What is biomedical science?

Biomedical science is the **science at the heart of healthcare**

**Everyone** will use the services of biomedical scientists more than once during their life.

Samples taken by doctors or nurses are usually sent to a pathology laboratory to be **analysed by** a biomedical scientist.

Biomedical science is one of the **broadest areas** of modern science and underpins much of modern medicine.
What is biomedical science?

Biomedical Science is divided into four different laboratory disciplines:

• **Infection Sciences**  
  Microbiology and Virology

• **Blood Sciences**  
  Clinical Chemistry, Haematology, Transfusion and Immunology

• **Cell Sciences**  
  Histology and cytology

• **Genetics and Molecular Pathology**
**Microbiology** is the **study of micro-organisms** such as bacteria, fungi and parasites which cause disease.

Biomedical scientists identify these organisms and establish their sensitivity to specific antibiotics.

**Virology** is the **study of viruses** and the disease caused by them such as German measles, HIV and Chickenpox.

Virologists are involved in monitoring the effects of vaccines.
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.
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 bloodstocks reserve for critical incidents, such as road traffic accidents and operations.
Haematology is the study of blood

In this discipline haematologists are involved with the formation, composition, function and diseases of blood

Some of the diseases diagnosed in haematology are leukaemia, malaria and anaemia
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.
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* e.g. bronchial washes and sputum tests.

Like histology, specialised techniques are used to prepare and study samples of cellular material.
Genetics and Molecular Pathology

Genetics is the study of genes, genetic variation, and heredity in living organisms.

It is generally considered a field of biology, but intersects frequently with many other life sciences and is strongly linked with the study of information systems.

Molecular Pathology is an emerging discipline within pathology which is focused in the study and diagnosis of disease through the examination of molecules within organs, tissues or bodily fluids.
What do biomedical scientists do?

Usually **based in laboratories** working in areas of **diagnosis, screening, monitoring and research** they carry out investigations on tissue and body fluid samples.

Every year in the UK they handle over **150 million** samples.

It is estimated that **over 70%** of medical diagnoses are based on their laboratory test results.*

Without a biomedical scientist, diagnosis and treatment would be **less effective**

*Royal College of Pathologists
Biomedical science roles include:

- Government advisory
- Cancer screening
- Blood donation
- Monitoring drug therapies
- Training
- Point of Care Testing
- Forensics
- Veterinary diagnostics
- Armed forces
- Pharmaceutical research
- Teaching
- Infection control
- AIDS and HIV diagnosis and treatment
- Management
- Transfusion services
- Journalism
- Food safety
- Rapid response labs
The Health and Care Professions Council (HCPC) is the statutory regulator for biomedical scientists.

It is a legal requirement for biomedical scientists practicing in the UK to be registered with the HCPC.

Completing an IBMS accredited degree and a Registration Training Portfolio will lead to the award of a Certificate of Competence. This will enable you to apply for HCPC registration as a biomedical scientist.
Studying biomedical science

An IBMS accredited BSc honours degree in biomedical science provides the academic knowledge and training you will need to work in biomedical science.

You can study part-time or full-time, with Integrated and Sandwich degree courses offering lab placements as part of your training.
What qualifications do I need?

To study biomedical science at university you will need

• A levels *or equivalent* in **Biology** and **Chemistry**
• GCSE *or equivalent* **Maths**

Biomedical scientists need an in-depth knowledge of anatomy, physiology and pathology – which are all covered in an IBMS accredited degree.
If you plan to work as a biomedical scientist you should choose an IBMS accredited or HCPC approved degree.

If your degree is not accredited by IBMS, any educational shortfall can be identified and your degree can be assessed. You may need to take additional modules on an IBMS accredited degree.
Skills for life

The skills you will gain studying biomedical science are highly valued by employers and relevant to whichever career path you take.

- Observation
- Communication
- IT statistics
- Team working
- Interpretation
- Numeracy
- Problem-solving
- Data analysis
- Critical thinking
- Project management
- Time management
What happens after my degree?

To work for the NHS you will need to become **HCPC registered** and complete an **IBMS Registration Training Portfolio (RTP)**.

Graduates of an IBMS accredited degree will have to complete their RTP in an IBMS approved lab.

After completing the RTP, graduates can apply to be HCPC registered.

Once you are HCPC registered you can start your career as a biomedical scientist.
Did you know...

Biomedical Scientist is a legally protected title

To protect public safety, anyone that uses the title must meet HCPC standards and be HCPC registered

Not everyone who studies biomedical science chooses a career in science after

Biomedical science graduates go on to work in: law, accountancy, management, marketing, finance, government, communications and sales
What is the IBMS?

The **Institute of Biomedical Science** is the professional body for biomedical scientists, support staff and students.

For **over 100 years** the IBMS has been dedicated to the promotion, development and delivery of excellence in biomedical science.

It is governed through an elected council of representatives, that allows its members the opportunity to shape the way it operates.
What does the IBMS do?

The IBMS sets the **quality standards** for the profession through: training, education, assessments, examinations and continuous professional development (CPD)

With more than 20,000 members in over 60 countries the IBMS provides a voice for the profession and promotes the role of biomedical science in society.
Why join the IBMS as an eStudent?

The IBMS eStudent membership is for students who are studying for a biomedical science or related degree.

Becoming a member is a great way to explore and expand your knowledge of biomedical science and will help develop your skills and experience.

The IBMS will support you while you study, offering you advice, tips and guidance and will connect you to a network of 20,000 biomedical science professionals.
Why join the IBMS as an eStudent?

Expand your knowledge
Access to our monthly biomedical science dedicated magazine and website resources

Support includes
Advice on placements
Access to expert advice
Member discounts

Connect with
over 20,000 biomedical science professionals

Join today at
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Develop your skills
CPD Portfolio
Journal based learning
Grants and rewards
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