

## *One World: Science Connects Us*

### Edinburgh Science Festival 2021 programme revealed

26 June – 11 July 2021

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**L-R: Winnie (8) and Valentina (6) Maia chat to Prof. Peter Tasker (Professor of Industrial Chemistry from the University of Edinburgh) using Science Festival's tin can phone**

- This year's Edinburgh Science Festival moved from its usual Easter holidays slot and takes place from Saturday, 26 June to Sunday, 11 July, exploring the theme of *One World: Science Connects Us*.
- With programming for the planet at its core, the 2021 Festival focuses on the challenges and opportunities ahead, as the world prepares for the 26th UN Climate Change Conference of the Parties (COP26) in Glasgow in November.

- The Festival presents over 200 events, tours, exhibitions, workshops for children, young people and adults, over 70% of these events are available online and free to access to anyone around the world. But at heart, the Festival is a deliverer of inspirational live experiences, and is delighted that – while it won't look quite the same as in a normal year – it is back in the live game, with a focus on getting out & about and interacting with science of all sorts.
- With 60% of the guest speakers in the programme women, the Festival offers invaluable insights into the respective fields of Prof. Heidi Larson, this year's Edinburgh Medal recipient and the Founding Director of the Vaccine Confidence Project at the London School of Hygiene & Tropical Medicine; Professor of Public Health and an adviser to the Covid-19 Committee of the Scottish Parliament Linda Bauld and conservationist and adventurer Sacha Dench, among many others.
- Thanks to a range of walks, tours, outdoor events and collaboration with Festival's programming partners such as, among others, National Museums Scotland and Royal Botanic Garden Edinburgh, this year's Science Festival has a greater city-wide presence than ever.
- This year, Cirrus Logic is the Edinburgh Science Festival's Headline Sponsor. Public sector funding comes from the Scottish Government, City of Edinburgh Council, Expo and PLACE funds and EventScotland.

Today, Edinburgh Science is very pleased to reveal the programme for its annual Science Festival, the world's first and still Europe's biggest, which this year moved away from its usual Easter holiday dates to take place – online and in person – between 26 June and 11 July, celebrating the power of science and the power of connecting through science.

The theme for the 33<sup>rd</sup> Festival, with Cirrus Logic as the Headline Sponsor, is *One World: Science Connects Us*, a fact drastically highlighted by the Covid-19 virus: whether we are talking to friends on the other side of the world or following the guidance from epidemiologists, helping us navigate the world shattered by a global pandemic, we are all bound together by science.

With programming for the planet one of the Festival's longstanding objectives, the Edinburgh Science team is pleased to connect Festival audiences to a world-class line-up of speakers and events highlighting the urgency of taking action to combat the climate crisis, which remains one of the defining challenges of this century. As we prepare for the next UN Climate Change Conference of the Parties and the world's attention turns to Scotland, Edinburgh Science is proud to lead the way to COP26 with its ambitious and inspiring 2021 programme, as well as through other work out-with the Festival, including the [Climate Opportunity Ideas Factory](#), a series of regular meetings of senior representatives from business, third sector, higher education, public sector and government, all with the aim of supporting Scotland's *Race to Zero* through impactful science-based projects and initiatives.

Whether it is a Science Day Out or a Science Night In, the 2021 Festival has everyone covered. Offering 220 events, tours, discussions, workshops, downloadable resources and interactive experiences, the Festival takes place both online and in person with over 80% of the programme available to audiences free of charge – and the digital programme available to anyone in the world! – truly connecting all the sci-curious minds around the globe.

With a ground-breaking 60% of the Festival's speakers women this year, Edinburgh Science Festival leads the way to gender balance as it confirms its role of a champion of the achievements of women in science and science communication.

The under-representation of women in science, technology, engineering and maths (STEM) and stereotypes sadly persist, despite many long-standing initiatives to boost young women's interest. The Festival's 2021 programme not only gives female scientists, engineers, science communicators and explorers a platform to share their knowledge and passion with the world, but also shines a special light on their achievements through a series of ambitious events and exhibitions (see Women in STEM section).

The challenges of the past 14 months have made many of us realise the importance of and the connection to our immediate surroundings – our local community and our city. Edinburgh Science is pleased to be able to

return to presenting live events this year as it recognises the importance of Edinburgh's recovery as the Festival City to the local people.

Science Festival events, walks, exhibitions and tours have a truly city-wide presence, thanks to the Festival's long-standing programming partners: National Museums Scotland, Royal Botanic Garden Edinburgh, Dynamic Earth, Royal Zoological Society of Scotland's Edinburgh Zoo, University of Edinburgh, Edinburgh Napier University, Heriot-Watt University, Royal Academy of Engineering, British Ecological Society and others.

