UNIVERSITY COLLEGE LONDON

University of London

EXAMINATION FOR INTERNAL STUDENTS

For The Following Qualification:-

B.Sc. (Intercal)

Surgery 1: Cancer Research

COURSE CODE	:	**SURG0001**
UNIT VALUE	:	**0.50**
DATE	:	**01-MAY-03**
TIME	:	**10.00**
TIME ALLOWED	:	**3 Hours**

TURN OVER

UNIVERSITY OF LONDON
(University College London)

BSc Degree 2003

TUMOUR BIOLOGY SURG 0001: CANCER RESEARCH

01 May 2003: 10.00 to 13.00

Answer Sections A, B and C: 6 questions from 3 sections

Please answer each Section in a separate answer book

You should allow about 1 hour for each Section

Marks allocated equally between Sections

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

A1 "There is a wealth of evidence that much published research is methodologically unsound". Do you think this is really true? (*hint:* your answer could include reference to models, qualitative and quantitative analyses and to the written reports).

A2 Describe the steps involved in the discovery and development of anti-cancer agents, illustrating your answer with examples from specific classes of drug.

A3 Discuss **three** ways in which immunological techniques could be used to analyse the expression of cancer-associated antigens on the surface of tumour cells.

SECTION B Answer **TWO** of the following four questions

B1 You have received a freshly excised breast lump plus the axillary lymph nodes. Outline the laboratory procedures, the techniques you would use, and the factors you would consider in order to reach both a pathological diagnosis of the lump and a prognosis. Give reasons for each of your procedures.

B2 What experimental models of cancer would you choose to test
a) an agent that is potentially curative
b) an agent that is potentially preventive?

Highlight the differences.

PLEASE TURN OVER

B3 You wish to produce a model of human prostate cancer metastasis. Starting from fresh human biopsy tissue, outline what you would do and how you would validate the model.

B4 Cancer cells demonstrate an accumulation of genetic changes. Name:-
i) one technique used to identify large chromosomal changes
ii) one technique used to detect point mutations
in cancer tissue. Describe the principles of **each** technique, with its advantages and limitations.

SECTION C Answer **THREE** of the following five questions

C1. Outline the experimental options for cytotoxicity testing in vitro.

C2. Describe **two** uses of fluorescence in cancer research

C3. Give **two** ways of solving **each** of the following problems encountered when using antibodies:
(a) how to ensure that the antibody is working specifically for its antigen?
(b) how to ensure that the antibody can bind to an antigen that may be internal? or masked.
(c) how to prevent the antibody sticking non-specifically?

C4. Make notes on **two** of the following:-
a) tumour spheroids
b) tissue microarrays
c) DNA microarrays

C5. Define the following:-
a) primary cultures
b) cell lines (also called cell strains)
c) immortal cell lines
d) cancer cell line
e) clonal cell lines

END OF PAPER