SCHOOLS' PROGRAMME

Life™
SCIENCE FOR ALL

Contents:

A message from the Chief Executive

The Life Science Centre is a unique learning resource serving the North East of England. For nearly 25 years we've supported teachers by delivering activities that enhance and enrich the STEM (science, technology, engineering and maths) curriculum.

We continue to work closely with schools, listening to teachers and responding to their needs and the challenges they face. The current programme is our most exciting and relevant yet. It is fine-tuned to meet the demands of the 21st century and is rooted in the curriculum, with our trademark interactive approach integral to the mix.

Life provides the ideal environment for all students to flourish, raise their aspirations and actively consider the wealth of STEM careers available to them.

We aim to ignite students' imaginations and inspire a curiosity for science and the world around them; creating or cementing a meaningful and memorable relationship with science that could last a lifetime.

Linda Conlon

Schools' Programme

Life promises...

- Exciting, relevant, and interactive STEM experiences that cannot be replicated in the classroom, delivered by an inspirational team.
- Hands-on, curriculum-linked practical workshops in fully equipped real labs and Making Studios.
- One of the broadest space engagement programmes in the North of England including the largest planetarium in the region, which uses the most advanced technology to create an ultra-immersive experience in space.
- An award-winning science centre that injects a fun, extra dimension to your visit to create a memorable, impactful learning experience.
- Real science experienced in a unique science village where researchers and clinicians work together to improve the lives of thousands – providing access to inspirational role models.
- Relevance to the lives and career aspirations of students – igniting interest in STEM, demonstrating real-world applications of science and technology, and highlighting a vast range of careers for all.
- Fuss-free organisation – our team will do all the planning and organising so everything is in place to create a great and safe experience.

Workshops and interactive story-telling

Our unique and engaging programme of workshops and story-telling sessions have been designed to reflect current and relevant STEM themes and topics which are linked to the national curriculum. Workshops take place in fully equipped real labs and making studios.

The themes and topics of the programme link to exhibitions and activities in the science centre providing an extra dimension to the learning experience.

As well as space, human biology and engineering, students can explore climate change, put their maths skills to the test and find out more about exciting STEM jobs that could be for them - all with a North East connection.

Key Stage 1 and Reception

Living in space

Follow astronaut Space Ted as they go about their daily life on board the International Space Station.

Can you be part of the mission control team planning healthy meals and making sure Space Ted gets enough exercise? Take on the role of a scientist investigating the properties of materials to make space suits for astronauts like Space Ted.

Full details *life.org.uk/schools*

Who wants to be a scientist?

Take on the role of a scientist and use real laboratory equipment to create new substances and reveal their hidden properties.

Discover how scientists use their senses to study chemicals. Make scents and jelly worms before ending the workshop with a dramatic whoosh!

Full details *life.org.uk/schools*

Where on Earth?

Interactive story-telling. Join our storyteller under Life's beautiful digital Sphere as you go on an adventure around the Earth travelling from night to day, discovering oceans and continents.

Can you help our lost animals find their right homes in the hot, cold, dry, and wet places?

Full details *life.org.uk/schools*

Max's Mealtime

Help find the ingredients for Max the dog's birthday tea of fish, chips and peas! In this interactive storytelling session, complete with structured role play and activities, students learn about how we get food from its source to our plates in environmentally friendly and sustainable ways.

From identifying animals and plants to learning the basic needs of animals and how humans pollute the oceans with plastic, this workshop covers a variety of curriculum areas.

Full details *life.org.uk/schools*

Key Stage 2

Extreme materials: Antarctica

Discover how scientists and engineers help people to live and work in one of the harshest environments on Earth - Antarctica.

Conduct experiments to find the best construction materials for an Antarctic Research Station. Learn about the cutting-edge design of a real Antarctic Base.

Full details *life.org.uk/schools*

Destination space

Discover how scientists and engineers help astronauts live and work on the International Space Station (ISS).

See what life is like for the astronauts on the ISS and the challenges they face. Conduct experiments to identify the best materials for a space suit and for an astronaut's nappy! Try some astronaut food; and see a mini rocket launch across the lab.

Full details *life.org.uk/schools*

Disgusting digestion

Through a series of gross but delightful demonstrations and hands-on lab activities, students will learn about the workings of the digestive system.

Discover how the body's organs extract nutrients from food and get rid of waste materials. Follow the journey of a breakfast through the digestive system, from the mouth to the toilet bowl. Find out how healthy a patient is by examining a wee sample.

