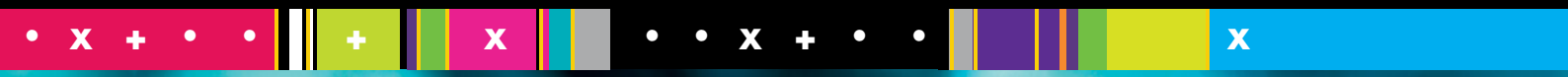
JOB KIT

CAREERS WITH STEM™



FUTURE SCIENTIST

Insights, information and advice on science careers of the future

SUPPORTED BY QUT

Studying STEM at QUT opens a world of opportunities to achieve your full potential and forge a rewarding career.

Discovering how to improve lives by solving a range of real-world problems will be crucial in the future. Many of the jobs of today were unheard of a decade ago: app developers, big data analysts, nanotechnologists and sustainability engineers.

We all know that careers in STEM provide the greatest opportunities to succeed in the future.

No university is better placed to help you launch your STEM career than Queensland's only university of technology.

Search QUT STEM to learn more about your study options, scholarship opportunities, and life as a QUT STEM scholar.

the university for the real world

QUT

CRICOS No: 00213J

BUILD A BRIGHTER FUTURE

Innovations in science are securing our future and building a brighter tomorrow. Are you a future scientist in the making?

PROFESSOR KATHRYN FAIRFULL-SMITH, CO-DIRECTOR, CENTRE FOR MATERIALS SCIENCE, QUT

SHUTTERSTOCK

Science and progress go hand-in-hand – almost every technological or medical breakthrough had its roots in a scientist asking a question and applying the scientific method to find the answer.

And as we fight global challenges like climate change and COVID-19, the crucial role of science has never been clearer – but science is about more than tackling the challenges we already face. Science is about making new discoveries, coming up with new questions and venturing into the unknown.

At the QUT Centre for Materials Science, we are conducting research at the cutting edge of materials development, with real-world outcomes in areas ranging from next-generation electronics, to medical imaging, biodegradable plastics and drug delivery.

Of course, it's not really science that helps us better understand the world around us and transform our lives – it's *scientists*. Science is about people, and we need the very best people to be driving our scientific institutions and organisations forward into a better and brighter future. Scientists who will make the discoveries we can't even dream about today, and who will help solve the inevitable new challenges the future will bring.

> **"IT'S NOT REALLY SCIENCE THAT HELPS US BETTER UNDERSTAND THE WORLD AROUND US AND TRANSFORM OUR LIVES – IT'S SCIENTISTS"**

If you're curious about how the world works, a problem-solver who wants to make the world a better place, then a career in science could be for you. Whether you're excited about cutting edge physics and chemistry, passionate about the environment or saving lives – there's likely an education and career pathway in science to suit you.

Read on to learn more and get inspired about becoming a future-focussed scientist!

Professor Kathryn Fairfull-Smith, Co-Director, Centre for Materials Science, QUT

Check out CareerswithSTEM.com for more insights, information, inspiration and advice about future scientist careers!

