




Biomedical Science

AND LABORATORIES IN ALTNAGELVIN &
SOUTH WEST ACUTE HOSPITAL

- 
- * What is a Biomedical Scientist ?
 - * How do I become one ?
 - * Specialising
 - * Career opportunities.

What is a Biomedical Scientist



- * Biomedical science is the **science at the heart of healthcare**
- * Biomedical science is one of **the broadest areas** of modern science and underpins much of modern medicine

***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 Scientists are the hidden team working 24/7



Name	Jocelyn E Pryce
Registration number	BS35818
Location	London
Status	Registered
Registered from	01/12/2015
Registered until	01/12/2017

- * Biomedical Scientist is a protected title and all Biomedical Scientists wishing to practice in the UK need to become registered with the Health Care Professions Council (HCPC)



Biomedical science roles include:

teaching

Infection control

blood donation

AIDS and HIV diagnosis
and treatment

Cancer screening

management

monitoring drug therapies

Pharmaceutical research

training

drug testing

food safety

Armed forces

Transfusion services

veterinary diagnostics

Point of Care Testing

forensics

Government
advisory

rapid response labs

Journalism

Biomedical Scientist

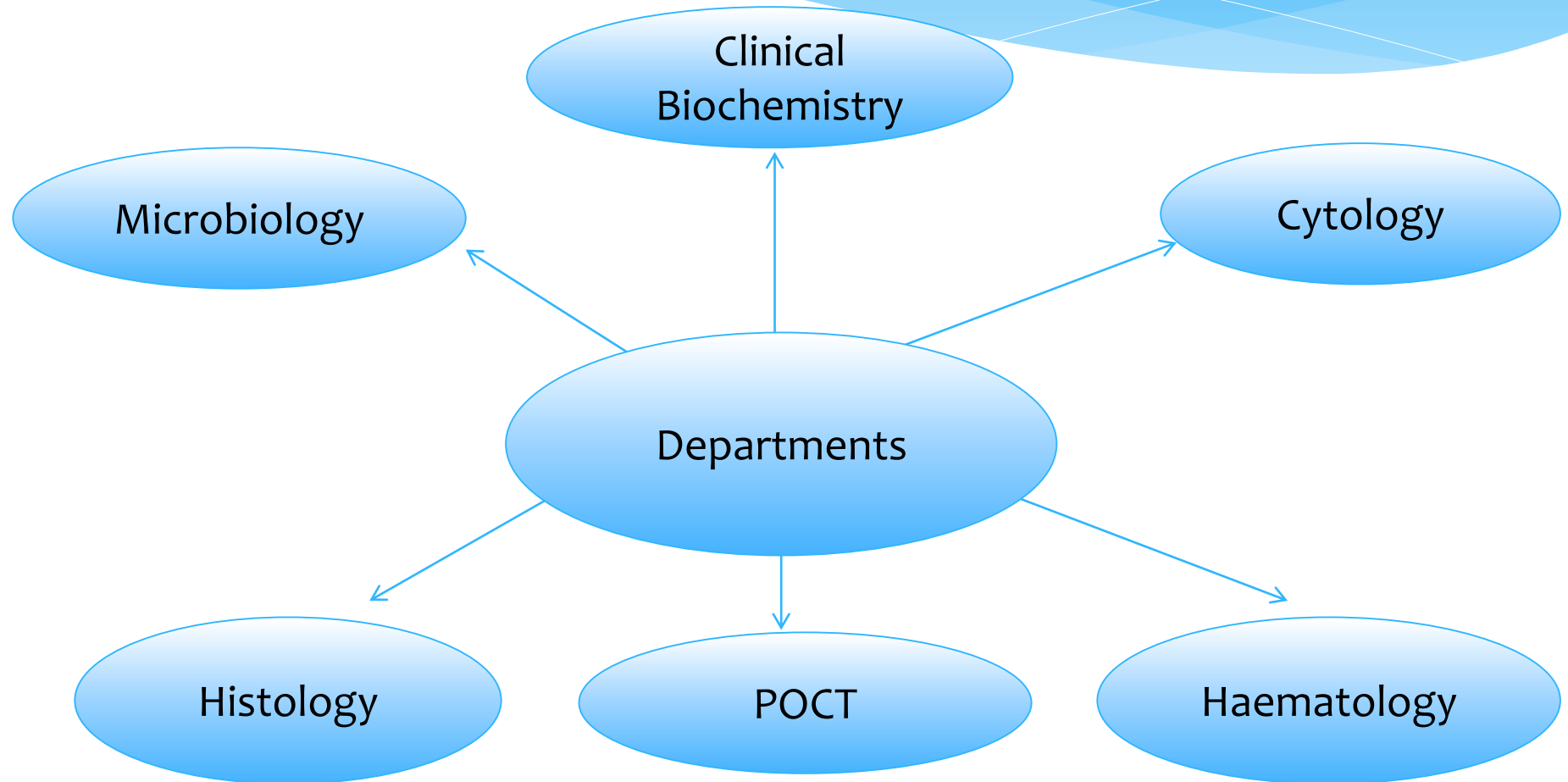
How do I become one ?

