

UNIVERSITY COLLEGE LONDON

University of London

EXAMINATION FOR INTERNAL STUDENTS

For The Following Qualifications:–

B.Sc. B.Sc. (Intercal)

Surgery 2: Cell Biology of Neoplasia

COURSE CODE : SURG0002

UNIT VALUE : 0.50

DATE : 27-APR-06

TIME : 10.00

TIME ALLOWED : 3 Hours

UNIVERSITY OF LONDON
(University College London)

BSc Degree 2006

TUMOUR BIOLOGY SURG 0002 : CELL BIOLOGY OF NEOPLASIA

27 April 2006: 10.00 to 13.00

Answer both Sections A and B: 5 questions from 2 sections

Please answer each Section in a separate answer book

You should allow about 1 hour for Section A and 2 hours for Section B

One third of marks allocated to Section A

SECTION A Answer ONE of the following three questions

A1. Describe how growth factors, their receptors and downstream molecules of their signal transduction path contribute to human tumourigenesis. You may use one growth factor family and one signal transduction pathway as an example.

A2. Which signalling path is crucially dysregulated in the initiation of the majority of colorectal cancers? Explain the underlying mechanisms involved and the cellular outcomes.

A3. Briefly describe the cell cycle and how oncogenes and tumour suppressor genes interact with it. What are the cellular consequences? List the names of human cancers/syndromes that these genes have been associated with.

SECTION B Answer FOUR of the following seven questions

B1. Which growth factor opposes proliferation of epithelial cells and which cancer is it most associated with? Outline the signal transduction pathway of this growth factor and explain how **two** named molecules in this pathway are altered in cancer.

PLEASE TURN OVER

SURG 0002 SECTION B *continued*

B2 Choose two cellular proto-oncogenes. For each, explain its importance in named human cancers and how it may be targeted therapeutically.

B3 Discuss the molecular mechanism of action of a named DNA virus in relation to the aetiology of a specific human cancer.

B4 What are the risk factors associated with breast cancer and why do ER α -positive cancers have a better prognosis than ER α -negative cancers?

B5 Explain the mechanism of action of retinoids. Why does *all-trans* retinoic acid produce remission in only some promyelocytic leukaemia patients?

B6 What is apoptosis? Describe its signal transduction pathway. Name one molecule from this pathway which has been associated with a named human cancer.

B7 Write short notes on **two** of the following:

- (a) HGF
- (b) PDGF
- (c) Knudson's hypothesis
- (d) MDM2

END OF PAPER