Fall of 2016  
Drug Discovery – Challenges and Opportunities

MSMPHL 2370  
Monday and Thursday; 11:30 AM – 1:00 PM  
BSTWR 995

Mark Schurdak, Director, D. Lansing Taylor, Lee McDermott, Bruce Freeman, Michael Lotze, Edward Chu, David Whitcomb and Ivet Bahar Co-Directors

### Fundamentals of Therapeutics

| 1. Concepts of Molecular-Based pharmacology | Alessandro Bisello | 8/29/16 ✓ |
| 2. Origins of Small Molecule Drugs | Lee McDermott | 9/1/16 ✓ |
| 3. Biologics as Therapeutics | Michael Lotze | 9/8/16 ✓ |
| 4. History and Overview of Drug Discovery/Development | Lans Taylor | 9/12/16 ✓ |

### Molecular Target-Centric Discovery

| 5. The Drug Discovery and Development Process | Mark Schurdak | 9/15/16 ✓ |
| 6. Hit to Lead Optimization | Lee McDermott | 9/19/16 ✓ |
| 7. Early Safety Assessment and Link to Pre-Clinical | Larry Vernetti | 9/22/16 ✓ |
| 8. Computational Chemistry | Carlos Camacho | 9/26/16 ✓ |

### Pre-Clinical Drug Discovery

| 9. Overview of Pre-Clinical Development | Larry Vernetti | 9/29/16 ✓ |
| 10. Computational Biology: Target Structure | Ivet Bahar | 10/3/16 ✓ |
| 11. Pre-clinical: ADME-Tox and PK | Julie Eiseman | 10/6/16 ✓ |
| 12. Clinical: PK and other Challenges | Jan Beumer | 10/11/16 ✓ |

### QSP to Advance Personalized Medicine

| 13. Overview of QSP | Andy Stern | 10/13/16 ✓ |
| 14. Analysis of Clinical Samples to Identify Disease Pathway Modules | Adrian Lee | 10/17/16 ✓ |
| 15. Big data resources, mining and analysis | Takis Benos | 10/20/16 ✓ |
| 16. Computational Biology: Drug Repurposing and Polypharmacology | Ivet Bahar | 10/24/16 ✓ |
| 17. Computational Models of Disease and Hypothesis Generation | Jim Faeder | 10/27/16 ✓ |
18. Phenotypic Discovery: Experimental Organisms  
   Andreas Vogt  10/31/16

19. Phenotypic Discovery: Cell-Based High Content Screens  
   Bert Gough  11/3/16

20. Disease Relevant Experimental Models  
   Lans Taylor  11/7/16

21. Biomarkers for Diagnostics and Tracking Disease Progression  
   Schoen/Brand  11/10/16

22. Chemical Proteomics  
   Nathan Yates  11/14/16

23. IND/NDA and clinical Trials  
   Ed Chu  11/17/16

24. Precision Medicine  
   David Whitcomb  11/21/16

**Case Studies**

25. Case study in discovery #1  
   Jeff Brodsky  11/28/16
   Targeting molecular chaperones to thwart protein conformational diseases and cancer

26. Case study in discovery #2  
   Neil Hukreide  12/1/16
   Acute Kidney Injury

27. Case study in discovery #3  
   Bill Chen  12/5/16
   Therapeutics for inflammatory disease

28. Case study in discovery #4  
   Bruce Freeman  12/8/16
   Anti-Inflammatory Drug Discovery, Development and Commercialization

29. Case study in discovery #5  
   Mark Schurdak  12/12/16
   Huntington’s Disease

30. Case study in discovery #6  
   Andy Stern  12/15/16
   Metastatic Breast Cancer

**Note:** The week of Dec. 12-16 is final exam week.