- * Recommended Institute Biomedical Science (IBMS) accredited degree course
- * A list of the locations offering the accredited degree course is available from the IBMS website.



Non-accredited degree courses are available, but it is more difficult to get a job via this route.

Western Trust pathology department



Samples arrive from all over the Western Trust

Wards and clinics:
South West,
Altnagelvin,
Waterside,
Roe Valley.

Family
Planning
Clinics.

Genito-urinary
clinic.

Northwest
Independent
hospital.

Health
centres.



Lab Reception



Support Staff play a vital role in laboratory life.

- Sorting the vast amount of samples received on a daily basis.
- ensuring the right samples are delivered to the correct department .
- Delivering Urgent samples immediately.
- Numbering samples with unique numbers.
- Dealing with Porters, Nurses, Doctors and Visitors.
- Sending samples to reference laboratories.
- Maintenance and general laboratory duties.

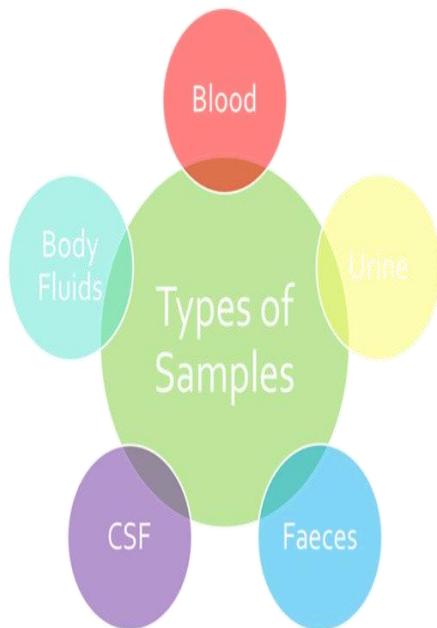
Lab Reception



Clinical Chemistry



- * Clinical Chemistry give support to all primary and secondary care services 24/7 365 days a year



- * Clinical Chemistry receives approx 2500 samples per day
- * Last year – 1,250,000 profiles in Altnagelvin (ranging from 1 to 30+ analytes per profile)

Clinical Chemistry



Clinical Chemistry



Clinical Chemistry:

Is the study of chemical and biochemical mechanisms of the body in relation to disease, mostly through the analysis of body fluids such as blood and urine.

