Impact report 2023-24

The Royal Institution
Science Lives Here

It starts with a spark.

Transforming lives and inspiring generations for 225 years.

Thanks for running these events, they are really excellent, and my children always come away from them really excited about being scientists!

– Parent

Director's introduction

We are delighted to be celebrating the impact of our charity's work throughout 2023-24.

At The Royal Institution (Ri), our role is to be a place where people and scientists come together to share their interest and passion for science. With the support of our trustees, members, donors and funders, we have been able to grow our reach even further this year.

Our inspirational activities reached over 100,000 young people across the UK, most of them at schools in the most deprived areas, enabling many more school children to see a positive future for themselves with science.

We welcomed over 32,000 people to a live talk or show in our iconic theatre or online. Also within our historic Grade 1 listed London building, we saw rising numbers of visitors to our museum and collections – and also rising participation in our 'short courses' which enable members of the public to explore science at a deeper level.

Our global audience continues to thrive, with almost 1.6million subscribers to the Ri YouTube channel – our highest ever – and our online videos were viewed over 46million times in 205 countries.

We were honoured to welcome King Charles as our Royal Patron, and to welcome several new donors, supporters and funders to join the Ri family.

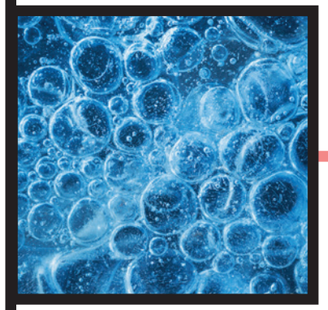
We are looking forward with excitement to the year ahead when we will embark on a retrofit to improve our carbon footprint and celebrate the 200th anniversary of the CHRISTMAS LECTURES®, Friday evening Discourses and the discovery of benzene.

We hope you will support us to continue our vital work. The Ri is a home for science and everyone is welcome.

Katherine Mathieson
Director, The Royal Institution

The modern world runs on discoveries made at the Ri

Pioneering scientific breakthroughs made at the Ri continue to shape our daily lives. From Michael Faraday's revolutionary development of the electric motor two centuries ago, to George Porter's Nobel Prize-winning laser research, the Ri's contributions to science have been transformative.



Elements

Humphry Davy discovered or isolated nine elements while at the Ri, including sodium – now crucial in modern detergents.

Telecommunications

International telecommunications, including the Internet, still depend largely on old-fashioned cables laid on the seabed. Knowledge of the technologies were amplified by lectures at the Ri, and the first transatlantic cable was laid in 1858.

Motors

Faraday's 1821 electric motor invention, converting electrical energy into mechanical movement, underpins virtually all modern electrical appliances with moving parts.

Greenhouse gases

Our understanding of greenhouse gases and their effect on climate is made possible by John Tyndall's discoveries at the Ri, made more than 160 years ago. His experiments – and those in America of Eunice Foote – demonstrated how gases in the atmosphere absorb radiant heat.

Vacuum flask

James Dewar invented the vacuum flask in 1892, revolutionising liquid gas storage. This technology lives on in today's Thermos flasks.

Our impact in numbers

Masterclasses for over **4,500** students

14m engagements on social media

92% of the 4,500 teachers who received our training reported increased confidence in delivering demonstrations

32,307 people attended Adult or Family science talks

UK TV audience of over **1.6m** for the CHRISTMAS LECTURES®

5,600 members

Over **100,000** children engaged from UK schools

46m views on YouTube

2,500 volunteers supporting students learning through Ri Masterclasses

We spark a passion for science

Our Science in Schools programme captivates students with spectacular shows, full of explosive and innovative demonstrations, bringing science to life. This year was our most successful yet, reaching thousands of primary and secondary age students across 375 schools.

The programme targets pupils in the nation's most disadvantaged areas, with 100% of our free shows directed to schools in these regions. Unlike traditional lessons, dynamic shows make science accessible and unforgettable by introducing scientific principles from the curriculum through interactive and practical demonstrations.

The impact extends far beyond the hour-long presentations which are delivered to whole school groups, often igniting lifelong scientific curiosity. Teachers consistently report transformative effects. One teacher said, *"This elevated science's profile throughout the school. Students from all backgrounds now recognise science's universal importance and can envision their own future in the field."*

> ***What a super afternoon! Dan from the Ri came to talk to us about electricity, but not just boring light bulbs, he lit up a gherkin, exploded gasses in someone's hands and never would I expect to see a Barbie doll fly across the hall, but I did!***
>
> – Student

“

We might never see the results, because it takes 20 years and they’re far too remote, but I firmly believe that one of your audience members is going to grow up and cure cancer or the equivalent, and an ingredient in their journey will have been the Ri schools programme.

