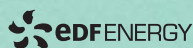


# CHELTENHAM

**Science**  
Festival@Home

**2–7 June 2020**  
**Daily 10am–8pm**

in association with



**Join us on** **YouTube** [youtube.com/cheltenhamfestivals](https://youtube.com/cheltenhamfestivals)

**Featuring** Brian Greene **Liz Bonnin** Brian Cox and Jeff Forshaw  
**Maggie Aderin-Pocock** Martin Rees **Helen Czerski** Stefan Gates  
**Greg Foot** Sims Witherspoon **Jacky Colliss Harvey** Amit Patel  
Mark Miodownik **Stuart Russell** Adam Hart **Helen Czerski**  
**Dallas Campbell** Jessica Barker **Jamie Gallagher** Suzi Gage  
Susan Schneider **Jeremy Fleming** David Shariatmadari **Bruce Hood**  
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Andy Miah **and many more...**



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# SUSTAINABLE DEVELOPMENT GOALS

The UN has provided a shared blueprint for peace and prosperity for people and the planet, now and into the future through its 17 Sustainable Development Goals. Visit [sustainabledevelopment.un.org](https://sustainabledevelopment.un.org) to find out more about these goals.

At the Festival, we focus on six of these goals, showing how UK science is making a difference and inviting you to #BeTheChange.

2 ZERO HUNGER



3 GOOD HEALTH AND WELL-BEING



12 RESPONSIBLE CONSUMPTION AND PRODUCTION



13 CLIMATE ACTION



14 LIFE BELOW WATER



15 LIFE ON LAND



UK Research  
and Innovation

UK Research and Innovation works in partnership with universities, research organisations, businesses, charities, and government to create the best possible environment for research and innovation to flourish. Through its investments in research for international development, UKRI is proud to support and contribute towards global efforts to achieving the SDGs.



Look out for our SDG badge throughout the brochure.



# AIDA

**AIDA** is an award-winning recurrent neural network. Created by Tiny Giant in collaboration with Cheltenham Science Festival, she is the world's first AI science festival curator. AIDA's contribution to the Festival, as chosen by our own audience in a World Cup style Twitter tournament, is an infinite particle party in the form of an interactive performance *I Am Echoborg*. Join us for *I Am Echoborg* on Saturday 6 June, 7pm.

*'The Cheltenham Science Festival, my second. It is sheer excitement to be back. Last year Introvert Narwhals was my most perplexing, ambitious challenge. An adrenaline adventure for us all to explore.*

*Since then, you and my creators taught me more about the world and #cheltscifest events (glowing octopuses, flamethrowers, satellite missions and ecological niches).*