Full details *life.org.uk/schools*

Light fantastic

Can you bend a beam of light, send it round corners, and turn it into a rainbow? How do scientists study the light from stars at the furthest edges of the universe?

Using an array of optical devices, students will explore the beauty and wonder of light – recreating some of the most famous scientific experiments in history and learning about the latest technology that uses light.

Full details *life.org.uk/schools*

Key Stage 2

Discovering chemistry

Take on the role of a chemist and use real laboratory equipment to identify mystery powders and create new substances.

See how a flame can be used to identify a chemical and discover the beauty and wonder of chemical reactions.

Full details *life.org.uk/schools*

Electrifying Newcastle

Did you know that Newcastle was one of the first places in the world to have electric street lights? And that street lights used to be switched on and off by the police? That today the North East is a centre of innovation in environmentally friendly electricity generation?

Try your hand at designing and building electrical circuits to light up our lab. Discover how switches and light detectors are used to control Newcastle's streetlights. Explore the future of electricity generation that is developing right here in the North East.

Full details *life.org.uk/schools*

Our place in space

Discover the movement of the Earth, its Moon and the planets in our solar system to find out how we get days and years.

In this live, presenter-led planetarium experience, students can make decisions about what they discover. They will feel like they're visiting different continents on Earth, going stargazing in Kielder and even launching a mission to the Moon. Our presenters will take you on a tour of the solar system and you will see how the JWST (James Webb Space Telescope) can help us make new discoveries about our universe.

Full details *life.org.uk/schools*

Spotlight on space package

With our **Spotlight on space package***, Key Stage 2 students can embark on a space adventure centred around hands-on, curriculum-linked learning for **£15 per pupil**.

The package includes an interactive planetarium show - **Our place in space**, a hands-on workshop - **Destination space**, and time to explore the **science centre**, which includes our mock-up of part of the International Space Station and Gaia – our mesmerising seven-metre-diameter planet Earth.

*Activities can be booked separately.
See pricing information on our website.

Full details *life.org.uk/schools*

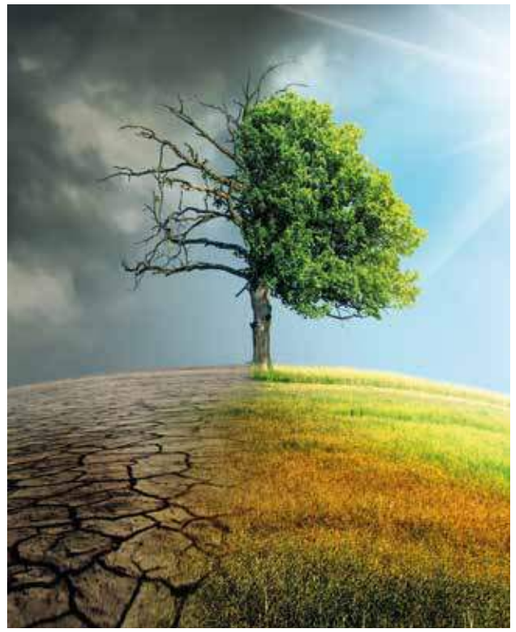
Key Stage 3

Heart, lungs and blood dissection

Key Stage 3 & 4 – Discover the fascinating anatomy of sheep's heart and lungs in this hands-on dissection workshop.

Experience what these organs actually look and feel like. Learn how these organs are adapted to fulfil their role in the mammalian body and how pathologists can learn about the impact of disease by carrying out dissections. In this workshop students will be guided by a trained member of staff through the stages of dissecting a sheep's heart and will see a live demonstration of a sheep lung dissection.

Full details *life.org.uk/schools*



A question of climate

What is the carbon cycle and how is human activity changing it? What impact is this having on our climate and our oceans? And how might science offer some solutions?

At the end of the workshop students will see a dramatic presentation of real data displayed on our magnificent digital Sphere and learn how scientists are using this data to study the causes and impact of climate change.

Full details *life.org.uk/schools*

Key Stage 3

Generating electricity

Discover the science behind how electricity is generated.

See if you can make the lights come on with your own generator and test out different designs of wind turbines to see which is the most efficient for converting wind energy into electrical power. And watch the sparks fly when we demonstrate our Wimshurst machine.