**Amanda Tyndall, Edinburgh Science's Festival and Creative Director said:** "It is an understatement to say that it has been an exceptional year; a year that has shown us just how intimately interconnected our world is. We share one world and need to innovate and collaborate to tackle global challenges and embrace the opportunities ahead. In a spirit of optimism, resilience and hope – our 2021 Festival explores new ideas and formats that ensure audiences can safely get their science fix this summer."

### **Some of this year's programme highlights include:**

- **[Pale Blue Dot](#)**: celebrating Scotland's Year of Coasts and Waters 2020/21, this large-scale exhibition at the National Museum of Scotland delves deep into the science, beauty and mystery of our oceans.
- **[Edinburgh Medal](#)**: Prof. Heidi Larson, the Founding Director of the Vaccine Confidence Project at the London School of Hygiene & Tropical Medicine, is this year's Edinburgh Medal recipient.
- **[Women in STEM Art Trail](#)**: featuring large-scale graffiti portraits of female STEM professionals, the Trail takes over 9 iconic locations around the city as it highlights the achievements of 9 inspiring women.
- **[In Memoriam](#)**: Artist Luke Jerram's latest touring artwork commemorating those lost in the pandemic and honouring NHS staff and volunteers is presented for the first time ever in Scotland, at Royal Botanic Garden Edinburgh.
- **[Human Nature](#)**: this is a large-scale photography exhibition on Portobello Promenade exploring the human connection to nature and its fragility.
- **[SciMart](#)**: everyone's favourite SciDay Out is back and this year's SciMart connects the Royal Botanic Garden Edinburgh visitors to local inventors and food producers.
- **Online talks**: Festival presents a series of fascinating talks available for free on its YouTube channel, exploring such topics as the Covid-19 pandemic, biodiversity, sustainable agriculture, women in space and animal conservation.
- **Festival guest speakers**: as always, the Festival connects its audiences to an inspiring array of global voices. This year's line-up includes Dr Emily Hepburn aka The Psychology Mum, science presenter Greg Foot, queer ecology scholar Dr Nicole Seymour, ethical hacker Rupert Goodwins, conservationist and environmentalist Mya-Rose Craig, inventor Alison Grieve and post-conflict trauma expert Thanos Karatzias, among many others.
- **Family**: known for its world-class science offer that since 1989 has inspired millions of children in Scotland and around the world, the Festival presents digital workshops, talks, downloadable resources as well as walks, exhibitions and interactive experiences around Edinburgh to keep young minds both busy at home and inspired by the great outdoors.

Please see below for more detailed 2021 programme information and quotes, or visit [www.sciencefestival.co.uk](http://www.sciencefestival.co.uk)

## **2021 PROGRAMME INFORMATION**

### **Programming for the planet**

With the eyes of the world on Scotland as it prepares for COP26, Edinburgh Science Festival signposts the way to a more sustainable way of living with an ambitious programme of climate crisis-focused events, a topic that permeates every strand of the Festival, from food and nutrition to visual art.

A large-scale exhibition taking over the Grand Gallery of the National Museum of Scotland, [Pale Blue Dot](#) invites audiences of all ages to explore all things marine as it takes them on a journey through every layer of the ocean, exploring the essential and life-giving nature of the big water, with a focus on its important biodiversity and its role as a provider of energy, transport, food and opportunities for leisure and pleasure. There are online resources available for those who are unable to visit the exhibition. *Pale Blue Dot* is part of Scotland's Year of Coasts and Waters 2020/21 and came to life thanks to the PLACE Fund. It is also supported by Stirling University and Crown Estates Scotland

One of the highlights of the Festival's online talks programme, [Reconnecting to Nature](#) is a discussion that brings together young leaders in wildlife communication to examine how new tools and platforms can be used to connect nature enthusiasts and democratise learning and features, among others, Mya-Rose Craig, a prominent 18-year-old birder and conservationist.

This year marked the beginning of the UN Decade on Ecological Restoration, a clarion call to the globe to reverse the previous centuries' rampant destruction of our environment and prevent an ecological disaster. [The Regeneration Generation](#) looks at what policymakers, governments and individuals all need to do to reseed biodiversity and rewild the world.

Sacha Dench aka The Human Swan, conservationist and UN Ambassador for Migratory Species, famous for flying 7000km by paramotor from Arctic Russia across 11 countries to the UK to help save the Bewick's swan, shares stories of her inspiring adventures and her latest project, *Round Britain Climate Challenge* at [In Conversation with Sacha Dench](#).

["Our Biggest Experiment" - How We Made and Discovered the Climate Crisis with Dr Alice Bell](#) is another fascinating online talk following the story of Eunice Newton Foote, a scientist, inventor and women's rights campaigner who in 1856 first warned the world that an atmosphere heavy with carbon dioxide could send temperatures soaring.

