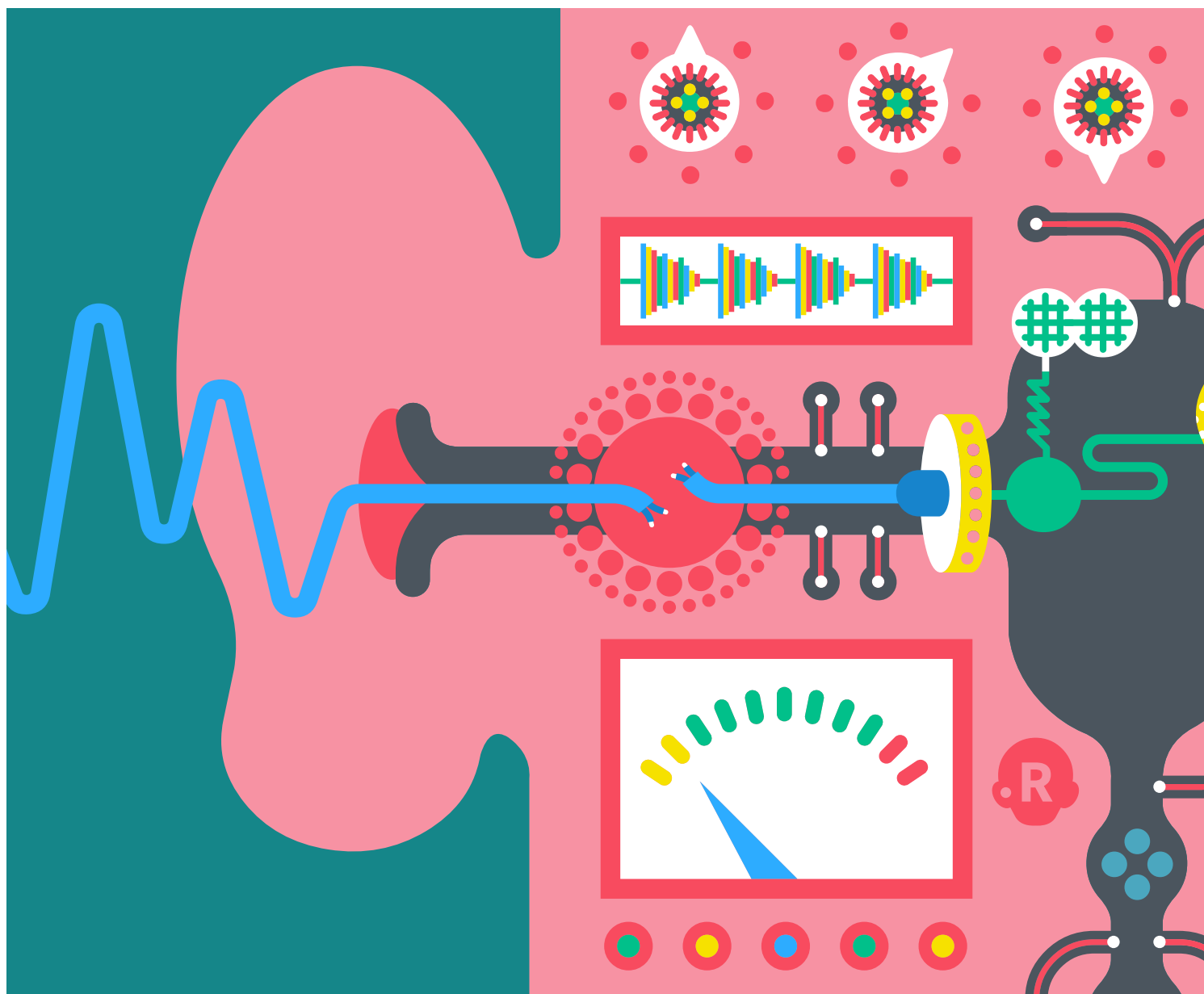


Prize essays



The winners of our young-writer essay competition

The contest for 18–25-year-olds received more than 660 entries from 68 countries.

In May this year, as part of our 150th anniversary, *Nature* asked readers aged between 18 and 25 to enter an essay competition. The task was to tell us, in no more than 1,000 words, what scientific advance they would most like to see in their lifetimes, and why it mattered to them.

