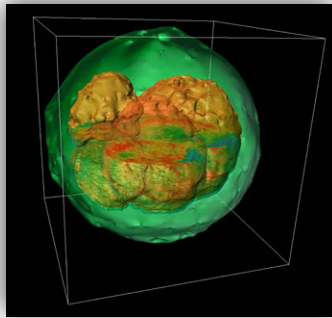


Light microscopy

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Basic Microscopy (12 hours)

1. Historical perspective
2. Ever advancing technology
3. Impact across all fields of science and medicine
4. Across the scales
5. Properties of light
6. Light-matter interactions
7. Properties of lenses, rays, and vision
8. Microscopes
9. Contrast techniques: bright field, dark field, polarization
10. Contrast techniques: phase contrast, differential interference contrast
11. Contrast techniques: fluorescence and confocal
12. Microscopy in 2022: Cancer in focus
13. Microscopy in 2022: Cardiovascular disease in focus
14. Microscopy in 2022: SARS Cov-2 detection

Advanced Microscopy (6 hours)

1. Superresolution Microscopy
2. Structured Illumination (SIM)
3. STED
4. 4PI Microscopy
5. Multiphoton Microscopy
6. Light Sheet Microscopy
7. Total Internal Reflection
8. Expansion Microscopy
9. Fluorescence Resonance Energy Transfer (FRET), fluorescence lifetime imaging microscopy (FLIM), FRAP Live cell imaging
10. Farfield vs. Nearfield
11. 3D and Deconvolution and computational techniques

Textbooks

1. Mertz, J. (2010). Introduction to optical microscopy. Greenwood Village, Colo., Roberts.
2. Popescu, G. (2011). Quantitative phase imaging of cells and tissues. New York, McGraw-Hill.