

FREE ENTRY

SUMMER SCIENCE

EXHIBITION

1 – 7 JULY 2019

PROGRAMME



THE
ROYAL
SOCIETY

 @royalsociety #summerscience

Opening times

MONDAY 1 JULY

11am – 6pm

TUESDAY 2 JULY

10am – 4pm

6pm – 10pm

(18+ only)

WEDNESDAY 3 JULY

10am – 4.30pm

THURSDAY 4 JULY

10am – 4.30pm

FRIDAY 5 JULY

10am – 6pm

SATURDAY 6 JULY

10am – 6pm

SUNDAY 7 JULY

10am – 6pm

**Last entry is 30 minutes
before closing.**

General information

Photography policy

Please be aware that photography/filming may take place during your visit to the Royal Society.

If you do not wish to consent, please visit the information desk to collect an opt-out sticker from a member of staff. If you wish to use photography or filming equipment at the exhibition, remember to respect visitors wearing a 'no photography' sticker who do not wish to be photographed/filmed.

Accessibility

The exhibition is fully wheelchair accessible, and the café is located in the Basement, accessed from the lifts situated near the main staircase. Entrance and exit to the Terrace marquee is via ramp. Please inform a member of staff at any point during your visit if you require any assistance.

We can also provide free portable hearing loops and portable seats on demand. Talk to a member of staff for more information.

Large print programmes are available from the information desk.

Staff

Should you require any help during your visit to the Royal Society, our exhibition team will be happy to assist you. You can pop to the information desk or our exhibition team will be around the building, identifiable by their red 'Staff' t-shirts.

Welcome

It is a pleasure to welcome you to the Royal Society for our annual Summer Science Exhibition.

We are excited to share some of the latest and most innovative research in science, engineering and technology from across the UK. The exhibition provides a great opportunity to talk directly to scientists to understand more about their work and how it is helping shape our society.

All of the 22 exhibits are hands-on, giving you the chance to personally experience the science. This year, you can look forward to exploring what it would be like to live on the Moon, discovering why we get breathless and finding out how maths is helping unlock new treatments for cancer.

We are also delighted to introduce our event programme, which is packed with talks and activities for all age groups. As well as showcasing a wide variety of current research, we delve into some of the fascinating history which led to modern day science and technology.

I hope you enjoy your visit to the Exhibition.