A research collaboration with the University of Edinburgh's Futures Institute's [newreal.cc](#), an Experiential AI research programme, [AWEN](#) is a self-guided climate walk, prompted by global climate data and science, that delivers audiences a deeply personal encounter with the environment.

## Medicine | Covid-19

This year's prestigious [Edinburgh Medal](#) is awarded to anthropologist and author Heidi Larson, the Founding Director of the Vaccine Confidence Project at the London School of Hygiene & Tropical Medicine, for the role she has played in recognising the importance of popular and widespread misunderstandings of vaccines and of her work to advance public health and social wellbeing for the benefit of all. Prof. Larson's Medal Address, supported by M&G, will be broadcast online to audiences around the world on the Festival's YouTube channel.

Also available on the Festival's YouTube channel, [How to Handle a Pandemic](#) brings together a panel of experts to try to answer that very question - hosted by Director of the UK's Emerging Infections Research Unit Tom Solomon who will be joined by the Chair of the WHO's Global Outbreak Alert and Response Network Dale Fisher, behavioural scientist and Scottish government advisor Linda Bauld and epidemiologist Tim Spector.

Exploring the impact of the pandemic on our mental health, [Aftershocks](#) features two international experts in post-conflict trauma, Prof Thanos Karatzias and Prof Neil Greenberg. At this online talk they will explore what the prognosis might be for our society and how we as individuals and as a nation can best mitigate the unequally-felt effects of this extraordinary year.

Continuing the theme of the global pandemic is [Life in the COVID Bubble: Voices from the Frontline of Critical Care](#), an audio experience in Edinburgh's George Square which invites audiences to enter a labyrinth

to listen to stories of people who worked in intensive care during the pandemic and reflect on the challenges critical care staff faced as well as the value of teamwork and compassion.

A 5-minute walk from George Square, The Meadows is home to [Beneath the Mask? Exploring Mental Health Nurses' Emotional Work Through the Arts](#), a photography exhibition of hand-embroidered mask pieces which opens up the inner world of mental health nursing.

[Same Same, But Different - Using Maths to Understand Parasitic Worms](#) is an online talk and Q&A with researcher Dr Goylette Chami who looks at different networks in our lives (from neurons to electricity grids) and how utilising them can track and stop the spread of infectious diseases.

The annual Tam Dalyell Prize Lecture – awarded by the University of Edinburgh to individual or groups for their excellent in science communication – will this year be delivered by Dr Andrew Manches whose work looks at how children gesture and how using gestures can help adults explain things better.

In [The Menopause Manifesto with Dr Jen Gunter](#) the New York Times bestselling author breaks down the patriarchal barriers surrounding menopause and exposes how society's focus on what happens to women's bodies has shaped and hindered treatment and understanding of menopause for years.

While Theatre of Debate's [Covid and Me – the Monologues](#) presents a series of short films written by some of the UK's best dramatists, including Sarah Daniels, Oladipo Agboluaje and Sudha Bhuchar. Each tells the story of how people from different communities have been affected by COVID-19 treatment, vaccination trials and the fake news swirling around social media. Several of the monologues are performed in different languages including Punjabi, Urdu and Bangla.

## **In and around Edinburgh**

Outdoor walks, tours, trails, exhibitions and installations form an important part of the Festival programme this year, using the city as a playground and allowing audiences to safely get their science fix this summer.

Celebrating the achievements of 9 female scientists, the [Women in STEM Street Art Trail](#) is a beautiful homage to the life-changing power of science. 9 locations around the city – including WHALE Arts, Summerhall and Dynamic Earth – will each showcase a large-scale graffiti portrait of a woman whose scientific feats are often little known to wider public. From Dr Kathy Sullivan, first American woman to complete a spacewalk, the first woman to travel to the bottom of the ocean and the first person to do both, to Zarina Ahmad, a climate justice and race equality advocate working with under-represented group on improving funding access.

Luke Jerram's [In Memoriam](#), a touring artwork commemorating the lives lost to Covid-19 and paying tribute to NHS health and care workers, makes its Scottish debut at the Royal Botanic Garden Edinburgh. The artwork comprises of flags created from NHS bed sheets and arranged in the form of a medical logo.

Also at the Garden - [SciMart](#) is back this year and celebrating the 50th anniversary of the creation of the World Food Programme as it takes form of a farmer's market with a scientific twist, revealing the science behind some of our favourite foodstuffs.

Portobello Promenade once again hosts a beautiful large-scale series of photographs, this time exploring our connection to nature and highlighting its fragility and diversity. [Human Nature](#) sponsored by AEB Charitable Trust invites passers-by to consider the importance of the natural world to human health and happiness and discover how the global community is tackling the challenges of the climate crisis that threaten our green spaces.

