A Career in Biomedical Science

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Biomedical Science is a profession

- Institute of Biomedical Science – the professional body for biomedical scientists
  - Sets standards of training for biomedical scientists
  - Accredits degrees
  - Links between universities and employers
  - Approves training laboratories
  - Provides professional qualifications for biomedical scientists
  - Works with other professional organisations

What is Biomedical Science ?

- One of the broadest areas of modern science
- Underpins much of modern medicine
- Biomedical scientists are a large part of the wider biomedical science workforce
- Samples taken by doctors or nurses are analysed by a biomedical scientist
- Without them, diagnoses and treatment would be less effective

Role of Biomedical Scientists in the UK

- Part of the NHS healthcare science workforce
- A registered profession (HCPC)
- Accredited biomedical science degrees
- Work with medical pathologists and laboratory support workers
- Undertake laboratory tests, staff training, quality control and laboratory management

Biomedical Science is divided into different laboratory disciplines

- Infection Sciences
  - Microbiology and Virology
- Blood Sciences
  - Clinical Chemistry, Haematology, Transfusion and Immunology
- Cell Sciences
  - Histology and cytology
- Genetics and molecular biology

Infection Sciences

- In microbiology you will study micro-organisms such as bacteria, fungi and parasites which cause disease
- You will identify these organisms and establish the antibiotic treatment required to kill them therefore stopping the disease.
- Virology is the study of viruses and the disease caused by them such as German measles, HIV and Chickenpox.
- It is also involved in the monitoring the effects of vaccines.

Blood Sciences - Clinical Chemistry

- Biomedical Scientists analyse blood and other body fluids to detect enzymes, chemicals and hormones to help the diagnosis of disease e.g. diabetes, and cancer.
- They also carry out toxicological studies, test kidney and liver functions and help to monitor therapies.
- Operates as a 24/7 service