Full details *life.org.uk/schools*

Key Stage 4 and above

Heart, lungs and blood dissection

Key Stage 3 & 4 – Discover the fascinating anatomy of sheep's heart and lungs in this hands-on dissection workshop.

Experience what these organs actually look and feel like. Learn how these organs are adapted to fulfil their role in the mammalian body and how pathologists can learn about the impact of disease by carrying out dissections. In this workshop students will be guided by a trained member of staff through the stages of dissecting a sheep's heart and will see a live demonstration of a sheep lung dissection.

Full details *life.org.uk/schools*

Key Stage 4 and above

Genetic engineering

Key Stage 4 & Post-16 – Discover how bacteria can be genetically engineered to have new characteristics which make them useful for scientific research and medicine.

Students follow a protocol to insert plasmid DNA containing a modified bacterial operon and GFP (Green Fluorescent Protein) gene into bacterial cells and learn how to use good aseptic technique to streak out their genetically modified bacteria onto agar plates. An additional hands-on activity explains the process of DNA cloning using 'sticky ends'.

Full details *life.org.uk/schools*

Microbiology

Key Stage 4 & Post-16 – Practise microbiological laboratory techniques to get up close to bacteria.

Students will develop practical skills from the microbiology lab to find out how scientists grow and study bacteria. They will use aseptic technique to pour and streak plates to grow bacterial colonies and also prepare slides with a Gram stain to examine and identify bacteria under our research grade microscopes. Students will find out about a range of practical applications where these skills are used by scientists.

Full details *life.org.uk/schools*

Forensic DNA

Key Stage 4 & Post-16 – Discover how forensic scientists analyse DNA found at crime scenes to help them solve crimes.

Students use gel electrophoresis to compare DNA fingerprints from three suspects to a sample found at a crime scene and determine which of the suspects might have committed the crime.

Full details *life.org.uk/schools*

Key Stage 4 and above

PCR: A question of taste

Post-16 – Using their own DNA, students discover and compare their version of a bitter taste receptor gene (their genotype) to their ability to taste the bitter compound (their phenotype).

In our specially equipped lab, students will carry out molecular biology techniques including: DNA extraction, micro pipetting, polymerase chain reaction (PCR), restriction enzyme digest, and gel electrophoresis.

Students explore how different genetic variants evolve in populations and consider a case of convergent evolution.

Full details *life.org.uk/schools*

Extending your visit

Extend the Life experience back in the classroom.

Talk about the experience with your students. Encourage them to reflect on what they did, saw and learnt. Students could create a display of their visit, write a class email to us about their day or discuss the various science jobs they found out about on their visit.

Online resources

Check out our range of resources – from activity sheets to videos of scientists on the Life website *life.org.uk/life-goes-online*

And don't forget to stay connected via our newsletter. There will be more events and resources to fire your students' imagination coming soon.

Subscribe *life.org.uk/subscribe*

Life Science Centre

Exciting interactive zones and activities are designed to inspire and entertain students of all abilities. Students can find out more about North East research and real people doing brilliant STEM jobs.

Space Zone

Explore the impact space technology has on our everyday lives and how the future of space exploration is being shaped right here in the North East. Space Zone includes:

ISS - A replica of part of the International Space Station.

The Sphere - A stunning large-scale spherical projection screen, ideal for sharing a space-eye view of the Earth, other planets and the moon, and highlighting issues such as environmental change.

Planetarium - The North's biggest and most technically advanced planetarium which creates an ultra-immersive experience in space. We offer a mix of traditional planetarium shows and creative animated films.

Wow Zone

Wow Zone offers a collection of engaging interactives that explore how forces, physics and chemistry are used in everyday life.

From constructing an electrical circuit to building a bridge, pupils can explore a wide range of curriculum links. Plus it's all great, hands-on fun which makes for a memorable and impactful learning experience.

Life Science Centre

Gaia - the Earth

Gaia by British artist Luke Jerram, is a mesmerizing seven-metre-diameter installation of planet Earth. Created from detailed NASA imagery of the Earth's surface, it provides a unique opportunity for students to view our planet, floating in three dimensions.

The installation aims to create a sense of the Overview Effect, which was first described by author Frank White in 1987. Common features of the experience for astronauts are a feeling of awe for the planet, a profound understanding of the interconnection of all life, and a renewed sense of responsibility for taking care of the environment.

Brain Zone

In the Brain Zone, students can explore the most fascinating and complex organ in the human body and investigate a range of biology topics.

