

The Royal Society

Supporting excellence in science for four hundred years

For over three centuries, The Royal Society has been promoting excellence in science, facilitating international collaboration and showing people why science is so important to us all, whoever and wherever we are. In this interview, Executive Director Dr Julie Maxton CBE tells Research Features how this established Society is still finding new ways to support scientists and approach the world's most pressing scientific challenges.

The Royal Society is the world's oldest scientific academy in continuous existence, with its origins in a 1600s 'invisible college' of scientists. Despite its age, the Society's mission and priorities have remained the same over the centuries; to promote excellence in science, to support international collaboration and to demonstrate the importance of science to everyone.

Today, it is the United Kingdom's national academy of science and a fellowship of over 1600 of the most celebrated scientists around the world. Research Features found out more about its programmes and plans from Dr Julie Maxton CBE, Executive Director.

Can you tell us about yourself and your background?

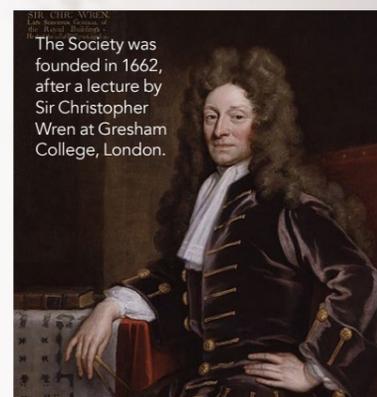
My subject is law. I trained as a Barrister at the Middle Temple in London, but I've been an academic lawyer for most of my life. I eventually became the registrar at Oxford University and from there I came to The Royal Society, just when Paul Nurse had started as the President.

How does the Society plan to ensure the UK remains an attractive research destination after Brexit?

Our aim was to get the closest possible association with Horizon Europe (the European Union's flagship research and innovation programme) once the decision was taken to leave



Dr Julie Maxton CBE is Executive Director of The Royal Society.



The Society was founded in 1662, after a lecture by Sir Christopher Wren at Gresham College, London.



Leading natural philosophers and physicians joined the group, including Robert Boyle.



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The Royal Society funds discovery and applied science.

matter to people such as a speedy visa entry into the UK. The *Global Talent visa* is currently in progress.

Let's talk about your grant schemes; you have a variety of different ones. Do you set certain research priorities?

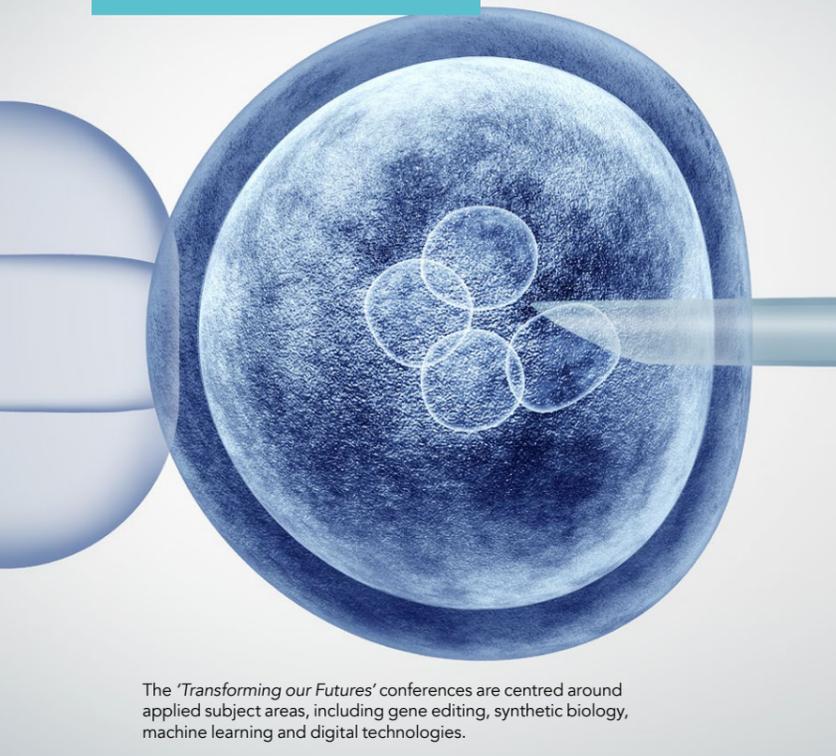
With grant schemes we're trying to attract and retain talented scientists in the UK. To that extent we're part of the agenda to bring the best scientists to Britain, which is what the government would like us to do. We also want to grow international networks through our grants work, though, and foster global collaborations. Within our grant schemes we are very focused on career development and the culture of research. We have a lot of different grant