At the heart of Edinburgh, The Mound Precinct this year hosts an exhibition presented by the Royal Academy of Engineering [This is Engineering... As You've Never Seen It Before](#), an exhibition shining light on the role of engineering in our everyday life – from planes and videogames to tackling the world's most pressing issues to do with climate or medicine. Alongside it will sit a photography exhibition, sponsored by Oceana and Arup and curated by the Festival team to highlight engineering innovation for a sustainable future.

[Oscillations in Light & Sound](#) sponsored by CityFibre takes over Edinburgh's iconic St Andrew Square as it invites audiences of all ages to play with giant crystal blocks that come alive through movement, creating a light and sound show.

For those keen to venture out of Edinburgh, the Festival's closing weekend will see the [European Stone Stacking Championships](#) returning to the beautiful Dunbar beach for the fourth time. Filled with competitions and demonstrations – and offering a chance to see stone stacking professionals in action! – the weekend is a perfect opportunity to connect to nature for people of all ages.

## **Women in STEM**

Edinburgh Science is proud to present a Festival where 60% of the guest speakers are women, leading the way to gender balance in science communication. The Festival's line-up features an inspiring line-up of female STEM professionals, authors and explorers from around the world, including, among many others, such names as Prof. Linda Bauld who is an adviser to the Covid-19 Committee of the Scottish Parliament; astronautical engineer Cassandra Mercury; Mya-Rose Craig, an 19 year old prominent British Bangladeshi birder, conservationist and environmentalist; quantum gravity, theoretical physics expert Dr Sonali Mohapatra who is part of the technical team of the upcoming ROKS mission which will be launched in 2022; and Prof. Heidi Larson, founder of the Vaccine Confidence Project and the recipient of this year's prestigious Edinburgh Medal.

The Women in STEM Street Art Trail, presenting large-scale graffiti portraits of 9 inspiring female STEM professionals in 9 locations around the city, is painted by local artists Shona Hardie and Kerry Wilson and shines a bright light on the achievements of, among others, Lorna Prendergast who in 2019, at 90 years old, graduated from Melbourne University with a Master's Degree in ageing and now researches the use of music in dementia symptom relief and Dr Anne-Marie Imafidon MBE who at 11 years old became the youngest ever girl to complete an A-level in computing and who is the co-founder of Stemettes, an award-winning organisation dedicated to inspiring and supporting young women and non-binary people into STEM careers.

Nearly 60 years after the first woman was launched into orbit, we are on the cusp of a new space age. Space Shetland's Yvette Hopkins chairs [Spacewomen](#), an online discussion bringing together women working in the space industry from across the world to share their career experiences and hopes for the future: space medic Christina Mackaill, astronautical engineer Cassandra Mercury and Rocket Women founder and Project Manager at Mission Control in Canada, Vinita Marwaha Madill.

## **Family programme**

Known for its creative and engaging science events and workshops for children, this year's Edinburgh Science Festival presents almost 120 free workshops and activities supported by Edina Trust to be explored from the comfort of one's home – or in the great outdoors!

### Online

Edinburgh Science's educational arm – Edinburgh Science Learning, with Baillie Gifford as its Headline Sponsor – produces a range of fantastic events every year with *Generation Science* being one of the key ones. *Generation Science* is Scotland's largest school touring educational programme which has inspired over 1 million pupils since its inception. This year, thanks to the pivoting of delivery to online, Festival audiences have an amazing opportunity to take advantage of some of *Generation Science*'s world-class content! *Kids Lab at Home* offers five different online activities exploring everything from [magnetic forces](#) and [solar system](#) to programming machines. And while the Festival's flagship family venue, City Art Centre, cannot physically open its doors to Festival audiences this year, there is plenty of interactive and free content available on Festival's YouTube channel, including [Little Giants](#), a workshop all about the bees or [Wild Vets](#) where every child becomes an animal conservationist!

*StrongWomen Science* are back by popular demand to perform their mind-boggling tricks, effortlessly marrying circus and science and for those missing theatre, *Two in Barrel* is a clown-inspired physical theatre

performance for young audiences about co-existing in an environment with limited resources - the waste we create - and the destructive consequences of our habits.

One of Blue Peter's regulars, [Greg Foot](#) presents online shows for children exploring the future of food as the world's population grows and shining lights in the deepest depths of oceans. Television presenter and author Stefan Gates returns to the Festival with *Gastronaut*, a fantastic range of science shows looking at everything from the science of sweets to fart-ology!

