Explorazone Digital

SATURDAY 17 OCTOBER
8am – 9pm (then on-demand for 30 days)
7-12 yrs / Teenage / Adult

Wherever you are in the world, transport yourself to Oxford and discover amazing science, experiment with creative technologies and chat with the people developing the most innovative research today, all from the comfort of your own home!

Wander around the virtual Exhibition Hall and choose the activity booths you want to visit. Watch short video demonstrations and collect activities to take away to do at home. Visit the Auditorium for presentations and shows.

Explorazone Digital is free to join and is a place for you to meet the scientists and engineers.

Booths in the Exhibition Hall

Blue sky science

Earth, air, and oceans... on a table. Watch with fascination as we ID some mystery river water samples, catch breath on our air monitors, and test how radioactive you or your home might be. The smoking ocean and microplastics environmental detective game are sure to surprise you!

Royal Society of Chemistry, Environmental Chemistry Group

Animal research: who, how and why?

Discover why animals remain a central part of modern biological science and all the work that is being done to replace them in research and protect their welfare. Test your knowledge, learn the law, explore animal labs with a virtual tour and challenge the experts on the rights and wrongs of using animals for testing and experimentation.

Understanding Animal Research

Lighting up life with colour

Learn how things change colour in response to light, acid or heat, and how coloured fluorescent dyes are used to see inside cells. Meet some chemists who invent new coloured molecules for studying living cells and discover experiments you can do at home relating to this bright science.

Department of Chemistry, University of Oxford

Superconducting magnets in MRI

In hospitals worldwide, MRI scanners help diagnose tumours, clots and tissue damage. Explore the heart of the MRI machine, a superconducting magnet surrounded by liquid nitrogen, where one in three of these magnets across the globe are made here in Oxford. Expect cool demonstrations with some super-fast freezing!

Siemens Healthineers Magnet Technology

Shake your bonds up!

Did you know that molecules love to dance? Their bonds stretch and bend as different melodies and rhythms are played, and scientists can recognise them by their distinctive dance moves. Come and learn about molecules and dance along with them.

Wellcome Centre for Integrative Neuroimaging, University of Oxford

Drug discoveries

How do researchers share their studies of human diseases? Proteins are complex molecules, which come in all shapes and sizes, making you ill or helping you recover. Learn how proteins collaborate inside your body, what happens when this goes wrong and how scientists are working to make new medicines to share with everyone.

Structural Genomics Consortium, University of Oxford

Diamond lights

At Diamond, the UK's giant particle accelerator, amazingly bright X-ray light is used like a super-microscope, studying samples at an atomic level. Scientists use this to analyse everything from fossils to jet engines and viruses to vaccines. Come take a look, chat to our team and run your own synchrotron!

Diamond Light Source

The environment and your health

Learn about some everyday hazards that may be harmful to your health. What is ionising radiation, where is it and how do we measure it? What do we know about air pollution, inside the home and outside? How can we see invisible nanomaterials in ordinary products?

Public Health England

X-rays and how our bodies work

See how intense X-ray beams aren't just for broken bones. Meet the biochemists using synchrotron light (check out the Diamond Light Source!) to see the shapes of molecules keeping you alive. Find out how disease and drug discovery are connected to crystals and what a jelly baby can tell you about your body.

Department of Biochemistry, University of Oxford

Vaccines: past, present and future

Learn about gurgling guts and blistering boils, and how vaccination has changed from Victorian times to the current COVID-19 pandemic, and what may be in store for the future. Take a tour of the Jenner Institute, home of the vaccine in the news, play games and meet the scientists working on keeping you healthy.

Jenner Institute and Oxford Vaccine Group, University of Oxford

Look what's inside us

How is your body built, and how does it work? Come and explore the invisible inner workings of cells, embryos and organs, such as the heart. Researchers are ready to show you some of their latest images and videos, and take you through some fun hands-on activities to try at home.

Department of Physiology, Anatomy and Genetics / Micron Advanced Imaging Unit, University of Oxford

Beware: floods ahead!

Mix maths with poetry and climate science with geography: be the flood judge, create your 'climate stripes', build a rain gauge and compose a weather poem. You'll discover how research is helping predict tomorrow's weather, today, so when floods are forecast, we can avert disaster.