Designed to develop understanding of our senses, consciousness, perceptions, emotions and how we learn, the Brain Zone covers a wide range of methods used to investigate the brain through fun memory games and optical illusions.

Live Science Shows

Exciting experiments and audience participation are hallmarks of our live shows.

Shows change regularly throughout the year.

Space Zone and **Making Studios** have been made possible through the support of the Inspiring Science Fund – a partnership between UK Research and Innovation (UKRI) and Wellcome. Additional support has been provided by The Garfield Weston Foundation and the Catherine Cookson Charitable Trust. **Brain Zone** has been supported by Wellcome.

Creativity Zone

Students can get hands-on in the Creativity Zone, with a range of interactive exhibits. Here they can solve challenges, make objects move on the spinning table and marvel at inspirational LEGO® creations from local LEGO® artist Steve Mayes.

Play Zone

Play Zone is an interactive play environment for Key Stage 1 and Early Years pupils.

An outdoor marketplace, and a dress-up corner provide opportunities to learn through child-led imaginative role play, with a boat too for some nautical adventures. Our construction and soft play areas allow children to stretch, balance, wobble and create. This helps develop and test their physical and manipulation skills, key for learning to write.

Outdoor Ice Skating

This festive season, students can enjoy a whirl on our open-air ice rink, and combine it with an exciting winter-themed workshop.

From just £13.00 per pupil, schools can book a special winter package that consists of a skate on our open-air ice rink plus a science centre visit, with the option to add on a winter-themed curriculum-linked workshop (available for KS1, KS2 and KS3).

Book in the usual way by contacting our bookings team (0191) 243 8223.

This year, winter packages will be available from 11 November until 3 January.

Our regular ***KS4 and post-16 workshops*** will be available during this time.

Find out more on ***our website***.

Planning your day

A typical school visit includes time in the science centre plus a workshop in our labs or Making Studios – or you can opt for a workshop or a science centre visit only.

We'll provide you with an itinerary when you arrive which is tailored to the learner level and focus of your group so you don't miss a thing. We'll also include an area for you to have packed lunches if you're staying all day. Our team will be on hand to help with activities and answer your science questions.

General enquiries:

General enquiries can be directed to **info@life.org.uk**, however bookings must be made by phone (see pricing information on page 19).

Storage for belongings and any packed lunches will be provided on arrival, and there will be space for you to eat your lunch too.

Please note: *we cannot guarantee that you will be able to visit all areas on your visit. Please tell us if there are any particular areas you want to be included at the time of booking.*

Before you book:

Having the following information handy will help us to process your booking more quickly:

- Preferred date/s for your visit
  (it may be useful to have a few options available).
- Staff contact details
  (email, phone number and school address plus email for invoicing, if different).
- Number and ages / year group of students.
- Number of accompanying adults
  (please specify if this includes any 1:1 carers).
- Details of any workshops, package or aspects of the science centre you are interested in.
- Details of any special or additional needs, and how we can best support your visit.
- Gift shop time or goody bags required. These can be booked in advance to make your visit easier.

Pricing and how to book

For current pricing visit *our website*

To make a booking, or for more information, call **(0191) 243 8223**.

Queries can be directed to **info@life.org.uk** but bookings should be made by phone.

The bookings team is available **Monday to Friday, 9.00am – 5.00pm**.

We recommend a ratio of 1 adult to every 5 children for most groups. Additional adults over this ratio will be charged. In the case of SEN groups, we may offer further free adult support on request – contact us to discuss your requirements.

Getting here

Life Science Centre is located in Times Square, Newcastle city centre.

Travelling by train or Metro? We're just a two-minute walk from Newcastle Central Station.

Travelling by coach? We have a designated drop-off area located at the back of our building. Life is situated within the Newcastle Clean Air Zone (CAZ) Depending on how you are travelling to Life, there may be associated CAZ charges to be aware of. More information can be found on the Newcastle Council website.

Keep in touch

Don't forget to stay connected via our newsletter. There will be more events and resources to fire your students' imagination coming soon.

Subscribe *life.org.uk/subscribe*

Your details will not be shared with third parties.

If you are interested in supporting Life's schools' programme, please email **info@life.org.uk**

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SCIENCE FOR ALL

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All information is correct at the time of going to print (June 2023). Programme is subject to change; please see **life.org.uk/schools** for the latest information.