



From jelly to Judaism, the world of Dr Emily

BY ANGELA KIVERSTEIN

IF YOU drew a line with a standard pencil, until the pencil was all used up, how far would you get? To the end of the street? The nearest supermarket? France? Or round the world and back to where you started?

Dr Emily Grossman has always loved asking questions and now she has written a book of *Brain-Fizzing Facts* (including the one above).

"I was the kid asking: 'why does this happen?' from the moment I could talk," she says. "When I was at [South Hampstead High School], I had brilliant teachers who really encouraged my inquisitive mind. And I was hugely supported and inspired by my dad, Ashley and my mum Susan, a lecturer in journalism and career coach." Not forgetting her grandmother, bestselling writer Rosemary Friedman, still writing now, at the age of 90.

Although her parents divorced when she was four, Emily spent a lot of time with her father, a professor of endocrinology, sharing what he called Theory Afternoons. "I was too young to know what a 'theory' was," she says,

"but I thought 'this must be a word for fun stories about the world'. One time he said, if I travelled really fast, the world would slow down. I was like 'could I make time go backwards?'. My best friend Lucy and I used to have what we called our Little Ponders. For instance we'd think — why is it that when we pour water out of a bucket,

it falls in a sheet, but when it rains, it does it in drops?"



It's important to have a guess, make mistakes and try again'

Perhaps, speculates Emily, she imagined God pouring a bucket of water from the sky, though she did not yet feel a connection with Judaism. "I used to go for

Friday-night dinner with my grandparents and it was a wonderful family time but in terms of religion I couldn't find my way in," she says.

Then, ten years ago, two of her friends, Rachel Rose Reid and Joel Stanley, founded Grassroots Jews, bringing together Jews from multifarious backgrounds, including Orthodox.

"I went along cynical and jaded

and not really expecting to be able to engage with anything," remembers Grossman. "I think it was a Yom Kippur service in a big marquee in a garden and there were talks and workshops and even yoga classes — and I felt like I'd come home. I've gone from being a cynical attendee to offering workshops on compassion and gratitude. Now I feel deeply connected to my spiritual Jewish roots and the ideas and values of the religion." This has not conflicted with her scientific world-view. "I feel like if there's a known explanation I need to understand it, but there are many things I don't need to understand, if I feel them."

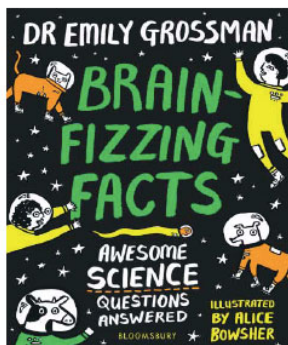
Like the hypothetical pencil line, Emily's life has not taken a direct route: "Having gone from a very supportive school, where both my physics teachers were women, I arrived at Cambridge with the intention of studying physics," she says. "There were predominantly male students and tutors and lecturers. My first thought was 'wahey!'. But I quickly started to lose confidence. It was quite a macho sink-or-swim environment. I started to be afraid to ask questions, in case

people rolled their eyes. I decided to drop physics, although I loved it. But I still had to sit the exams. I came out of them in tears. The boys came out laughing and joking — 'what do you mean you put 52? Derr, it was obviously 520...' But when it came to the results, I did better than a lot of them. Looking back I realise that, in that environment, what changed were not my abilities but my perception of my abilities."

She switched to biology and, after Cambridge, gained a PhD in cancer research. But she enjoyed performing — and eventually she headed for drama school and "a wonderful eight years, in roles from Snow White to Lady Macbeth." The lifestyle was challenging, though, and in her early 30s, Emily had "a bit of a breakdown".

It was time for another change, in the form of a BBC training course for female science experts who wanted to work in TV and radio. She became a science communicator and adopted the motto: "say yes; panic later". Highlights of her new role included six seasons on *Duck Quacks Don't Echo*, a celebrity panel show, explaining the science behind weird facts. This led her to create a stage show — *Dr Emily's Weird and Wonderful Science Facts*.

For the show, "I turned facts into questions with multiple-choice answers," says Grossman, who does the same in her book. Her six younger sisters have kept her "playful" she says — and the show and book take a playful approach, too — citing wobbling jellies to elucidate resonance or farting sea cows to explain buoyancy. The book's



The brain-fizzingly brilliant book

multiple-choice quiz format is crucial, as it encourages young readers to take risks and think for themselves.

"A key thing I wanted to get across to young people is how important it is to have a guess, make mistakes, figure out the answers," says Grossman. "Studies show we create far more neural pathways when we make mistakes, learn and try again."

"I hope if kids read the book and feel they are engaged and excited by science and facts, they could make a difference in the world." Climate change and antibiotic resistance are among the global issues she hopes they will be motivated to tackle.

She adds: "You don't need to be top of the class, the most clever, the most talented to study Stem subjects. Passion is far more important, sensitivity,

the ability to work as a team, creativity, imagination and a desire to understand the world."

Her feelings on this were crystallised by a dramatic event in 2015. Tim Hunt, the Nobel-prize-winning biochemist, had spoken about his "trouble with girls in the lab... You fall in love with them, they fall in love with you and when you criticise them, they cry."

His comments were "a bit irresponsible," says Grossman, who ended up debating the issue on Sky TV and faced a torrent of misogynistic comments afterwards. Once she had recovered, she decided to look into the arguments for the value of emotion in science and society. This culminated in her TEDx talk: *Why Science Needs People Who Cry* (watch it and be inspired).

"All careers really need people who are not just logical and analytical but bring passion to the workplace, ability to collaborate, empathy and creativity," she says. "Don't be put off by anyone who tells you you can't do whatever you want to do. No matter who you are, or where you're from. Science needs all sorts of diverse people. If you're passionate about understanding the world, then science needs you. Not just even if you cry. Especially if you cry."

Brain-Fizzing Facts by Dr Emily Grossman is illustrated by Alice Bowsher and published by Bloomsbury (£6.99). Emily is available to give talks or perform a show based on her book. Contact her through emilygrossman.co.uk or follow @DrEmilyGrossman