Department of Geography and Environmental Science, University of Reading

Making a Sun on Earth

Ever wondered what powers the stars? Our Sun is hot and bright, but it needs a power source to make that heat and light. That power source is fusion energy. Meet the scientists and engineers working in Oxfordshire on how to harness star power and make a Sun on Earth.

United Kingdom Atomic Energy Authority

Making waves

Music may be the product of instruments that create it, but it is so much more! Sound is a wave, and the space in which we hear it has a profound impact on our sonic experience. Learn the link between spaces and sound, and how this connects to quantum chemistry.

Department of Materials, University of Oxford

Particle physics adventures

Explore a virtual model of the CERN laboratory, located on the Swiss-French border, and its ATLAS experiment in the *Minecraft* computer game. Learn how the most powerful particle accelerator in the world explores the fundamental building blocks of the universe.

Department of Physics, University of Oxford

Volcano!

Why do volcanoes erupt, and what happens when they do? Dive in to see how volcano scientists are looking for answers. Watch as we squash rocks, fly drones over active volcanoes, and listen to eyewitness stories of eruptions. Check out some suggestions for volcano experiments you can try at home.

Department of Earth Sciences, University of Oxford

Brilliant bodies, marvellous medicine

Learn all about the micro-mysteries of the human body with scientists and clinicians from the University of Oxford. Explore the cutting edge of medical research. Join live chats with researchers, video demonstrations and a series of puzzles all related to the human body.

Nuffield Department of Orthopaedics, Rheumatology and Musculoskeletal Sciences / Nuffield Department of Surgical Sciences, University of Oxford

Seeing the invisible

You've heard of Hubble, now explore the invisible Universe with the amazing James Webb Space Telescope. Due to launch next year, it will peer out into deep space. Back on Earth, find out how the ISIS Neutron and Muon Source examines the world around us, from dinosaur eggs to samurai swords, and aeroplane wings to spider silk.

Science and Technology Facilities Council, Rutherford Appleton Laboratory

Information engines

Can information be used instead of fuel to power an engine? Play a new Maxwell game to find out how, and explore limitations on how engines work. Complete our dot-to-dot and guess the underlying picture with as few lines as possible, just like our machine accelerates scientific discoveries!

Department of Materials, University of Oxford

Memory and motivation

Try simple tasks that help understand memory and motivation in people with and without Alzheimer's and Parkinson's diseases. Learn how NHS researchers develop assessment and care procedures for patients.

Department of Experimental Psychology, University of Oxford

Diamond: the science of sparkle

We all know diamond as a sparkly gemstone, but this material also has some amazing properties and applications for you to investigate, from cutting and heat management, to optics and even quantum technologies. Come and join our scientists and ask them to show you some fabulous diamond demonstrations.

Element Six

Engineering a great smile

Your teeth can resist acid attack, mechanical wear and bacterial invasion. Scientists are learning how biological materials in your mouth can be damaged and better protected. Join some fun activities to explore how two minutes twice a day can help your smile last a lifetime.

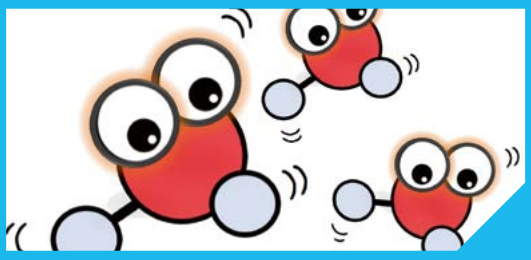
Department of Engineering Science, University of Oxford

Pioneers and culinary reactions

Curious about the chemistry of cakes? Cook up some kitchen experiments and explore the science behind perfect patisseries. From pioneers of protein crystallography to innovators putting cleaner protein and seaweed superfoods on your plate, research is making progress towards better environmental sustainability. Meet people changing the future and hear their scientific inspirations today!

Somerville College, University of Oxford

Presentations in the Auditorium



10 – 10.45am

Under 7s / 7-12 yrs / Teenage / Adult

Shake your bonds up and dance like water!

Water molecules are great at dancing and they want to share their favourite moves with you. Whether you're a disco diva or have two left feet, join Maria and Lia, a chemist and a dancer, and learn the simple steps to create your own water-inspired dance routine.

Wellcome Centre for Integrative Neuroimaging, University of Oxford

11 – 11.45am

Under 7s / 7-12 yrs / Teenage / Adult

Poetry of science

From acrostic and shape poems to sonnets and free verse, there are endless forms of poetry to suit the myriad topics in science. Join Theresa Lola, 2019 Young People's Laureate for London and several young finalists from the *IF Oxford Poetry of Science competition* to hear some winning poems.