Clinical Chemistry



Clinical Chemistry



- * This helps in the diagnosis of diseases such as diabetes, heart attacks, kidney and liver disease, thyroid problems and cancer
- * Therapeutic drug monitoring is also carried out. This ensures people are on the best dose

Clinical Chemistry

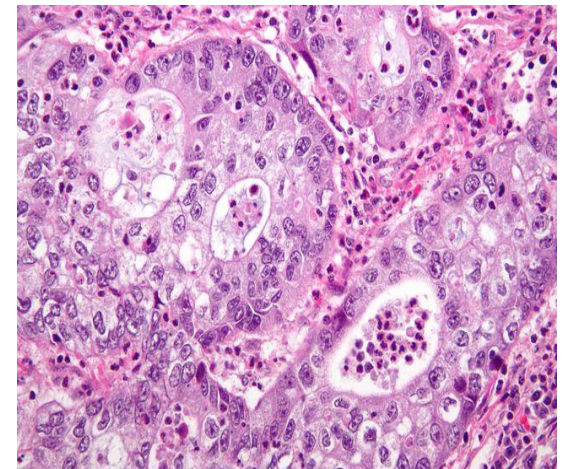
Clinical Chemistry uses various techniques to analyse samples;

- * Manual testing (simple and complex)
- * Semi-automated
- * Automation – simple and complex automated analysers



Cytology

- * The study of cells, their origin, structure, function, and pathology.
- * **Cytology** is best known for **screening cervical smears**, but it also provides a **non-gynaecological service** e.g. bronchial washes and sputum tests



Multi-head microscope



HPV Testing in the NHSCSP

- * HPV is a risk factor for cervical cancer
- * Certain 'smear' samples are tested for the HPV virus if they look abnormal
- * HPV testing is used as triage to determine risk
- * Testing for HPV following treatment is known as 'Test of Cure'
- * HPV testing will soon become the primary cervical screening test

Cytology



Diagnostic Cytology

- * Work with samples in Category 3 room under strict Health and Safety guidelines
- * Attend breast clinics to aid rapid diagnosis for patients
- * Make cytoblocks for immunocytochemical analysis
- * Screen samples

Histology

- * **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.



Dissection



Processing



Tissue Section



Microscopy



Histology



Haematology & Blood Transfusion

- * **Haematology** is the **study of blood**
- * Haematology Laboratory
- * Coagulation Laboratory
- * Transfusion Laboratory (Blood Bank).



Haematology

Automated instruments are used to count different cell types in a blood sample - full blood count (FBC) and reports cell numbers, size and paleness - up to 120 samples per hour.



- * Some of the diseases diagnosed in haematology are leukaemia, malaria and anaemia.

Coagulation



- * Coagulation (blood clotting) measures the ability of the blood to clot, either to check before surgery, patients who have unexplained bleeds and monitoring patients on anti-coagulants like warfarin & heparin.