Venki Ramakrishnan
President of the Royal Society

royalsociety.org/summer



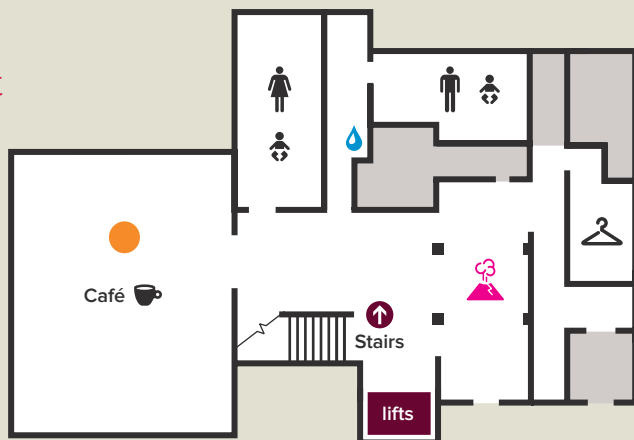
/theroyalsociety



@royalsociety #summerscience

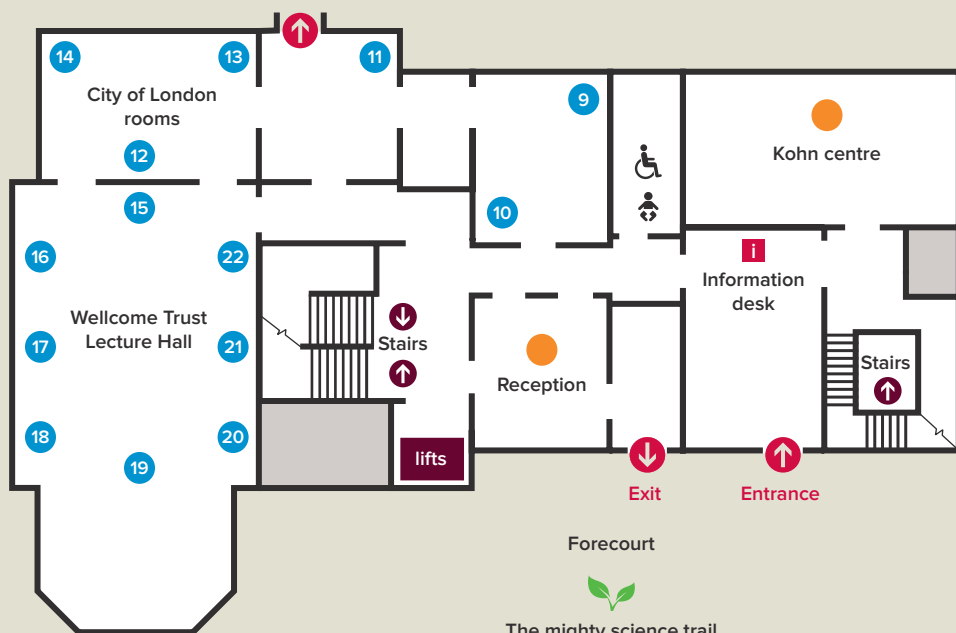
Map

Basement



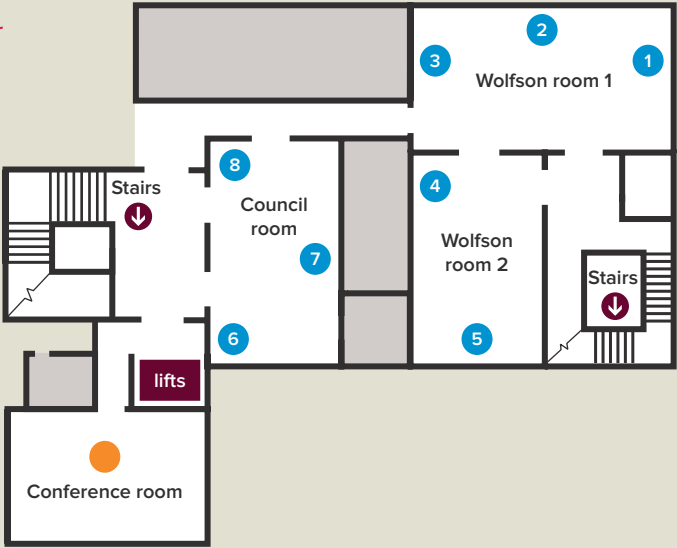
Ground floor




● Terrace marquee / ● Schools hub



The mighty science trail
meeting point
(Saturday and Sunday only)

First floor







-  Exhibits
-  Talks and activities locations
-  Schools hub
(No public access from Monday, 11am – Friday, noon)

Other exhibits



Fiery Earth exhibition

General information

-  Café
-  Baby changing facilities
-  Water fountain
-  Cloakroom
Please note: Items are left at owner's risk.

Exhibits

First floor



1

In your element

Celebrate the 150th anniversary of the periodic table with an investigation into the elements we rely on every day.



2

A recipe for primordial life

Dive into the primordial soup to reveal the fundamental building blocks of life.



3

The great Bristol shake off

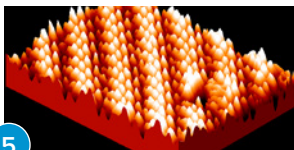
Shake, shake, shake those fake earthquake tremors to help safeguard our nuclear reactors against natural disasters.



4

It's a knockout

Explore how tuberculosis is becoming a disease of the past through the use of genetic technologies.



5

Surface matters

Detect how even small changes on the surface of materials can dramatically alter their properties.



