UNIVERSITI TEKNOLOGI MARA

BMS663: DRUG DISCOVERY

Course Name (English)	DRUG DISCOVERY APPROVED
Course Code	BMS663
MQF Credit	3
Course Description	This subject discusses how molecular biology changed the drug discovery process from a chemistry-based random process into one that is guided by an understanding of the pathophysiology of diseases. Molecular targets can now be identified and validated, and compounds that interacts with these targets can be sought from natural sources or synthesized in the lab. These have resulted in a new generation of molecular drugs with high specificity and little side effects. Main goals of this course is to guide the steps necessary to translate benchside findings into bedside applications.
Transferable Skills	Able to perform few biological assays such as cell proliferation and viable cells. Ability to produce power point and working in groups.
Teaching Methodologies	Lectures, Blended Learning, Tutorial
CLO	CLO1 Describe the basic concepts of drug discovery and how biotechnology and genetics are used in drug discovery and testing CLO2 Understand the various steps towards the discovery of a drug CLO3 Describe the various steps required for the commercialization of a new drug. CLO4 Perform basic bioassay and toxicity tests
Pre-Requisite Courses	No course recommendations

Topics
1. 1.0 Introduction to Drug Discovery 1.1) 1.1 Two paradigms of drug discovery 1.2) 1.2 Physiology-based drug discovery 1.3) 1.3 Target-based drug discovery
2. 2.0 Target discovery 2.1) 2.1 Disease-Mechanism 2.2) 2.2 Disease Genes 2.3) 2.3 Target Type and ‘Druggability”
3. 3.0 Target Validation 3.1) 3.1 Knockout/In, Gain-of –function, Transgenic Models 3.2) 3.2 Pathways 3.3) 3.3 Clinical Data 3.4) 3.4 Antisense DNA/RNA and RNAi 3.5) 3.5 Chemicals knockouts and Chemical Biology
4. 4.0 Assay Development 4.1) 4.1 In-vitro/Cell-based assay 4.2) 4.2 In-vivo/Animal Models 4.3) 4.3 High Throughput Screening (HTS)
5. 5.0 Screening and Hits to Leads 5.1) 5.1 Compound Libraries 5.2) 5.2 In silico/CADD and SBDD 5.3) 5.3 Synthesis and Combinatorial Chemistry 5.4) 5.4 Primary Screen 5.5) 5.5 Potency and Dose-Response 5.6) 5.6 Counterscreens and Selectivity 5.7) 5.7 Mechanism of Action (MOA)

6. 6.0 Lead Optimization 6.1) 6.1 Medicinal Chemistry 6.2) 6.2 Animal PK/PD/ADME 6.3) 6.3 Toxicity 6.4) 6.4 Formulation and Delivery
7. 7.0 Development of Leads 7.1) 7.1 Preclinical Data Package 7.2) 7.2 Process Development/CMC/API 7.3) 7.3 IND Application
8. 8.0 Clinical Trial 8.1) 8.1 Phase 1 8.2) 8.2 Phase 2 8.3) 8.3 Phase 3 8.4) 8.4 NDA 8.5) 8.5 Review 8.6) 8.6 Phase 4

Assessment Breakdown	%
Continuous Assessment	100.00%

Details of Continuous Assessment

Assessment Type	Assessment Description	% of Total Mark	CLO
Assignment	Online Group Assignment	20%	CLO4
Group Project	online Mini project/Proposal	50%	CLO3
Test	OnlineTest 1	15%	CLO1
Test	Online Test 2	15%	CLO2

Reading List

Recommended Text

- **H. P. Rang,Daniel Vasella 2006, *Drug Discovery and Development*, Churchill Livingstone [ISBN: 0-443-06420-2]**
- **Edited by Alan L. Harvey 1999, *Advances in drug discovery techniques*, Wiley**

Reference Book Resources

- **Edited by C. R. Clark, W. H. Moos 1996, *Drug discovery technologies*, CEH**
- **Chi-Jen Lee 1993, *3. Development and evaluation of drugs : from laboratory through licensure to market*, CRC Press**

Article/Paper List: This Course does not have any article/paper resources

Other References: This Course does not have any other resources