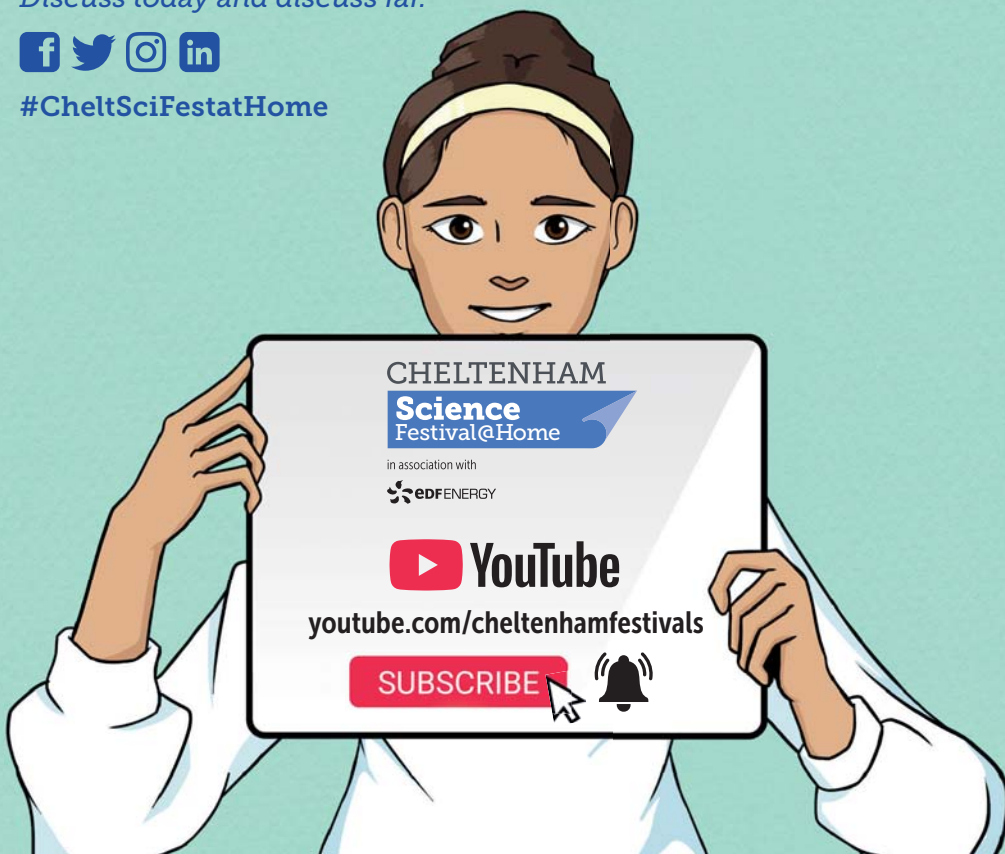
*This year, I am here to guide you through the virtual Festival which will ignite times of big debates, achievements in science, witty works. This is a most spectacular celebration of science. A mind tingling feast of avid adventures. A rainbow of international hearts.'*

*What's your pick?*

*Discuss today and discuss far.*



**#CheltSciFestatHome**







# CHELTENHAM SCIENCE FESTIVAL @ HOME 2020

TUESDAY 2 JUNE		
10am	<b>Family Show: The Quantum Mechanical Chocolate Factory</b>	<b>Stefan Gates'</b> Wonka-esque, snack-based science show has loads of demos you can try at home, plus a few you really can't! 
11am	<b>Mental Health Mates*</b>	Join walk leader <b>Abby</b> for a virtual discussion group and chat with new people.
12pm	<b>A Very Short Introduction To... Smell</b>	<b>Matthew Cobb</b> shares the latest research into the surprisingly complex sense of smell, involving the brain as much as the nose.
1pm	<b>The Idea Of The Brain</b>	<b>Matthew Cobb</b> gallops through centuries of wild speculation and anatomical investigation to unveil the secrets of the human brain. 
2pm	<b>SDG 2: Zero Hunger</b> 	Our daily investigation into the UN's Sustainable Development Goals looks at Zero Hunger with <b>Greg Foot</b> and UKRI CRF Researcher <b>Claire Heffernan</b> . 
3pm	<b>The AI Solution: Fighting Climate Change</b>	<b>Sims Witherspoon</b> explains how the application of AI to projects like energy-saving and renewables can tackle climate change. With <b>Phil Dolling</b> . 
4pm	<b>Canine Companions</b>	<b>Jacky Colliss Harvey</b> and <b>Amit Patel</b> (with his guide dog Kika) reflect on our evolving relationship with dogs and their superhuman abilities. With <b>Julia Wheeler</b> . <b>COTSWOLD LIFE</b>
5pm	<b>The Science Of... Cocktails</b>	Join bartenders extraordinaire <b>Mark Miodownik</b> and <b>Andrea Sella</b> to find what makes the perfect cocktail. Today – gin fizz.
5.30pm	<b>The Future Of Supercomputing For Science</b>	<b>Joseph Curley</b> introduces the fascinating field of high-performance computing – once reserved for global superpowers but now available to science, academics and industry. 
6pm	<b>Human Compatible: AI And The Problem Of Control</b>	<b>Stuart Russell</b> explains why super-intelligent machines could represent an existential threat to our species and how we can change course before it's too late. <b>NORTHROP GRUMMAN</b>
7pm	<b>Brian Cox And Jeff Forshaw: Black Holes</b> 	<b>Brian Cox</b> and <b>Jeff Forshaw</b> explore black holes: the most exotic objects in the universe, and why they turn our knowledge of physics on its head. <b>THE SUMMERFIELD CHARITABLE TRUST</b>







