Aston University
Life & Health Sciences

STEM Pathways

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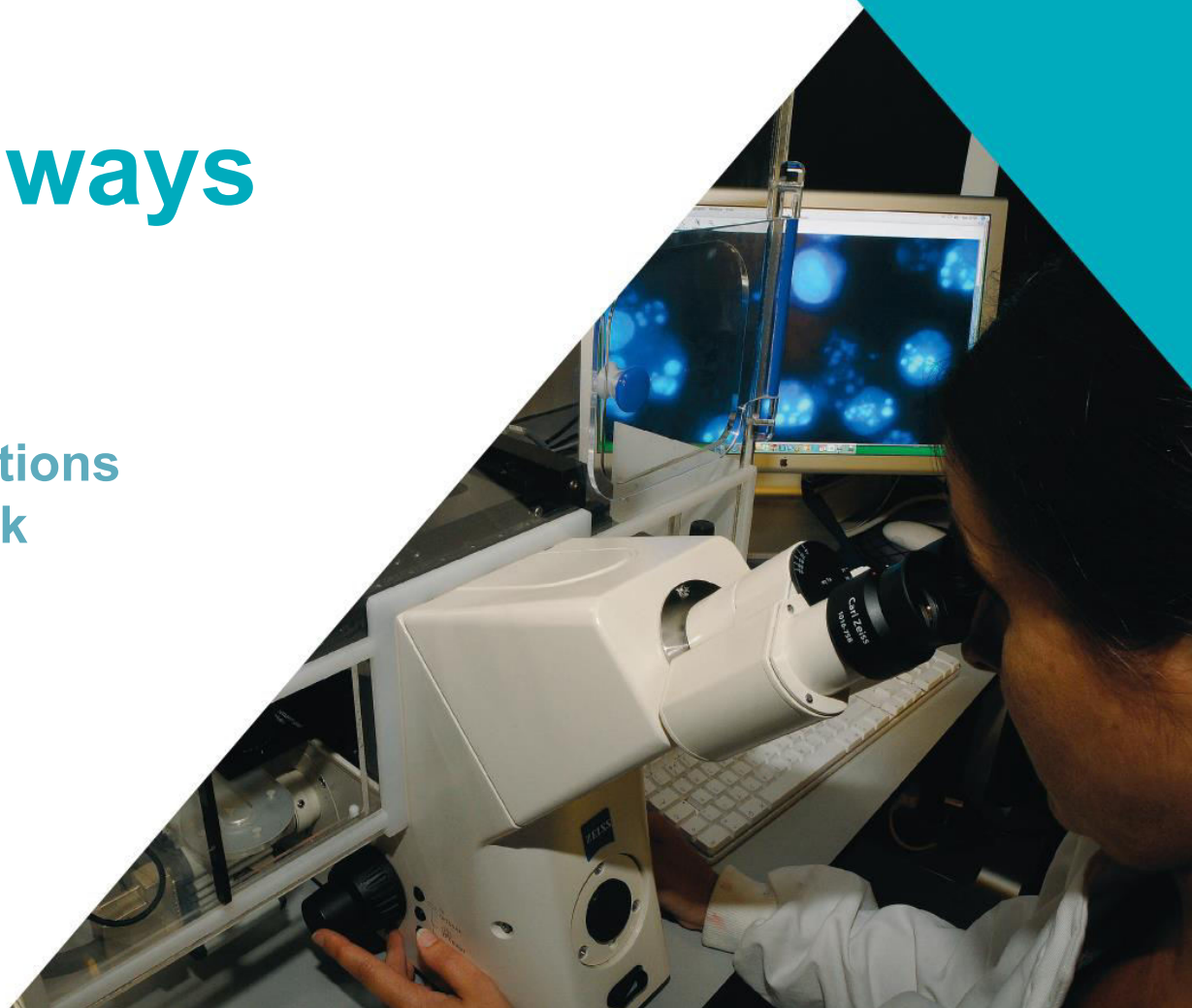


Athena SWAN Bronze Award

Academic progression route – where next?

