



UNIVERSITY OF CUMBRIA
COURSEWORK REASSESSMENT REQUIREMENT

Module Code: HSOB5010

Module Title:
Cellular and Molecular Pathology

Tutor: Lucy Spain

Title of the item of work: Practical Assessment of Cellular and Molecular Pathology

Wordage:
3500 words (+/-10%)

Details and Criteria: (Please attach additional sheets if necessary)

Learning outcomes to be assessed:

1. Demonstrate knowledge of the classical steps involved in disease progression and their corresponding microscopic phenotype.
2. Describe how cells and tissues are processed for microscopic examination within a diagnostic setting.
3. Compare and contrast methods used to detect and differentiate specific cellular elements in cell and tissue preparations.
4. Discuss the diagnostic value of specialised procedures such as immunocytochemistry and FISH.
5. Critique the development of new and emerging procedures and techniques.

THIS ASSIGNMENT IS WEIGHTED AT 100% OF THE MODULE.

Throughout this module you have used laboratory skills to explore the molecular and cellular morphology associated with disease. You must produce a portfolio building on this work, in which you will demonstrate the classical steps involved in disease progression and how this presents as microscopic phenotypes (**LO1**), describe how cells and tissues are processed for microscopic examination (**LO2**) and compare and contrast methods used to detect and differentiate specific cellular elements (**LO3**). In addition, through independent research, you should include discussion of the diagnostic value of

specialised procedures such as immunocytochemistry and FISH (**LO4**) and critique the development of new and emerging procedures and techniques (**LO5**).

In-text citation is included in the word count, but the reference list is not included in the word count. You are required to present a reference list to support your work, to include relevant journal articles as well as a range of other suitable sources.

Further guidance on the structure and content of the portfolio can be found below:

Section 1 - Introduction

At the start of your portfolio, you should include an introduction which demonstrates knowledge of the classical steps involved in disease progression and their corresponding microscopic phenotype. (**LO1**)

In order to do so, it is recommended that you pick an organ of the body and disease that affects this organ. Some examples are given below, however you could pick an alternative focus, these are just suggestions:

Kidney – Chronic kidney disease
Liver – Alcoholic liver disease
Heart – Coronary heart disease
Bone – Osteoporosis
Reproductive System - Endometriosis

In this section you should introduce the cells and tissue that form the organ that you focus on and include explanations of the microscopic phenotype of normal and diseased tissues within the organ, considering the different stages of disease. You should include images to support the work in this section. For some organs, these can be obtained during your laboratory sessions. For others and for examples of slides showing specific disease, these images can be taken from other sources which should be referenced appropriately.

Section 2 - Practical

Throughout this module, you will complete a series of practicals which demonstrate different methods used in the study of cellular and molecular pathology. You will:

- 1) Embed tissue samples in paraffin
- 2) Produce thin samples for mounting onto slides using a microtome
- 3) Stain samples using a variety of techniques

For the three process above, you will need to include a method and photographic evidence for each practicals covered in this module, which describes how cells and tissues are processed for microscopic examination within a diagnostic setting (**LO2**).

This would be a good opportunity for you to use your own images of the slide preparation process you will complete in the laboratory

You should include an explanation for readers of what they can see in each of the images included, what they should take note of and how this image fits in with other important aspects of slide preparation. For example, you may include dos and don'ts, or, issues and common problems that arise with the different steps of processing to produce histology slides.

Section 3 - Compare two methods of staining used in cellular and molecular pathology

In this section you should discuss different techniques used in cellular and molecular pathology. Refer to techniques and use images taken in the laboratory and from other sources. This section should include a comparison of two different methods used to detect and differentiate specific cellular elements in cell and tissue preparations **(LO3)**.

Section 4 – Independent work on contemporary techniques in cellular and molecular pathology

In this section you are asked to discuss, using a clinical example, the diagnostic value of one specialised procedure such as immunocytochemistry and FISH **(LO4)**. Finally, you should critique one additional new and emerging technique used in the field of cellular and molecular pathology by explaining how it is an improvement over current techniques **(LO5)**.

SUBMISSION DATE AS PER STUDENT PORTAL

To be submitted by **4 PM** on **12/08/2022** via Turnitin on the Module Blackboard site.