6

Lighting the brain after birth

Glimpse how light can be used to monitor the brain activity of babies and even save the lives of newborn infants.

First floor



BepiColombo: x-ray eyes on Mercury

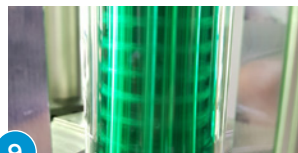
Voyage to this mysterious and uncharted planet and explore how its secrets are being revealed using x-ray imaging.



Molecular music: the sound of chemistry

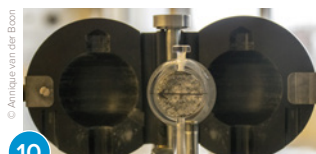
Join Ilkley Grammar School as they create musical masterpieces to show what's happening in a chemical reaction.

Ground floor



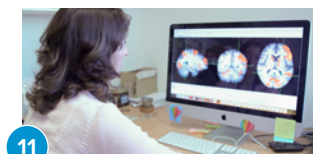
Green light for chemistry

Find out how light can be used as a clean, green alternative to chemicals in manufacturing methods.



Magnetic to the core

Discover what the Earth's ancient magnetic field tells us about the hidden depths of our planet.



Breathing with your brain

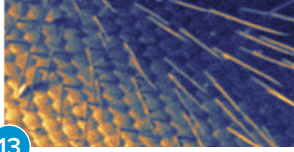
Why do we get breathless? Explore how and why the brain can influence the breathing process.



Do you feel me?

Discover how words can have a taste and sounds have a colour for people with synaesthesia, a condition that blends the senses.

Ground floor



13

Seeing with atoms

See how helium can be used in microscopy to open a new world of discovery.



14

Living on the Moon

Prepare for the next big lunar challenge, 50 years after the historic Apollo 11 Moon landing.



15

Timber towers of tomorrow

Explore the science and engineering of super tall timber, from the smallest of cells to the highest of skyscrapers.



16

A message from afar

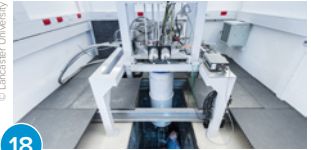
Join the debate on whether we should try to communicate with extra-terrestrial civilisations.



17

Take a bite out of climate change

Uncover the surprising truths about what we eat in this myth-busting look at the food on our plate and how it gets there.



18

Art of isolation

Is the quietest place in the Universe really next to the M6? Investigate how the removal of 'noise' is enabling the development of brand new technology.

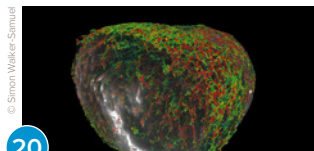
Ground floor



19

Trusted autonomous vehicles

Would you trust a driverless car? Put your views to the test and see what it takes to establish trust in this up and coming technology.



20

The mathematics of cancer

In the search for a cure for cancer, see how mathematical modelling is providing valuable insight into the complex structures of tumours.



21

Robots in the danger zone

Meet the real-world robots unlocking new possibilities in areas too hazardous for humans to work.



22

Super biomaterials to fight super bugs

Discover the amazing materials helping to battle the rise of superbug infections in medical devices.



Fiery Earth: the volcano and the Royal Society

In 1883, the island of Krakatoa erupted in a series of cataclysmic volcanic explosions and the after-effects were experienced across the world. This exhibition looks at how natural philosophers struggled up to this point to understand volcanos and why Krakatoa gave urgency to discovering more about our planet – for what happens deep beneath the Earth's surface has consequences for us all.

Events

Talks

Admittance for our talks is first-come, first-served. Please ensure you arrive early for talks as we can get busy at the weekends and you may need to queue to get into the building.

Drop-in

These activities run continuously and you can drop in at any time. Please note if the venue is at capacity you may have to wait.

