Sharna is
a neuroscientist

NOT GOOD AT
feeling confident trying new things and artistic things

CAREER
neuroscientist

EXPERT ON
helping live longer, happier lives

GOOD AT
perservering and writing

LOVES
travelling the world, meeting new people, watching old movies, and reading
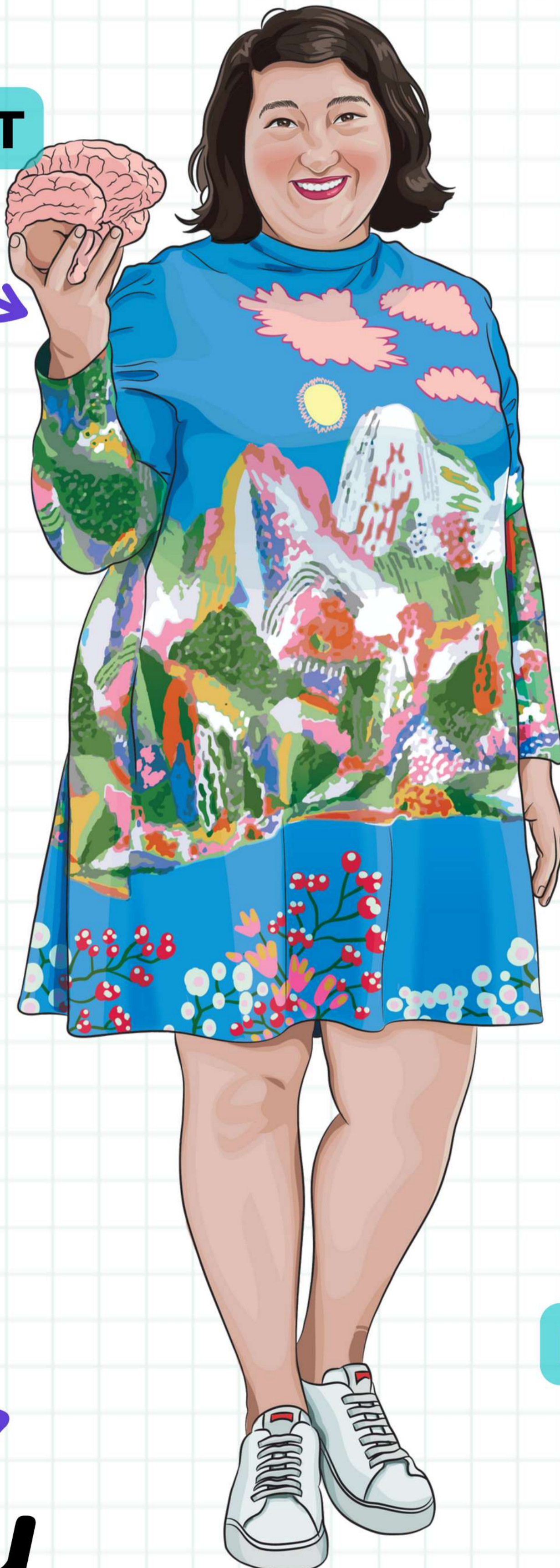
STUDIED
started a degree in Maths and Computer Science, but switched to Psychology

WANTS TO
help others become scientists

HER RESEARCH
looks at how life impacts the brain

future**you**

www.futureyouaustralia.com.au/pathfinders/sharna

Meet Sharna Jamadar

What do you do?

I'm a neuroscientist. That means I study the brain using cool machines like MRI and PET scans. These machines let me see how different parts of the brain light up when people do different things, and I'm curious about how these patterns can be different from one person to another.

I run a research lab where we focus on two big questions. First, I want to find out if doing brainy activities like puzzles or having a challenging job can help people stay sharp as they get older. Second, I'm interested in how becoming a mom or dad changes your brain. Some people think having a baby makes you forgetful, but our research suggests that being a parent might actually make your brain better in a lot of ways!

How did you get into that job?

