Writing fiction allows neuroscientist David Eagleman to ask the big questions that science can't yet answer. He had already written several non-fiction books about perception and cognition, and had scripted and presented a television series on the brain. These are ways to disseminate science to the broader public. But his more-recent fiction writing has allowed him to explore and wrestle with the biggest ideas, he says.

“These are the questions that live some distance beyond the cycles of papers and grants,” Eagleman says. *Sum: Forty Tales From the Afterlives* (Pantheon, 2009), a collection of stories that explore human identity from the perspective of those who have died, was translated into 29 languages and turned into two operas. “I feel that fiction picks up right where my science leaves off,” says Eagleman, who is at Stanford University, California, and chief executive of Braincheck, a company that uses technology to measure brain function. “I can prove X, Y, Z in the lab, but what happens beyond that? Fiction asks the big ‘what ifs’, which are the most powerful inroad into everything we’re doing.”

Whereas Eagleman’s non-fiction articles and books translate his scientific research for a broader audience, his fiction takes him well beyond the field of neuroscience. “To some degree, they’re really separate worlds — writing journal articles and writing fiction — and that’s fine with me.” He’s currently writing a novel, *Eon*, about the cosmos that spans more than 200 billion years.

Science is a creative process. Researchers must be inventive and ingenious as they design experiments, seek funding and try to publish results. But those who find time to squeeze creative writing into their life at the bench (and the laptop) report that there is a pay-off. Whether they write poems,
Keep a daily journal. It can focus on your form or join a writers’ group in your city. Take a workshop or course. Many professional centres of the Milky Way. He devised scientist and researcher. “You can devise thought experiments beyond the real and into the possible,” says Benford, who is now an adviser on Breakthrough Starshot, a privately funded initiative to develop a fly-by mission to the Alpha Centauri star system. “Fiction aids scientific discovery and thinking. It makes me a better scientist and researcher.”

Benford’s Galactic Center Saga, for instance, a series about a galactic war between mechanical and biological life, led him to study radio maps of the real Galactic Centre, the rotational centre of the Milky Way. He devised a hypothesis about the radiating filaments observed in the centre, and published his first paper on the subject in 1988. “Even today it seems like a viable model,” he says. And it’s a two-way street. His 1980 time-travel novel Timescape (Simon & Schuster, 1980) was based on research for his PhD thesis, and imagines an ecological disaster that takes place in 1998. His 1970 story, The Scarred Man, anticipates the computer virus. For many writer–scientists, creating poems, song lyrics or fiction helps them to unwind and to access and practice a different way of thinking, even if they don’t deliberately try to channel their muse into their academic thinking and writing. “When molecular research becomes frustrating, I can recharge my batteries, giving free rein to my creativity,” says Gaia Bistulfi, a computational biologist at D’Youville College in Buffalo, New York. She writes novels in the young-adult genre and blogs for her young audience about social issues and her life as a writer–scientist. “Fiction writing has helped me reconnect with my community and find renewed purpose for my scientific research as well.”

Bistulfi has published four novels (as Gaia B. Amman), which explore social issues such as eating disorders, sexuality and drug abuse. For years, she wrote peer-reviewed papers on molecular biology, but she says that it wasn’t until she started writing novels that she gained the voice and courage to extend her neutral scientific writing to penning opinion pieces. She sent a Correspondence article to Nature (G. Bistulfi Nature 502, 170; 2013) calling on scientists to reduce, reuse and recycle lab waste. “I would have never thought to do that before my experience as a novelist,” says Bistulfi.

“Once you do something you love, it doesn’t feel like work.”

“Fortified by my writing experience, I gathered the courage to express my thoughts in a format that did not require standard deviations and graphs.”

Whereas writing fiction appeals to some scientists, others find non-fiction — such as blogs, essays or books — about their own research or research field to be the most accessible genre. Beth Shapiro, an evolutionary molecular biologist at the University of California, Santa Cruz, had been at the bench for 13 years before deciding to try her hand at popular scientific non-fiction. She wrote her first book, How to Clone a Mammoth: The Science of De-Extinction (Princeton Univ. Press, 2015), because she wanted to communicate to a non-scientific readership the differences between the science fiction of de-extinction and what was technically feasible — and what might become feasible in the future. Shapiro also wanted to show how emerging genetic tools could be used to enhance beneficial traits in existing animals to help them survive in a changing climate. “I enjoyed the freedom to write a popular book,” she says. “It was a relief from writing a journal article. And I think it made me a better writer.”

Penning the book helped her to write manuscripts more clearly. “I had to be able to communicate complex ideas in a simple way, but without cutting corners or leaving out the important parts,” she says. “This translates to academic publishing. Nobody ever complained that a manuscript was too easy to understand.” Another benefit is that researching the book deepened her understanding of the field well beyond her specific research. “It forced me to dive into literature that is tangential to my everyday research but critical to understanding different components of de-extinction,” says Shapiro.