Ticketed

These sessions are timed and have limited capacity. Our family shows are ticketed to make it easier to plan your visit with children in tow. To attend, please collect a free ticket on the day of the event from the information desk. Tickets will be available an hour before the event start time. Without a ticket, you will be denied entry.



EVENTS

Tuesday 2 July



18+ only

Time 6pm – 10pm

Summer Science Exhibition Lates

Building-wide

Join us for our late night opening of the exhibition and enjoy an evening of science, music and cocktails.

From the science of beatboxing to 3D printed food, this is a night not to be missed for those with curious minds.

EVENTS

Wednesday 3 July –
Friday 5 July

© Rentia Images



14+ Ticketed

Time 12pm, 1pm



EVENTS

Friday
5 July



14+ Drop-in

Time 2pm – 6pm

Come as you are yoga

Kohn centre

Reclaim your lunch break with a science of yoga class that will be as invigorating as it is informative.

No special clothes, fancy equipment or elastic flexibility necessary.

People of science

Café

Who inspires you? Brian Cox takes this question to some of the most eminent figures in science at this special screening of the Royal Society's flagship video series.

EVENTS

Friday 5 July

© iStock



7+ Drop-in

Time 2pm – 6pm

© Tony Duckett 2016



7+ Ticketed

Time 3pm, 4pm, 5pm



© JGPRubex UnivEarts/University Paris Diderot – C. Epilain and S. Rodriguez



14+ Talk

Time 4.45pm – 5.45pm

Rubbish science challenge

Conference room

Can you create something that has the potential to solve a real-world problem using only what we find in our bins?

Make and take your very own creation made from recycled trash in this drop-in workshop run by Rubbish Science.

Incredible invertebrates

Terrace marquee

Join Mission:

Invertebrate and the Royal Parks to discover the wonderful world of bugs and beasts on your doorstep.

Learn how these not-so-creepy crawlies help plants to make seeds, recycle organic waste and much more.

The next giant leap for mankind

Kohn centre

Take a journey to Saturn as a part of a landmark mission of exploration with space physicist Professor Michele Dougherty. Explore what the key discoveries were and what they mean for the search for life on other planets.

EVENTS

Saturday 6 July



Under 10 Drop-in

Time 10am – 6pm



7+ Drop-in

Time 10am – 6pm



7+ Drop-in

Time 10am – 6pm

Kids' zone

Café

Ever wondered how the Universe started? Or what makes us different from other animals?

Visit the Little House of Science team in the Kids' zone, where inquisitive young minds can find the answers to life's biggest questions.

Makerspace

Conference room

Get creative and hands-on in our pop-up makerspace hosted by Barclays Eagle Lab. Construct laser cut cars and put these to the test in a high octane battle on the race track, or watch the live 3D printing demonstrations going on around you.

Street science

Building-wide

What does ketchup in a bottle of water have in common with a submarine? And how can someone guess your birthday using only binary numbers?

You'll have to bump into the Street Scientists from Newcastle University roaming around the exhibition to find out.

EVENTS

Saturday 6 July

© 24, Inc.



7+ Drop-in

Time 10am – 6pm

How stars made the elements brick by brick

Reception

Discover how the chemical elements are created through the lives and deaths of stars, as you attempt to build the periodic table brick by brick with LEGO® master Dr Ben Still.

© Neil Monteiro



7+ Ticketed

Time 11am, 1pm, 3pm



Lunar explorers

Terrace marquee

Get ready to explore the lunar landscape with science presenter Neil Monteiro. Packed full of gravity defying demonstrations and out of this world tricks, this is a show that will inspire the next generation of intrepid space explorers.



7+ Ticketed

Time 11.30am, 1.45pm, 3.45pm



The mighty science trail

Meeting point on the Royal Society forecourt

Join our intrepid explorer David Price (he's the one wearing a pith helmet and holding a banner) as he tackles the mighty science challenges of St James's Park.

No volunteers will be harmed on this science trail, honest.

