscopy-II (**Holy**)

09-02-15 (W): Tissue Optics (**Joe Culver**)

09-07-15 (M): Labor Day holiday-no classes

09-09-15 (W): Optical Imaging (Fluorescence) (**Walter J. Akers**)

09-14-15 (M): Optical contrast agents (**Mikhail Berezin**)

09-16-15 (W): **Quiz** and tour of selected optical facilities including MIC (**Walter J. Akers**)

### Magnetic Resonance Imaging:

09-21-15 (M): Introduction-MR Imaging (**Josh Shimony**)

09-23-15 (W): Structural and Functional MR Imaging-I (**Shimony**)

09-28-15 (M): Functional MR Imaging-II (**Shimony**)

09-30-15 (W): **Quiz** (**Shimony**)

### Nuclear Medicine Imaging:

10-05-15 (M): Overview of PET/SPECT-I (**Yuan-Chuan Tai**)

10-07-15 (W): Overview of PET/SPECT-II (**Tai**)

10-12-15 (M): Contrast Agents for PET/SPECT (**Shokeen**)

10-14-15 (W): Oncologic Imaging (pre-clinical) (**Shokeen**)

10-19-15 (M): Overview of Image Quantification (**Kooresh Shoghi**)

10-21-15 (W): Microfluidics in radiopharmaceutical development (**David Reichert**)

10-26-14 (M): Tour of CCIR (**Richard Laforest**)

10-28-14 (W): **Quiz** (**Shokeen**)

### Applications of Imaging:

11-02-15 (M): Oncologic Imaging-Clinical (**Farrokh Dehdashti**)

11-04-15 (W): Cardiovascular Imaging with PET/SPECT (**Pamela Woodard**)

11-09-15 (M): Targeted radiotherapies (**Richard L. Wahl**)

11-11-15 (W): Microscopy applications (**Holy**)

11-16-15 (M): Clinical Lung Imaging (**Delphine Chen**)

11-18-15 (W): Neuroimaging I (**Bob McKinstry**)

11-23-15 (M): Functional MRI (**Adam Eggebrecht**)

11-25-15 (W): Thanksgiving Break, no classes

11-30-15 (M): **Student Presentations**

12-02-15 (W): **Student Presentations**

12-07-15 (M): **Final**

**Scoring:** Equally distributed between the quizzes, presentation, attendance and final exam

**Telesis:** Lecture notes will be posted on WU Blackboard ([bb.wustl.edu](http://bb.wustl.edu))