– Teacher

”

Another teacher noted, *“The engagement was extraordinary – some students even recreated experiments at home after the community event.”*

We tailor our science shows for both primary and secondary students, often delivering them as part of a comprehensive school package. This includes professional development sessions where teachers gain confidence in performing their own classroom demonstrations. The programme culminates in evening community shows that welcome entire families, creating an opportunity for the excitement and passion to continue at home.

The results speak for themselves: our post-visit evaluations show that 96% of teachers reported increased student knowledge and understanding, while 94% noted more positive attitudes toward science. Additionally, 92% of the 4,500 teachers who participated in training reported greater confidence in conducting classroom demonstrations.

By reaching more young people than ever, Science in Schools is inspiring a new sense of possibility for many in the next generation.

MASTERCLASSES

For students showing potential STEM aptitude and interest, our Masterclasses provide crucial additional support to nurture their development.

We successfully delivered free Masterclasses series for over 4,500 students throughout the year. Each of our 125 mathematics and computer science series supported students specifically identified by teachers and community leaders as those both most likely to benefit from deeper engagement and unable to access other specialist opportunities due to financial or other barriers.

“

The children were treated like they were intelligent beings who had a lot to offer and who could teach us adults a thing or two too.

– Masterclasses Parent

”

The Masterclasses programme delivered 628 individual sessions, totalling 40,000 learning hours. The impact is clear: 91% of students reported positive engagement with specific science topics, 97% of Masterclass organisers observed high or very high student engagement levels, and 85% of students expressed enjoyment of the Masterclass experience. Notably, over one-third of participants came from schools in the UK’s 40% most deprived areas.

The programme also nurtures leadership skills among older students, with 540 sixth-formers delivering Masterclasses for over 900 primary school students.

Theatre has always been at the centre of what we do

Mike Wooldridge

Talking whales, a teenager's messy bedroom, a woman crushing a can with her prosthetic hand, a stage covered in confetti – these were just some of the ways that the transformative power of AI was brought to life in the 2023 CHRISTMAS LECTURES® exploring 'The Truth About AI', hosted by Mike Wooldridge.

While primarily aimed at teenagers, these lectures captivate audiences of all ages with their accessibility and innovation. Calling them an institution understates their significance—now in their 200th year and broadcast on UK national television since 1966, the CHRISTMAS LECTURES® have inspired generations of scientists who trace their earliest interest in science to these treasured TV lectures.

> ***I want you to see what a difference you are making. Until my son saw you, his grades and efforts struggled, but after seeing you, a torch was lit in his mind.***
>
> – Public event attendee

The Mike Wooldridge series achieved remarkable reach, becoming BBC Four's second-most watched factual programme of the year, with 1.6 million viewers across broadcast and iPlayer in the first month alone.
The programme was subsequently watch by people all over the world on the Ri YouTube channel.

> ***I've been watching the CHRISTMAS LECTURES® with the kids. Fantastic, so well explained and great to see lots of women in STEM participating.***
>
> – BBC Four viewer

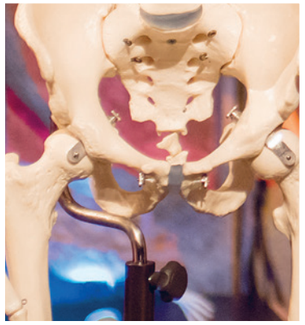
The theatre, literally and metaphorically central to our iconic building, has been fundamental to the Ri's mission since its founding. Michael Faraday, who instigated the CHRISTMAS LECTURES®, championed the democratisation of science, insisting it belonged not just to scientists but to everyone. This principle of accessible science communication, especially for young people, remains crucial in building a scientifically literate and equitable society.

While the CHRISTMAS LECTURES® represent our most recognised offering, they're just one part of our theatrical programming. In 2023/24, our theatre hosted 128 live events, drawing 32,307 attendees. True to the Ri's tradition, about one third of our talks feature demonstrations by our renowned 'Demo Team', adding spectacular practical elements to theoretical discussions.

We welcomed world-leading scientists including Claudia Maraston, the UK's highest-ranked female physicist, who illuminated stellar population modelling; Carlo Rovelli, who explored the mysteries of white holes; and Phil Ball, who challenged conventional understanding of life itself.

Our commitment to diversity in science manifested through presentations by Athene Donald on women in science, Tim Winter on Muslim scholars' discoveries, and astrophysicist Alfredo Carpineti's 'Big Rainbow Science Quiz' for LGBTQ History Month. October's Ada Lovelace Day Live drew over 1,000 attendees, while our new 'Science and Snacks' series provided PhD interns a platform to share their research.