Beyond the future

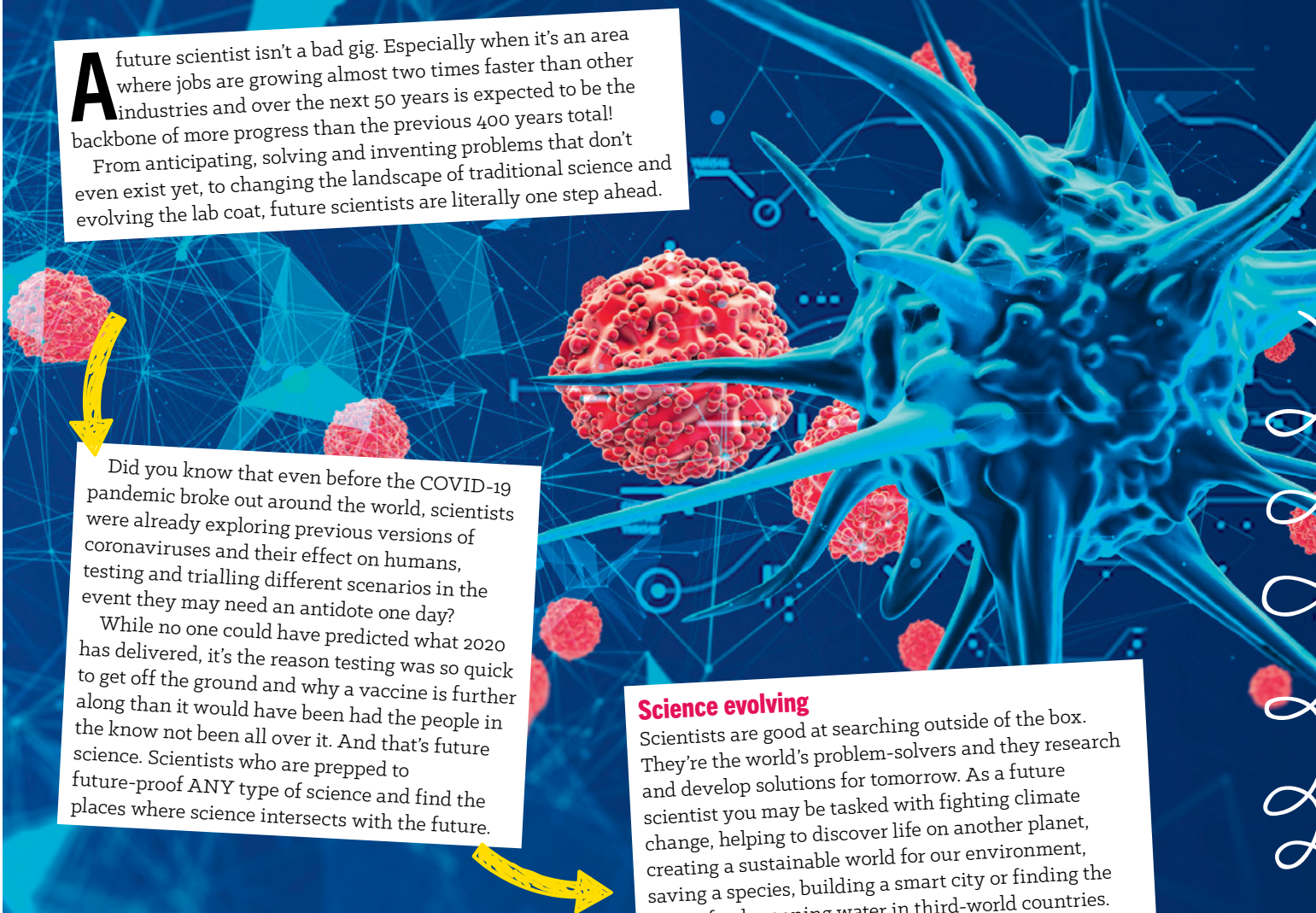
What does your future employment look like? A career in advanced science could mean working at the cutting-edge in areas as diverse as health to urban development, advanced manufacturing to wildlife conservation – or maybe your future career hasn't even been invented yet...

Cash advantage

Want to pocket **AU$60K** plus in the bank straight outta uni? Science and post-science grads can earn between **AU$60K–$78K** depending on your speciality. This compares to the national average of **AU$52–$55k** for non-science graduates. **Cha-ching!**

A future scientist isn't a bad gig. Especially when it's an area where jobs are growing almost two times faster than other industries and over the next 50 years is expected to be the backbone of more progress than the previous 400 years total!

From anticipating, solving and inventing problems that don't even exist yet, to changing the landscape of traditional science and evolving the lab coat, future scientists are literally one step ahead.



Did you know that even before the COVID-19 pandemic broke out around the world, scientists were already exploring previous versions of coronaviruses and their effect on humans, testing and trialling different scenarios in the event they may need an antidote one day?

While no one could have predicted what 2020 has delivered, it's the reason testing was so quick to get off the ground and why a vaccine is further along than it would have been had the people in the know not been all over it. And that's future science. Scientists who are prepped to future-proof ANY type of science and find the places where science intersects with the future.

Science evolving

Scientists are good at searching outside of the box. They're the world's problem-solvers and they research and develop solutions for tomorrow. As a future scientist you may be tasked with fighting climate change, helping to discover life on another planet, creating a sustainable world for our environment, saving a species, building a smart city or finding the key to fresh running water in third-world countries.

Here's all you need to know about what being a future scientist looks like...

Take note... You don't have to know all the answers, you only have to know where to find the answers!

SHUTTERSTOCK

PICK YOUR PATHWAY

WHO'S HIRING DEPENDS ON WHO YOU WANT TO WORK FOR. BUT ONE THING IS FOR SURE. JOBS IN THE SCIENCE SECTOR ARE WIDE AND VARIED. SO, PREP YOUR RESUME!

#1

Educators

Be a science teacher. Pass on your knowledge to the next gen of scientists and be part of evolving the future.