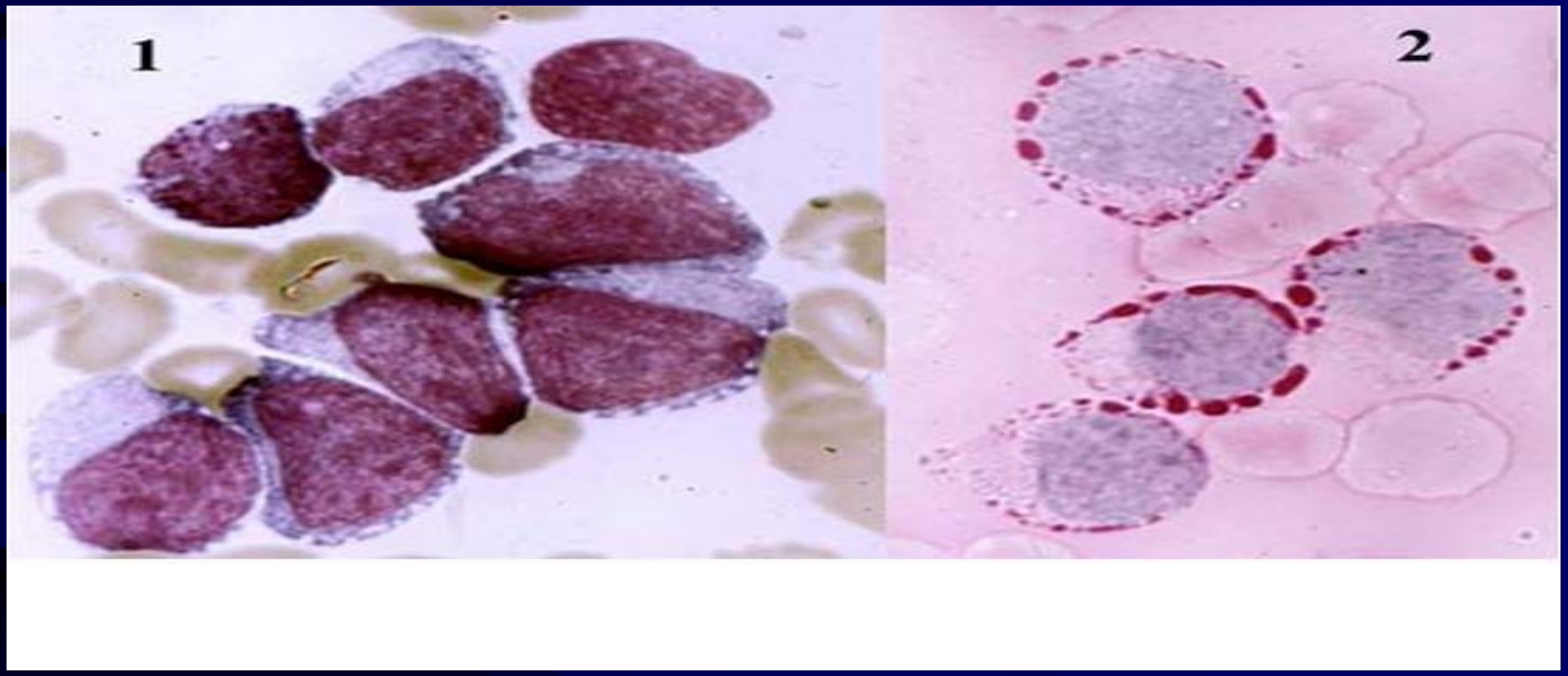
Blood Sciences - Transfusion Science

- Biomedical Scientists identify blood groups for blood donation and ensure the correct group blood is matched to the patient due to receive the transfusion.
- They also make sure there is enough blood available in case of emergency such as road traffic accidents and operations.
- Operates as a 24/7 service

Blood Sciences - Haematology

- Haematology is the study of blood.
- In this discipline you are involved with the formation, composition, function and diseases of the blood.
- Some of the diseases diagnosed in haematology are leukaemia, malaria and anaemia.
- Operates as a 24/7 service

LEUKAEMIC CELLS

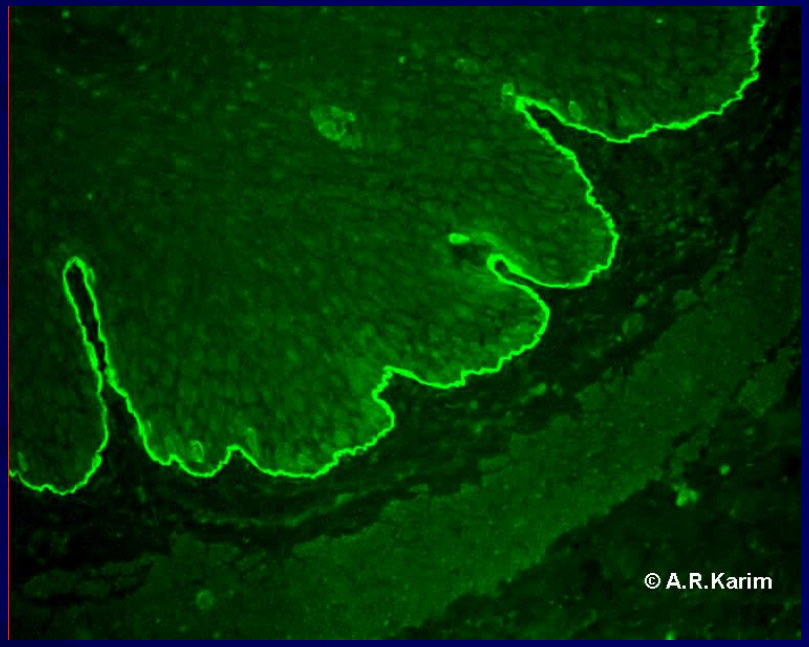


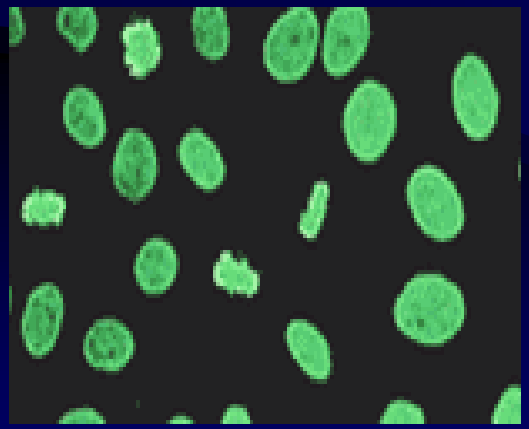
Blood film showing abnormal white cells (fig 1). Glycogen granules in cytoplasm
confirms acute lymphatic leukaemia (fig 2)

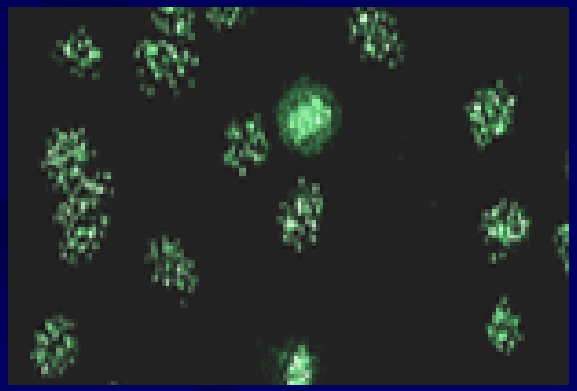
Blood Sciences - Immunology

- Biomedical scientists in Immunology deal with the condition of the body's immune system and its role in infectious diseases, allergies, tumour growth, tissue grafts and organ transplantation.
- Their work is particularly important in the monitoring and treatment of AIDS, autoimmune conditions and allergies.

