

Lecture Outline for “Experimental Approaches in Molecular and Cell Biology”

Topic	A Brief History Of Light Microscopy And How It Transformed Biomedical Research
Lecturer	Dr. Suewei Lin
Course Outline	<p>The history of microscopy</p> <ul style="list-style-type: none">- Why we need microscopes? What problems we try to solve?- The development of microscopy techniques<ul style="list-style-type: none">• Important people• Principles and limitations- How it changes the way we study biology <p>Recent examples of using microscopy methods to study molecular and cell biology</p> <ul style="list-style-type: none">- Protein-protein interaction and protein trafficking- Single-molecule localization- Cell Morphogenesis and migration- Neural circuits and function <p>Future of microscopy?</p> <ul style="list-style-type: none">- What are we still longing for?- Microscopy methods that are under development <p>The microscopy methods that will be covered in this lecture are:</p> <ul style="list-style-type: none">- Regular light microscopy<ul style="list-style-type: none">• Phase contrast and Dark field• Polarization• Differential interference contrast• Fluorescence- Laser-based microscopy<ul style="list-style-type: none">• Confocal• Two-photon• Light-sheet- Super-resolution fluorescence microscopy<ul style="list-style-type: none">• PALM• STED