#2

Government

If research is your thing, look under the job ads for roles at the biggest and most diverse organisation in the world, CSIRO. Good news? It's right here in Oz. Or, aim for the boss' chair and become a business development manager, combining your science skills with people know-how, developing products in the food safety, medical testing, urban growth or ag-tech worlds.

#3

Hospitals

Traditional science still has its place; it just doesn't necessarily require a white coat. Nowhere is it more prominent than in the health world. Labs, testing, trialling are all part of the job description at places like the Garvan Institute, a world-class medical research institute.

#4

Startups

Behind every new idea is a person – or team of people – with the passion, the skill and the willingness to put their hand up to solve a problem and find new ways to research, develop and implement change. Think: biotech; geoscience; Artificial Intelligence (AI); wearable tech and energy sectors. And defs consider working for yourself! You *are* a startup.

Skills session

If it applies to you, put a cross in the box and see what your skills checklist reveals...

Hint: all roads lead to science!

- ☐ Good communicator
- ☐ Problem-solver
- ☐ Diverse thinker
- ☐ Curious
- ☐ Creative
- ☐ Good listener
- ☐ Patient
- ☐ Critical thinker
- ☐ Shows initiative
- ☐ Team player
- ☐ Analytical

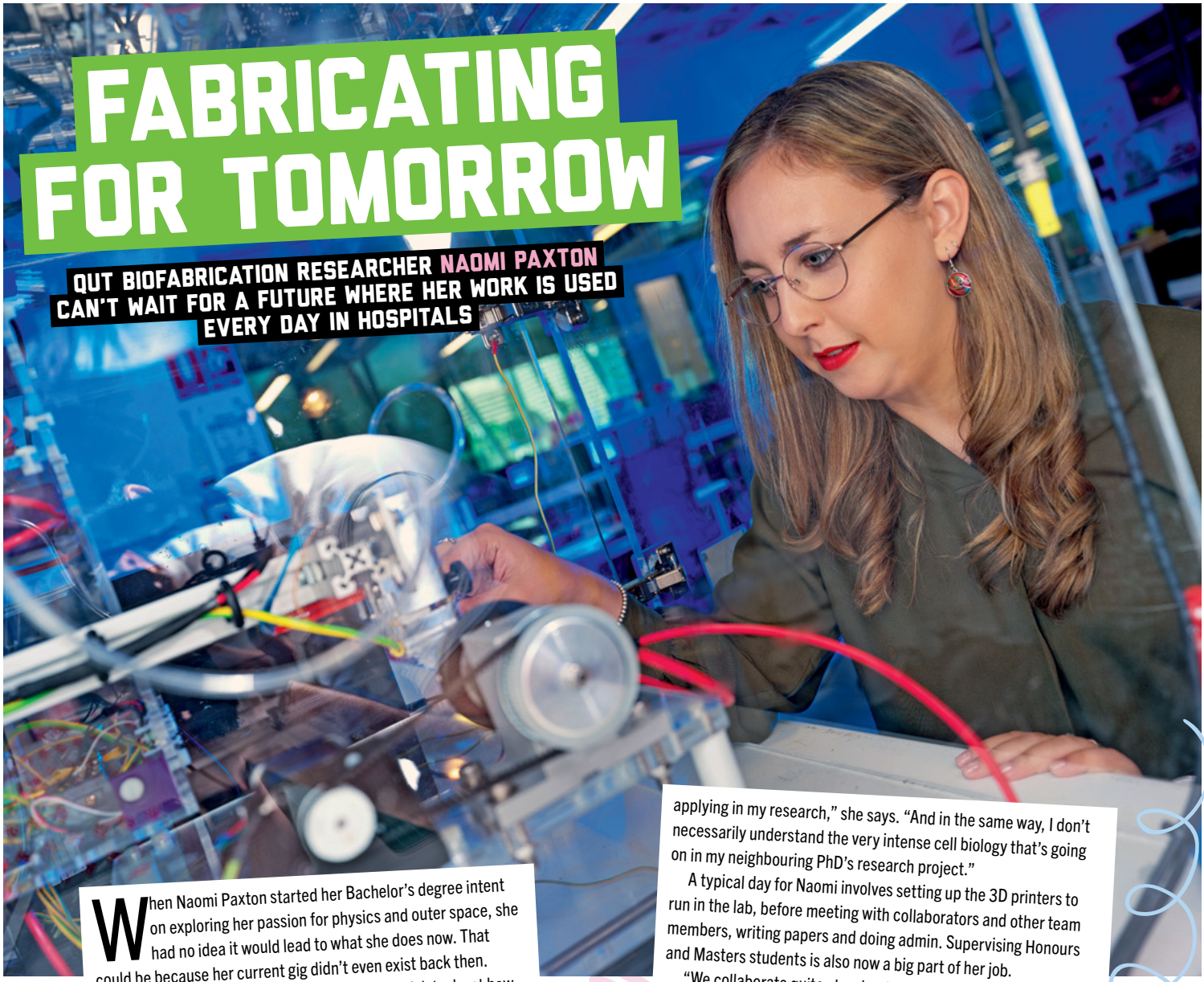
CAREER KICKSTART

Aussie company Kelly Services want to help future scientists get started on the right path. They're the peeps behind The Future Scientist Award, which offers an awesome cash prize and the opportunity to hook up with potential employers after graduation. So, if you're living in Oz, are in the final semester of a science degree – or graduated uni in the past six months – have been involved in all things science through uni and want to get a jump on your perfect job, check it out!

info.kellyservices.com.au/the-future-scientist-award

FABRICATING FOR TOMORROW

QUT BIOFABRICATION RESEARCHER NAOMI PAXTON CAN'T WAIT FOR A FUTURE WHERE HER WORK IS USED EVERY DAY IN HOSPITALS



When Naomi Paxton started her Bachelor's degree intent on exploring her passion for physics and outer space, she had no idea it would lead to what she does now. That could be because her current gig didn't even exist back then.

Naomi's field of research is biofabrication, which looks at how synthetic materials and 3D printing can be applied in the health sector. She recently completed her PhD, which looked at how 3D printed 'scaffolds' containing a patient's own cells could be used to replace existing methods of bone grafting.

A chance encounter at a TEDx event sparked Naomi's interest in biofabrication. She was there to give a presentation on the chances of planets that orbit two suns being able to sustain life. Naomi was inspired by Prof Mia Woodruff's talk on tissue engineering and 3D printing in healthcare. Mia recruited Naomi to a new Masters program, and now that Naomi has finished her PhD she has joined Mia's research team at QUT.