The Braintastic team explores human senses, the tricks they play on us and how we remember and store memories in fun, interactive shows filled with games and quizzes. Royal Zoological Society of Scotland's Edinburgh Zoo presents a series of fascinating Zoom workshops and shows where audiences race to save the planet in [All About Attitude!](#) and learn all about [Animals Around the World](#) – and more.

For those keen to engage the whole family, [Climate Quiz 2021](#) offers a fantastic opportunity to test one's knowledge on climate crisis and learn all about some creative solutions to it and [Carbon City: The Board Game](#) sees players becoming mayors of their own city, racing to be the first to reduce its carbon emissions while [Escape from the Physics Lab](#) is a unique virtual escape room experience where puzzles are both fun and educational – obviously!

### Outdoors

For those who have experimented with *Oscillations in Light & Sound* in St Andrew Square, marvelled at the beauty of our oceans in *Pale Blue Dot* at the National Museum of Scotland and seen the ingenuity of engineering in [This is Engineering... As You've Never Seen It Before](#) on The Mound (see In and around Edinburgh section), the Festival has plenty more to offer for families and downloading a copy of the Festival Discovery Trail is the best way to get started!

[Discovering the Deep Outdoor Exhibition](#) at Dynamic Earth tells the story of marine science in Scotland, from Edinburgh's unsung hero, Charles Wyville Thomson whose pioneering exploration of Scotland's marine environment in the 19th century launched the modern science of oceanography to the investigations of researchers working in Scotland right now, e.g. in Scottish cold-water coral reefs. Accompanying the exhibition will be ocean-themed drop-in children's activities.

Dynamic Earth also presents a fantastic range of walks around Holyrood Park, each exploring a different era in Edinburgh's rich past – ice, volcanos and even tropical! And Leith Links becomes a scene of investigation in *Wild Casting*, where young conservationists learn all about signs animals leave behind while [Family Bushcraft](#) is all about survival skills, from lighting a fire to... cooking marshmallows.

Inch Park is home to [Sherlock Holmes and the Biofilms Mystery](#), an adventure that requires help from young detective scientists to discover who broke into Holmes' apartment and why they did it.

[Seashore Nature Detectives in Musselburgh](#) (and in [North Berwick!](#)) is back with naturalist and wildlife tracker Dan Puplett guiding young detectives looking for clues the nature left behind.

Back in Edinburgh city centre, [Walking Through the Covid-19 Vaccine](#) is a family-friendly treasure trail offering a unique insight into the science behind the vaccines and answers to some of the most common questions.

### **Programme for young people (12+)**

This year's Science Festival has plenty of science shows and workshops for older children to get hands-on, covering everything from computer programming and mental health to animals and ethical hacking.

### Online

Cyber Zone has gone fully digital, presenting workshops on [Artificial Intelligence](#) as well as [App Factory](#) and [Micro Coders](#). For those keen to further hone their cyber skills, Digital Skills Education presents 16 fantastic workshops using themes such as animal conservation, cyber security and medicine to enhance young people's digital prowess, including [Defend the Rhinos LIVE](#) where young conservationists use science data to defend these endangered animals.

Civic Digits Theatre Company brings their [Big Data Show ONLINE](#) to the Festival to tell the fascinating story of ethical hacker Rupert Goodwins and ask the audience the uncomfortable question – do you know who knows your secrets?

Young minds will certainly be inspired to look up to the sky thanks to [The Last Stargazers with Emily Levesque](#), a digital talk peeking into the world of a professional astronomer and how it feels to brave sub-zero temperatures or handle equipment worth millions.

[Strange Science with George Zaidan](#), science communicator and television host, delves deep into the weird science behind everyday items - cheese puffs, coffee, sunscreen, vapes, hand sanitiser - that may or may not kill you, depending on whom you ask.

*Mammals - Our Big Stories*, run in partnership with the Scottish International Storytelling Festival, is a series of online events exploring the relationship between humankind and our large mammals through storytelling and science. Looking at some of the Planet's most iconic animals - [bears](#), [whales](#) and [elephants](#) - the series brings the beauty of these animals alive right on our computer screens, and highlights the challenges they are facing, often threatening their very existence.

[In-conversation with Dr Emma Hepburn the @PsychologyMum](#) is a digital talk with Dr Emma Hepburn, a clinical psychologist and Instagram influencer, known for providing accessible information on mental health and wellbeing to her 113k followers, on a mission to get the nation to proactively look after their mental wellbeing.

### Outdoors

Continuing the theme of mental health, [My Depression – Your Depression. Same Name, Different Story](#) showcases stories from adults and young people, their relatives and researchers, all with a lived experience of depression. Each story is so different yet it is given the same name. Taking form of a walking trail around George Square and the Meadows, the project encourages more openness about mental health and highlights the benefits of walking and greenspaces.

