

**GEORGE M O'BRIEN CENTER  
FOR ADVANCED RENAL MICROSCOPY AND ANALYSIS  
2013 COURSE SCHEDULE – May 6-10, 2013**

**MONDAY, MAY 6<sup>TH</sup>, 2013**

<b>7:30 am - 8:20 am</b>	<b>BREAKFAST – R2 Lobby</b>	<b>R2 Lobby</b>
8:20 am - 8:30 am	<b>Welcome and Introduction – R2 101</b> Bruce Molitoris – Indiana Center for Biological Microscopy	R2 101
8:30 am -9:20 am	<b>Overview: Advancing Nephrology through Intravital Imaging: Achievements and Challenges</b> Bruce Molitoris – Indiana Center for Biological Microscopy	R2 101
9:20 am -10:10 am	<b>Intravital Multiphoton Microscopy – Principles and Challenges</b> Ken Dunn – Indiana Center for Biological Microscopy	R2 101
<b>10:10 am - 10:20 am</b>	<b>BREAK (10 minutes)</b>	<b>R2 Lobby</b>
10:20 am - 11:10 am	<b>Practical Intravital Imaging</b> Ruben Sandoval - Indiana Center for Biological Microscopy	R2 101
11:10 am - 12:00 pm	<b>Approaches for Improving Multiphoton Microscopy of Biological Tissues</b> Jeff Squier – Colorado School of Mines	R2 101
<b>12:00 PM</b>	<b>LUNCH</b>	<b>R2 Lobby</b>
<b>12:10 pm - 1:00 pm</b>	<b>PLENARY LECTURE</b> <b>Hydro-dynamic Delivery of Plasmids to Kidney Cell In Vivo</b> Peter Corridon and Simon Atkinson	<b>R2 101</b>

<b>1:15 pm - 5:00pm</b>	<b>CONCURRENT WORKSHOP ACTIVITIES</b>	<b>R2 202</b>
1:15 pm - 3:00 pm	<b>Session 1</b>	
3:00 pm - 3:15 pm	<b>BREAK (15 minutes)</b>	
3:15 pm - 5:00 pm	<b>Session 2</b>	
<b>5:00pm - 6:00 pm</b>	<b>ROUND TABLE</b>	<b>R2 101</b>
	<b>Roundtable: Introduction and Goals</b>	
	Bruce Molitoris – Indiana Center for Biological Microscopy	
<b>6:00 pm - 7:00 pm</b>	<b>DINNER</b>	<b>R2 Lobby</b>
7:00 pm - 10:00 pm	<b>Individual projects by arrangement</b>	R2 202
<b><u>TUESDAY, MAY 7<sup>th</sup>, 2013</u></b>		
<b>7:30 am - 8:30 am</b>	<b>BREAKFAST</b>	<b>R2 Lobby</b>
8:30 am - 9:20 am	<b>Glomerular Dynamics: The Importance of Quantitative Analysis</b>	R2 101
	Bruce Molitoris – Indiana Center for Biological Microscopy	
9:20 am - 10:10 am	<b>3D Visualization and Analysis</b>	R2 101
	Jeffrey Clendenon, Aeon Imaging	
10:10 am - 10:20 am	<b>BREAK (10 minutes)</b>	<b>R2 Lobby</b>
10:20 am - 11:10 am	<b>Forster Resonance Energy Transfer Microscopy</b>	R2 101
	Richard Day – Indiana University	
11:10 am - 12:00 pm	<b>Super-Resolution Fluorescence Microscopy</b>	R2 101
	George Patterson – NIH-NIBIB	
<b>12:00 PM</b>	<b>LUNCH</b>	<b>R2 Lobby</b>
<b>12:10 pm - 1:00 pm</b>	<b>Using Fluorescent Probes to Study AKI</b>	R2 101
	Pierre Dagher – Indiana University	