EVENTS

Saturday 6 July

© Lisa Gilligan-Lee, University of Nottingham



7+ Talk

Time 4.45pm

From test tube to YouTube

Kohn centre

Join Professor Martyn Poliakoff, renowned chemist and YouTube star, to explore how his videos, which started as a quick summer project, have now engaged hundreds of millions of people in the science of the elements.



Discover more

The Royal Society runs a number of events for the public throughout the year, from talks and debates at Carlton House Terrace to hands on activities around the country.

Sign up to our public newsletter to hear about our events and other news or find out more at royalsociety.org/events

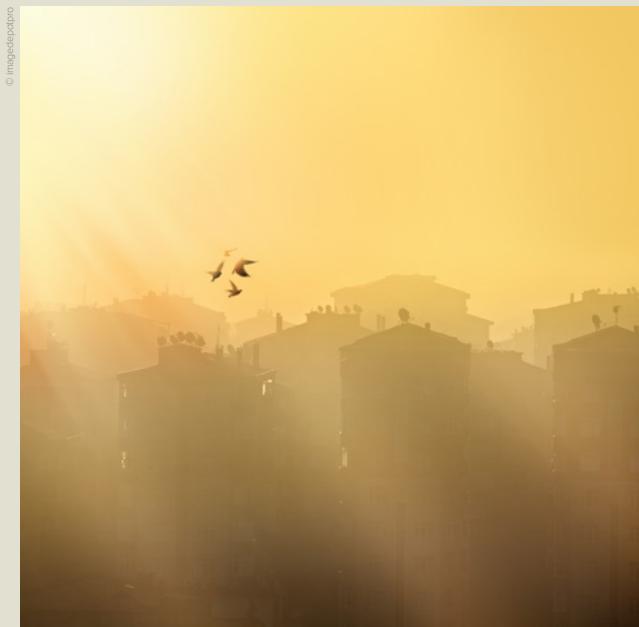
Saturday 6 July

Lightning talks

These talks are part of our series of lightning lectures. Perfect for getting a taste of science, why not catch one (or more) of these electrifying fifteen minute talks.

14+ Talk

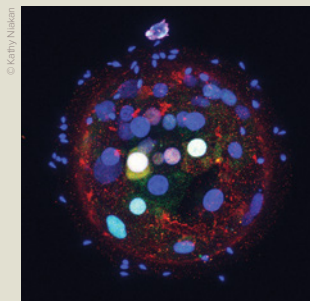
Location: Kohn centre



Time 10.30am, 2.15pm

Seeing the air you breathe

Dr Mark Richards joins us to explain how we can monitor the quality of the air we breathe using environmental sensing systems that can rapidly identify, track and map air pollution.



Time 11.15am, 3pm

Building ourselves

Hard hats at the ready as you discover the intricacies underpinning early cell development with Dr Kathy Niakan.

Saturday 6 July

© Dr Stephen Buckley

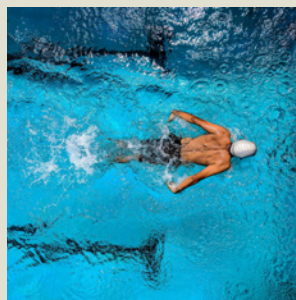


Time 12pm, 3.45pm

Mummies and molecules: the chemistry of ancient Egyptian mummification

Dr Stephen Buckley reveals the secrets of the ancient Egyptians by exploring how chemistry can be used to uncover the science behind the art of embalming.

Please note that this talk may include images of human remains.



Time 12.45pm, 4.15pm

Uncovering the complexity of doping in sport

Are dopers born or made? Join Professor Susan Backhouse to explore the psychology of doping and the complex social and environmental factors that might lead an athlete to cheat.



Time 1.30pm, 5.30pm

The art of AI extrapolation

Join Professor Yarin Gal to discover new techniques in machine learning that will give you the chance to venture beyond the frame of some of your favourite paintings.