PERSONAL PERSPECTIVE

For those who want more immediate reader interaction, blogging is popular. Hanneke Meijer, a palaeontologist at the University of Bergen in Norway, is one of a team of researchers that contributes to Lost Worlds Revisited, a palaeontology blog for The Guardian newspaper in London. “I enjoy telling people what my research is about,” she says. “I like the exposure it gives my research, and it’s a way to highlight my field. Blogging is a nice way of showing people there’s a lot more to palaeontology than dinosaurs and mammoths.” Between researching for her blogposts and writing them, Meijer says she has learnt to think more broadly as a scientist and to step back and ask herself, partly for her readers, why her research and the broader field are important to the public.

Meijer likes to weave some of her own experiences and perspectives into her posts, which she cannot do in her papers. Personalizing them provides a ‘hook’ into the story, she says. She adds that it helps to make the post more

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GET STARTED

Practice makes perfect

Here are some tips and resources for launching into creative writing.

- Keep a daily journal. It can focus on your research life or anything else. A popular tool for daily writing is Julia Cameron’s book The Artist’s Way (Putnam, 1992). Other books on the craft include Anne Lamott’s Bird By Bird (Anchor Books, 1980); Natalie Goldberg’s Writing Down the Bones (Shambhala, 2010); Stephen King’s On Writing (Hodder, 2012); and Elizabeth Gilbert’s Big Magic (Bloomsbury, 2015).
- Take a workshop or course. Many universities offer one-off and semester-long writing courses and programmes in specialties such as memoir-writing and poetry. Private and non-profit organizations also offer writing workshops, many led by writers. One is the Iceland Writers Retreat in Reykjavik, an annual series of workshops and panels over several days led by writers from around the world. Another option is the Freefall Writing Workshops held in Europe, Australia, Canada and the United States, where seasoned writers teach multi-day and online workshops for beginning and experienced writers.
- Form or join a writers’ group in your city. Some public libraries and book stores offer space and structure for such groups, and groups can be found on Meetup.com and other online connectors. S.M.
Evolutionary biologist Beth Shapiro is a published science non-fiction author.

interesting and allows non-scientists to relate
more closely to research and to palaeontology
itself.

If all of this sounds as though it takes
a lot of time, it does. “I work all the time,”
says Bistulfi. And the time sink isn’t the
only downside of moonlighting. Published
work, particularly if it is not connected
to one’s research, can raise eyebrows
among colleagues and superiors. And,
like many aspects of research itself, writ-
ing can be a lonely pursuit. But many
maintain that it becomes a compulsion.
“One you do something you love,” says
Bistulfi, “it doesn’t feel like work.”

Some researchers weave their work into
their writing. Clinical epidemiologist Anne
McTiernan co-wrote Breast Fitness (St. Mar-
tin’s Press, 2000), which explores the con-
nection between exercise and a lowered risk
of breast cancer. She then started Grandma
Doc, a blog that discusses health care
and her life as a researcher, physician and
grandmother.

McTiernan decided to build the blogposts
into a larger, more cohesive body of work.
Thus began her coming-of-age memoir
Starved: A Nutrition Doctor’s Journey From
Empty to Full (Central Recovery Press, 2016),
which delves deeply into her childhood
struggle with anorexia and obesity, and
her adult life as a medical practitioner and
researcher at the Fred Hutchinson Cancer
Research Center in Seattle, Washington.
McTiernan says that writing the book has
helped her to excavate long-buried emo-
tions that give her insight into her patients’
struggles and improve her research. “When
you’re writing a memoir, it puts you in touch
with feelings,” she says. “It has reminded me
how difficult it is to have weight issues. Now
I really feel for those patients in clinical trials
who have been trying to lose weight.”

Osmo Pekonen, a mathematician at the
University of Jyväskylä in Finland, finds
a connection between maths and poetry.
“The art of poetry is a matter of condensing
meaning into a single beautiful and striking
line, and a mathematical formula does the
same,” he says. Like poets or philosophers,
mathematicians explore the realm of the
spirit, whereas physicists, chemists and others
deal with matter, adds Pekonen, who writes
poems, reviews, essays, and books about
poetry and poets.

He has organized an annual international
colloquium called Bridges on the link
between maths and poetry, and is book
reviews editor for The Mathematical Intel-
ligencer, a magazine published by Springer
that explores the human side of maths. “Like
a new mathematical theory, creative poetry
can encompass an entire world in a con-
densed form,” he says. “Mathematical rigour
and poetical fantasy inform each other in my
thinking. Mathematics seems to represent
structure while poetry carries the spirit.”

Although creative writing poses its own
challenges, researchers who dive into it say
that it makes their life, including their work,
more rewarding and diverse. “My science-
writing and my research continue to
inform each other,” says Benford. “To me, it’s
absolutely essential to life balance that I have
writing on the side.”

Susan Moran is a freelance writer in Boulder,
Colorado.