<b>1:15 pm - 5:00pm</b>	<b>CONCURRENT WORKSHOP ACTIVITIES</b>	<b>R2 202</b>
1:15 pm - 3:00 pm	<b>Session 1</b>	
<b>3:00 pm - 3:15 pm</b>	<b>BREAK (15 minutes)</b>	
3:15 pm - 5:00 pm	<b>Session 2</b>	
<b>5:00pm - 6:00 pm</b>	<b>PLENARY LECTURE</b>	<b>R2 101</b>
	<b>Intravital Microscopy: A Powerful Tool to Study Membrane Trafficking in Physiological Conditions and During Invasion and Metastasis</b>	
	Roberto Weigert - NIH-NIDCR	
<b>6:00 pm - 7:00 pm</b>	<b>DINNER</b>	<b>R2 Lobby</b>
7:00 pm - 10:00 pm	<b>Individual projects by arrangement</b>	R2 202
<b><u>WEDNESDAY, MAY 8<sup>TH</sup>, 2013</u></b>		
<b>7:30 am - 8:30 am</b>	<b>BREAKFAST</b>	<b>R2 Lobby</b>
8:30 am - 9:20 am	<b>Mechanism of Pancreatic Regeneration in Zebrafish</b>	R2 101
	Ryan Anderson – Indiana University	
9:20 am - 10:10 am	<b>Optical Coherence Tomography of the Kidney</b>	R2 101
	Yu Chen – University of Maryland	
<b>10:10 am - 10:20 am</b>	<b>BREAK (10 minutes)</b>	<b>R2 Lobby</b>
10:20 am - 11:10 am	<b>Multiphoton Endoscopy</b>	R2 101
	Chris Xu – Cornell University	
11:10 am - 12:00 pm	<b>Quantitative Comparison of Fluorescence Imaging Systems</b>	R2 101
	John Murray – University of Pennsylvania	

<b>12:00 PM</b>	<b>LUNCH</b>	<b>R2 Lobby</b>
<b>12:10 pm - 1:00 pm</b>	<b>PLENARY LECTURE</b> <b>Fluorescent Proteins</b> John Allen – Florida State	<b>R2 101</b>
<b>1:00 pm - 5:00pm</b>	<b>CONCURRENT WORKSHOP ACTIVITIES</b>	
1:00 pm – 2:00 pm	<b>Session 1 – Sponsored Lectures: Demonstration Systems Overview</b>	<b>R2 101</b>
1:00 pm – 1:30 pm	<b>N-STORM – Super Resolution Microscope</b> Nathan Claxton, Nikon Instruments INC.	
1:30 pm – 2:00 pm	<b>Fluoview FV1200 – Near IR Confocal Microscope</b> Richard Heil-Chapdelaine, Olympus America INC.	
<b>2:00 pm - 2:30 pm</b>	<b>BREAK (30 minutes)</b>	
2:30 pm - 5:00 pm	<b>Session 2</b>	<b>R2-202</b>
<b>5:00pm - 6:00 pm</b>	<b>DINNER</b>	<b>R2 Lobby</b>
<b><u>THURSDAY, MAY 9<sup>th</sup>, 3012</u></b>		
<b>7:30 am - 8:30 am</b>	<b>BREAKFAST</b>	<b>R2 Lobby</b>
8:30 am - 9:20 am	<b>Writing a Shared Instrument Grant and Knowing What You Need</b> Ken Dunn – Indiana University	R2 101
9:20 am - 10:10 am	<b>Building Your Own 2-Photon Microscope: Challenges, Advantages and Limitations</b> Roberto Weigert - NIH-NIDCR	R2 101
11:10 am -12:00 pm	<b>Alternative Methods of Intravital Fluorescence Microscopy</b> Sam Wells –Vanderbilt University (teleconference)	R2 101

<b>12:00 PM</b>	<b>LUNCH</b>	<b>R2 Lobby</b>
<b>12:10 pm - 1:00 pm</b>	<b>ROUND TABLE</b> <b>Alternative Approaches to Intravital Microscopy</b> Ken Dunn, Roberto Weigert, Sam Wells (teleconference)	<b>R2 101</b>
<b>1:15 pm - 5:00pm</b> 1:15 pm - 3:00 pm <b>3:00 pm - 3:15 pm</b> 3:15 pm - 5:00 pm	<b>CONCURRENT WORKSHOP ACTIVITIES</b> <b>Session 1</b> <b>BREAK (15 minutes)</b> <b>Session 2</b>	<b>R2 202</b>
<b>6:00 pm - 9:00 pm</b>	<b>DINNER – Creation Café &amp; Euphoria</b> <b>Please take IU People Mover to destination (first stop)</b>	
<b>FRIDAY, MAY 10<sup>th</sup>, 2013</b>		
<b>Open to individual studies on the microscopes</b>		

