UNIVERSITY of BRADFORD

Module Descriptor

Module Details	
Module Title	Principles of Drug Discovery
Module Code	INC7014-B
Academic Year	2023/4
Credits	20
School	School of Pharmacy and Medical Sciences
FHEQ Level	FHEQ Level 7

Contact Hours	
Type	Hours
Tutorials	5
Lectures	24
Directed Study	171

Availability	
Occurrence	Location / Period
BDA	University of Bradford / Semester 1

Module Aims

To provide students with an appreciation and understanding of the various stages of the drug discovery process. To provide students with a current and critical evaluation of methods, techniques and strategies used to select molecules for evaluation of their biological properties. In particular, a specific aim is to provide students with an understanding of the criteria used for 'druggable' targets.

Outline Syllabus

The aim of this course is to provide an overview of all aspects of the drug discovery process and an introduction to drug discovery. Topics include:TargetsWhat makes a good drug target, strategies for identification of new targets, target validationReceptors & EnzymesA brief introduction/revision to receptor types, enzyme inhibitionNatural productsA source for potential lead agents. Discovery/sourcing of natural products. Drug development from natural product leadsDrug Design & Molecule Structure-ActivityThis topic will explore in some detail the molecular structure & physicochemical properties of drug molecules (pKa, ionization, water solubility, stereochemistry), & how they interact with their targetsComputational chemistryAn overview of methods to generate hit compounds using molecular modelling, virtual libraries. Includes a workshop demonstration.Peptides, proteins, modern biological therapies: Unique issues to such molecules, drug delivery, synthesis, therapeutic examples. Cancer immunotherapy and antibody-conjugates.Drug screeningMethods for in vitro & in vivo screening of agentsLead optimisation strategiesCombinatorial approaches, diversity-orientated synthesisPharmacokinetics and Drug Metabolism:Half-life, clearance, elimination, importance of administration route. Drug metabolism reaction types, Cytochrome P450, Glucuronidation.Safety PharmacologyPre-clinical assessment of potential clinical agentsPre-clinical evaluation and clinical trialsStages of clinical trial, examplesIntellectual property, commercialisation and regulation:Patents, confidentiality; issues related to large scale production, formulation, marketing, regulatory affairs

Learning Outcomes

Outcome Number	Description
01	Appraise the drug discovery process; in particular, strategies and tools for identification and optimisation of leads; types of drug delivery approaches; importance, strategies and tools for PKPD profiling and other pre-clinical issues, clinical trials, issues related to large scale drug production, intellectual property issues and regulatory affairs.
02	Critically evaluate issues that are relevant in a drug discovery process.
03	Employ generic literature skills for life-long learning (literature and databases).
04	Critically evaluate issues and literature material and deliver an oral presentation. Development of communication skills.

Learning, Teaching and Assessment Strategy

N/A

Mode of Assessment

Type	Method	Description	Weighting
Summative	Examination - Closed Book	Examination closed book (Students must answer five out of seven questions) (2 Hrs)	70%
Summative	Presentation	Oral Presentation (drug profile) (20 Mins)	20%
Summative	Coursework - Written	Coursework: Medicinal Chemistry	10%

Reading List

To access the reading list for this module, please visit https://bradford.rl.talis.com/index.html

Please note:
This module descriptor has been published in advance of the academic year to which it applies. Every effort has been made to ensure that the information is accurate at the time of publication, but minor changes may occur given the interval between publishing and commencement of teaching. Upon commencement of the module, students will receive a handbook with further detail about the module and any changes will be discussed and/or communicated at this point.

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