We work with partners overseas to facilitate international collaboration and we also seek to strengthen research and capacity in developing countries.

the Union. We were really pleased that on Christmas Eve 2020, we did manage to do that, but this is just the first step. We now want to focus on delivering association as quickly as we can. For our stakeholders, getting the association done quickly and then being clear about what they can apply for, whether they can lead projects etc., is really important. The second thing to mention here is that the government's

aspiration is for the UK to be, and I use their terminology, a "global superpower in science". If you're going to be a global superpower you've got to be attractive to all parts of the world. All of our schemes are open to anybody in the world to come to the UK and many of the schemes that are funded through the government are open to everybody as well. We have to couple these programmes with things that really

schemes; some schemes support early career researchers, like our University Research Fellowship scheme, and some support our senior researchers. We fund discovery and applied science. It's important to know that we do the lot: we invest in industry and innovation. We work with partners overseas to facilitate international collaboration and we also seek to strengthen research and capacity in developing countries.



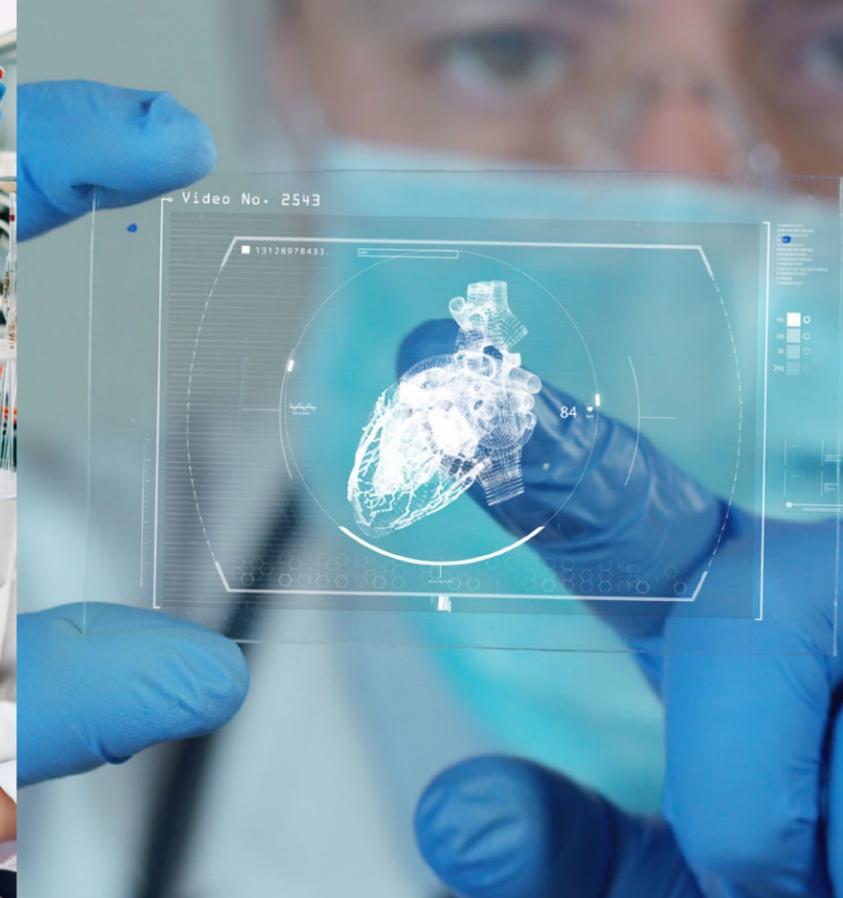
The 'Transforming our Futures' conferences are centred around applied subject areas, including gene editing, synthetic biology, machine learning and digital technologies.



The University Research Fellowship scheme supports early career researchers.



A recent YouTube event hosted by the Society explained how vaccines work.



You have a lot of different schemes educating researchers on how to talk to media and how to communicate to the public in general, is that right?