I grew up in the Hunter region of New South Wales and always wanted to go to university, but I wasn't sure what I wanted to study. I started with maths and computer science but soon realised it wasn't for me. After taking a break for six months, I decided to study psychology because I was fascinated by how people think and behave.

At first, I thought I'd become a clinical psychologist, but by the end of my degree, I realised I loved learning about the brain even more. So, I decided to do a PhD in neuroscience. It was challenging but exciting! I love seeing people's brains in action and figuring out how they work.

What do you love about your job?

I love that I get to research things I find really interesting. Whenever I wonder, "Why does that happen?" or "Why do people experience certain things?" I can design experiments to find out! I get to choose my own research topics and explore my curiosity, which is super fun.

My job has also let me travel all over the world, from Europe and the USA to Asia and even Antarctica! I've made friends from all over, and it's been amazing.

How does your job help people/the community/the world?
My research helps people live happier and healthier lives for longer. Instead of just studying diseases, I look at what's normal in the brain as we age and when we become parents. Understanding what's normal helps us figure out what goes wrong when people are unwell.

What are two things you're not good at?
When I start something new, I often feel like I can't do it well. But I always find a way to get better, even if I need to ask for help.

I'm also not great at artistic stuff like drawing or painting. My hands don't seem to follow what I see in my mind, but I still enjoy being creative, even if the result isn't perfect!

What are two things you are good at?
I'm good at sticking with things, even when I think I can't do them. If I need to learn something new, I dive right in, and sometimes I ask friends for help.

I'm also pretty good at writing. At first, it was tough to express my thoughts clearly on paper, but with practice and help from my PhD supervisor, I got much better. Writing is a skill that takes time and effort to develop.