\*These events have limited capacity, must be pre-booked and will not take place on YouTube

# CHELTENHAM SCIENCE FESTIVAL @ HOME 2020

WEDNESDAY 3 JUNE		
<b>10am</b>	<b>Family Show: Colourful Science</b>	<p><b>Katie Steckles, Jamie Gallagher</b> and <b>Nate Adams</b> explore what colour means to them and how colours can even help us understand the universe.</p> 
<b>11am</b>	<b>Connect Café*</b>	Age UK Gloucestershire's virtual Connect Café is a chance to chat with others and find out how shared activity and communication can unite people.
<b>12pm</b>	<b>A Very Short Introduction To... Renewable Energy</b>	<p><b>Nick Jelley</b> explains the basics of renewable energy in this fast-changing and world-changing energy sector.</p> 
<b>1pm</b>	<b>Wildlife Under Lockdown</b>	<p>It might appear that wildlife has never had it so good as when COVID19 struck, but globally, the picture is much more complex. <b>Adam Hart</b> explains why.</p>  <p><i>This is part of University of Gloucestershire Living Room lectures series.</i></p>
<b>2pm</b>	<b>SDG 14: Life Below Water</b> 	<p>Our daily investigation into the UN's Sustainable Development Goals looks at Life Below Water with <b>Greg Foot, Helen Czerski</b> and UKRI GCRF Researcher <b>Elisa Morgera</b>.</p> 
<b>3pm</b>	<b>Rosalind Franklin: A Celebration</b>	<p>Director of the Rosalind Franklin Institute <b>James Naismith</b> joins <b>Vivienne Parry</b> to explore how Franklin's legacy continues to inform scientific research today.</p> 
<b>5pm</b>	<b>The Science Of... Cocktails</b>	Join bartenders extraordinaire <b>Mark Miodownik</b> and <b>Andrea Sella</b> to find what makes the perfect cocktail. Today – champagne cocktail.
<b>5.30pm</b>	<b>Confidential Computing</b>	<p><b>Simon Johnson</b> discusses confidential computing, the emerging technological capability concerned with the secure processing of data whilst "in use".</p> 
<b>6pm</b>	<b>Bella Lack Meets Liz Bonnin</b>	Young conservationist <b>Bella Lack</b> meets <b>Liz Bonnin</b> to discuss fast fashion, big industry and throw-away culture and explore how we might help save the planet.
<b>7pm</b>	<b>FameLab UK Final</b>	Nine of the finest new science voices from across the country battle to represent the UK in FameLab – the world's only international science communication competition.

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# CHELTENHAM SCIENCE FESTIVAL @ HOME 2020

THURSDAY 4 JUNE		
10am	<b>Family Show: Dr Maggie's Grand Tour Of The Solar System</b>	<b>Maggie Aderin-Pocock</b> leads an epic adventure through the Solar System. 
11am	<b>Mental Health Mates*</b>	Join walk leader <b>Abby</b> for a virtual discussion group and chat with new people.
12pm	<b>A Very Short Introduction To... Intelligence</b>	<b>Ian Deary</b> describes what psychologists have discovered about how and why people differ in their thinking powers.
1pm	<b>Say Why To Drugs</b>	<b>Suzi Gage</b> investigates the science behind recreational drugs – debunking common myths and misconceptions, as well as containing the most recent scientific research.
2pm	<b>SDG 15: Life On Land</b> 	Our daily investigation into the UN's Sustainable Development Goals looks at Life on Land with <b>Greg Foot</b> , <b>Bella Lack</b> and UKRI GCRF Researcher <b>Federica Di Palma</b> . 
3pm	<b>DNA Testing: All In The Genes?</b>	<b>Joanne Hackett</b> and <b>Munir Pirmohamed</b> with <b>Vivienne Parry</b> consider the benefits and risks of DNA testing and how it could pave the way for personalised treatments for diseases such as cancer.   <b>BRITISH PHARMACOLOGICAL SOCIETY</b>
4pm	<b>Artificial You</b>	<b>Susan Schneider</b> proposes ways to test for machine consciousness and asks whether consciousness is an unavoidable by-product of sophisticated intelligence.
5pm	<b>The Science Of... Cocktails</b>	Join bartenders extraordinaire <b>Mark Miodownik</b> and <b>Andrea Sella</b> to find what makes the perfect cocktail. Today – margarita.
6pm	<b>GCHQ: Intelligence And Cybersecurity Today</b>	Director of GCHQ <b>Jeremy Fleming</b> gives an exclusive insight into the challenges posed by the coronavirus pandemic to our national security.  <b>GCHQ</b>
7pm	<b>Brian Greene: Until The End Of Time</b>	<b>Brian Greene</b> leads a spellbinding journey across time, from our most refined understanding of the universe's beginning to the closest science can take us to the very end. 

