



Diploma of Expert Practice in Immunocytochemistry

Examination 2024

Paper 1

Short-answer questions

120 minutes

1. Attempt **6 out of 9** questions – **choose 2 from each section**
2. Each question is worth 20 marks
3. You must transfer your answers directly into the answer booklet

Pre-Analysis

1. Discuss the factors that can affect the immunohistochemistry result in a surgical resection sample.
2. Discuss the effects of the use of different fixatives and embedding media on immunocytochemical (ICC) staining procedures.
3. Discuss and evaluate the methods of decalcification for bony tissues requiring immunocytochemical investigations.

Analysis

4. Discuss controls used for immunohistochemical methods.
5. Provide an overview of the different hypotheses which have been proposed to explain the mechanisms underlying high temperature epitope retrieval (HIER).
6. Provide an overview of the steps involved in the production of monoclonal antibodies and discuss the advantages and disadvantages of using monoclonal antibodies in ICC staining techniques.

Post Analysis

7. Your laboratory was highlighted by your EQA provided as a poor performer for Estrogen Receptor. Discuss the actions you will now take.
8. Describe how would you recognise that an antibody is showing an incorrect staining pattern.
9. Describe the quality measures used to assure good laboratory practice for ICC staining procedures in the laboratory.



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Paper 2

Interpretive Questions

120 minutes

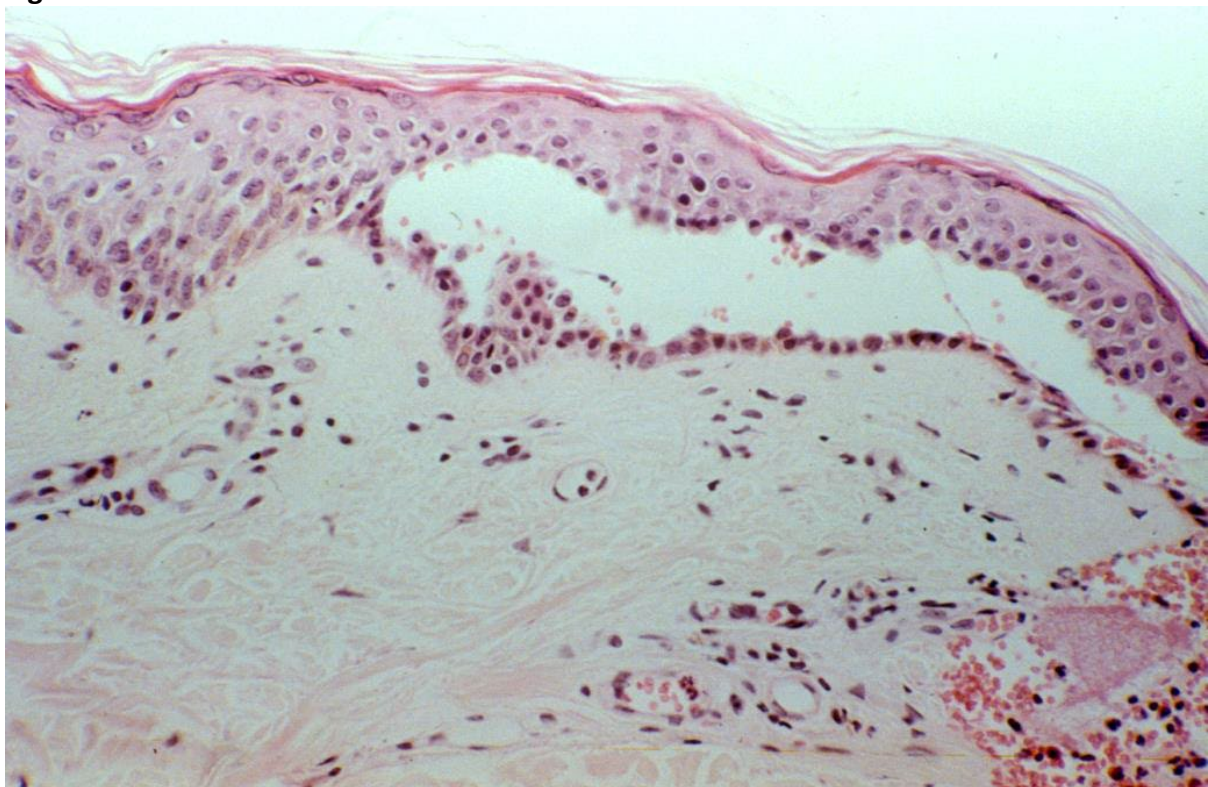
1. Attempt **3 out of 5** questions
2. Each question is worth 100 marks
3. You must transfer your answers directly into the answer booklet
4. Begin each new answer on a new page

