



Discovering Science: Medicinal Chemistry

What role does chemistry play in healthcare and our ability to diagnose and treat patients?

If your students are completing the whole of this course online and are not participating in the teacher-led lessons based on it, then they can complete useful and engaging activities based on the content covered. You can choose for your students to complete individual tasks by themselves or encourage group work. Though you may have your own ideas about what your students can do with the course content, we've made things easy for you by suggesting some activities that you can submit to your students below. Instructions for the students can be found later in this document.

Individual student tasks taken from the course

Reflection: Students write a 500 word reflection on what they learned from the course, including anything they might do differently now as a result of their learning, and anything additional they found out from their own reading around the topic. They will submit this reflection as a written essay, podcast or video.

Activity: Students watch the videos in Step 1.4 and 1.5 (Discovering chemotherapy). Students should take thorough notes, including definitions of these terms:

- molecular targets
- kinase
- any other new terms they encounter in the videos.

Using information from the videos, students should also produce a timeline of the development of chemotherapy. They should submit their definitions and timeline to the teacher.

Research task: Students research and write a short video script which outlines the ethical issues surrounding the future of medical imaging. The video will be 2-3 minutes, roughly 150-200 words. In producing their scripts, students should:

- demonstrate scientific understanding of the selected topic
- present a fair and balanced overview of the topic for the intended audience and provide sufficient context
- indicate an understanding of the key 'story'.

Students should also consider the 'who, what, why, where, when, how?' questions which help to tell a story effectively.

If time permits, or as an extra task, students can film their videos if they wish using phones or other devices, or alternatively submit their scripts to the teacher.

Group tasks based on the course

Research task: In groups, students perform research to find out what they can about epigenetics, answering these questions:

- What are some recent developments in epigenetics?
- Why do they matter?
- How will they be used in the future?
- Who is doing the work?

After they have researched, students imagine they are science reporters, and they are going to interview an expert on the topic of epigenetics. They should formulate five questions they would like to ask the expert. Questions should be well-researched, relevant and demonstrate an understanding of the topic. Groups submit their research findings and interview questions to the teacher, after which they can review the PDF 'Richard's explanation of epigenetics' from Step 1.14, identifying where any of their questions have been answered, and which questions remain unanswered.

Research task 2: Each group researches and produces an informative poster on one of the following:

- X-rays
- Ultrasound
- MRI
- Radioisotope imaging

When conducting research and producing their posters, groups should consider the following:

- How does this imaging technique work?
- Which chemical elements are involved in this process?
- What is the chelate effect and how does it relate to this technique?

Posters should be as simple and easy to understand as possible. Information and links provided in Steps 2.3 and 2.4 will be useful. Groups then present their posters to each other ensuring that all students see at least one poster on each of the four imaging techniques.

Discussion task: In their groups, students discuss the different imaging techniques, answering the following questions:

- Which imaging technique would you be most comfortable with and why?
- Why do you think it's important for patients to understand how imaging techniques work?

Additional support

You can use the [How to use FutureLearn guide](#) with your students to get them started. There is also a school-facing [Guide to safeguarding and security on FutureLearn](#) if you need it.

Test

You can use the test questions listed in the student instructions below as a short assessment to enable your students to demonstrate what they have learned on the course. The assessment has 15 marks in total.

The questions have been designed to be flexible and open. The questions indicate which steps the answers can be found on. The marks available reflect the likely length and complexity of the answer expected, and how many points they are likely to make. For example, a 5-mark question might reflect a longer, more complex question, or one where they have asked to describe or explain a number of elements. Depending on the level and ability of your students, you can decide how you wish to award the marks so they are appropriate for your class.

Each question suggests which steps the students may wish to return to answer the questions. **You can decide if you want to include this information when you share the assessment with your students.**

Student instructions

Reflection

Write a 500 word reflection of what you have learned from the course. It should include anything you might do differently now because of what you learned, and anything additional you found out in your reading around the topic. Submit this reflection to your teacher as a written essay, podcast or video.

Activity

Watch the videos in Step 1.4 and 1.5 (Discovering chemotherapy) and take thorough notes, including the definitions of these terms:

- molecular targets
- kinase
- any other new terms you encounter in the videos.

Using information from the videos, you should also produce a timeline of the development of chemotherapy. Submit their definitions and timeline to the teacher.

Research task

Research and write a short video script which outlines the ethical issues surrounding the future of medical imaging. Your video will be 2-3 minutes, roughly 150-200 words. In producing your script, you should:

- demonstrate scientific understanding of your selected topic
- present a fair and balanced overview of the topic for the intended audience and provide sufficient context
- indicate an understanding of the key 'story'.

You should also consider the 'who, what, why, where, when, how?' questions which help to tell a story effectively.

As an extra task, you can film your video, using a phone or another device, or alternatively submit your script to your teacher.

Group discussion

In your groups, discuss the different imaging techniques, answering the following questions:

- Which imaging technique would you be most comfortable with and why?
- Why do you think it's important for patients to understand how imaging techniques work?

Group research task

In your group, conduct research to find out what you can about epigenetics, answering these questions:

- What are some recent developments in epigenetics?
- Why do they matter?
- How will they be used in the future?
- Who is doing the work?

After you have conducted research, imagine you are science reporters, and you are going to interview an expert on the topic of epigenetics. You should formulate five questions your group would like to ask the expert. Questions should be well-researched, relevant and demonstrate an understanding of the topic.

Submit your research findings and interview questions to your teacher. After this, you can review the PDF 'Richard's explanation of epigenetics' from Step 1.14, identifying where any of your questions have been answered, and which questions remain unanswered.