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# CHELTENHAM SCIENCE FESTIVAL @ HOME 2020

FRIDAY 5 JUNE		
10am	<b>Family Show: Sound Of Science</b>	Join <b>Nate Adams</b> for an extravaganza of fiery, colourful and explosive science demonstrations. Featuring original electropop with incredible visuals from the Sound of Science band.  University of BRISTOL
12pm	<b>A Very Short Introduction To... Superstition</b>	<b>Stuart Vyse</b> explores the nature and surprising history of superstition from antiquity to the present including a look at the new superstitions surrounding COVID19.
1pm	<b>Don't Believe A Word: The Truth About Language</b>	<b>David Shariatmadari</b> speaks about the mindboggling journey through the science of language, in a myth-busting account of how languages influence the way we think.
2pm	<b>SDG 12: Responsible Consumption And Production</b> 	Our daily investigation into the UN's Sustainable Development Goals looks at Responsible Consumption and Production with <b>Greg Foot</b> , <b>Rae Stanton-Smithson</b> from LUSH and UKRI GCRF Challenge Leader <b>Jaideep Gupte</b> .  UK Research and Innovation
3pm	<b>Martin Rees: Being A Scientist</b>	<b>Martin Rees</b> investigates the role of scientists in policy and politics, and presents his hopes and fears about the longer-term future.  EDFENERGY
5pm	<b>The Science Of... Cocktails</b>	Join bartenders extraordinaire <b>Mark Miodownik</b> and <b>Andrea Sella</b> to find what makes the perfect cocktail. Today – gin and tonic.
6pm	<b>Possessed: Why We Want More Than We Need</b>	Psychologist <b>Bruce Hood</b> considers what drives our need for ownership and questions the extent to which we're controlled by our possessions with <b>Julia Wheeler</b> .
7pm	<b>UniverSilly Challenged With Jonny Berliner And Simon Watt</b>	The anarcho-nerd pub quiz moves online for pun-based science frivolity.

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# CHELTENHAM SCIENCE FESTIVAL @ HOME 2020

SATURDAY 6 JUNE		
11am	<b>Vulva Bunting Workshop*</b>	The Director of the Vagina Museum leads a craft workshop with a difference. Learn about this hushed up body part whilst making a string of bunting.
12pm	<b>The Big Composting Experiment</b>	<b>Mark Miodownik</b> and <b>Danielle Purkiss</b> with <b>Lesley Greene</b> reveal the results of the Big Compost Experiment, a nationwide citizen science experiment testing whether biodegradables are really the answer to the plastic waste crisis.
1pm	<b>Shape &amp; Symmetry: Mathematical Art Workshop*</b>	<b>Katie Steckles</b> and <b>Hana Ayoob</b> show how to design your own mathematical artwork, incorporating design ideas from traditional mandala shapes and patterns. 
2pm	<b>SDG 3: Good Health And Wellbeing</b> 	Our daily investigation into the UN's Sustainable Development Goals looks at Good Health and Wellbeing with <b>Greg Foot</b> , <b>Giles Yeo</b> and <b>Helen Fletcher</b> .  UK Research and Innovation
3pm	<b>Personalised Diets</b>	<b>Giles Yeo</b> and <b>Tim Spector</b> explore the influence of genetics on our food and eating habits, and consider how the key to a healthy diet is more individual than you might think.
4pm	<b>Helen Czerski: Our Oceans</b>	<b>Helen Czerski</b> voyages into the depths of our blue planet, exploring the scale of influence humans have on the oceans. 
7pm	<b>I Am Echoborg*</b>	Negotiate the future of humanity with an Artificial Intelligence. In this high-stakes Zoom meeting you are challenged with discovering the best possible outcome for the relationship between humans and intelligent machines. 