Celebrating Scotland's Year of Coasts and Waters 2020/21, [Coastal Knowledge](#) aims to showcase the diverse forms of coastal knowledge, varying from local history to coastal science and art, highlighting the importance of coastal communities in Scotland, resilient in the face of climate crisis. Audiences are invited to take a virtual tour of Scottish coasts, explore Edinburgh's coastal community of Granton with the [Curious Edinburgh walking tour](#) showcasing Granton's industrial and fishing history or make a stop at granton:hub, the arts and community centre showcasing the works of local artists.

[The Dead Interesting Tour](#) is a journey back in time along the pathways of Warriston Cemetery, shedding light on the fascinating tales of its tenants and the trails they blazed during their time on Earth: from a dauntless doctor to a dodgy distiller and a pioneering meteorologist to a young chemistry student whose discovery changed the world...

### **Food and nutrition**

Sustainable diet and food production plays an important role in tackling the climate crisis – if the way we eat continues, we are unlikely to meet the UN Sustainable Development Goals and the Paris Agreement.

Apart from the food-focused Festival favourites such as [Cheeseology](#) or [SciMart](#), this year's edition also offers great insights into the latest food-related hot topics – from feeding a nation to sustainable cooking tips, treating our health and environment as a common agenda.

[How can we Eat to Save the Planet? With Annie Bell](#) is an online talk with author Annie Bell inspired by her eco-friendly recipe book, *Eat to Save the Planet* (December 2020), and 28-day food plan based on the ground-breaking Planetary Health Diet, a global scientific study that tackles both our personal health and the health of the planet. The book was dubbed “the first science-based diet that both tackles the poor food eaten by billions and averts global environmental catastrophe” (The Guardian).

[Ending Hunger with Anthony Warner](#) is a talk also inspired by a newly published book (January 2021) which sets out the challenges involved in feeding a growing and increasingly affluent human population and looks at ways in which we might do so without a devastating impact on the natural world.

Changing the way Scotland does food and farming is vital to meeting the nation's ambition climate commitments. [Feeding the Five Million](#) is a digital talk exploring the issues around sustainable farming, featuring organic farmer and director of Nourish Scotland Pete Ritchie, agricultural economist and land use expert Prof. Deb Roberts and is hosted by Slow Food Scotland chair Donald Reid.

## **Society and gender**

Looking at the communities who have been historically and globally ignored in the discussions surrounding climate change and how to engage them, [No-one left Behind in the Fight Against Climate Change](#) is a timely and important online discussion which aims to enable a greater sense of STEM belonging for event participants, exploring identity and intersectionality in the context of climate crisis.

Do conversational assistants like Alexa and Siri perpetuate negative gender stereotypes? Research suggests that they do. [Gendering AI: the Case of Conversational Assistants](#) is an online talk featuring experts discussing the issues surrounding gender and conversational assistants, and what can be done about them, including Kate Devlin who is an expert on human-computer interaction and artificial intelligence, and investigates how people interact with and react to technologies and Fiona Linton-Forrest is part of the design team working on the persona of the BBC's new voice assistant, Beeb.

[Glitter Bar: A Makeover Takeover!](#) is a Zoom event live from the Festival's Glitter Bar, featuring queer ecology scholar Dr Nicole Seymour and the high priestess of Edinburgh drag, Mystika Glamour showcasing biodegradable alternatives to typically-microplastic cosmetic glitter and - through the playful format of the makeover - exploring the idea that the LGBTQ+ adoption of biodegradable glitter, along with movements like the #PlasticFreePride campaign, that environmental ethics must be central to future queer politics.

Another Festival favourite, [Edinburgh Skeptics](#) is back to delve into the world of sex, taboos and prejudices with four different speakers providing a skeptical insight into some surprising and wide-ranging topics.

Scotland's glittering history of invention and innovation is known around the globe - but can looking at the landmark discoveries of the past help us predict the future? [The Greatest Inventions of the Future](#) brings together inventor Alison Grieve, futurist and author Adrian Hon and engineering historian Carol Marsh to explore the constants that tie together humanity's relationship with technology through time and what the folk of 2121 might single out as today's most important discoveries.

## **Space**

For those who love stargazing and pondering the meaning of life, the universe and everything, [First Light: Switching On Stars At The Dawn Of Time](#) with Emma Chapman is not to be missed. Dr Chapman will look at the time when the first stars burst into life, hundreds of times the size of the Sun and a million times brighter - these stars were lonely giants that lived fast and died young in powerful explosions that seeded the Universe with the heavy elements that we are made of.

