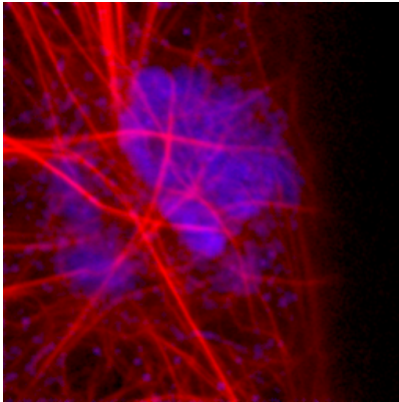


**Overview:**

- Introduce students to the theory and practice of basic and advanced light microscopy techniques with emphasis on confocal laser scanning microscopy.
- Hands-on experience with research microscopes, a confocal microscope, and image analysis software.


**Lectures:**

1. Microscopy Basics
2. Geometrical Optics, Diffraction, Image formation
3. Contrast Generation: Darkfield, Phase, DIC
4. Widefield Fluorescence Microscopy
5. Confocal Laser Scanning Microscopy
6. Applications in Fluorescence Microscopy
7. Image Processing, 3D Image Reconstruction

**Labs:**

- |  |         |
|--|---------|
| 1. Microscope alignment, specimen preparation, imaging in bright field | 2 weeks |
| 2. Darkfield, phase contrast, differential interference contrast       | 3 weeks |
| 3. Fluorescence Microscopy, immunofluorescence lab                     | 2 weeks |
| 4. Confocal microscopy, demos and student assignments                  | 3 weeks |
| 5. Confocal microscopy, student projects                               | 2 weeks |