



About the Tutor

Guy Sutton's primary academic interests are the genetics of neural development and the interactive nature of biological, behavioural and genetic factors in disease processes; in particular, how the brain can affect immunity increasing susceptibility to illness.

Guy is an Honorary Lecturer in Neuroscience at the University of Nottingham Medical School. He lectures in neuroscience to undergraduate and postgraduate students, including medics, biologists and psychologists, and to health professionals. He also lectures in postgraduate molecular genetics and has held previous academic appointments at Manchester, Manchester Metropolitan and Cambridge Universities. Guy has been a visiting researcher to universities in the United States and has conducted research projects and data analysis for various organisations, including the Department of Health and the Medical Research Council. In addition to presenting research at various international conferences and writing for academic publications, he has talked about the theoretical and clinical aspects of his research on television and radio.

Guy has tutored on 'A' level reading parties for students and teachers for several years, and is an associate tutor with Villiers Park Educational Trust, Cambridge, running courses for Young, Gifted & Talented.

About MBI

MBI (Medical Biology Interactive) delivers one-day and half-day courses, seminars and tutorials in epidemiology, occupational health and the human sciences to the health service, industry and education. All MBI seminars are written and run by academics and health specialists, each of whom has considerable experience in research and its practical applications. Seminars are delivered at the hospital, workplace or school, based on cutting-edge research and current practice benchmarks, and tailored to the needs and concerns of the client.

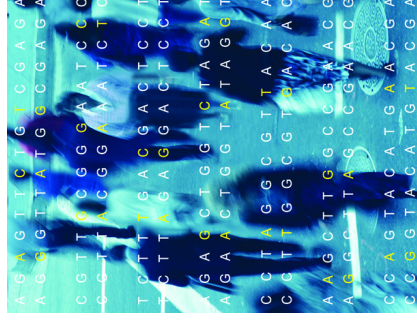
For further information and full programmes, please refer to the contact details on the back of this pamphlet.



MBI
MEDICAL
BIOLOGY
INTERACTIVE

PRESENTS

DNA A.M.



A Half-Day Tutorial For AS/A2 Level Students In Modern Medical Genetics - Delivered At Your School

TUTOR:

Dr. Guy M. Sutton

Director, MBI &

Honorary Special Lecturer,
University of Nottingham Medical School



MBI
MEDICAL
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Seminars & Tutorials For The Health Service, Industry & Education

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WHY A DNA MORNING?

The gene-containing regions of the human genome are now effectively sequenced with the most recent estimates suggesting some 18,308 protein-coding genes (Science, 2007). In years to come, genomics and proteomics will likely revolutionise the practice of medicine and dramatically increase our knowledge of preventing and treating many diseases. Genomics will also impact on academic disciplines from the life sciences to economics.

This tutorial is thus intended to serve as a comprehensive primer of modern genetic principles applied to medicine and biomedical science, developing knowledge beyond the AS/A2 curriculum. To be considered are important questions and issues that have arisen from recent research, acknowledging the social ramifications for genetic technologies.

In addition to reviewing elementary principles of medical genetics, the tutorial introduces the student to modern theories of disease development, with a focus on cancer genetics. The field of cancer epigenetics is evolving rapidly as a function of advances in our understanding of chromatin structure, transcriptional activity and DNA methylation and these processes will be over-viewed. To further emphasise the rapid developments being made, students will learn about new pharmacological epigenetic therapies such as DNA methyltransferase inhibitors.

Future treatment and prevention of the large number of genetic diseases will depend on a deeper understanding of the relationship between genes, environment and other disease variables and this relationship will be emphasised.

WHICH STUDENTS WILL BENEFIT?

This tutorial is designed primarily for very able AS and A2 level students but will also be useful to:

- any AS students with an interest in the principles and applications of genetics and its contribution to medicine and society.
- those students considering a university degree and/or career in the following subjects:

Medicine **Biology** **Neuroscience**
Biochemistry **Genetics** **Psychology**
Dentistry **Nursing** **Philosophy**

The material presented during this tutorial will complement and develop upon topics and issues encountered in AS/A2 level Biology.

AIMS OF THE TUTORIAL

There are three main aims to this tutorial:

- to provide the student with an overview of elementary and advanced genetic principles, including contemporary issues and recent developments in epigenetics.
- to examine various types of genetic and chromosomal disorders, also considering complex genetic disorders.
- to focus on cancer biology and genetics, providing the student with an insight into gene classes and their roles in cellular control processes.

TOPICS TO BE COVERED

A variety of topics and issues relating to genetics will be covered. The tutorial can be tailored to your specific requirements; an exemplar programme is provided below:

• 9.00-10.15: Introduction to Genetics

Aims & introduction. From DNA, genes and chromosomes to transcription, translation and the genetic basis of mutation. With DVD presentation.

• 10.15-10.50: GeneWeb

Computer internet-based session featuring MBI software.

Exercises include: Explore A Sequence of DNA;

Chromosome Browsing; Gene Sequencing.

• 11.05-11.40: Medical Genetics

Genetic, chromosomal, mitochondrial and multifactorial disorders. From polydactyly and neural tube defects to complex disorders such as autism and schizophrenia.

• 11.40-12.20: Focus: Cancer Genetics

The molecular basis of cancer, considering cancer gene families, impaired cellular DNA repair, apoptosis and telomere shortening.

• 12.20-12.45: Epigenetics

Methylation and histone deacetylation, gene expression and gene silencing in health and illness.

• 12.45-12.50: Conclusions

FORMAT

The tutorial is delivered in your school and runs throughout the school morning. Tutorial date can be arranged by contacting MBI. Format is varied, with interactive, multimedia lectures and group discussions.

Each school receives an interactive CD-ROM featuring specially-written DNA A.M. software, incorporating tutorial material, genetics exercises and activities together with web links. Students each receive a comprehensive 14-page tutorial pack and are permitted to copy the above software for home use.

MBI

OTHER SEMINARS & TUTORIALS

FOR THE HEALTH SERVICES & INDUSTRY

MEDICAL GENETICS
(FOR GENERAL PRACTITIONERS)

METHODS IN MOLECULAR BIOLOGY

EPIDEMIOLOGY & STATISTICS IN CLINICAL PRACTICE

HEALTH & STRESS MANAGEMENT

BRAIN DAY FOR THE HEALTH & EMERGENCY SERVICES

FOR EDUCATION
(FOR A2 LEVEL STUDENTS)

BRAIN DAY

STRESS DAY

HUMAN HEALTH & DISEASE GENETICS