Naomi says one of the things that appealed to her about biofabrication is that it is so multidisciplinary.

"It takes biologists, chemists, engineers, physicists, mathematicians and clinicians all working together to solve these big problems in healthcare," she says.

Because everyone comes from different disciplines, communication skills are absolutely critical. "I can't expect that even my colleagues in my immediate research team can necessarily understand the physics or the maths that I've been applying in my research," she says. "And in the same way, I don't necessarily understand the very intense cell biology that's going on in my neighbouring PhD's research project."

A typical day for Naomi involves setting up the 3D printers to run in the lab, before meeting with collaborators and other team members, writing papers and doing admin. Supervising Honours and Masters students is also now a big part of her job.

"We collaborate quite closely with clinicians at the hospital," she says. "They give us really direct feedback on what we're developing. It's really useful to our research."

Naomi's team recently received funding from Advance Queensland to research how 3D printing could be used to create personalised, reusable N95 masks in order to reduce the need for disposable equipment, which has led to shortages during the COVID-19 pandemic.

Her goal for the future is to become a professor and have her own research team, as well as see her work being used in everyday hospital life. "I think it's going to be really exciting in the next five, 10 or 20 years, when 3D printers are just sitting in a surgical suite ready to crank out whatever tissue is needed to treat a patient," she says. "A lot of really exciting jobs are going to be available in the future." – *Chloe Walker*

> **"I THINK IT'S GOING TO BE REALLY EXCITING IN THE NEXT FIVE, 10 OR 20 YEARS"**

BACHELOR OF APPLIED SCIENCE, QUT >> MASTER OF APPLIED SCIENCE, QUT / JULIUS MAXIMILIAN UNIVERSITY OF WURZBURG >> PHD, QUT >> ASSOCIATE RESEARCHER, QUT

A day in the life of a... FUTURE SCIENTIST

Chemist Vanessa Lussini tells us about a typical day at the Reserve Bank of Australia

Australians are really rough with their bank notes. We put them through the washing machine, take them surfing and leave them to cook in the sun. One grandma even had to return her Aussie dollars after she tried to iron out the wrinkles.

Over at Australia's central bank, the Reserve Bank of Australia (RBA), it's Vanessa Lussini's job to find new ways to make Australian bank notes more secure through the development of new security features to prevent counterfeiting. Vanessa studied chemistry at QUT, where she became interested in plastics. Now, she literally makes money!