Immunology







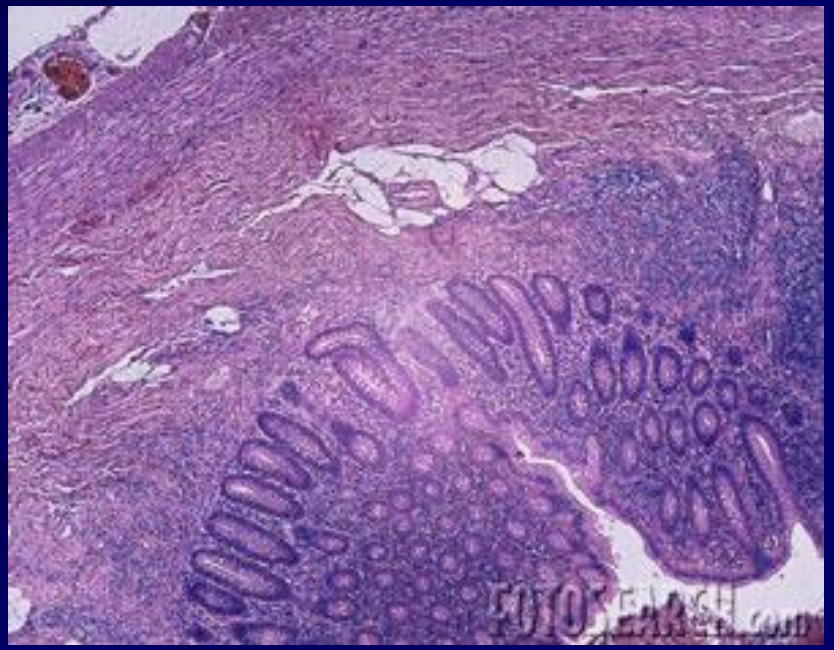
Cell Sciences

- Histology is the microscopical study of tissue samples to establish the cause of disease
- Tissue may be taken during surgery or at post mortem.
- Diseases such as cancer are diagnosed by looking for abnormal features in tissue and cells.
- Cytology is best known for screening cervical smears, but it also provides a non-gynaecological service.
- Like histology, specialised techniques are used to prepare and study samples of cellular material.
- 24/7 service not usually required