GCSE's

A levels

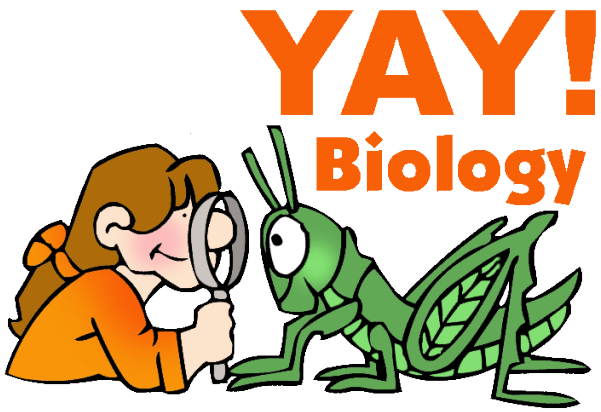
BSc (Masters) undergraduate degree

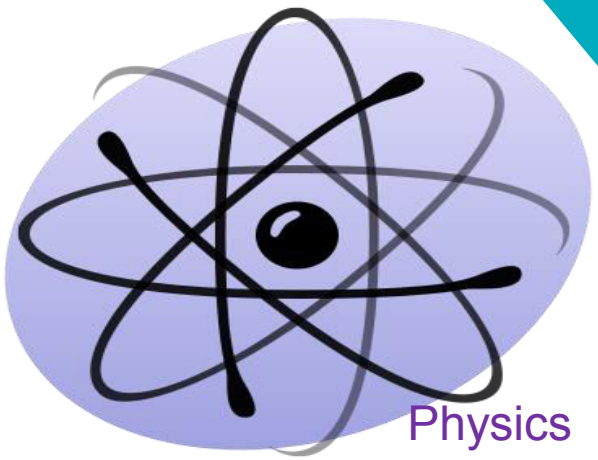
MSc postgraduate taught degree

PhD postgraduate research

Make your move

What A levels are you studying?





Chemistry of Life

Science

What are you interested in?

- **Non Clinical**
- Biology & Biomedical Science
- Biomedical Engineering
- Psychology & Neuroscience

Clinical

- Audiology
- Optometry
- Pharmacy

Biology & Biomedical Science degree courses at Aston University

- Degree structure for:
  - BSc Biological Sciences
  - BSc Cell & Molecular Biology
  - BSc Human Biology
  - BSc Microbiology & Immunology

  - M Biological Sciences

  - BSc Biomedical Science – Accredited by the Institute of Biomedical Science & Health & Care Professions Council Approved

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YEAR 1 (120 credits)	YEAR 2 (120 credits)	PLACEMENT (120 credits)	FINAL YEAR (120 credits)
Molecular biology Cell Biology	Biotechnology Nutrition and Dietetics		Physiology Cell biology
Physiology	Endocrinology		Cancer biology Stem cell biology
Genetics	Metabolism		Applied molecular biology
Immunology I	Immunology II		Immunology III
Biochemistry	Molecular genetics		Medical biochemistry
Microbiology I	Microbiology II		Food microbiology
Key skills	Molecular pathology		Clinical microbiology and infectious disease
Progression year	Carry over of marks to final year		RESEARCH PROJECT

Biology with Science Education (QTS)

biology

Qualified Teacher Status

Year 1	**Aston: Biological Science (120 credits)**	
Year 2	**Aston: Biological Science (120 credits)**	
Year 3	**Newman University (120 credits)**	**Teacher training** **Teaching theory** **Classroom experience**
Year 4	**- Aston (100 credits)** **- Newman (20 credits)**	**Biological Science** **Embedding Education**

Why science teachers should not be given playground duty.

Aston University
Life & Health Sciences

Aston and Newman University Collaboration

Newman University
Birmingham

Master of Biology (MBiol)

Enrol through UCAS

? Year 3 Placement

Directly onto MBiol

MBiol Year 1	MBiol Year 2	MBiol Year 3/4	MBiol Year 4/5
• **Content identical to year 1 Biology/BMS**	• **Content identical to year 2 Biology/BMS**	• **4 CORE** • **2 ELECTIVE**	• **RESEARCH (6-MONTHS)** • **4 ELECTIVE**

≥ 60%

≤ 60%

UG Biology or BMS

Year 1	Year 2
• Biological Science • BMS	• Biological Science • BMS

≥ 60%

Microbiology, Cell Biology, Obesity
Stem Cell Technology, Toxicology,
Neurodegenerative disease……..