Haematology



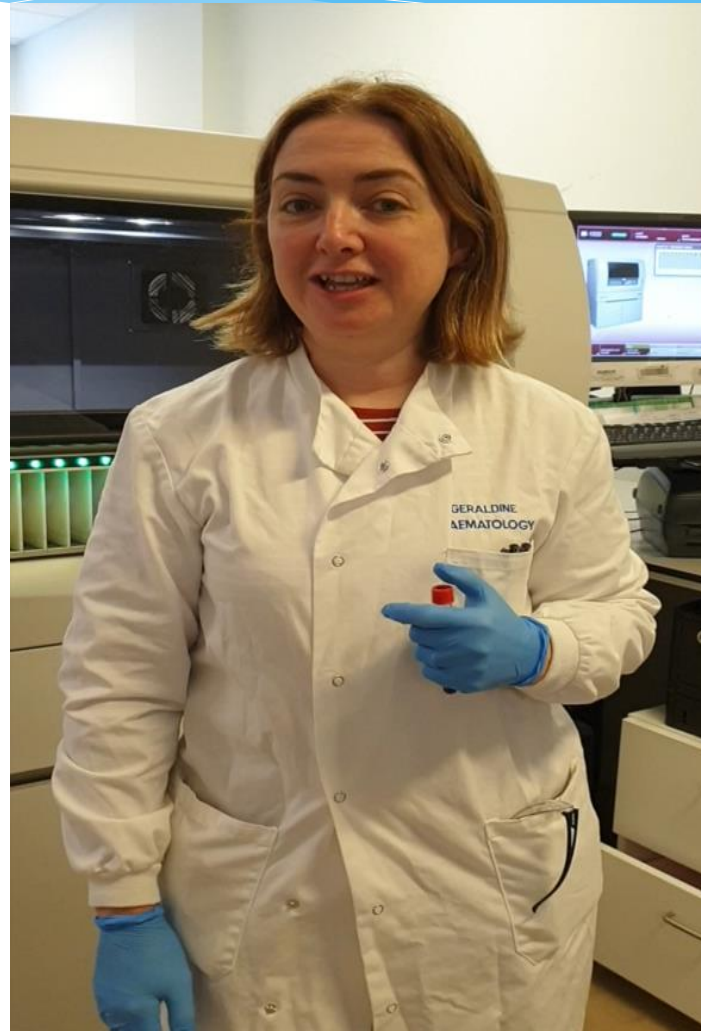
Transfusion Science/Blood Bank

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.



Transfusion Science/Blood Bank



Point Of Care Testing

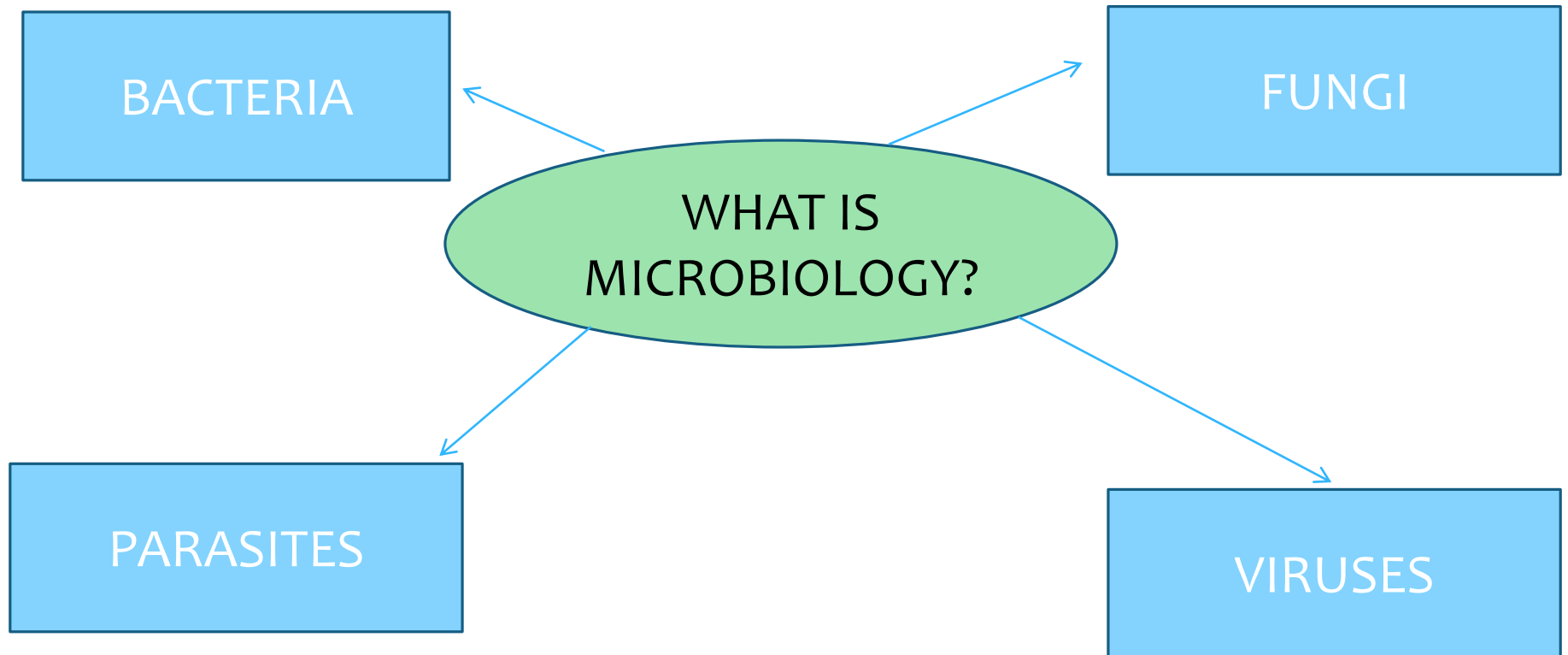
- * Urinalysis and Urine Pregnancy testing
- * Blood glucose and Ketone meters
- * Bilirubinometers
- * Blood gas/electrolyte analysers
- * INR meters
- * HbA1c analysers
- * Cardiac marker analysers
- * Pre-term labour markers
- * Urine drug screening
- * Alcometer
- * HIV and Syphilis Testing