Microtomy

Transverse section through a normal appendix

Inflammatory appendix

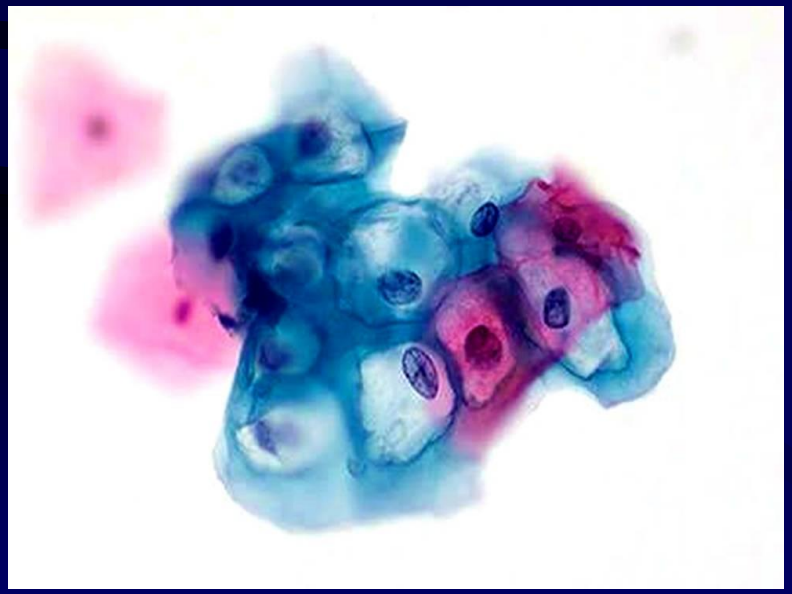


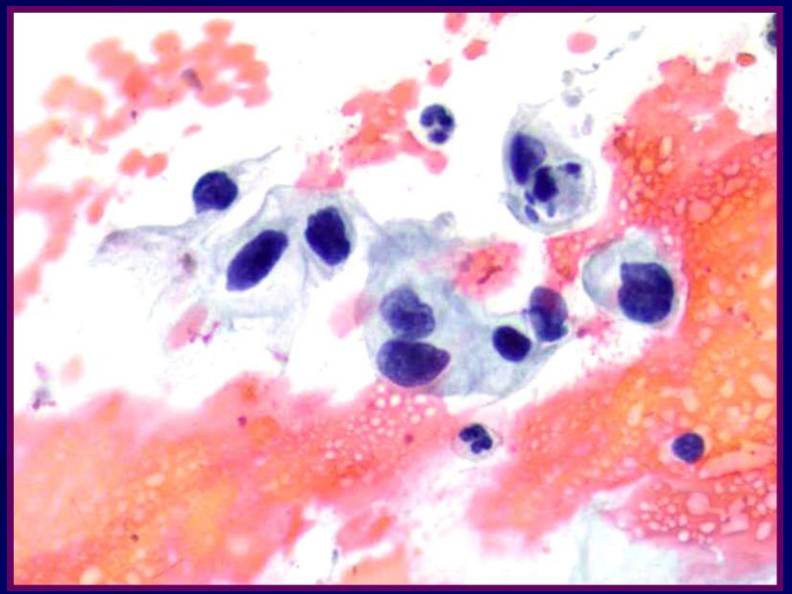
Cervical cytology

4,000,000 women screened per year

Death rate approx 1,000 per year

8-10% smears show pre-malignant changes





How do I become a Biomedical Scientist?

- An IBMS accredited degree in biomedical science OR in healthcare science
- Non accredited degrees will require individual assessment by IBMS and undergraduate top-up
- Training position in an approved laboratory – sometimes referred to as a trainee healthcare science practitioner
- HCPC registration

Career progression

IBMS Professional qualifications

- Specialist Diploma – usually required for NHS Band 6 positions
- Diplomas of Expert Practice – important in some specialist areas and roles
- Higher Specialist Diploma (M level) – acceptable for Band 7 positions
- Advanced Specialist Diplomas – available in cytology and histology only and involve a diagnostic element.

Career progression

Academic qualification

- MSc – required for NHS Band 7 positions. Access limited by cost. An alternative is the Higher Specialist Diploma
- PhD and professional doctorates – not very common. Depends on local employer requirements and support.

Other NHS Careers

Laboratory support worker

- Often no minimum qualification requirement (Bands 2 and 3)
- Useful for gaining laboratory experience

Clinical Scientist

- National recruitment on to scientist training programme (STP)
- 1st or 2.1 hons degree for entry on to a Masters training programme
- HCPC registration

NHS Payscales

Band 4 - Laboratory support worker

Point 11	18,838
Point 12	19,268
Point 13	19,947
Point 14	20,638
Point 15	21,265
Point 16	21,388
Point 17	22,016

Band 5 – Basic level registered biomedical scientist

Point 16	21,388
Point 17	22,016
Point 18	22,903
Point 19	23,825
Point 20	24,799
Point 21	25,783
Point 22	26,822
Point 23	27,901

NHS Payscales

Band 6 – Specialist biomedical scientist

Point 21	25,783
Point 22	26,822
Point 23	27,901
Point 24	28,755
Point 25	29,759
Point 26	30,764
Point 27	31,768
Point 28	32,898
Point 29	34,530

Band 7 – Senior supervisory biomedical scientist positions

Point 26	30,764
Point 27	31,768
Point 28	32,898
Point 29	34,530
Point 30	35,536
Point 31	36,666
Point 32	37,921
Point 33	39,239
Point 34	40,558

Other career opportunities

Biomedical Science graduates are found in

- NHS and private laboratories
- Veterinary laboratories
- Blood Transfusion Service
- Medical Research Council
- University laboratories (and as lecturers)
- Pharmaceutical manufacturers and sales
- Teaching
- Accountancy!

Further information

- You can get information on accredited courses by visiting the Institute of Biomedical Science website at www.ibms.org
- You can become a student member of the Institute of Biomedical Science for £10.00 per year. Visit www.ibms.org/students

Any questions?