For families, we offered an engaging mix of programming: physics teacher Hiba Noor Khan demonstrated how to 'spaghettify' dogs, TV presenter Maddie Moate led a curious Christmas celebration, and 'Astrophysics for Super-villains' posed provocative cosmic questions. We broadened science's appeal through innovative formats—including documentaries, comedy nights, and events exploring science through craft, cooking, and Hollywood films—making scientific engagement more accessible and entertaining than ever.



Alice Roberts

Eugenia Cheng is a mathematician, educator, author, public speaker, columnist, concert pianist, composer and artist. She is Scientist In Residence at the School of the Art Institute of Chicago and Honorary Visiting Fellow at City, University of London. She has previously taught at the Universities of Sheffield, Cambridge, Chicago and Nice and holds a PhD in pure mathematics from the University of Cambridge.

Alongside her research in Category Theory and undergraduate teaching her aim is to rid the world of ‘math phobia’. She has published several books popularising maths.

Eugenia tells us of the role the Ri played in setting her on this path.

“I was lucky to attend the Royal Institution Masterclasses at Sussex University on Saturday mornings when I was 11 or 12 years old. This was such an important and eye-opening experience for me.

I loved maths, but I had never met anyone else my age who enjoyed maths, and I had never seen such interesting and open-ended maths in something like a classroom setting. It was exciting to be in a university lecture room and feel like I was being valued by university professors (although I’m not sure who the teachers actually were!).

I still have the file with all the handouts and my scribbled notes from those sessions. It helped me to be sure that there was interesting maths beyond the usual curriculum, and it helped me to feel that I could be part of it.

By the time I was 13 I knew I wanted to become a mathematician and, crucially, I believed I could do it, and the RI Masterclasses contributed to that.

The Masterclasses also helped me to feel quite unphased when I actually went to university as an undergraduate myself, and this experience inspired me to set up a scheme for sixth form students when I became a university lecturer, inspired by the RI Masterclasses.

It is a great honour that I have been invited to give public talks at the Royal Institution myself now, and every time I go I am still amazed at my journey, and grateful for the Ri Masterclasses I attended all those years ago.”

Science Global

The Ri YouTube channel has been watched from 205 countries this year.

The Ri's global presence continues to expand dramatically, engaging hundreds of thousands globally with science every day. The Ri YouTube channel, with 1.6 million subscribers, generated 46 million views this year. Topics span the leading-edge of science, from generative AI and ultra-processed food to gravitational theory and black hole exploration.

We broadened access to our scientific programming by live-streaming 26 science talks, which were subsequently made freely available on the Ri YouTube channel, alongside our CHRISTMAS LECTURES®. This commitment to open access ensures our content can reach curious minds worldwide.

> ***I'm a Cuban young person, I work for 20 dollars per month, my cellphone and my computer are really old, but I can see your CHRISTMAS LECTURES®. Your Lectures are the reason why I studied and keep studying.***
>
> – YouTube viewer, Cuba

Our social media presence continues to flourish across most platforms, achieving significant growth.

The impact of our digital outreach is reflected in the numbers: we recorded over 136 million impressions across social media platforms, generating more than 14 million engagements—approximately six times the typical engagement rate.

This digital transformation has enabled us to reach audiences on a scale that would have been unimaginable to history's most celebrated scientists.

Local heritage, global inspiration

This year, an exciting partnership with Lancaster University completed the digitisation of Humphry Davy's notebooks, a treasured and important part of our collection, which are now accessible and available to a much wider audience. This work involved the transcription of over 13,000 pages, has revealed fascinating insights into both Davy's scientific process and the Georgian era, reaching new audiences through exhibitions at the Ri museum, Northumberland County Hall, and the Wordsworth Trust.

There is major ambition to increase accessibility of our collection to the global public and this project brings us one step closer.

The Ri was delighted to receive a major gift from Jack and Carolyn Long, new supporters and Patrons from Texas, USA, to enhance the interpretation of the Faraday Laboratory and enhance the visitor experience of the museum. Work began in 2024 and will be complete by summer 2025. Thank you to the Longs for this incredible support.

Humphry Davy

Stefan Bernhardt-Radu and Sheryl Wombell

A Director's Choice book, funded by the American Faraday Foundation, featuring 36 iconic objects from our collection, was published by Scala this year. The Ri has been at the forefront of scientific innovation, discovery and communication since 1799. Director, Katherine Mathieson, shares a selection of her favourite features of the Ri. With thanks to Jake Jacobs.