This is most used by the researchers who are on the University Research Fellowship (URF) because we take the view that as they're getting public money they need to be able to explain what they do to the public. I should mention that the URF is a long-term career move, and we look to support people doing this in different ways. If they've got an interest in public engagement or in working with the media, we can support them in that. It's not just about funding them to do their research – it's about supporting their career development. We actually have a tool called the *career tracker*. It shows the variety of backgrounds of our URF fellows. There are people who sold their businesses for millions of pounds, through to people like Brian Cox (physicist and TV personality), and then we have a Nobel Prize winner and one who's got a Field's Medal. So, they've all gone down very different routes and our goal is to support them to be able to do that, to find their real space.

How do you aim to bring researchers and industry professionals together? We have an industry team working at The Royal Society, as well as a Science,

Industry and Translation Committee. They oversee this programme of work together with representatives from many big companies. Scientists can apply for grants and awards to support industry and innovation, and industry and academic collaboration. We have an Industry Fellowship scheme (there can be up to 40 scientists on it at a given time) and we also hold some conferences which we call '*Transforming our Futures*' (TOF). We run them on a range of applied subject areas, for example synthetic biology, gene editing, machine learning and digital technologies. What we are trying to do is to give industry a more obvious place in The Royal Society. The COVID crisis has illustrated the importance of collaboration between the academic world and industry. You don't have to look further than Oxford/AstraZeneca, it's all in the name, isn't it?

How have the Society's fellows contributed to tackling COVID-19? The first thing to say is that scientific advice to policymakers is fundamental but the policymakers have to think about a range of other things, like the economy and behaviours. Many of our fellows are at the forefront of this. Our former President, Venki Ramakrishnan, chaired the Data, Evaluation and Learning in a Viral Epidemic (DELVE) Group and

attended some Scientific Advisory Group for Emergencies (SAGE) meetings, emphasising a key point: that in most science there is uncertainty. When people say "follow the science" it's as if there's one science. This doesn't capture the uncertainty in science. When you're in a pandemic, when you don't know a lot about a virus, that's problematic. People think there's one answer and one way. Within the Society we set up three groups. One was DELVE, another one was Rapid Assistance in Modelling the Pandemic (RAMP) and the final one was Science in Emergencies Tasking - COVID. We think the scientists have been helpful to the government; of course there are a lot of scientists and many people who have made a big contribution who are not fellows of The Royal Society, but many are too.

Throughout the pandemic we have made papers on COVID-19 open access so that people could research fast and get to them quickly. We decided to do that early on because we thought that would help in the pandemic. We've also engaged with the public on the topic, in part by hosting some events on *YouTube*. We held one recently on vaccines: three scientists explained very clearly how vaccines actually work and why you should take one. It's always important to

us to hear from the public as well, so in our events we take questions via Slido.

Tell us about some of the Society's upcoming events. We have the *Summer Science Exhibition* coming up in July. We usually have it at the Carlton House Terrace, but last

(post-16) require students to go from a relatively broad range of subjects to a two-year A-level course with on average only three subjects. Our research shows that this is unusual in the world. Even as close to home as in Scotland the system doesn't work that way, allowing students a broader base. Secondly,

the Judiciary and Fellows of The Royal Society in seminars to discuss matters of common interest. For example, if you take memory, judges always have to ask witnesses what they remembered seeing in a trial, but do they know the latest neuroscience research on memory? Another aspect of this programme,

The COVID crisis has illustrated the importance of collaboration between the academic world and industry.

year and this year it's going to be online. We've got more events related to COVID lined up as well.

Could you tell us more about your work on educational research and how you aim to influence school curricula? Our previous President was particularly keen on this aspect of our work. We're arguing for long-term reform of post-16 education. You have to get a lot of people wanting the reform because it takes time to roll it out. Our position has four aspects to it. Firstly, we are arguing for a 'broad and balanced' range of subjects from different disciplines, so that post-16 education gives you a broader balance. Currently in the UK, A-levels

we'd like to see subjects talk in an interconnected way so that themes are linked between different disciplines, and then thirdly, we argue for an assessment system that allows for the teaching of skills in addition to knowledge (e.g. problem solving, creative thinking and communication). Finally, we want a curriculum which is developed with input from employers, reflecting the skills and knowledge that they value.

Is there anything else that you would like to talk about? I thought I'd mention a programme which I initiated about five years ago now which we call our '*Science and the law*' programme; this brings together

in partnership with The Royal Society of Edinburgh, is the development of 'primers', short statements summarising accepted science. It's not to make judges scientists, but it gives them an up-to-date idea of where science is today on subjects like DNA, statistics, ballistics etc.

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