What makes you happy (outside of work)?
I really love travelling and seeing the world – and I'm almost always fascinated by the people and how they live their lives – I love getting that insight into the daily lives of people all over the world. I also love watching old movies and reading books that were written many years ago. I love switching off and imagining living in times that have gone by.
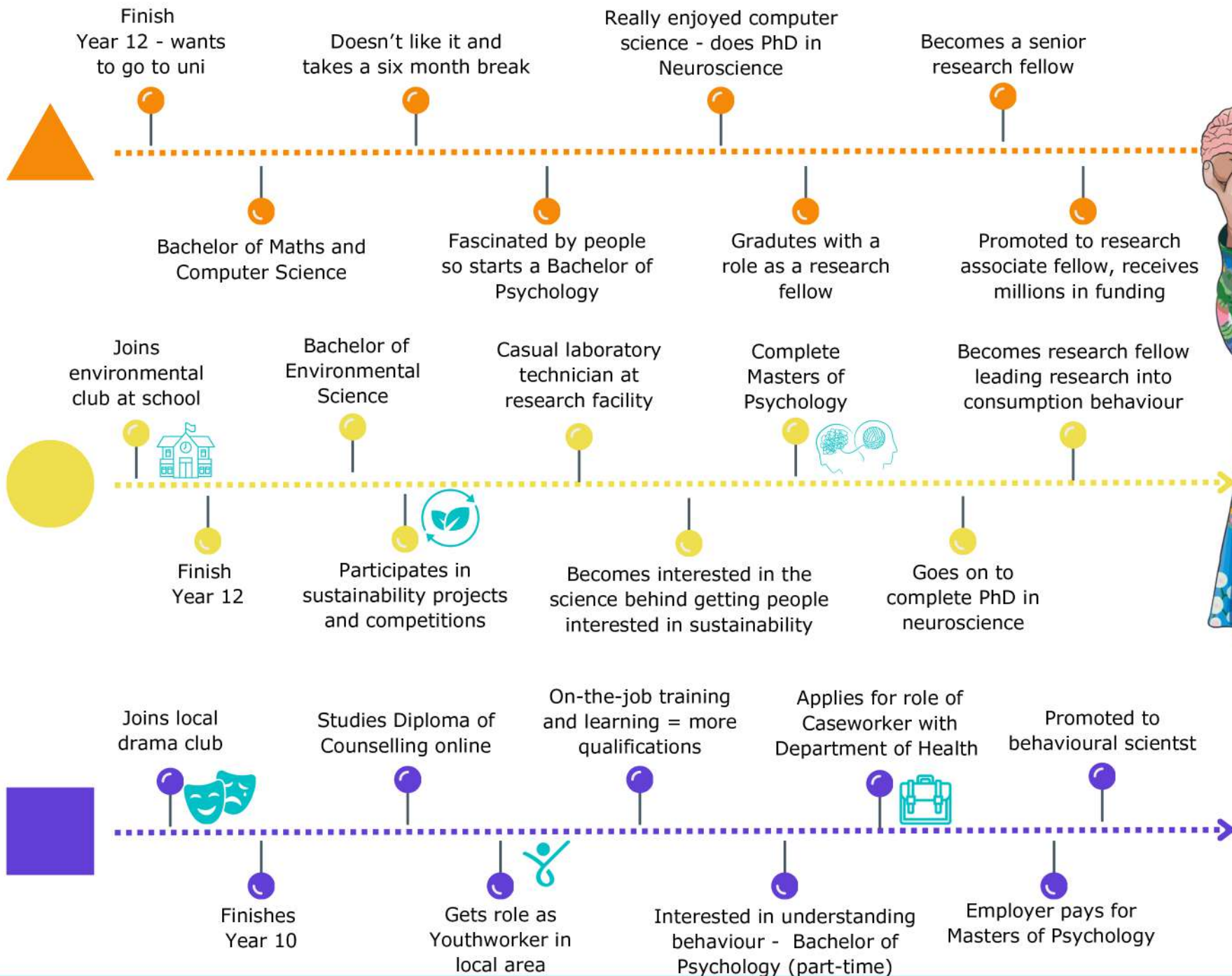
Where do you want your career to take you?
One thing I love is helping people become scientists. I've got a wonderful team of students and I am constantly learning from them. I'm lucky that I get to help them on their journey towards their own careers in STEM.
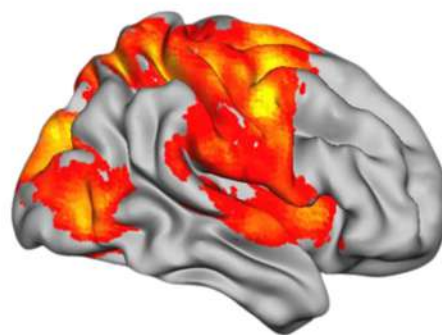
Example: MRI and PET show which parts of the brain light up when people are thinking or doing particular tasks. This technology uses physics and engineering.

Orange Pathway (top timeline)

Finish Year 12 - wants to go to uni

Bachelor of Maths and Computer Science

Doesn't like it and takes a six month break

Fascinated by people so starts a Bachelor of Psychology

Really enjoyed computer science - does PhD in Neuroscience

Gradutes with a role as a research fellow

Becomes a senior research fellow

Promoted to research associate fellow, receives millions in funding

Yellow Pathway (middle timeline)

Joins environmental club at school

Finish Year 12

Bachelor of Environmental Science

Participates in sustainability projects and competitions

Casual laboratory technician at research facility

Becomes interested in the science behind getting people interested in sustainability

Complete Masters of Psychology

Goes on to complete PhD in neuroscience

Becomes research fellow leading research into consumption behaviour

Purple Pathway (bottom timeline)

Joins local drama club

Finishes Year 10

Studies Diploma of Counselling online

Gets role as Youthworker in local area

On-the-job training and learning = more qualifications

Interested in understanding behaviour - Bachelor of Psychology (part-time)

Applies for role of Caseworker with Department of Health

Employer pays for Masters of Psychology

Promoted to behavioural scientst

Neuroscientist career pathways
Find out more at www.futureyouaustralia.com.au/resources/#other/

FUTUREYOU

The educational qualifications and levels outlined in these pathways are intended as general guidelines. To obtain accurate and up-to-date information, explore resources specific to your state or territory, available through websites like *myfuture.edu.au*, *YourCareer.gov.au* and *australianapprenticeships.gov.au*.

