

News in focus

of *TKTL1* into brain organoids – mini brain-like structures grown from human stem cells.

Brain size

Fossil records suggest that human and Neanderthal brains were roughly the same size, meaning that the neocortices of modern humans are either denser or take up a larger portion of the brain. Huttner and Pinson were surprised that such a small genetic change could affect neocortical development so drastically. “It was a coincidental mutation that had enormous consequences,” Huttner says.

Neuroscientist Alysson Muotri at the University of California, San Diego, is more sceptical. He points out that various cell lines behave differently when made into organoids, and he would like to see the ancestral version of

TKTL1 tested in more human cell lines. Furthermore, he says, the original Neanderthal genome was compared with that of a modern European – human populations in other parts of the world might share some genetic variants with Neanderthals.

Pinson says that the Neanderthal version of *TKTL1* is rare among humans today, but adds that it’s unknown whether the mutation causes any disease or cognitive differences. The only way to prove that it has a role in cognitive function, Huttner says, would be to genetically engineer mice or ferrets to have the human form of the gene and compare their behaviour with that of animals that express the ancestral version. Pinson is now planning to look further into the mechanisms through which *TKTL1* drives the birth of brain cells.

WHY ARE PEOPLE GRIEVING FOR A QUEEN THEY NEVER MET?

As millions mourn for Queen Elizabeth II, research helps to explain the nature of grief for a public figure.

By Katharine Sanderson

The death of Queen Elizabeth II at the age of 96 has prompted an outpouring of emotion – in the United Kingdom and around the globe. Her close family and confidants are grieving for the loss of someone they knew and loved, but what is everyone else feeling? Can feelings of loss for someone you’ve never met even be considered grief?

Most grief research has focused on the loss of parents, close friends or spouses, says Michael Cholbi, a philosopher and ethicist at the University of Edinburgh, UK.

One-sided relationships between a person and a well-known public figure, celebrity or member of royalty are called parasocial relationships. “I certainly think that parasocial relationships can give rise to grief. I don’t see why we should anticipate that grief would only arise, only make sense, within the context of reciprocal relationships,” says Cholbi.

Disrupted world

Some researchers attribute parasocial grief to a loss of possibility. “The experience of grief is a kind of disruption to the experience of the world overall. When it happens, there’s a kind of shattering of your assumptions,” says philosopher Louise Richardson, co-director of a project at the University of York, UK, called Grief:

A Study of Human Emotional Experience. She cites a theory called the assumptive world, which suggests that a person has strongly held and grounding assumptions about the world. “The kind of losses that we grieve over are the ones that disrupt that assumptive world, which can explain feelings of grief about the death of the Queen,” she says.

Cholbi says it makes sense that people will

mourn the loss of a public figure in whom they had somehow invested their own identities – by adopting the same perceived values, or because they admire a stance that the person took. “This is the loss of someone that has played a part in their own values and concerns. So it feels like not just kind of a loss of the person, but in a certain way, a small loss of an aspect of oneself.”

Research from 2012 suggests that a process called introjection helps people to cope with the death of a celebrity (S. K. Radford & P. H. Bloch *J. Consum. Cult.* **12**, 137–155; 2012). Introjection is about the qualities that we perceive someone we are in a relationship with has – even if we relate to them from a distance, explains Andy Langford, clinical director of the London-based bereavement charity Cruse. We eventually adopt those qualities ourselves, he says – and that helps when coping with bereavement. “For some people, it will be a case of saying, well actually, I’ve really admired that quality, and so I’ll continue to live in that, to stand for it,” says Langford. He says that grief for a public figure really is grief: “Those feelings are real, that grieving is real.”

Diminishing grief

But for someone distant, such as the Queen, Langford expects that grief will diminish sooner than for the loss of someone closer. The bond we form with someone relies on three variables: time, proximity and closeness, he says. “Those three facets will indicate to us the degree of which we mourn, and the reason why they’re important is because there are neurons in our brains that are designed to look for those three things.”

And it is “highly improbable” that prolonged grief disorder – a condition in which grief continues intensely and can last months or years – will affect those mourning the death of the Queen, says Katherine Shear, director of the Center for Prolonged Grief at Columbia University in New York City.

Despite these insights, testing theories around grief and finding quantitative answers remain challenging. “How can you test something when you’re not quite sure what it is?” says Richardson. “It’s not like there’s a kind of grief gland in the brain that you can see how active it is some certain conditions.” Grief might be a simple word, but it’s very complicated, adds Shear: “It’s not one emotion, it’s a whole group of emotions.”

What is clear, is that many people who are mourning for the Queen – whose funeral took place on 19 September – really are feeling grief. “We experience a loss as a part of ourselves, even for those who never met the Queen,” adds Mary-Frances O’Connor, a psychologist at the University of Arizona in Tucson. “We still lose a source of inspiration and encouragement, and a period of one’s own personal history and cultural history.”



Mourners at Buckingham Palace after the death of Queen Elizabeth II.