

UNIVERSITY COLLEGE LONDON

University of London

EXAMINATION FOR INTERNAL STUDENTS

For The Following Qualification:-

B.Sc. (Intercal)

Surgery 2: Cell Biology of Neoplasia

COURSE CODE : SURG0002

UNIT VALUE : 0.50

DATE : 06-MAY-03

TIME : 14.30

TIME ALLOWED : 3 Hours

UNIVERSITY OF LONDON
(University College London)

BSc Degree 2003

TUMOUR BIOLOGY SURG 0002 : CELL BIOLOGY OF NEOPLASIA

06 May 2003: 14.30 to 17.30

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.

One third of marks allocated to Section A

SECTION A Answer **ONE** of the following three questions

A1 There is a family of polypeptide growth factors which often acts in the opposite manner to most other growth factors. Identify such a family. Describe the cellular actions of the growth factors and explain, using examples, how their actions oppose or contribute to oncogenesis and cancer progression.

A2 What is the function of the APC protein? Discuss how the mutation spectrum of the *APC* gene is affected by the role of the APC protein in colorectal cancer cells.

A3 What are retinoids and why may they be used to antagonise precancerous or malignant disease? Describe their mechanism of action at the cellular level and illustrate how this explains their efficacy against *some* promyelocytic leukaemias.

SECTION B Answer **FOUR** of the following seven questions

B1 Explain how the protein product of a named cellular oncogene contributes to cancer growth and progression; in your answer, include cellular mechanisms and outcomes.

B2 "Death is a good thing if you want to stay alive". What cellular process do you think this phrase alludes to? Briefly describe the process and explain how its alteration contributes to cancer progression.

B3 Describe **two** examples of how our understanding of the role of cellular oncoproteins has enabled drugs of high specificity and decreased toxicity to be designed for the treatment of **named** human cancers.

PLEASE TURN OVER

SURG 0002 SECTION B *continued*

B4 The p53 protein maintains the genomic integrity of the cell. Describe the mechanisms that control the cellular level of this protein.

B5 Give one example of a retrovirus and one example of a DNA virus postulated to cause human cancer. For each virus, describe its mechanism of action and the type of cancer it is proposed to cause.

B6 Outline the significance of **two** of the following in cancer:

- a) the *ptch* gene
- b) loss of uroplakin expression
- c) oestrogens in breast cancer
- d) BRCA1 and BRCA2

B7 Make notes on **two** of the following:

- a) Knudson's hypothesis
- b) cyclin kinase inhibitors (cki's)
- c) 'knockout' mice

END OF PAPER