She gets inspiration from everywhere, including toys, craft materials and the natural world. "Most sciences are very creative," she says. "I think it's something people forget. Looking at an idea and applying it to something else is a really cool thing."

RESEARCH SCIENTIST, RESERVE BANK OF AUSTRALIA

RESEARCH ASSISTANT, DMTC LTD

RESEARCH ASSISTANT, CRC FOR POLYMERS

PHD (CHEMISTRY), QUT

BACHELOR OF APPLIED SCIENCE (CHEMISTRY AND BIOCHEMISTRY), QUT

Here's how she spends her days at the RBA!

9am

I catch public transport to work. When I arrive at the office, the first thing I do is check my emails. We have lots of overseas collaborators, so lots of emails come in overnight. We work with other central banks with similar currencies to us on ways to improve our bank notes.

10am

I spend some time reading new research and patents to look for new ideas we could apply to our bank notes. For example, could we use the technology from a colour-changing toy in some way? Or the chemistry of a chameleon's skin? I'll use this research to design experiments.

12pm

Our team eats lunch together and then we go for a walk. We call it the jail walk because we're surrounded by massive electric fences! Sometimes we spot a kangaroo.

1pm

The team gets together again for a strategy meeting. We need to make sure we're working on a diverse range of projects to ensure we are hitting key milestones and timelines.

2pm

As a project manager, I work closely with other scientists and I'll check on their progress in the afternoon. We undertake print trials to prove scaling up processes and to ensure the banknote features we develop are durable and tough enough for Australians!

3.30pm

Back to the emails. Now that I've had some time to think about our projects, I reply to our overseas collaborators with feedback, questions or new results from the lab.

5pm

Unless I've got footy practice, I'll work out at the gym on the way home. Then in the evening I catch up on Netflix!

Get the job!

Excited about a future-focussed science career? Start here

FUTURE FOLLOWS

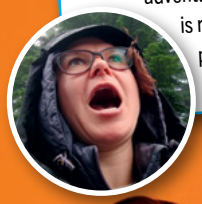
Add these scientist peeps to your insta feed and see what goes on in the futuristic world of all things science in real-time. You'll be across events, new discoveries and general info to keep you in the know today, so you're ready for study, inspo and work tomorrow.

Future Crunch @futurecrunch
Peeps with a passion for the future and ensuring science and tech are at the forefront of what lies ahead for humans and our planet.

QUT Science and Engineering @qutscieng
Uni courses? Tick. Comps to get involved in? Tick. Awesome learning avenues? Tick. Following now? Tick.

Careers with STEM @careers.with.stem
All you need to know about the world of STEM and opportunities galore in one place.

Bug Girl @hybopterashasta
From field work to flying insects this gal will take you on a science adventure like no other. The combo of science and the future is real! Think actual dragonflies and their crazy vision powers being the inspo for some of the latest drone tech. Shasti – AKA Bug girl – has the lowdown!



SCI-FI SCREEN SESH

As if you needed an excuse to binge some of the best movies of all time, here's our top pick of sci-fi films to cover all your science bases...

BIOLOGY Gattaca (1997)
Back in 2011, NASA named this movie as their pick of best sci-fi movie ever. Released in the 1990s during the hype around the Human Genome Project – an international research effort to map all of the genes of human beings (known as our genome) – *Gattaca* is set in a future where genetic selection of human embryos is taken to the extreme. "It's probably the most believable science fiction movie out there," said Lucy Osborne, a genetics expert from the University of Toronto in Canada.

PHYSICS Particle Fever (2013)
If you want to get excited about cutting-edge physics, this doco is a great place to start. It's all about the search for the Higgs boson particle – a massive international effort involving more than 10,000 scientists from 100 countries, spanning two decades, costing hundreds of millions of dollars and resulting in the biggest machine ever built.

CHEMISTRY Big Hero 6 (2014)
This one contains some fun chemistry – including character Honey Lemon's magic periodic table purse that produces chemical compounds to fight villains. The Disney animation stars a 14-year-old robotics genius living in a futuristic city. Yep, superheroes, villains and the periodic table all in one. Grab the popcorn.

SHUTTERSTOCK

Choose this career if you...
> Love all things science!
> Are passionate about the future
> Are logical and a problem-solver

Electives checklist
Choosing high school electives? These subjects will set you on the right path to a career in future science:
✔ Physics ✔ Biology
✔ Earth & Environmental studies
✔ Mathematics
✔ Chemistry

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This edition was published on 28 October 2020.

CAREERS WITH STEM