The response was phenomenal: we received 661 entries. Some entrants hoped that science would make their lifetimes much longer than they can currently expect. Many looked forward to work that will end climate change. Others wanted to see advances in neurodegenerative disease, our understanding of human history, crop growth, space exploration, medical technologies, water resources

ILLUSTRATIONS BY JAN KALLWEIT



or superfoods. The standard of writing was impressive, and the scope of ideas inspiring.

The winner is a compelling essay by Yasmin Ali, a PhD student at the University of Nottingham, UK. Ali submitted a thought-provoking piece on Beethoven, her brother's hearing loss and the science she hopes will one day cure it. It stood out to the judges as a reminder of why many scientists do research: to make the world better tomorrow than it is today.

All essays were judged by a group of *Nature* editors. The top ten submissions were then ranked by three members of a separate judging panel: Magdalena Skipper, editor-in-chief of *Nature*; Faith Osier, an immunologist and researcher at the KEMRI–Wellcome Trust

Research Programme in Kilifi, Kenya; and Jess Wade, a physicist at Imperial College London. All submissions were kept anonymous throughout the process.

We also selected two runners-up. Physicist Robert Schittko at Harvard University in Cambridge, Massachusetts, proposes that nuclear fusion could offer a solution to the climate crisis, in a piece that effortlessly mixes grand

ambition with gentle humour. And chemist Matthew Zajac at the University of Chicago in Illinois wrote a powerful personal account of why he wants to see advances in the field of same-sex reproduction.

The results show that today's young scientists have a wealth of ideas, talent and conviction that research can transform their world. We look forward to seeing what they do next.

Beethoven's dream

The composer wished for a cure for his hearing loss. Soon, research could make it a reality for my twin brother – and millions more. **By Yasmin Ali**

In 1802, under a June Sun, a 31-year-old Beethoven paced through the countryside around Vienna. Rays of sunshine pierced through the trees, the hard soil crunched beneath his feet and birds conducted their own orchestra. But Beethoven didn't marvel at these details; he was preoccupied by thoughts of suicide. Some years earlier, he had started to lose his hearing, and although it wasn't yet severe, he was still struggling immensely with his condition. Living with hearing loss made his life a "wretched existence" that drove him into despair, he wrote. He still persevered with his work, and went on to create timeless music. But he found little joy in the process.

I observed a similar struggle at first hand, as my twin brother Islam, when we were 18 years old, started to lose his hearing. I noticed changes in his personality, too. He was always the outgoing troublemaker, but became quiet and withdrawn. Because hearing loss isn't visible, I didn't know what he was going through, which also made it difficult for me to be there for him.

Today, 466 million people worldwide have disabling hearing loss, and over 900 million are expected to have it by 2050, according to the World Health Organization. Its impact is often underestimated compared with other disabilities, but people with hearing loss constantly experience communication difficulties in their everyday lives. They often mishear speech and find it very difficult to follow conversations. These miscommunications can lead to individuals feeling isolated as they struggle to take part in social interactions, ultimately leading

them to withdraw from society. As Helen Keller once wrote: "Blindness cuts us off from things, but deafness cuts us off from people."

To this day, there is still no cure for sensorineural hearing loss (the most common type, and the one Beethoven had). We have advanced technological devices that amplify sound, such as hearing aids and cochlear implants, but these still don't restore hearing. In my and my brother's lifetimes, I'd like to see research make that possible.

Sensorineural hearing loss occurs as a result of damage to the inner ear organ, called the

"If it works, such a scientific advance could transform hearing health care."

cochlea, which has intricate sound-sensing hair cells that are responsible for hearing. In humans and other mammals, any damage to hair cells is irreversible. Other animals, such as birds, fish, amphibians and reptiles, can spontaneously regenerate their cochlear hair cells, meaning that any hearing loss they develop is only temporary.

Scientists have been studying the regeneration process of hair cells in non-mammals, and have identified various genes and proteins that have central roles. These can be targeted to stimulate support cells in the cochlea to in turn create more hair cells and replace those that died.

Some of these cell therapies have been