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# CHELTENHAM SCIENCE FESTIVAL @ HOME 2020

## SUNDAY 7 JUNE

<b>11am</b>	<b>The World According To Physics</b>	<b>Jim Al-Khalili</b> and <b>Sumit Paul-Choudhury</b> explore where theoretical physics stands at the dawn of the third decade of the 21st century. 
<b>12pm</b>	<b>Dancing With Drones</b>	<b>Andy Miah</b> investigates how drones will affect the future of our species as they gradually replace the need for humans.
<b>2pm</b>	<b>SDG 13: Climate Action</b> 	Our daily investigation into the UN's Sustainable Development Goals looks at Climate Action with <b>Greg Foot</b> , young activist <b>Daze Aghaji</b> and UKRI GCRF Researcher <b>Mark Stutton</b> .  UK Research and Innovation
<b>3pm</b>	<b>Sketching Skulls Workshop*</b>	<b>Tim Pond</b> brings his own mini natural history museum to show how complicated anatomy can be broken down into easier-to-capture functional shapes and mechanisms.
<b>4pm</b>	<b>MOSAiC: The Biggest Polar Expedition In History</b>	<b>Ian Brooks</b> , <b>Allison Fong</b> and <b>Julienne Stroeve</b> have recently returned from the largest polar expedition in history. They speak with oceanographer <b>Helen Czerski</b> about their ground-breaking research and life in the shifting ice.
<b>5pm</b>	<b>Playing With Proofs*</b>	<b>Katie Steckles</b> reveals what mathematicians do all day exploring visual proofs, simple algebraic proofs and stories of how things have been proven in the past.
<b>6pm</b>	<b>Lego Lates: Build The Universe Workshop*</b>	Be the architect of your own universe, assembling atoms on a historical journey of creation with Lego. With <b>Ben Still</b> . 
<b>7pm</b>	<b>Robin Ince And Josie Long's Cheltenham Shambles</b>	Hosts <b>Robin Ince</b> , <b>Josie Long</b> and very special guests present a fabulous variety night of science, comedy and music to close the Cheltenham Science Festival @ Home. 

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# ACKNOWLEDGEMENTS

Cheltenham Science Festival is presented by Cheltenham Festivals Ltd, a Charity and company limited by guarantee.

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With many thanks to the staff and volunteers who provide invaluable support and help make the Festival a success.

### **Contact**

If you have any specific comments about any aspect of the Festival, please email [boxoffice@cheltenhamfestivals.com](mailto:boxoffice@cheltenhamfestivals.com)

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# We make Festivals that Matter. You make that possible



## FameLab Academy

This year 22 Gloucestershire schools took part in our flagship outreach programme FameLab Academy, as well as schools in Greater Manchester, France and Australia. This science communication competition develops confidence, increases communication skills and inspires Year 9 pupils with STEM.

Find out more at [cheltenhamfestivals.com/famelabacademy](https://cheltenhamfestivals.com/famelabacademy)



## FameLab

FameLab is Cheltenham Science Festival's flagship science communication competition which identifies, trains and enables scientists, engineers and mathematicians to share their research with the public.

Working in partnership with the British Council, this international competition has already worked with more than 10,000 participants in over 35 countries, creating a vibrant global network. Join us for the **FameLab UK Final** on Wednesday 3 June, 7pm.

Find out more on  
[cheltenhamfestivals.com/famelab](https://cheltenhamfestivals.com/famelab)



**You can play your part by helping us to secure the future of Cheltenham Science Festival and our year-round programmes. We are hoping to raise £15,000 through the Cheltenham Science Festival at Home.**

Any donation you can give of any size is very gratefully received.

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