Additionally, we awarded two Freer Prize Fellowships for 2024/25 to Sheryl Wombell (Cambridge University) and Stefan Bernhardt-Radu (University of Leeds), supporting their research in historical health practices and biological inheritance respectively.

'Director's Choice' book, Scala Press

Changing the narrative on climate change

The Royal Institution has begun an ambitious building sustainability programme of works supported by a £4.35 million grant from the Greater London Authority (GLA). This initiative aims to reduce the carbon footprint of the Ri's Albemarle Street operations and transforms our historic building into an environmental showcase, representing the cornerstone of our broader sustainability commitment. Work is already beginning on the initial measures to bring the Ri's Albemarle Street home towards Net Zero.

The works will initially replace plant and pumps, and make improvements to lighting and heating as we pursue funding opportunities to undertake more works to supplement the incredible investment in our Albemarle Street home for the future.

Thank you to the GLA for selecting our organisation for this funding.

While the broader climate emergency poses an immense challenge, innovation and solution-seeking offer a path forward. Undaunted, a partnership between Imperial College and the Royal Institution, embodies this powerful principle. Undaunted Demonstration Days at the Ri continue to be very popular and are a fantastic showcase of the Undaunted-supported clean-tech ventures.

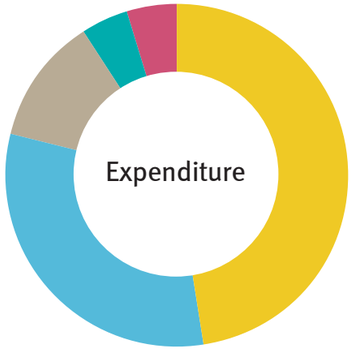
This success is exemplified by ventures such as Sequinova, which develops sustainable cellulose-based sequin textiles; Notpla, recipient of the 2022 Earthshot Prize for its innovative seaweed packaging; and Bio-cm, which converts agricultural waste into building insulation boards.

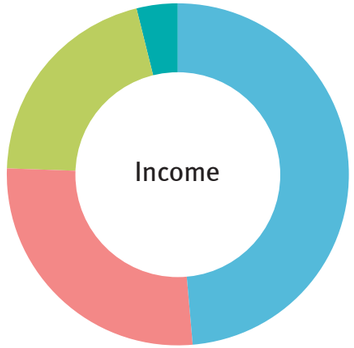
Our finances

We are pleased to report that during the 2023-24 financial year, our financial position strengthened significantly, with total income reaching £7.9m. A major contribution to this increase came from the generous legacy gift from Dr Shigeko Suzuki, a long-standing Ri Member who sadly passed away in 2020, with £1.6m recognised this year.

Our trading subsidiary, RiGB Ltd, showed remarkable performance with income of £2.9m and improved profitability of £460k, driven by strong venue hire activities.

Through careful management and a strategic restructuring at the start of the year, we reduced expenditure to £6.6m. This resulted in an unrestricted net surplus of £207k excluding the Suzuki Legacy.





How we spend our money

Total expenditure 2023-24

- Education programme: £3.2m
- Trading activities: £2.1m
- Raising funds: £0.8m
- CHRISTMAS LECTURES®: £0.3m
- Heritage: £0.3m

How we fund our work

Total income 2023-24

- Trading: £3.8m
- Donations and legacies: £2.1m
- Grants and events: £1.6m
- Membership and subs: £0.3m

Our governance

The Royal Institution was founded in 1799 and received its Royal Charter on 13 January 1800.
We are an independent Royal Charter charity, governed by our Byelaws and governing documents.

Royal Patron

His Majesty The King

President

HRH The Duke of Kent

Honorary Vice President

Sir John Ritblat

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Vincent Nobel
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Prof Angela Seddon
Prof Jack Stilgoe
Harriet Wallace

Thank you

We thank all those who support our charity. Our Trustees, Patrons, members, donors, corporate supporters, volunteers and visitors give us their time and expertise and make essential financial contributions which enable our programmes to have a meaningful impact on many.

As an independent charity we rely on financial support to sustain and grow our programmes. We look forward to continuing our important work with your support in the year ahead.

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All of our Electric Circle Patrons, all who wish to remain anonymous and all those who have named a seat in our historic theatre.

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Sir Richard Sykes

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The Association of Science Discovery Centres
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The National Education Union
The London Institute of Mathematical Sciences
The Open Society Foundation
The Pseudoscience Group
STEM Learning
University College London

The Royal Institution
Science Lives Here

Watching Carl Sagan in 1977, it was extraordinary to me. If there's one thing I can point to as the reason why I'm a scientist today, then it's the Royal Institution CHRISTMAS LECTURES®.

– Sophie Scott, 2017 CHRISTMAS LECTURER

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rigb.org

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