1.

A 45 year old Asian lady presented at a dermatology clinic with painful blisters in the mucosa of her mouth. In addition she also had skin blisters that come and went. The blisters wept, were crusty and eventually peeled off the skin surface resulting in ulcerated skin and mucosal lesions. The disease was thought to be an autoimmune disorder.

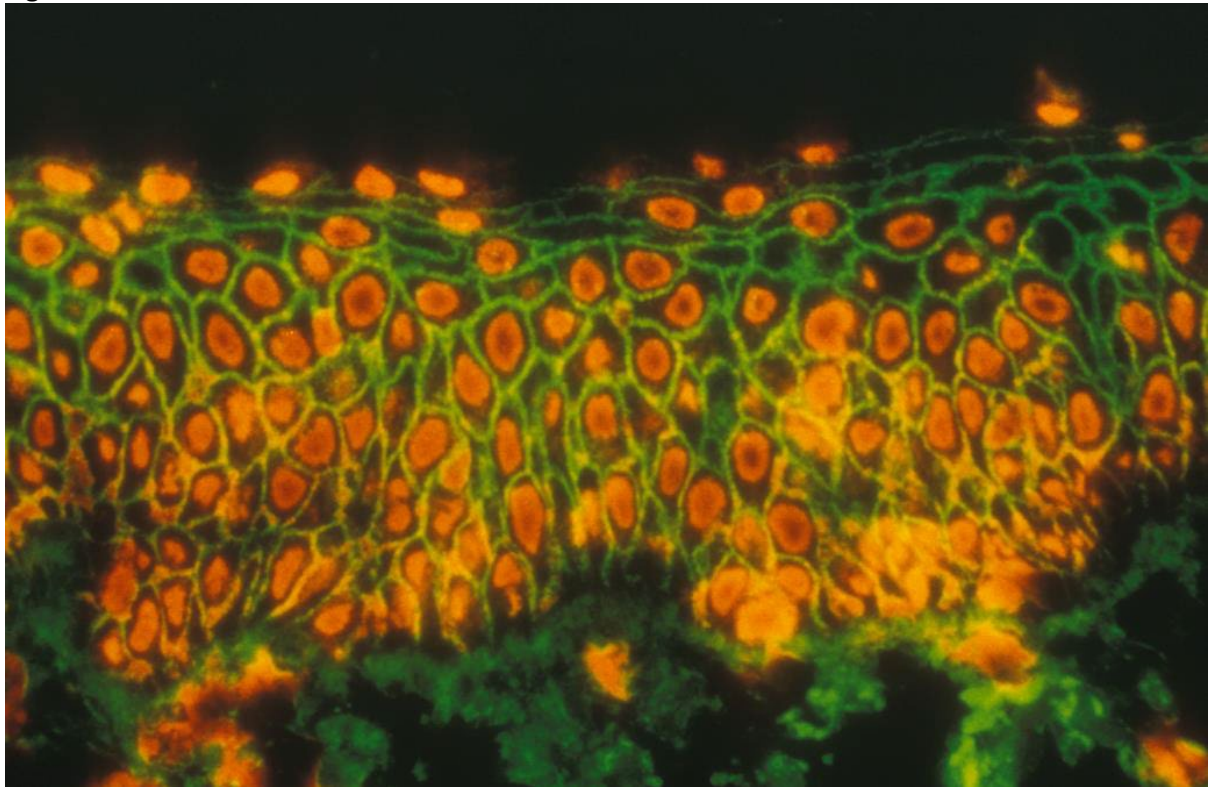
- a. Discuss and describe the optimal specimen type to enable a reliable assessment of the patient's condition (25 marks)
- b. Describe the investigations that would be performed including the selection of antibodies you may employ. (25 marks)
- c. Figure 1 HE demonstrates the nature of the lesion microscopically. Describe the appearance of the lesion. (20 marks)