12 – 12.45pm

7-12 yrs / Teenage / Adult

Engineering a great smile

Your bite is a complex piece of machinery, with powerful jaw muscles and exquisite materials able to withstand acid attack, mechanical wear and bacterial invasion. Find out what scientists are learning about the biological materials in your mouth and how to protect them. What can you do to care for your teeth?
Free dental kits are available in advance so you can take part in the interactive parts of this event.

Department of Engineering Science, University of Oxford

1 – 1.45pm

7-12 yrs / Teenage / Adult

Diamond – an engineering gem

Diamond is an amazing material, and not only a fancy gemstone. You may be surprised to find out diamond's role in shaping the world around you, from engineering your smart phone to focusing the lasers that cut sheet metal for cars. This presentation will describe how diamond can be made and engineered for many amazing applications.

Element Six

ARIEL: ESA & STFC RAL SPACE

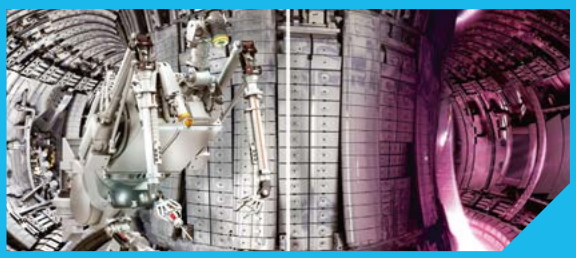
2 – 2.45pm

7-12 yrs / Teenage / Adult

ARIEL: planetary science across light-years

From the first discovery of planets orbiting a dead star in 1992, we now know of over 4,000 exoplanets orbiting other stars. Our Universe is more diverse than we could imagine, with weird and wonderful celestial bodies, from hot Jupiters or worlds made of ice, lava and diamond, to rogue planets drifting alone in the vastness of space. The ARIEL space mission will reveal just what these exoplanets are made of.

Science and Technology Facilities Council, Rutherford Appleton Laboratory



3 – 3.45pm

7-12 yrs / Teenage / Adult

Making a Sun on Earth: Live

What powers the Sun? Come and find out all about fusion energy, the ultimate power source, from the scientists and engineers trying to harness star power! You'll learn about plasma, magnets, robotics, and more, and how all these things help create sustainable and safe fusion energy to power our homes in the future. There will be activities that you can join in from home to help you figure out what's needed to make a Sun on Earth.

United Kingdom Atomic Energy Authority

4 – 4.45pm

7-12 yrs / Teenage / Adult

Living with volcanoes

It is 40 years since the eruption of Mount St Helens in USA, 25 years since the Soufriere Hills Volcano began erupting on the Caribbean island of Montserrat and 10 years since ash from an Icelandic eruption shut down Europe's airspace. This illustrated presentation shares the stories of eyewitnesses to understand how volcanoes erupt, how they affect people, and how communities can learn to live with volcanoes as their neighbours.

Department of Earth Sciences, University of Oxford

5 – 5.45pm

7-12 yrs / Teenage / Adult

A closer look at what's inside us

How is your body built, and how does it work? Explore the inner workings of cells and organs in this presentation. See how scientists capture time-lapse videos of embryo formation, from the process of developing a head-tail axis to how the heart starts to beat.

Department of Physiology, Anatomy and Genetics, University of Oxford

6 – 6.45pm

Teenage / Adult

Routes into scientific research

Would you like to get involved in scientific research? You may be a budding scientist, looking for a career change or just want to help out in your spare time. The ongoing COVID-19 vaccine trial at the University of Oxford has a team of 300 reserchers, doctors and nurses working alongside thousands of volunteers towards the common goal of a successful vaccine. Whatever your background and interests there are many different routes into science – explore them here and ask your questions.

Jenner Institute and Oxford Vaccine Group, University of Oxford

7 – 7.45pm

Teenage / Adult

Inside the COVID brain

COVID-19 has been this year's big disrupter and life might not return to normal for a long time to come. The *Explorazone Digital* finale takes you on a live tour with the help of a volunteer and a powerful brain scanner to understand the effects this coronavirus can have on the human body. There will be time to ask questions about the research and hear the experience of at least one COVID-19 survivor.

Nuffield Department of Clinical Neurosciences, University of Oxford