



# Medicinal Chemistry Research Coursework

**Faculty: Natural Sciences**

**Department: Chemistry**

**Module name: Medicinal Chemistry 2**

**Degree: BSc Chemistry, MSci Chemistry with Medicinal Chemistry**

**Level: Y2**

**Approximate number of students: 60-80**

**Duration: Set over 4 weeks, expecting 10-15 hours of work from students**

**Weighting and credit: 20% of module, module is 8.3% of Y2, Y2 is 20/35% of BSc/MSci degree respectively**

**Module ECTS: 5**

**Module Type: Elective**

## Assessment overview

The medicinal chemistry research assessment is an individual written coursework in a question-and-answer format, exploring the questions medicinal chemists might consider when selecting a drug target and investigating potential drugs. Assigned in Year 2 towards the end of spring term, it also practices use literature to explore the topics that might be covered in a journal-style introduction and allows for some creativity in the use of a software called PyMOL (see figure 1) to visualise the binding interactions between a potential drug and a drug candidate.

## Design decisions

### Rationale for the assessment type

This assessment is designed as an assignment that draws on some of the work medicinal chemistry researchers might perform during a PhD or Industry project. The questions prompt students to consider concepts they would likely have to consider when working on a drug target. Medicinal chemistry is a subject which can involve a lot of memorisation, and this assessment aims to combat that by incorporating a learning-by-doing methodology that mimics real-world medicinal chemistry research.

Part 1 of the assessment features questions that centre on the choice of drug target and methods to identify potential drugs. This is designed as an opportunity for students to practice literature searching, formal writing, and to understand what is required in a journal-style introduction

Part 2 of the assessment involves students using the binding visualisation software PyMOL, using the images they generate to describe the binding of drug fragments to a protein target and to propose how to develop the component further.

### Alignment with Learning Outcomes

The learning outcomes (LOs) that this coursework is most aligned with are:

- Explaining and evaluating methods for lead compound identification and optimisation including rational drug design
- Critically analysing binding of small-molecule drugs
- Comparing different biological targets

Along with the development and assessment of students' literature searching skills.

## Practicalities

### Fit with other assessments in the module and the programme

This assessment is delivered towards the end of Spring Term in Year 2. It builds on a similar question-and-answer assessment from Year 1, in which students are given one paper on a drug development project to read and use to answer short-answer questions, as a more-structured version of Part

**Interviewee: Dr Charlotte Sutherland**

**Role: Module lead and coordinator, coursework coordinator, lab design and assessment**



1 of the Year 2 assessment.

In Year 3, students are asked to write full lab reports with in-depth introductions for the first time. Part 1 of this Year 2 assessment aims to prepare students for this, so they enter Year 3 well-equipped with an understanding of what is expected of them in an introduction.

#### **Preparing students for assessment**

Two optional, one-hour drop-in sessions were hosted on Teams, with one member of staff fielding questions from students. They were held in the first and third week of the assessment period. These were relatively popular with students and helped solve some queries that might have been difficult to answer via Blackboard Discussion Board.

## **Medicinal Chemistry Research Coursework**

#### **Feedback and Marking**

This assessment was marked by an individual member of academic staff, with check marking, so avoided the challenges posed by spreading marking across a team of academic staff of GTAs. One focus throughout the module design was to allow for feedback throughout, instead of only providing feedback at the end of the year, so that students can use previous feedback for the next module assessment. Individual feedback was provided through the Turnitin submission portal that students submitted their work on, within Blackboard. This was split into two sections: detailed question-by-question comments annotated on the script electronically, and a short summary bloc attached to the script. Whole-cohort feedback was also provided, as a written Word document in the Coursework Blackboard folder.