There is also a range of financial support available for students doing apprenticeships or going to university, visit *www.servicesaustralia.gov.au/education* to see what's available.

- Bachelor of Maths and Computer Science, Bachelor of Psychology: https://www.courseseeker.edu.au/

- Bachelor of Environmental Science, Masters of Psychology: https://www.courseseeker.edu.au/

- Diploma of Counselling: https://training.gov.au/Training/Details/CHC51015
- Bachelor of Psychology, Masters of Psychology: https://www.courseseeker.edu.au

SCAN ME

Remember, there are countless pathways to the same career. Each child's unique skills, interests, and strengths will guide them on their personal journey to success.

Neuroscientist career pathways
Find out more at www.futureyouaustralia.com.au/resources/#other/

FUTUREYOU

Comprehension Questions

Learning outcomes:

All students will be able to:
- Identify that all people have strengths and weaknesses
- Actively think about what is happening in various texts as they read them
- Apply comprehension strategies to different media formats

In addition, some students will be able to:
- Identify different reasons for doing different jobs

Instructions:

- Format/print the students' question sheets (or load them onto school LMS) and direct students to a copy.
- Read the questions as a class to start, discussing any meanings
- Discuss with the class strategies for being able to answer the questions as they read about Sharna
- Read about Sharna as a class, encouraging students to answer questions as you go

Adaptation note: Questions can be modified on the PDF to meet students' needs or learning focus areas in your classroom

Comprehension questions

1. What does Sharna do and what does she use to do it?
2. What is Sharna interested in learning more about?
3. Where did Sharna always want to go?
4. What did Sharna do when she decided her first degree wasn't quite right?
5. Where has Sharna's research taken her?
6. Name two things Sharna isn't good at.
7. Name two things Sharna is good at.
8. What does Sharna's work help people to do?

Scan this QR code to visit my page

SCAN ME

Answers:
1. She's a neuroscientist who uses machines to see people's brains.
2. If doing puzzles or having a challenging job can help people stay sharp as they get older. How becominga parent changes your brain.
3. Go to university.
4. Took a six month break.
5. Europe, USA and Asia, and Antarctica
6. Being confident when doing something new, and artistic things.
7. Sticking withthings, and writing.
8. Live longer, healthier lives.

FUTURE **YOU**

www.futureyouaustralia.com.au/pathfinders/sharna

Sharna

Student name:

Comprehension Questions

What does Sharna do and what does she use to do it?

What two things is Sharna not good at?

1.

2.

What is Sharna interested in learning more about?

1.

2.

Name two things Sharna is good at.

1.

2.

Where has Sharna's research taken her?

Where did Sharna always want to go?

What does Sharna's work help people to do?

What did Sharna do when she decided her first degree wasn't quite right?

Capability Convos

Learning outcomes:

All students will be able to:
- identify some likes, dislikes, strengths, abilities and/or interests when showing a personal preference
- acknowledge that people have different needs, emotions and abilities

In addition, some students will be able to:
- describe the ways they are connected and can contribute to their community groups

Format

- Interactive game with 10 questions
- Easy to play
- Read about Sharna's job and journey with the class
- Print the questions
- Play the game
- Modify or include new questions based on students' needs

Scan this QR code to find out more about me.