Point Of Care Testing



Microbiology



Microbiology

- * Receives between 600 and 700 samples per day
- * Between 300 and 500 of these are urine samples!
- * Works closely with Infection Control Teams to monitor cases of outbreaks
- * Report to PHA isolates such as bacteria causing food poisoning.

Types of samples in Microbiology laboratory

Blood cultures



Swabs



Sputums



Urines



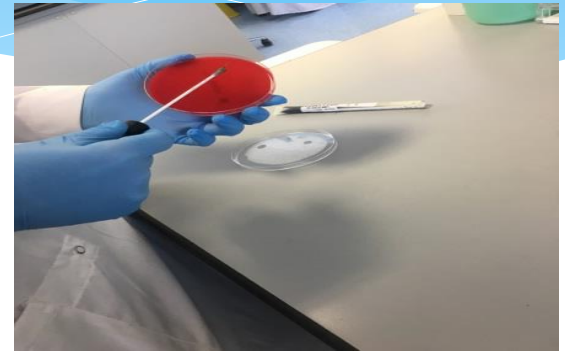
Faeces



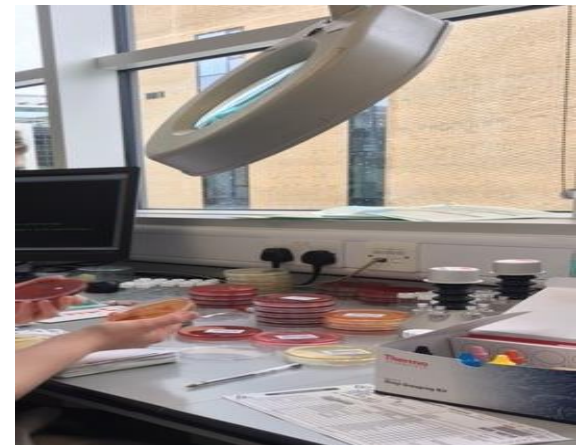
What do we do ?



