

## Molecular Basis of Cancer and Cancer Therapy

|                |                                         |
|----------------|-----------------------------------------|
| Module Code:   | INC7002-B                               |
| Academic Year: | 2018-19                                 |
| Credit Rating: | 20                                      |
| School:        | School of Pharmacy and Medical Sciences |
| Subject Area:  | Cancer Therapeutics                     |
| FHEQ Level:    | FHEQ Level 7 (Masters)                  |

Pre-requisites:

Co-requisites:

### Contact Hours

| Type           | Hours |
|----------------|-------|
| Lectures       | 23    |
| Tutorials      | 7     |
| Directed Study | 167   |

### Availability Periods

| Occurrence | Location/Period                                 |
|------------|-------------------------------------------------|
| BDA        | University of Bradford / Semester 1 (Sep - Jan) |

### Module Aims

To develop a systematic and critical understanding of the hallmarks of cancer, their implications for cancer treatment and opportunities for therapeutic intervention. The molecular biology of cancer will illustrate the identification of potential targets for therapeutic intervention and the importance of tumour pathology current and future treatment strategies.

### Outline Syllabus

There are two major themes within this module. The first is designed to inform students of current practise in Oncology and will focus on the classification of tumours, pathological parameters used to determine therapeutic intervention strategies and the classical

chemotherapeutic drugs. The later will focus on the classification of current drugs, their mechanism of action and the problems associated with current drugs (i.e. toxicity, multi-drug resistance etc). It is widely acknowledged that new therapeutics are required and that tumour biology represents the driving force behind the development of new therapeutics. In order to understand these new approaches, the cancer pharmacologist must have a good understanding of the molecular and genetic/epigenetic basis of cancer and this therefore forms the basis of the second major theme in this module. This section will cover the 'hallmarks of cancer' in terms of self sufficiency in growth signals, evading apoptosis, insensitivity to anti-growth signals, sustained angiogenesis, tissue invasion and metastasis, unlimited replicative potential and genetic instability. The emphasis throughout will be placed on the differences that exist between tumour and normal cells as these represent a key step in developing novel therapeutics. Students will extend their literature searching, presentation and report writing skills in preparing a journal club, and molecular target profile report.

## Module Learning Outcomes

*On successful completion of this module, students will be able to...*

- 1 Critically evaluate the molecular basis of cancer, its classification, current treatment approaches for cancer and the concept of target identification and validation as applied to anti-cancer drug discovery.
- 2 Critically evaluate and interpret the current research literature & state of the art reviews; interpret routine histological samples to analyse human tumour classification and examples of xenografts.
- 3 Develop a strategy to present a discussion of a research paper (Journal club); collate and summarise target evaluation for a defined report style.
- 4 Undertake analysis of the human genome database. Develop generic literature skills for life-long learning (literature & databases).

## Learning, Teaching and Assessment Strategy

A combination of lectures, invited seminar speakers, student-led seminars and student directed learning. The student led seminars will consist of a journal club exercise where students will individually review and present a selected research paper. The independent work will be to prepare a detailed profile of a specific biochemical or molecular target that is of current interest in terms of therapeutic intervention.

## Mode of Assessment

| Type      | Method                    | Description                                    | Length  | Weighting | Final Assess' |
|-----------|---------------------------|------------------------------------------------|---------|-----------|---------------|
| Summative | Examination - closed book | Examination (two essays from a choice of five) | 3 hours | 60%       | Yes           |

|           |            |                                                                         |              |     |    |
|-----------|------------|-------------------------------------------------------------------------|--------------|-----|----|
| Summative | Coursework | Oral presentation (journal club)<br>20% Molecular target profile report | 0-1000 words | 40% | No |
|-----------|------------|-------------------------------------------------------------------------|--------------|-----|----|

### Legacy Code (if applicable)

CR-4001D

### Reading List

To view Reading List, please go to [rebus:list](#).