Society of Biology
Degree Accreditation
Programme

YEAR 1 (120 credits)	YEAR 2 (120 credits)	PLACEMENT (120 credits)	FINAL YEAR (120 credits)
Molecular biology Cell Biology	Biotechnology Biomedical Technology		Clinical microbiology and infectious disease Haematology / Transfusion
Human Anatomy	Endocrinology Physiology		Cellular Pathology Medical biochemistry
Genetics	Metabolism	**Sandwich** **OR**	Biological basis of human disease
Immunology I	Immunology II	**Clinical Placement to obtain Certificate of Competence**	Immunology III Applied molecular biology
Biochemistry	Molecular genetics		Food Microbiology
Microbiology I	Microbiology II		
Key skills	Molecular pathology		
Progression year	Carry over of marks to final year		RESEARCH PROJECT

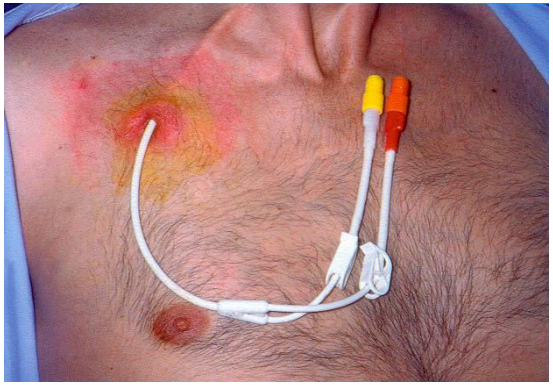
Placement Year

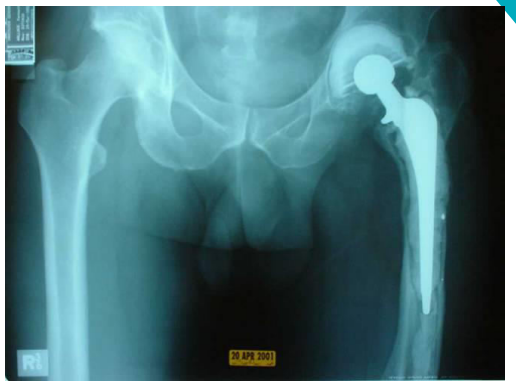
- Biology & Biomedical Science students have a wide range of choice
  - Hospital labs
  - Schools
  - University labs
  - Overseas

Future Employment Following Graduation

3 Year FT (Hons) / 4 Year Sandwich

- Medicine
- Research
- Pharmaceutical companies
- Medical journalism
- Teaching
- Medical sales
- Marketing
- Biomedical Scientists (need to achieve IBMS Certificate of Competence)





4-Year HCPC approved BMS degree

- HCPC registered BMS

Masters in Biological Sciences
4 years FT or 5 years FT with a placement year = RESEARCH

Entry Requirements for Biology and BMS at Aston University

- GCE A Level

  Typically **ABB/BBB** (320 UCAS points)

  -Must include one biological subject
  -Chemistry preferred but not essential

- GCSE:
  English language, mathematics and appropriate sciences at grade C or above

Check the UCAS website for entry requirements at all other institutions

Make your move

BEng/MEng Biomedical Engineering

What does a Biomedical Engineer do?

- Biomedical engineering is the application of scientific and engineering principles and design concepts to the medical field for healthcare purposes such as in diagnosis, monitoring and therapeutic treatment of disease and injuries.

- Biomedical engineering is a relatively new discipline, but it is in much demand and an expanding industry. With an aging population and desire for a high quality of life, more biomedical engineers are required in the short medium and long terms.

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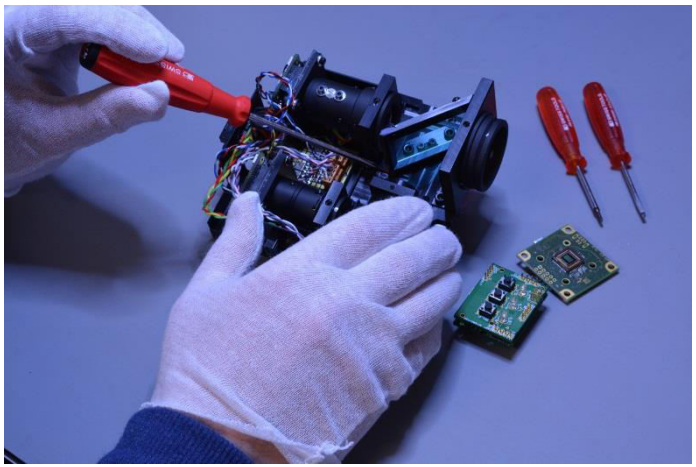
ASTON UNIVERSITY FORWARD BIOMEDICAL ENGINEERING