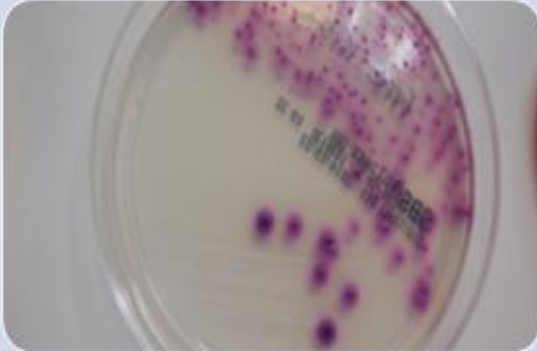
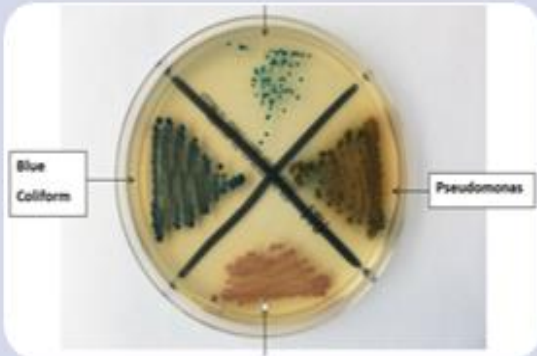
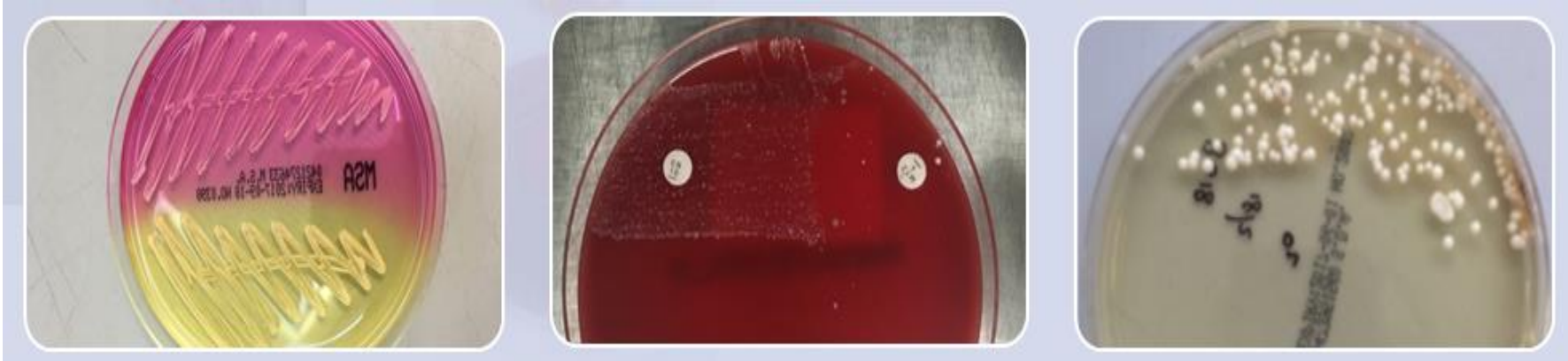
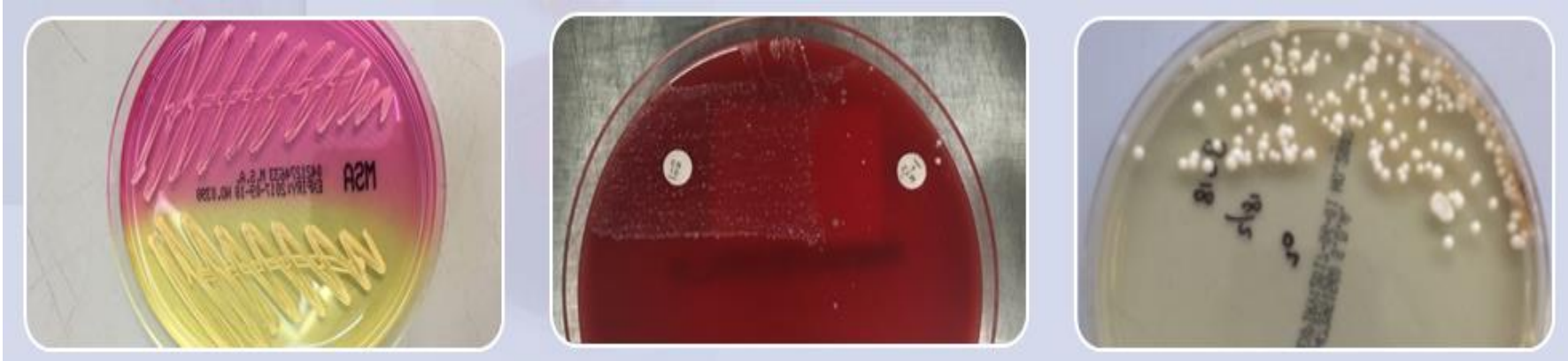
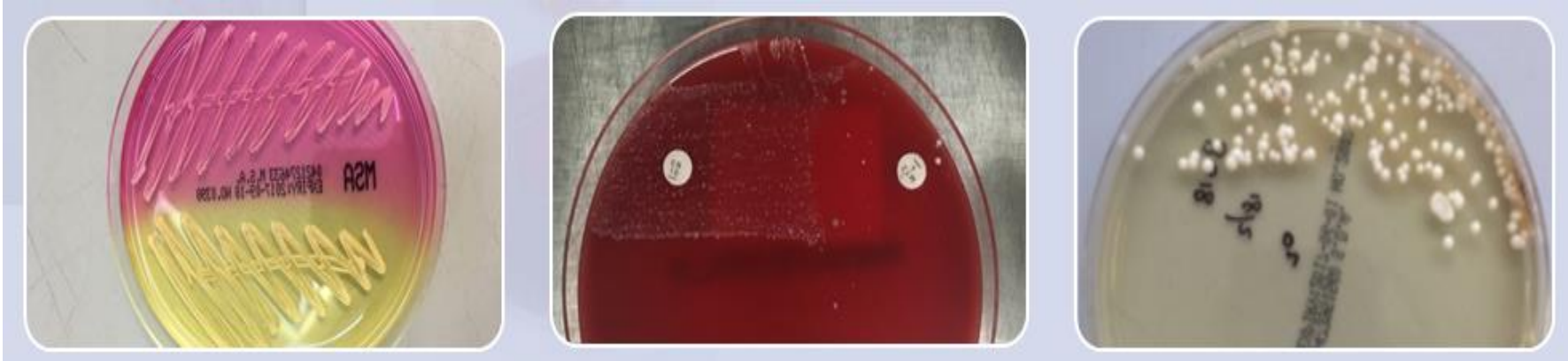
Use agar plates to grow bacteria. Plates are inoculated with samples.