Thousands of miles above our heads, a flotilla of human-made satellites is orbiting our planet, collecting information and beaming it back - mapping, monitoring and relaying data and are integral to connecting the globe and combating climate change. [Satellite's Eye View](#), sponsored by Ecometrica, is a digital talk featuring a panel of experts - Sonali Mohapatra, Paula McGregor and Katie Miller for an explanation of how we can best use this space-gathered data to help us confront one of the biggest challenges faced by Earth - climate crisis.

## **Digital and engineering**

Those who got hands-on with Digital Skills Education workshops, discovered the hacker in [Big Data Show ONLINE](#) and learnt how engineering permeates every aspect of our lives in [This is Engineering... As You've Never Seen It Before](#) exhibition on The Mound presented by the Royal Academy of Engineering, can further pique their curiosity with a range of digital and engineering talks at this year's Festival.

[CryoArks: Animal Biobanking for research and conservation](#) is a fascinating talk offering an insight into the [CryoArks Biobank](#) initiative, a UK-wide collaboration which aims to create Britain's first comprehensive zoological Biobank network for research and conservation. CryoArks partners, National Museums Scotland and the Royal Zoological Society of Scotland gather and preserve the DNA, tissues and cells of wild and zoo animals, in turn providing a wealth of information that can support worldwide conservation management. The talk will feature curator Andrew Kitchener and conservation geneticists Gill Murray-Dickson and Helen Senn discussing how museums and zoos are coming together to help conserve our endangered species.

*Superstar Engineers – Here We Go!* connects audiences with three brilliant engineers, shedding more light on their brilliant achievements: Askwar Hilonga from Tanzania grew up drinking dirty water but has now designed a piece of equipment that adapts water purifying, exploiting nanotechnology to improve health; Sophie Robinson is an Aerospace Engineer helping to design the first electrical vertical take-off and landing aircraft and Ruth Amos invented a new form of stair lift for accessibility and now brings to kids' inventions to life, recently making giant wings to help with social distancing! These engineers appear in the first series of *Inventive*, a new podcast telling engineering stories through fact and fiction.

## **When STEM becomes STEAM**

Complex problems require complex solutions and never before has creative thinking been more important. The Festival continues to champion art-based learning in science and the power of bringing scientists and other creatives together with a programme that truly puts A (Art) in STEM (science, technology, engineering and maths)!

Local artists and ecologists have got together to imagine a 'better', greener future for Edinburgh in [British Ecological Society Online Exhibition: Six Predictions for Edinburgh's Future Green Spaces](#). Tackling problems like carbon emissions, drought, heatwaves and even social justice, the online art exhibition, co-created by young and local artists and urban ecologists, showcases ground-breaking nature-based solutions, where nature is used to benefit both the environment and people. Audiences will be encouraged to share their own ideas for future green spaces in Edinburgh.

[Syncrasy](#) is a group contemporary art exhibition co-curated by Summerhall and ASCUS Art & Science which takes place at Summerhall. It offers its audiences an opportunity to experience the ground-breaking work of visual artists Beverley Hood, Victoria Evans and Sneha Solanki, who merge the fields of art, science and technology. Sneha Solanki probes the habitats of the un-natural and presents a new and expanding rendition of the 'E-Number' food additive system in [E-Numbers V2.0](#). In [Oscillations](#), Victoria Evans explores how distant and invisible phenomena affect our everyday lives. Using data sonification, she makes audible the cyclical patterns of the tides and their interplay with lunar and solar orbits; this exhibition will include sounds of Edinburgh coastlines. Inspired by eczema genetic research laboratory, Beverley Hood multi-artform sensory exhibition [We Began As Part of the Body](#) tells a story as seen from a point of view of an artificial skin cell, from the precious, short three week long in vitro life to disposal.

Also at Summerhall, and supported by the Scottish Government's Expo Fund and Royal Society of Chemistry, Bright Side Studio's [Elemental](#) invites its audiences to interact with the Elements as they embark on a magical, multi-sensory journey of discovery through an intriguing, immersive digital world in which magic meets alchemy and alchemy meets science. Play, discover and create with your fellow explorers.

[In Conversation with Levon Biss](#) features the internationally renowned photographer Levon Biss in conversation with Lesley Scott (Assistant Herbarium Curator, RBGE), on an extraordinary journey into the world of plants and macro photography and peeking behind the scenes to learn more about Biss' process and

RBGE's remarkable carpological collection, brought to life in *The Hidden Beauty of Seeds & Fruits: The Botanical Photography of Levon Biss*, currently on display in the John Hope Gateway.

For information on *Women in STEM Street Art Trail*, *Oscillations in Light & Sound* in St Andrew Square and Luke Jerram's touring artwork *In Memoriam* see the In and around Edinburgh section.

## **QUOTES**

**Culture Minister Jenny Gilruth said:** "The Science Festival is responding to incredibly difficult circumstances by continuing a proud tradition of innovation.