Figure 1



- d. Figure 2 Anti IgG staining demonstrates a characteristic pattern of staining. Describe the nature of the investigation shown and requirements for the laboratory equipment. (20 marks)

Figure 2



d. From Figure 2 - What is the probable diagnosis here? (10 marks)

2.

A 35 year old man recently returned from a holiday in Cyprus. On returning to the UK he reported to his GP with a pigmented skin lesion on his scalp that had recently changed in colour, had an irregular out line, was raised , was nodular and bled when touched.

- a. Describe the nature and type of specimen that would be taken for of a pigmented lesion removal. (10 marks)
- b. Describe the dissection and processing of such a specimen. (20 marks)
- c. Routine HE revealed an invasive tumour entering through the dermis and also rising through and ulcerating the epidermis. Immunocytochemical markers were requested to determine the nature of the tumour cells. What markers would be used to determine the nature of the tumour cells described? (20 marks)
- d. The reporting pathologists requested further immunocytochemistry to determine the proliferation index of the tumour cells. What marker could be used? (10 marks)
- e. The melanin present was found to be very extensive and the pathologist requested an alternative chromogen. What alternative chromogen could be used and why? (10 marks)

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f. Despite using an alternative chromogen the final reaction product immunocytochemical labelling was not easy to evaluate. What alternative options could be used here and why? (20 marks)

g. What predictive test could be used with IHC methods in this case and why? (10 marks)

3.

A 60-year-old man presented to his GP with a shortness of breath and a persistent cough of more than 4 weeks duration, which had not improve by non-prescription treatment. He was referred to the hospital for a chest X-Ray. The findings showed a mass on the right lower lung lobe.

a. What tumour types would you consider in this case? Justify your answers. (20 marks)

b. Provide a panel of antibodies that would help to differentiate between your suggested tumour types. Justify your choices. (30 marks)

c. At the multidisciplinary team meeting (MDTM) it was confirmed that the mass was a non-small cell lung carcinoma (NSCLC). What further tests might be requested and why? (50 marks)

4.

The following images are of tissue sections of a malignant neoplasm, 6cm in size, which was present in the antrum of the stomach of a 65-year old man. Figure 1 is of a haematoxylin and eosin stain and Figure 2 (different field) is of the tumour stained immunocytochemically with CD117.

Figure 1 – Haematoxylin and eosin stain (x20 magnification)