SCAN ME
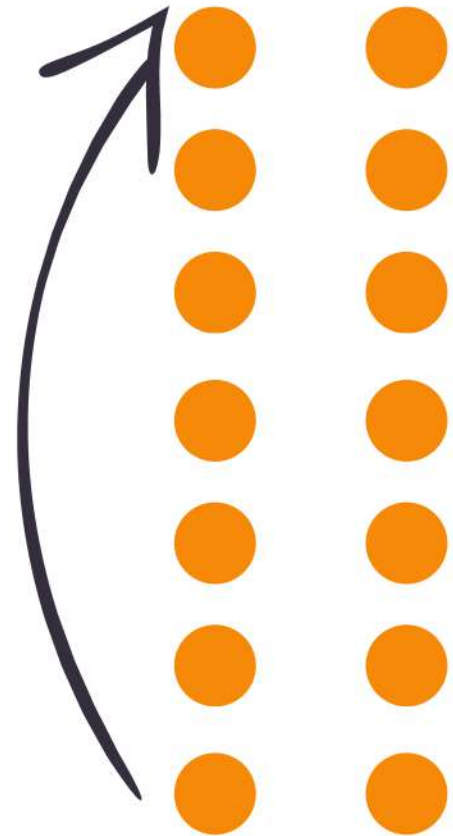
Instructions for students

Line the class up in two lines facing each other to form pairs. Ask the first question. Once each pair has discussed it, get one line to move one person to their right. The person at the end runs around to the other end of the line. Then you ask the next question and repeat the process until all the questions have been asked.

FUTUREYOU

www.futureyouaustralia.com.au/pathfinders/sharna

Sharna
Neuroscientist

Question 1
What do you think is interesting about Sharna's career?

Question 2
What skills does Sharna have that you also have, and does she have any skills you don't have that you would like to have?

Question 3
Why do you think it's important to find a career that suits your skills and personality?

Question 4
How are your interests and hobbies similar or different to Sharna's career?

Question 5
How do you think Sharna's career contributes to society?

Question 6
What sort of problems do you think Sharna might have doing this job in a rural or remote location?

Question 7
How important are mathematics and technology in Sharna's job? Can you think of some examples?

Question 8
What tools or technology do you think Sharna needs to do her job?

Question 9
How do you think AI might change Sharna's job in the future? Can you think of some examples?

Question 10
What do you think would be the biggest challenge pursuing a career as a neuroscientist?

Neuroscientist

STEM Meter

How much Science, Technology, Engineering and Mathematics (STEM) does this job use?

S		80%
T		70%
E		80%
M		70%

Source: jobsandskills.gov.au

Sharna is a neuroscientist. She is interested in finding out more about how life experiences, like careers, playing puzzles, and becoming parents impacts our brains. Find out more at:
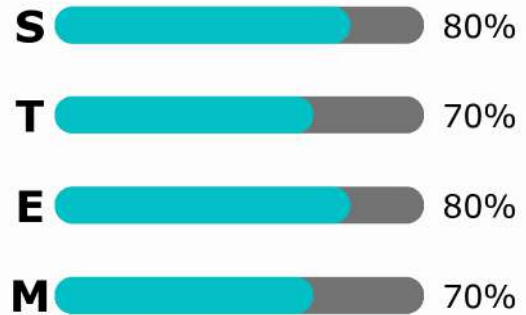
futureyouaustralia.com.au/pathfinders/sharna

It is so cool that I can peer into people's brains and see it working in action."

Job stats and facts

Location: The majority of neuroscientists live in Victoria and New South Wales.

Employment pathways:
A bachelor degree in science is required, but there are many pathways you can take to get an undergraduate degree. Discover them at myfuture.edu.au

3 STEM skills required for this job	Subjects to develop these skills	3 other jobs that value this skill
Research	Science, HASS	Business Analyst, Psychologist, Economist
Computer Science	Digital Technologies	Data Engineer, Marketing, Quantitative Analyst
Chemistry	Science	Chemist, Pharmacist, Veterinarian

www.futureyouaustralia.com.au

FUTUREYOU

Other careers related to this line of work

♡ Health

Psychologist
Social worker
Psychiatrist
Palliative Care Nurse
Neurosurgeon

🌱 Agriculture

Mixed Livestock Farmer
Botanist
Precision Agriculture Specialist
Pest Management
Beekeeper

🐾 Animals

Veterinarian
Wildlife Conversation Officer
Zookeeper
Marine Biologist
Park Ranger

⚛ AI

Computational Neuroscientist
Neural Network Engineer
Brain-Computer Interface Engineer
Cognitive Robotics Researcher
AI Safety Researcher

📶 Technology

Robotics Engineer
Neuroimaging Engineer
Visualisation Programmer
Neuroprosthetics Developer

The world is changing rapidly, and this means the career possibilities available to our kids are wide-ranging and exciting (and probably don't exist yet!).