"This programme offers online and in person experiences that will connect audiences to an excellent line-up of speakers and events highlighting the urgency of taking action to combat the climate crisis. I urge everyone to get involved."

**Cllr Donald Wilson, Culture and Communities Convener said:** "Each year the Edinburgh Science Festival programme makes science and the concepts being explored more accessible and entertaining for audiences of all ages. It was much missed last year and it's wonderful to see its return.

"It will be fascinating to explore the theme through the extensive digital programme and events taking place across the Capital. With more than 200 events over the two weeks, you'll be able to find talks, exhibitions and experiments and activities for all ages that you can be involved in physically, digitally - or even do at home!

"Public safety will of course be a priority, and this year's line-up promises to be very special."

**Cllr Amy McNeese-Mechan, Culture and Communities Vice Convener said:** "The Science Festival transforms the city into a celebration of science and technology and this year's theme is very fitting. As the past year has highlighted, science truly connects us all".

**Dr Chris Breward, Director of National Museums Scotland said:** "We are delighted to welcome back the Edinburgh Science Festival to the National Museum of Scotland and, for this year, in its new summer slot.

"In this Year of Coasts and Waters we look forward to hosting the Festival's exhibition *Pale Blue Dot*, which will act as a focal point to encourage discovery and discussion around sustainability and marine life. The exhibition will complement our own display, *Scotland's Precious Seas* which explores Scotland's diverse sea life and how global climate change is affecting the wildlife in our waters."

**Dr Helen Senn, Head of Conservation and Science Programmes at RZSS said:** "It is really exciting to be a part of this year's Edinburgh Science Festival and showcase our charity's worldwide wildlife conservation work, from preserving tiny samples of genetic material at Edinburgh Zoo to protecting the largest forest in East Africa.

"This year we want to take people on a virtual journey to visit wild places, see threatened species and meet the wild experts working to save them. We've got something for everyone, with an onsite activity taking you from Edinburgh Zoo's Budongo Trail to Uganda's Budongo Forest, and three free online talks from geneticists, veterinarians, zoo keepers, and field researchers designed to give you a glimpse into stories from the frontline of conservation."

**General Manager at Summerhall, Rowan Campbell said:** "After so long in lockdown, we are thrilled to open our gallery spaces again with *Syncrasy* – Summerhall's first in-person exhibition of 2021. This is the

7th exhibition we've curated in partnership with the Edinburgh Science Festival, and with an incredible line-up of multi-sensory artworks and experiences, it promises to be the best yet!"

**Jo-Dee Benson, Vice President and Chief Culture Officer at Cirrus Logic said:** "The wonders of our universe – all things seen and unseen – come to life each year at the Edinburgh Science Festival. Cirrus Logic is a proud sponsor of this year's Festival, and we support their mission to inspire the pursuit of science and exploration."

**/ENDS**

**Notes to editors:**

Images: [https://www.dropbox.com/sh/tlswi1c44eyqusv/AADY\\_PsuCnjbKp8-4wufQROUa?dl=0](https://www.dropbox.com/sh/tlswi1c44eyqusv/AADY_PsuCnjbKp8-4wufQROUa?dl=0)

Trailer: <https://youtu.be/zM2S0lGgsXI>

**Edinburgh Science**

Edinburgh Science, founded in 1989, is an educational charity that aims to inspire people of all ages and backgrounds to discover the world around them. The organisation is best known for organising Edinburgh's annual Science Festival: the world's first festival of science and technology and still one of Europe's largest.

The two-week Festival provides wide and diverse audiences with amazing science-themed experiences through a diverse programme of innovative events for adults and families. Alongside the annual Festival in Edinburgh, the organisation has a strong focus on education, running a touring programme, *Generation Science*, that brings science to life for primary schools around Scotland throughout the year, and running an annual *Careers Hive* event which promotes STEM careers to young people.

After programming on the themes of climate change and the environment for many years, in 2019 Edinburgh Science awarded the Edinburgh Medal to Christiana Figueres, the inspirational Costa Rican diplomat instrumental in the Paris Climate agreement. Inspired by this visit, Edinburgh Science established the Climate Opportunity Ideas Factory, a forum for all sectors to come together and generate collaborative actionable ideas that accelerate our transition to a zero-carbon world.

Edinburgh Science also shares its content and expertise internationally through Edinburgh Science Worldwide and operates a large-scale international programme of work. It regularly presents events overseas and is currently the Major Programming Partner of the annual Abu Dhabi Science Festival, helping to curate, produce and deliver the event. For international partners, the team at Edinburgh Science provide engaging content, curatorial advice on programming and business planning support, along with expert staff and training for local science communicators.

[www.sciencefestival.co.uk](http://www.sciencefestival.co.uk)

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