EVENTS

Sunday 7 July



Under 10 Drop-in

Time 10am – 6pm



7+ Drop-in

Time 10am – 6pm



7+ Drop-in

Time 10am – 6pm

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EVENTS

Sunday 7 July



© Dr Chloe James

7+ Drop-in

Time 10am – 6pm

Let me take a (bio)selfie

Reception

Create your own unique and colourful self-portrait using the bacteria swabbed from your cheek with Dr Chloe James and her team from the University of Salford.



© Greg Foot

7+ Ticketed

Time 11am, 1pm, 3pm



Deep ocean lab

Terrace marquee

What happens as you venture further and further into the dark ocean?

Dive deep with YouTuber and BBC presenter Greg Foot for the story of his scientific adventure to the depths of the ocean.



7+ Ticketed

Time 11.30am, 1.45pm, 3.45pm



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Meeting point on
Royal Society forecourt

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Sunday 7 July

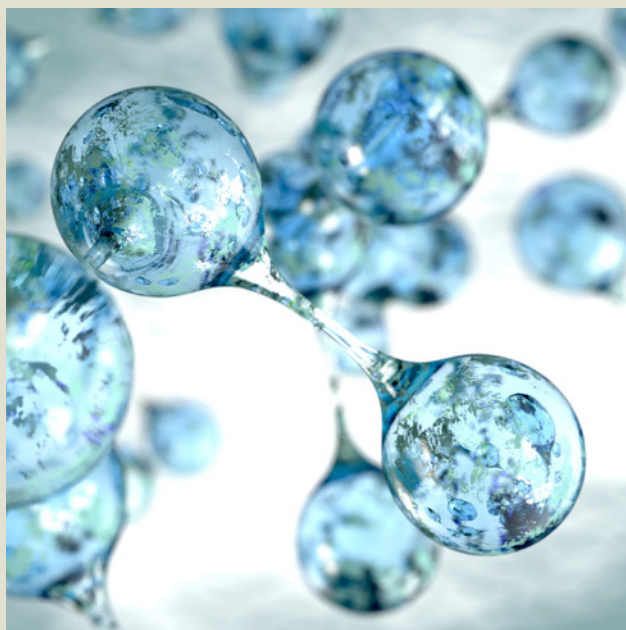
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14+ Talk

Location: Kohn centre

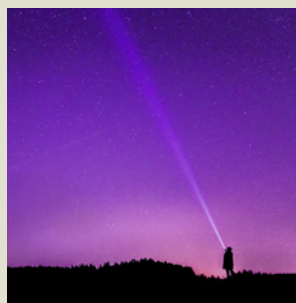
© Shutterstock



Time 10.30am, 2.15pm

Powering the future

Venture into the lab with Dr Ulrich Hintermair to discover the role of chemical catalysts in the creation of sustainable energy.



Time 11.15am, 3pm

Exploring exoplanets

Join astrophysicist Professor Giovanna Tinetti as she explores the exotic planets orbiting other stars. With almost 4,000 exoplanets being discovered in the past 20 years alone, there is still lots to be learned.

© meadow graphics



Time 12pm, 3.45pm

The secret mind of pets

Answer the much pondered question “what is my pet thinking?” with Dr Anna Wilkinson.

© Dr Andrew Bamji/The Glas Archives



Time 12.45pm, 4.30pm

Faces from the front

Dr Andrew Bamji joins us to explain the major advances in facial reconstruction surgery during World War I.

Please note that this talk contains images that some visitors may find distressing.

© Dr Paul Kelly



Time 1.30pm, 5.15pm

Pointing a finger(print)

From metal surfaces that have been scrubbed clean to remnants of prints on an ammunition case that have been removed through gunfire, Dr Paul Kelly reveals the chemistry behind a pioneering new fingerprinting detection technique.