BEng/MEng Biomedical Engineering

YEAR 1 (120 credits)	YEAR 2 (120 credits)	BEng FINAL YEAR (120 credits)	MEng 4th Year (120 credits)
Biomedical Engineering Foundations 1	Biomedical Engineering Core 1	Medical Engineering	Research Methods and Statistics
Biomedical Engineering Foundations 2	Biomedical Engineering Core 2	Clinical Measurement in Practice	Leadership Skills and Research Tools
Electronic Engineering Fundamentals	Dynamics & Control	Electronics for Biomedical Applications	Clinical trials and Medical regulations
Engineering Science Fundamentals	Engineering Mathematics 2	CFD/FEA for Biomedical Science	MEng Master's Year Project
Mathematics for Engineers	Engineering Materials	BEng Final Year Project	
	Thermodynamics & Fluids		

Biomedical Engineering

- BEng in Biomedical Engineering (3 year course)
- MEng in Biomedical Engineering (4 year course)
- Unique paid/voluntary placement opportunity in MEng 4th year, achieving a Masters Degree and work experience in 4 not the usual 5 years



Make your move

Entry requirements at Aston University

- GCE A Level

  Typically **ABB/BBB** (320 UCAS points)

  ❖ Must include Maths OR Physics

GCSE:

English language, mathematics and appropriate sciences at grade B or above

Check the UCAS website for entry requirements at all other institutions

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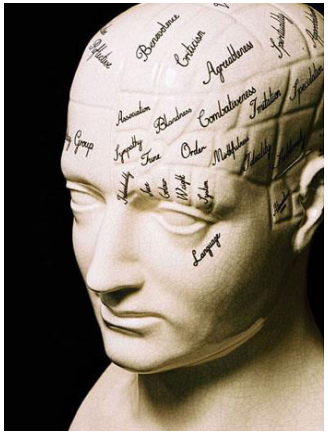
Psychology & Neuroscience

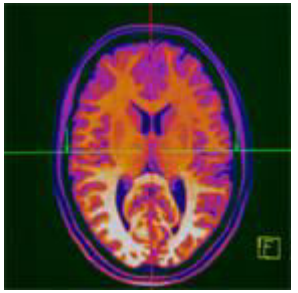
BSc Psychology (single Honours 3 or 4 year)

BSc Psychology & Business (4 year)
BSc Psychology & Sociology (4 year)

Accredited by the British Psychological Society



BSc Neuroscience



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YEAR 1 (120 credits)	YEAR 2 (120 credits)	PLACEMENT (120 credits)	FINAL YEAR (120 credits) Single Hons 8 Joint Honours 4
Developmental Psychology Social Psychology 1	Advanced Statistics Cognitive Psychology 2a, 2b		Psychology & work Models of Psychotherapy Efficacy of Psychotherapy
Studying Psychology in HE	Developmental Psychology		Philosophical Foundations of Psychology Auditory Perception
Approaches in Psychology	Language and Communication		Neuropsychiatric Disorders
Research Methods and Statistics	Advanced Contemporary Research Methods		Sexualities Mind & Brian Neuropsychiatric Disorders
Cognitive Psychology 1	Ageing Individual Differences & Psychometrics		Understanding Language Impairments Psychosis
Psychology and the Brain	Cognitive Neuropsychology		Psychology of Illness Individual Differences in Learning
Abnormal Psychology Research Practicals	Social Psychology 2		Visual Cognition Health Behaviours Psychopharmacology
Progression year	25% carry over of marks to final year		RESEARCH PROJECT

Careers in Professional Psychology

- Clinical Psychology
- Counselling Psychology
- Forensic Psychology
- Neuropsychology

Occupational Psychology
Educational Psychology
Health Psychology
Teaching and research

- See BPS website

- Aiming for psychology video: http://www.bps.org.uk/careers-education-training/careers-resources/careers-videos/careers-videos

- Placements and choices in your final year help you to stand out

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Programme Outline: Neuroscience

Note: This programme also includes a compulsory placement year

Broad training in the understanding of the brain and nervous system at multiple scales, from the microscopic to the whole organism