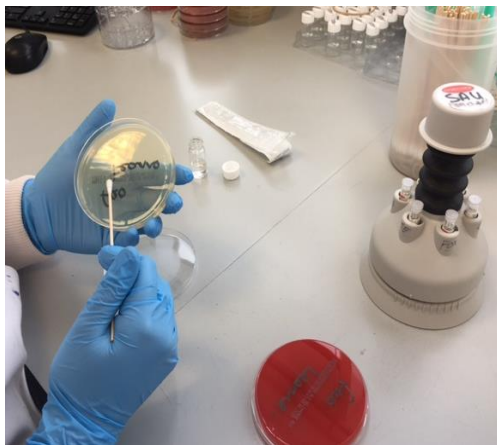
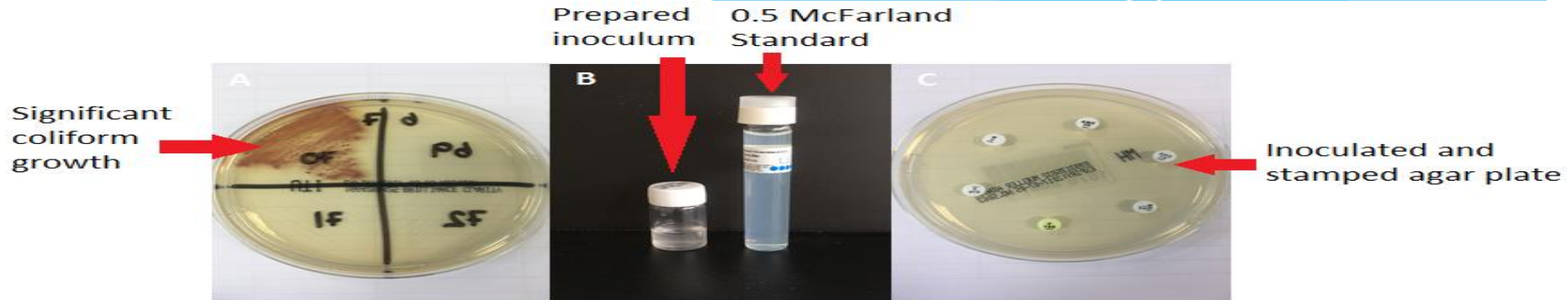
Plates are incubated overnight at 37°C overnight.



