Video: What is ageing?

Transcript

When you're a kid, birthday parties are a big deal.

But, as we get older, they come to symbolize something not-so-fun...

Aging

Aging isn't just candles on a cake.

In fact, one of the biggest questions in aging research is...

what *is* aging?

Frankly, we don't really know.

And the answer is different depending on whether you're looking inside our cells, in our brains, or in other species.

Sure, wrinkles, grey hair, and arthritic joints signal aging on the surface.

But its underpinnings remain enigmatic — and controversial.

Still, researchers have found certain symptoms of aging deep inside the body.

Protective caps on the ends of chromosomes called telomeres, represented here by ribbon on a present, get shorter and shorter with age.

That leaves DNA more prone to wear and tear.

Patterns of chemical tags on DNA that guide cell activity also vary with age.

Levels of different substances in the blood even fluctuate as we get older.

Some scientists think that the aging process is preprogrammed into our DNA.

Others see aging as the build up of small mechanical failures in the body over time.

The brain's path to old age may mirror how it was built in the first place.

Your brain starts out as a blob of identical cells.

Eventually brain cells take on more specific jobs, link up to other cells, and form neural networks.

As you get older, these jobs and connections get more and more specialized.

And then, some researchers think, the reverse may happen.

Long-distance connections degrade.

Specialist cells revert back to their generalist ways.

Well-built brains may be more resistant to these changes.

But what about aging in other organisms?

Biologists often study aging by tracking how mortality rates — the odds that a plant or animal will die change as organisms get older.

That's called a mortality curve, and for humans, the end is pretty steep.

But, for some species of tiny pond animals called hydra, the curve is a actually straight line.

Their odds of dying don't change as they get older.

Some hydra may not age at all.

Desert tortoises, on the other hand, are more likely to die when they're young, but as they mature,

their odds more or less plateau.

So, what is aging?

It's the process of growing old, but that process varies from species to species and person to person.

Some people experience a gradual decline before they die. Others remain perfectly healthy and then quickly succumb to an illness.

Aging might still be a bit of a mystery, but there is one thing most researchers agree on:

The process could be slowed or even stopped.

While death is inevitable, aging doesn't have to be.