YEAR 1	YEAR 2	Final year
Abnormal Psychology	Cognitive and Behavioural Neuroscience Research Methods	Advanced topics in cellular neuroscience
Research Methods and Statistics		
Introduction to Neurophysiology	Cellular and Developmental Neuroscience	Final year project in Neuroscience
Biochemistry for neuroscience		
EEG practical	Systems Neuropharmacology	Choice of options including: Brain Imaging, Neurophysiology, Social Cognitive Neuroscience, Neuropsychiatric disorders, Music and the brain, Psychosis, Stem Cell Biology, Social Cognitive Neuroscience
Cell and Molecular Biology		
Development and Human Anatomy	Brain and Behaviour	
Inheritance and Population Genetics		
Key skills in neurosciences 1	Advanced Statistics	
Attention and Perception		

Entry requirements at Aston University

- Psychology
- Typical offers:
  - A Levels: ABB (three best A levels)

- Specific subject requirements:
  - GCSE: Maths grade B, English, and two sciences or double award science at grade C

- Neuroscience
- **A level :** ABB. Should include at least one A level in a science (Biology, Chemistry, Human Biology, Psychology or Physics). General studies accepted as a fourth subject.

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Check the UCAS website for entry requirements at all other institutions

Clinical courses

- Foundation degree Hearing Aid Audiology (2 year) – Accredited by the Health and Care Professions Council
- BSc Healthcare Science (Audiology) (3 year with integrated placements) – Accredited by Registration Council for Clinical Physiologists
- MPharm Pharmacy (4 year) – Accredited by General Pharmaceutical Council
- BSc Optometry (3 year) M Optometry (4 year) – Accredited by GOC

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Foundation degree in Hearing Aid Audiology

YEAR 1	YEAR 2
Adult Auditory Assessment Introduction to Rehabilitation	Auditory Sciences
Introduction to Auditory Sciences	Hearing Aids
Signals and Systems in Audiology	Counselling Skills for Audiologists
Audiological Instrumentation	Quality in Healthcare
Pathology and Diagnostics of Hearing and Balance	Clinical Skills Laboratory 2
Core Professional Studies	Clinical Practice 2
Clinical Skills Laboratory	Professional Studies
Clinical Practice 1	

YEAR 1 (120 credits)	YEAR 2 (120 credits)	FINAL YEAR (120 credits)
Professional Practice	Professional Practice	Professional Practice
Clinical Measurement and Treatment	Research Methods	Research Project
Introduction to Anatomy, Physiology & Pathology	Clinical Practice	Clinical Practice
Introduction to Pharmacology, Microbiology and Genetics	Applied Physiological Measurement & Instrumentation	Speech Language and Auditory Perception
Introduction to Healthcare	Auditory Sciences	Specialist Audiological Assessment
Introduction to Cell Biology and Body Systems	Audiological Assessment	Advanced Auditory Intervention
Applied Physics and Measurement	Auditory Intervention Child Development	
10 weeks patient contact/placement Progression year	15 weeks patient contact/placement 25% carry over of marks to final year	25 weeks patient contact/placement

Audiology Entry requirements at Aston University

- **FD Hearing Aid Audiology**
- 2 good A levels – one of which is Science
- GCSE Maths and English Grade C or higher

- **BSc Healthcare Science (Audiology)**

  Typically **ABB/BBB** (320 UCAS points)

  -Must include one biological subject

- GCSE:
  English language, mathematics and appropriate sciences at grade B or above

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Check the UCAS website for entry requirements at all other institutions

Optometry course structure

3 Year BSc Optometry			MOptometry
Year 1	Year 2	Year 3	Year 4
Clinical Visual Biology	Clinical Practice Development	General Ophthalmology	Optional Pre-registration year (with distance learning modules)
Medical Biology & Pathology	Vision Science & Research Methods	Posterior Eye	Advanced Ophthalmic Examination
Optics & Medical Imaging	Primary Optometric Examination	Clinical Practice	Glaucoma
Vision & Visual Perception	Advanced Investigative Techniques	Low Vision & Paediatrics	Retinal and Macular Disorders
Clinical Optometry	Contact lenses	Binocular Vision	Ocular Therapeutics
Clinical Visual Optics	Ophthalmic Optics	Ophthalmic Drugs	Evidence Based Clinical Research
Ophthalmic Lenses		Anterior Eye	Inter-Professional Communication
		Occupational & Professional Studies	2 days of University based workshops and tutorials
		Elective Studies	