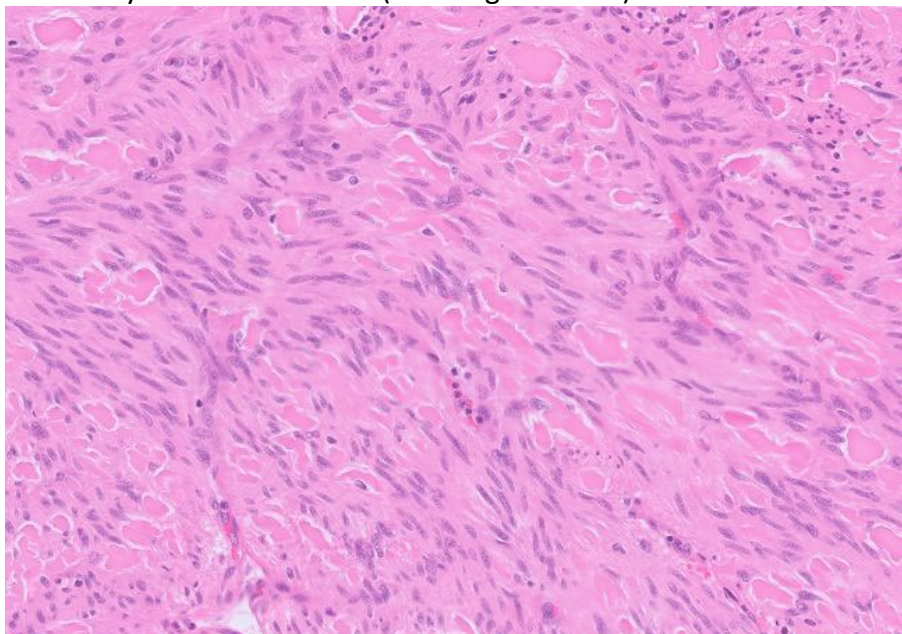
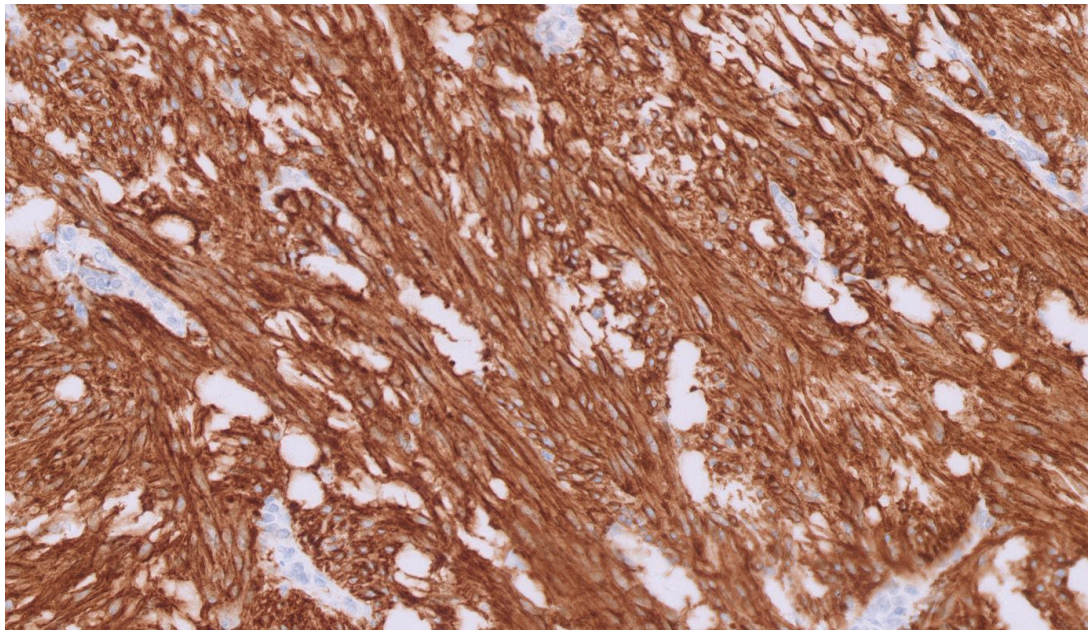


Figure 2 - Tumour stained immunocytochemically with CD117 (x20 magnification)



- a. What is the most likely diagnosis and what are the differential diagnoses in tumours of this type? (30 marks)
 - b. Discuss what other immunocytochemical markers you would include in a panel to confirm the nature of this lesion. (30 marks)
 - c. What internal and negative tissue controls can be examined to ensure optimal staining when staining with CD117? (20 marks)
 - d. What is the significance of the CD117 positivity in terms of the clinical management of this patient? (20 marks)
- 5.
- a. Critically discuss the role of the following antibodies in the diagnosis of prostate cancer: AMACR, p63 and cytokeratins. (60 marks)
 - b. Discuss the limitations of using PSA in the diagnosis of prostate cancer. (20 marks)
 - c. Discuss the practical limitations of using immunocytochemistry in the diagnosis of prostate cancer. (10 marks)
 - d. It is recognised that the use of biopsy samples is an essential part in the early diagnosis of prostate cancer. Discuss methods which can be used in order to maintain sample integrity and minimise risks associated with sample handling of prostate core biopsy samples. (10 marks)