From traditional vocations to emerging fields, there are countless pathways to be explored.

Parents and teachers can create environments that encourage kids to discover and investigate possible careers that match their skills and interests.

We've included some links to other valuable resources that can help guide career conversations and explorations. Find out more at:

www.futureyouaustralia.com.au/resources/#other

FUTUREyou

Neuroscientist

STEM Meter

How much Science, Technology, Engineering and Mathematics (STEM) does this job use?

S	80%
T	70%
E	80%
M	70%

Source: jobsandskills.gov.au

Sharna is a neuroscientist. She is interested in finding out more about how life experiences, like careers, playing puzzles, and becoming parents impacts our brains. Find out more at:
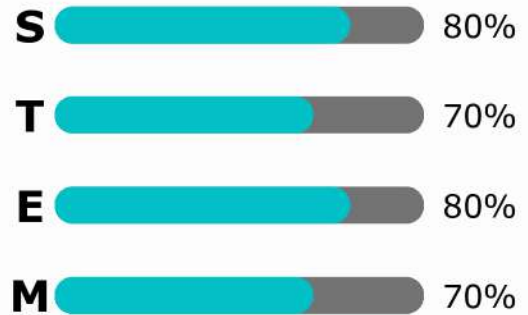
futureyouaustralia.com.au/pathfinders/sharna

It is so cool that I can peer into people's brains and see it working in action."

5 reasons why you should do this job

1 Find out more about the human brain

2 Help scientists solve mysteries

3 Help people live longer, happier lives

4 Work in a team with interesting people

5 Travel the world to share your research

3 STEM skills required for this job	Subjects to develop these skills
Research	Science, HASS
Computer Science	Digital Technologies
Chemistry	Science

www.futureyouaustralia.com.au

FUTUREYOU

A day in the life of a neuroscientist

8.30am   I arrive at work slightly earlier than usual because today is a big day: we're about to start data collection on a new project! Months of work developing the experiment, getting approval from the ethics committee, training staff, and running pilot tests is finished! Our participant is due to arrive at 9am, so I arrive early to make sure everything is running smoothly. Our nuclear medicine technologist (NMT) confirms she has our medication for the PET scan ready, our radiographer confirms that the MRI scanner is all in order, and my research assistant confirms everything is ready for when the participant arrives.

9.00am   Our participant arrives. My job today is really just to make sure everything is running smoothly – my team are the real stars today. We bring the participant around to the scanner – today they will be having a combined PET and MRI scan. It is really important that they have not eaten since last night, and that they don't have any implants or other things that would make it dangerous to enter the scanner room. The radiographer goes through a detailed checklist to ensure they are safe to scan. Then the NMT checks the participant's blood sugar levels to ensure they are safe to receive the medicine. Lastly, the research assistant reminds the participant what they will do in the scanner, and make sure they're feeling comfortable about doing the scan. Yes, they are – we're ready to put them in the scanner!

The radiographer helps the participant lie down on the scanner bed, and between them, the NMT & radiographer make sure they're nice and comfy. The NMT puts a needle in the vein of the participant's arm – this is how we will deliver the medicine that allows us to see the brain light up on the PET scan when it is active. The participant is moved into the scanner, then the experiment starts! Today, we are just interested in the participant's brain while they are at rest, and so they lie quietly, thinking of nothing in particular. Every 10 minutes, the NMT will go into the scanner room to take a tiny amount of blood to make sure the PET medicine is being delivered properly. Out in the console room, I can see that everything looks normal on the MRI, and that the experiment seems to be running smoothly, so I pop out to my office and leave the experts to do their job.

10.00am   Coffee time. I'm impressed I've held off so long! While in the kitchen, I run into the operations team who are responsible for making sure all the scanners and equipment are running smoothly. They mention there is a new project coming on board, and ask if I'd chat to the researchers about their project – sure! They also update me on the progress of some videos we filmed with famous football players about maintaining their brain health. They're looking great, I just need to confirm that all the scientific facts in the videos are accurate.