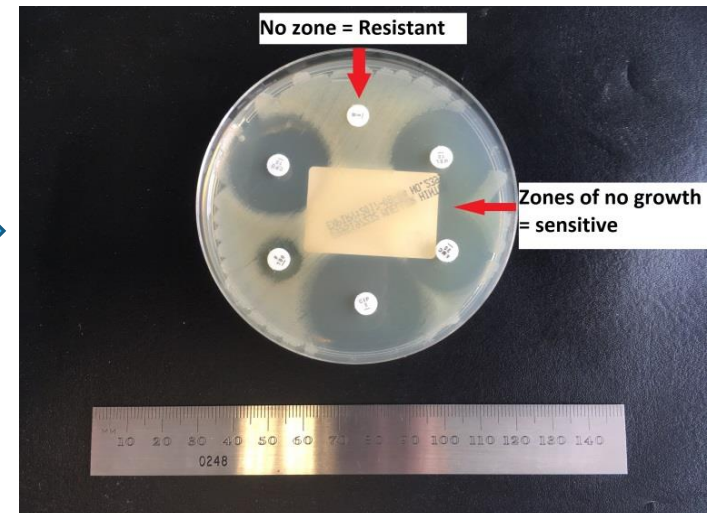
How do we do it



Sensitivity testing



Incubate
overnight



Microbiology



Sepsis.

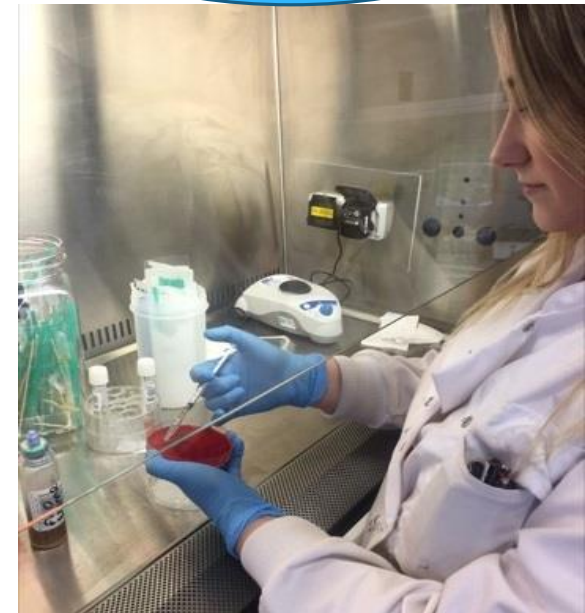
Blood cultures are taken.



Bacteria present produce CO₂, changes pH resulting in a colour change



Plates inoculated in safety cabinet.



Career Progression



Advanced Specialist
Diploma

Higher Specialist
Diploma

Specialist
Portfolio/MSc

Degree

Registration
Portfolio

Meet Some of the team.

Laboratory staff working



#AtTheHeartof Healthcare

24/7 365 days a year



My name is Isobel, a Specialist Biomedical Scientist involved in the screening of cervical smears as well as managing the diagnostic cytology section of the laboratory.



My name is Matthew, recently qualified as a Specialist Biomedical Scientist, working in Histology which involves dissecting a wide range of tissue samples.



My name is Kathy, a Biomedical Scientist working in Point of Care Testing bringing diagnostic testing closer to the patients bedside.



My name is Samantha, a Biomedical Scientist working in cytology. I am showing Carole a Health Care Assistant how to lyse cervical smear samples



My name is Barry, HCSA working in central specimen reception. Our team handles samples from all over the Western trust daily



My name is Emma ,a Biomedical Scientist in Cellular Pathology. I am currently completing my Institute of Biomedical Science Expert Portfolio on Dissection



My name is Marty, a
Biomedical Scientist
working as the Laboratory
manager.




My name is Aimee ,a
Biomedical Scientist
working in blood
transfusion issuing blood
to be transfused into a
patient.



My name is Sharon, a Biomedical Scientist working in Microbiology. My work involves testing samples for causes of infection and reporting antibiotic treatment.



My name is Rachel, a Biomedical Scientist working in the Clinical Biochemistry department analysing blood and urine samples.

- 
- * Training
 - * Quality management
 - * Advanced Practitioners
 - * Management.

Further Information

- * www.ibms.org
- * www.hcpc-uk.org
- * www.ulster.ac.uk
- * www.qub.ac.uk
- * www.hscrecruit.com