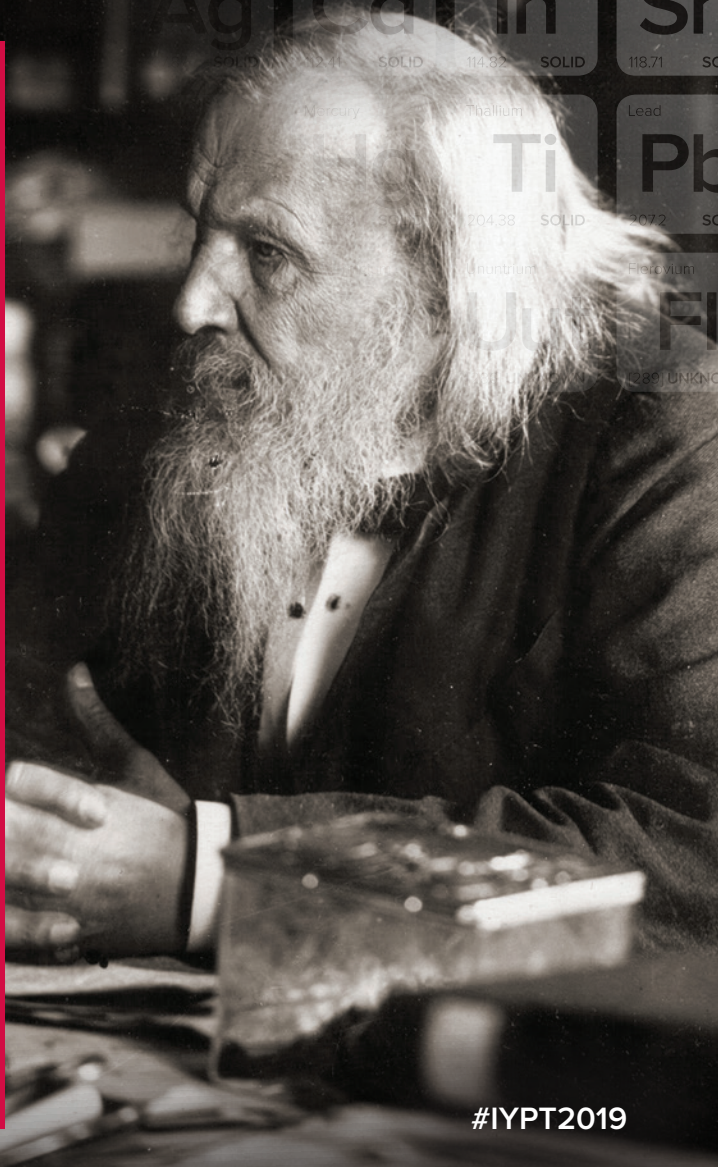
CELEBRATING

The International Year of the Periodic Table

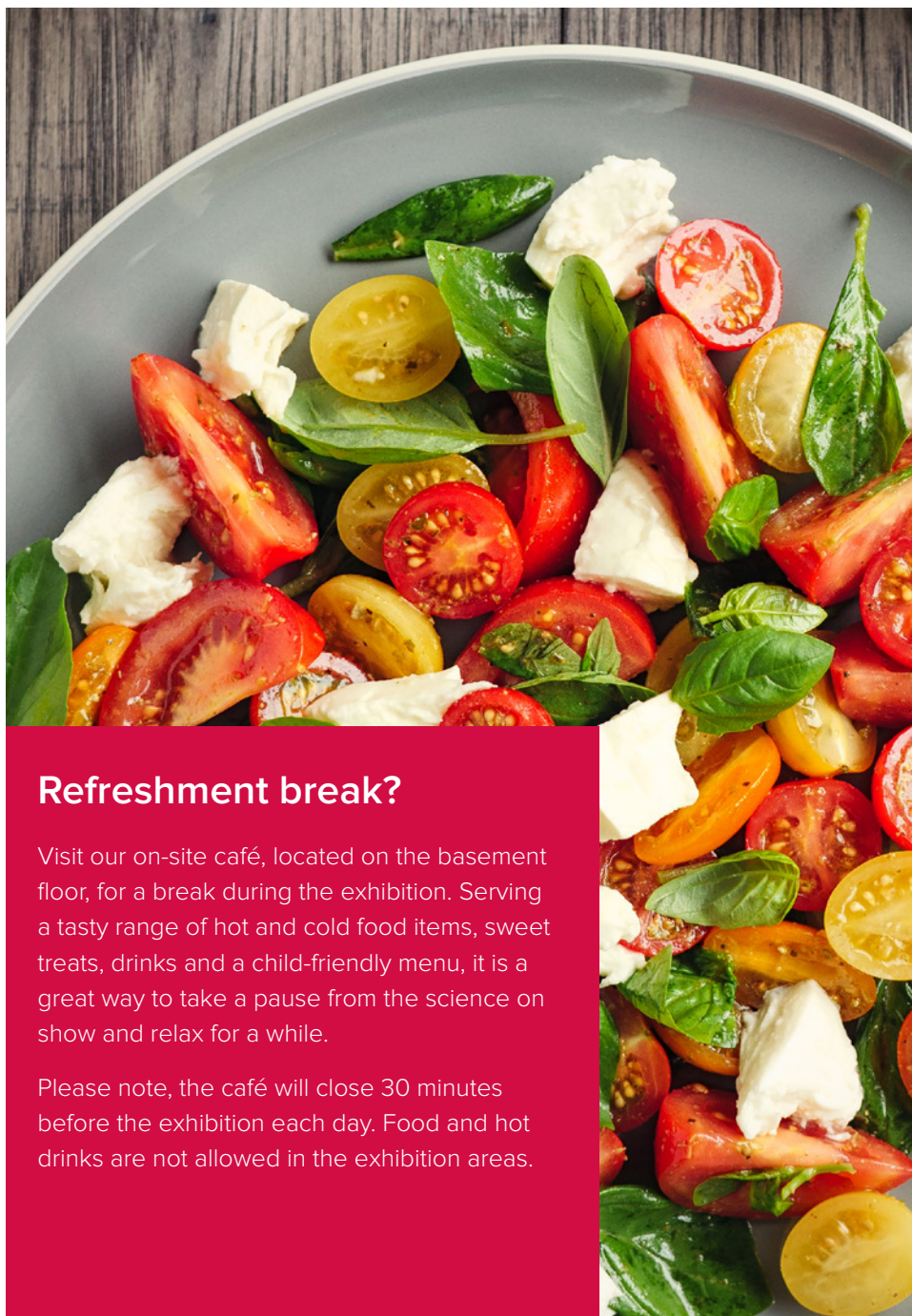
2019 has been designated by UNESCO as the International Year of the Periodic Table, marking the 150th anniversary of Dmitri Mendeleev's iconic Periodic Table of Chemical Elements. Since its creation in 1869, the periodic table has become a vital tool to all who learn and work in science, through all stages of their learning and careers.

You can explore the relevance of the periodic table through several of the exhibits at this year's exhibition.

For more information about the year-long celebrations, visit iypt2019.org or rsc.org/iypt



#IYPT2019



Refreshment break?

Visit our on-site café, located on the basement floor, for a break during the exhibition. Serving a tasty range of hot and cold food items, sweet treats, drinks and a child-friendly menu, it is a great way to take a pause from the science on show and relax for a while.

Please note, the café will close 30 minutes before the exhibition each day. Food and hot drinks are not allowed in the exhibition areas.

The Royal Society

The Royal Society is a self-governing Fellowship of many of the world's most distinguished scientists drawn from all areas of science, engineering, and medicine. The Society's fundamental purpose, reflected in its founding Charters of the 1660s, is to recognise, promote, and support excellence in science and to encourage the development and use of science for the benefit of humanity.

The Society's strategic priorities are:

- Promoting excellence in science
- Supporting international collaboration
- Demonstrating the importance of science to everyone

For further information

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London SW1Y 5AG

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W royalsociety.org



Founded in 1660, the Royal Society is the independent scientific academy of the UK, dedicated to promoting excellence in science.

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