10.30am   After checking my emails (there are so many), I have the first of my 1:1 meetings with my PhD students. I have 9 students at the moment, and they're studying topics as diverse as the effects of pregnancy on the brain, how brain energy declines in ageing, and the effects of circadian rhythms on the brain. Today I only have 4 student meetings, and we chat about how their projects are going and if they need anything from me to help them complete their studies. Working with all these clever people is the best part of the day.

12.30pm   Lunch. I'm almost always starving by this point, and today I picked up sushi on my way in. I quickly gobble it down at my desk while responding to emails.

1.00pm   I start reading and making edits to a student's paper. Now that I supervise so many students a lot of the time the students are doing the analysis and writing the first draft. This draft is good! I print out the figures and draw all over the graphs to make sure I've understood everything properly. The brain images look amazing, but the student forgot to label which side is left and right. Whoops!

2.00pm   Time to review a paper. I'm an editor at 2 journals and so I read a lot of papers to see if they will be a good fit for our journal. This one looks pretty interesting – machine learning of MRIs to detect Alzheimer's disease.

3.00pm   Operations meeting. My facility supports a really large range of scientists across any field that uses imaging technology. I update everyone on progress on a few new projects. I hear that the new clinical trial pilot test went well and that the triceratops scan on the CT machine was a big success. Next week that team will be scanning lumps of wood – maybe not quite as exciting as a dinosaur.

4.00pm   Zoom meeting with collaborators about a conference we're organising. Discussion revolves around international speakers and where we should host it. I tune out a bit and sneakily look at my emails.

5.00pm   Home time. I should run out the door, but I pop by the scanner neuro chat with the NMT and radiographer. Everything went well today, and the data is uploaded ready to analyse. We're all excited about scanning lots of people for the new study and what the results will be!

FUTUREYOU

Pathfinder Workwords

Neuroscientist

```
U R N C O H X N L E Y M C W Y X Q I M S F G N
T D E X L E I O A P W G U Y E Z F N I R I G E
H X O S T X N I S O J W O L P N R S L G N V U
H V N R E G N T T C G V F L E S Y S S T D K R
A C O Z E A H P U S C E G W O L N G J S I B O
G C O V A Z R E B O R O D E A R Y I F E N B T
L E I V O Q F C N R Y V P N L D U L A V G K R
H T N J A M T R H C T V A I H X T E C R S E A
Y O Z E E A T E Z I L A D D U Z E I N Z B S N
I T Y M T V A P H M T E X P E R I M E N T P S
R N O C J I N X N A H K F I L N Z M T W A A M
J R K T R F C O D E R N P K F B L Y S A R N I
Y S N E U R O S C I E N T I S T T M B M X Y T
G N I L E D O M L A N O I T A T U P M O C S T
A S P I N A L C O R D N O I T I N G O C J X E
N E L O E J X L D D P Q M M X J T R W W G E R
```

Find 19 words Sharna needs to do her job.

