

Helsinki, says that the number of subscription journals offering open access for a fee has doubled in recent years, and currently stands at more than 4,300. However, just 1–2% of eligible authors take up that open-access option<sup>5</sup>. Björk argues that the high costs are a deterrent — about \$3,000 is typical. “There are, however, a few publishers and individual journals with a much higher uptake,” he says. For example, *Nature Communications*, which was launched in 2010 by Nature Publishing Group (NPG), is a multidisciplinary journal that takes this hybrid approach. When it started, about half of authors chose the open-access option. But those numbers have fluctuated, says James Butcher, associate director of open publishing at NPG, and in the past six months about 30% have chosen open access. Butcher has not collected data to explain the trend, but speculates that it might be attributable to the journal’s relatively high fees of around \$5,000, to changing author demographics or to a general drop in interest after early excitement about the open-access option.

Chambers suggests that paying a fee to publish in a hybrid journal is a good way to achieve both accessibility and prestige. “The key factor is whether the researcher has the funds available to do so, and whether the funding agency requires papers to be open access,” he says. But where funds have not been set aside for article-processing charges, and young scientists would need to spend research money, Chambers advises against consenting to high publishing fees.

“As a young investigator you have to do what’s economically viable,” says Stephen Macknik, a neuroscientist at the Barrow Neurological Institute in Phoenix, Arizona. Paying an article-processing charge for a reputable open-access journal may be a good middle ground for young researchers, he says.

But scientists shouldn’t sacrifice funding that was meant for research. “To maximize their competitiveness it is vital that young researchers maintain a productive profile of high-quality research, and this means using research funds to do as much high-quality research as possible,” says Chambers. “It falls to the more senior scientists to change the system.” ■

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## TURNING POINT

# Kate Rubins

*After 15 years in infectious-disease biology, Kate Rubins jumped at the chance to fulfil her childhood dream of becoming an astronaut.*

### Did you always want to become an astronaut?

As a kid, I really did, but various people pointed out that it was not the most realistic career choice. When I was 16, my dad took me to a DNA conference at the Exploratorium science museum in San Francisco, California, and I was captivated by this way of looking at biology and by the discussions of bits of nucleic acid that could make us sick.

### How did you come to focus on research related to public health?

As an undergraduate majoring in biology at the University of California, San Diego, I worked on infectious diseases at the nearby Salk Institute for Biological Studies. I decided to do graduate studies in virology at Stanford University in California because it had a hospital, which made working on clinical applications easier. I was looking at immune responses related to smallpox and Ebola, so I flew to Maryland every few weeks to work in a biosafety-level-4 lab, which handles the most dangerous microbes. Then I shipped the data back to Stanford.

### You built a lab quickly after your PhD. How?

I decided to skip the postdoc. The Whitehead Institute for Biomedical Research in Cambridge, Massachusetts, had a fellows programme that was akin to a junior faculty position with few teaching responsibilities. That seemed to be a good fit. My interests had shifted to the genomics of infectious disease, and I started laying the groundwork to study monkeypox infections in the Democratic Republic of the Congo. With a lot of hubris, I started my own lab. It was amazing — the Whitehead gave fellows a lot of leeway. In three years, I had secured enough money from the US National Institutes of Health and the departments of defence and homeland security to increase the lab to 14 people.

### Why did you apply to become an astronaut?

It was one of those childhood dreams that I couldn’t let go of. I thought that NASA didn’t take biologists and so nothing would come of it, but I knew I would regret it if I did not apply.

### How did it feel to have to dismantle your lab after NASA accepted you?

Joining NASA was very exciting, but it was the hardest decision I have had to make in my life. I had been working towards one goal for



NASA

more than 15 years. I had been very specific about what I wanted to do with my career, and this was completely different. I was concerned about my lab members— wonderful people whom I couldn’t leave high and dry. I wanted to make sure that they were able to continue their research. In the six weeks that I was given to shut down my lab before heading to the Johnson Space Center in Houston, Texas, for training, I found good labs for everyone to join.

### Three years later, do you still feel that joining NASA was the right decision?

Yes, I am really happy. I have learned a whole bunch of new skills, including how to speak Russian, conduct a space walk and fly a supersonic jet. The whole time at NASA has been a huge turning point for me.

### Are you able to do research?

Yes, but it is different from having my own lab. I don’t get to say, “I want to do this”; they select the best peer-reviewed research. I bring an operational perspective to the experiments that match up with my expertise. My time in biosafety labs taught me to work in a high-pressure environment, which provided skills that I am using at NASA. I am working on experiments from immunology to bone loss in microgravity.

### Will you go into space?

Fingers crossed. I am in the newest class of astronauts. The International Space Station will be operational until 2020, and perhaps 2028, so there is a chance. NASA is also building a space-launch system to go beyond low-Earth orbit. Whether either of those overlaps with my time frame is unknown, but it would be fantastic. I will go wherever NASA sends me. ■

INTERVIEW BY VIRGINIA GEWIN