**CONCURRENT WORKSHOP ACTIVITIES (1:15 pm - 5:00 pm)**

**Monday**

**Session 1 (1:15 - 3:00pm)**

1. **Image Analysis** – Metamorph
2. **Intravital Rat Kidney Imaging** – Glomeruli Filtration (Munich Wistar Rat)
3. **Intravital Mouse Kidney Imaging** – Renal Function
4. **Live Cell Imaging** - Mitosis, Vesicle Trafficking and FRET

**Session 2 (3:15 - 5:00pm)**

1. **Live Cell Imaging** - Mitosis, Vesicle Trafficking and FRET
2. **Image Analysis** - Glomeruli Filtration
3. **Intravital Rat Liver Imaging** - Transport and Drug Toxicity

**Tuesday**

**Session 1 (1:15 - 3:00pm)**

1. **Voxx**: A Volume Rendering Software for 3D Microscopy
2. **Intravital Rat Kidney Imaging** - Glomeruli Filtration (Munich Wistar Rat)
3. **Intravital Mouse Kidney Imaging** - Kidney Dysfunction – Ischemia
4. **Live Cell Imaging** – Mitosis, Vesicle Trafficking and FRET

**Session 2 (3:15 - 5:00pm)**

1. **Image Analysis** - Glomeruli Filtration
2. **Intravital Rat Kidney Imaging** - Mitochondrial Function
3. **Intravital Rat Liver Imaging** – Transport and Drug Toxicity

Wednesday	
<b>Session 1 (1:00 - 2:00pm)</b>	<b>Session 2 (2:30 - 5:00pm)</b>
<b>Sponsored Lectures</b> Demonstration Systems Overview (see lectures, R2-101)	<u>Demonstrations on commercial microscopes:</u> <ol style="list-style-type: none"> <li>Leica TCS SP8-Video Rate Multiphoton System (upright) – <b>Renal Function – Microvascular Flow</b></li> <li>Nikon STORM - <b>Super Resolution Microscopy</b></li> <li>Olympus FV1200- Near IR Confocal Microscope – <b>Renal Function - Proximal Tubule Uptake</b></li> </ol>
	<ol style="list-style-type: none"> <li><b>Intravital Rat Kidney Imaging</b> - Delivery of Plasmids to Kidney Cell In Vivo</li> <li><b>Image Analysis</b> –Metamorph</li> </ol>
<i>Additional demonstrations upon request</i>	
Thursday	
<b>Session 1 (1:15 - 3:00pm)</b>	<b>Session 2 (3:15 - 5:00pm)</b>
<u>Demonstrations on commercial microscopes:</u> <ol style="list-style-type: none"> <li>Leica TCS SP8-Video Rate Multiphoton System (upright) – <b>Renal Function - Proximal Tubule Endocytosis</b></li> <li>Nikon STORM - <b>Super Resolution Microscopy</b></li> <li>Olympus FV1200- Near IR Confocal Microscope- <b>Mouse Kidney Dysfunction</b> –Renal Microcirculation</li> </ol>	<u>Demonstrations on commercial microscopes:</u> <ol style="list-style-type: none"> <li>Leica TCS SP8-Video Rate Multiphoton System</li> <li>Nikon STORM - Super Resolution Microscope</li> <li>Olympus FV1200- Near IR Confocal Microscope</li> </ol>
<ol style="list-style-type: none"> <li><b>Image Analysis</b> - Image J</li> <li><b>Intravital Rat Kidney Imaging</b> - Delivery of Plasmids to Kidney Cell In Vivo</li> </ol>	
<i>Additional demonstrations upon request</i>	
<b>Friday - sessions by arrangements</b>	

**Notes:**