1. MICROSCOPE
2. DATA ANALYSIS
3. EXPERIMENT
4. GENETICS
5. COMPUTATIONAL MODELING
6. BRAIN
7. SYNAPSE
8. CORTEX
9. SPINAL CORD
10. NEUROTRANSMITTER
11. MEMORY
12. COGNITION
13. NEUROLOGY
14. PERCEPTION
15. REFLEX
16. NEUROSCIENTIST
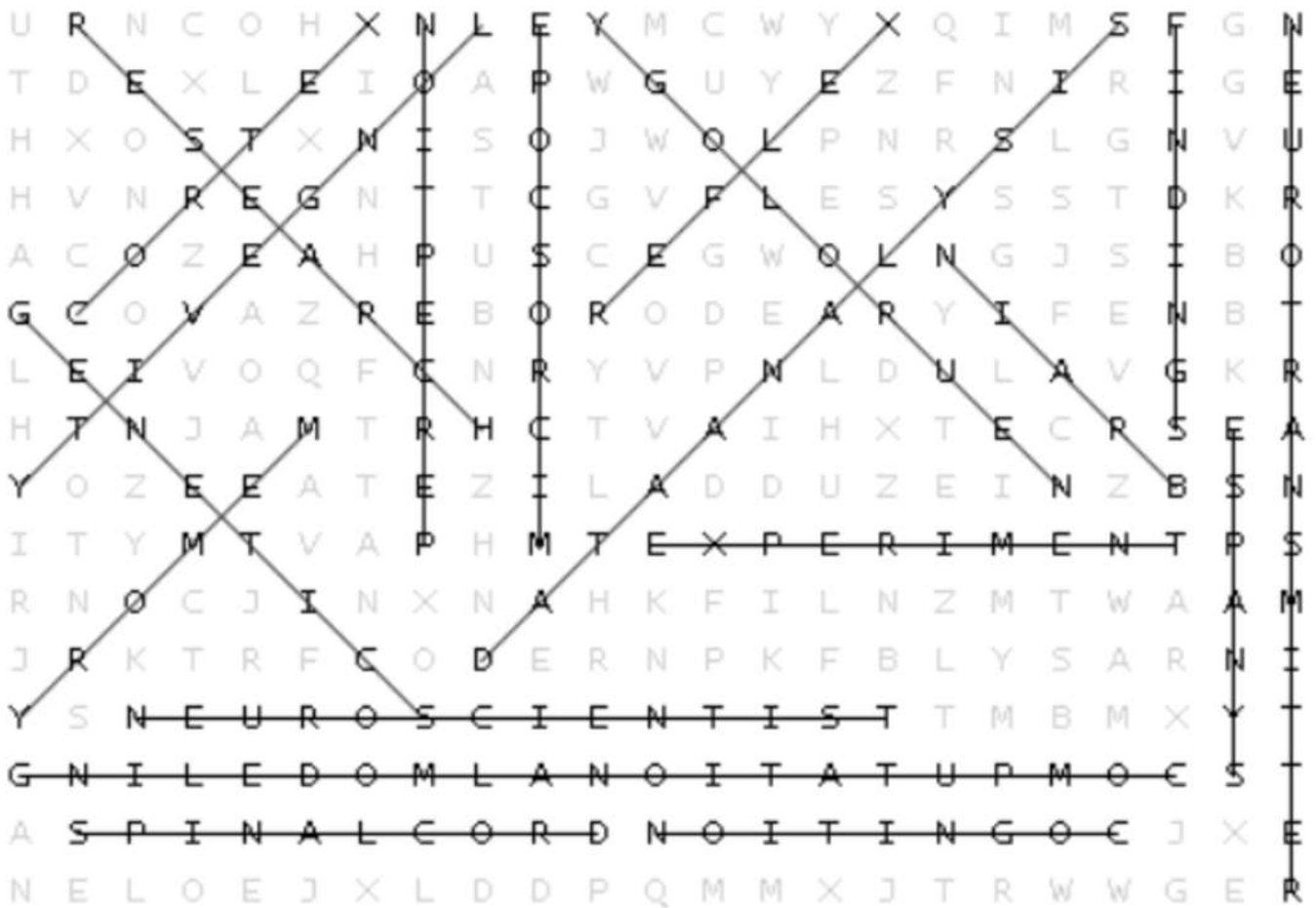17. RESEARCH
18. FINDINGS
19. LONGEVITY

SCAN ME

Scan this QR code to find out more about Sharna.

Pathfinder Workwords

Answers

Let's reflect

Were any of these words new to you? Look them up and find out what they mean.

Which of these skills do you think you are best at, or would like to get better at?

1._____

2._____

3._____

Can you think of anything else Sharna might need to do her job?

_____

Meet Sharna. She's a neuroscientist who wants to know more about how to make our brains more resilient to aging. Fill in the bubbles with 5 STEM (Science, Technology, Engineering and Mathematics) skills she uses in her job. Which of these skills do you think is most important? Which do you think would be the hardest to develop? When you've thought of the skills, colour in the rest of the image.