Optometry Entry requirements at Aston University

- **A Levels:** AAA/AAB
- **Specific subject requirements:** A level: Two sciences at A level, including Biology with either Maths or Physics. Chemistry may be acceptable as an alternative. General Studies not accepted as part of the offer. Additional A levels welcomed.
- **GCSE:** English and Maths grade B, Physics grade B (if not held at A level) or Dual Award Science grade BB

Check the UCAS website for entry requirements at all other institutions

MPharm Pharmacy course structure

Year 1	Year 2	Year 3	Year 4
Professional Skills	Communication Skills	Statistical Skills	Continuing Professional Development (CPD)
Cell & Molecular Biology	Pharmacology	Therapeutics, drugs & Disease	Project Skills
Microbiology	Microbiology & Immunology	Chemotherapy	Advanced Studies
Physiology	Medicinal Chemistry	Infectious Diseases	Clinical Pharmaceutics
Pharmaceutics	Pharmaceutics	Biotechnology & Gene Therapy	Therapeutics II
Medicinal Chemistry	Pharmacy Practice	Modified Release Systems	Therapeutics III
Pharmacy Practice		Pharmacokinetics	Pharmacy Practice
		Quality Assurance	
		Pharmacy Practice	

Pharmacy Entry requirements at Aston University

- **A Levels:** AAB/ABB

Specific subject requirements:

A level: Chemistry, plus one from Biology, Maths or Physics. General Studies not accepted as part of the offer. Additional A level subjects welcomed.

GCSE: English grade C, Maths grade B.

Check the UCAS website for entry requirements at all other institutions

Make your move

Clinical roles require Infection Control

MRSA SKIN INFECTION CAN GO FROM……

THIS……..TO THIS

BECAUSE THE ANTIBIOTICS DON'T WORK

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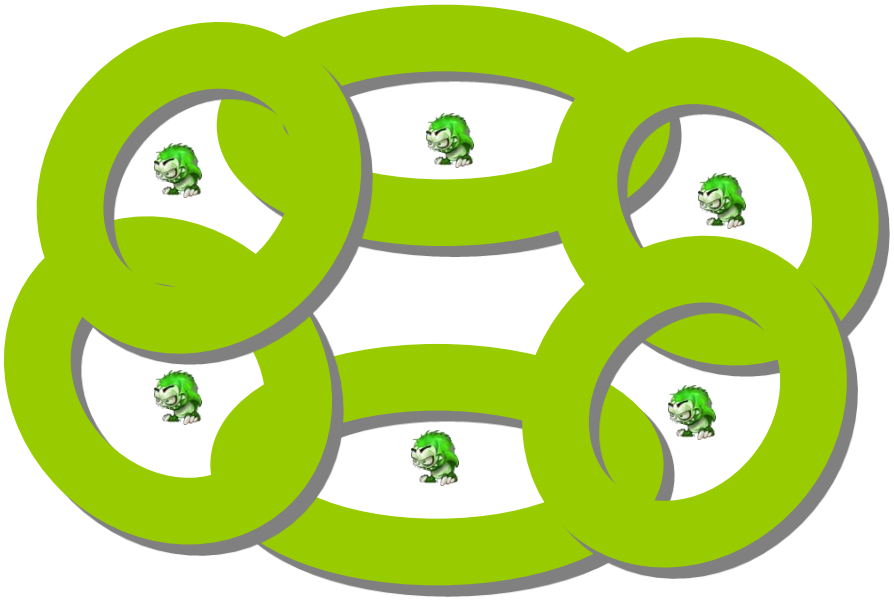
The '*Chain of Infection*'
The way infections spread

Source of infection

Infected Patient



Way in for infection

Inhalation

Ingestion

Sexual intercourse

Intravenous needles

Way out for infection

Coughing / sneezing

Diarrhoea

Sexual intercourse

Intravenous needles

Spread of infection

Hand contact / touch

Airborne / blood / bodily fluids

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Handwashing: Prevent the Spread of infection including MRSA and *C. diff*

99 out of 100 microbes on your hands are removed by properly washing your hands

Make your move

- **Interested in other STEM subjects?**
- **Looking for more information?**
- **Your '*Where Can Science Take Me*' booklet is full of interesting advice & guidance**