Humans and bananas, a few chromosomes apart!

by Mark Pavilons

We like to think we're one of a kind, unique creatures.

We are different, but we do share similarities with our counterparts, from all walks of life around the globe.

Not only do we share human traits, our internal makeup is almost identical to a host of other biological, living things on Earth.

I find that quite amazing, and there must be some cosmic reason for it all.

Humans and other creatures share similar DNA because all living organisms evolved from a common ancestor ??he Last Universal Common Ancestor (LUCA). This means that many genes that were essential for life in LUCA have been conserved throughout evolution and are present in a variety of species. The closer two species are on the evolutionary tree, the more similar their DNA will be.

Chimpanzees and bonobos share roughly 98.65% of our DNA. That's only a 1.4%?difference between commuters and those who throw their poo at one another. Okay, bad example!

This doesn't mean that we're related, but we do share a common ancestor who lived between 6 and 8 million years ago. Both of us evolved along different trajectories from this ancestor.

Roughly 20% to 60% of our genes can also be found in plants. We even share about 99% of our DNA with lettuce! Yes, lettuce. What?

Most of the genes that plants share with us turn sugars and proteins into energy. Cacti have mitochondria just like humans, and rely on them to make energy when it gets too hot or too dry for photosynthesis.

Plants and humans have genes that behave similarly even though they're not actually related to each other. Some plants have a protein called leghemoglobin, which acts the same way as our hemoglobin molecules do in binding oxygen.

We have more in common with most mushrooms and zebrafish than most veggies, gene-wise.

The big difference between us and cacti is that we don't ?flower.?

Our floral counterparts are also quite ingenious. Plants duplicate their entire set of DNA. We don't know why, but what we know is they have more chromosomes than we do, and thus they can create many more offshoot varieties.

A person usually has 23 pairs of chromosomes, for 46 in total. But the prickly pear cactus has 88 chromosomes in total. Instead of pairs, it has eight copies of each of 11 unique chromosomes.

Extra copies of such things can be redundant, if they're not being used for something well, cool.

Cacti, apparently, developed a new way to make sugars from sunlight and air by making them at night, when it's cooler. Most cacti will get half-way through photosynthesis throughout the day and finish the rest at night.

Sounds pretty neat to me. And efficient.

Imagine if we ?copied ourselves? and put those extra chromosomes to work. Maybe UV-resistant skins; the ability to breathe under water, or growing an extra set of arms!

As species diverged and evolved on this planet, the DNA changed, but the fundamental building blocks of life remain the same.

That's quite interesting, at least for an armchair science buff like me.

Our genes are more than a complex combination of cells and acids.

Genes are responsible for basic life processes, such as cellular respiration, DNA replication, and protein synthesis, which are essential for all living organisms.

In fact, they keep us alive.

And for some, an error, fault or damage to our DNA can lead to abnormalities, and even, in my case, to a susceptibility to cancer.

I?was told by my oncologist that prostate cancer is not a product of diet or lifestyle, but rather a breakdown in my genes.

I'm not sure who to blame this one on, LOL. Maybe some nasty chimp in my family tree!We are starting to fiddle with DNA and even manipulate it in unborn children. Not sure how far modern biology wants to take this before we're on the verge of God-like creation.

I'm totally on board with us removing life-altering illnesses, diseases and conditions that cut our lives short. And yes, while we're in there monkeying around with things, perhaps we can find a way to make us live longer.

But I won't hold my breath.

What I find almost unbelievable is that despite our perch atop the food chain, we are ?related? to almost every living thing on this planet. Why is that?

Yes, I?realize all life began when the earth cooled, and the conditions were perfect for life to emerge from the bubbling pool of ooze so many billions of years ago. Okay, that moment ? when it all happened ??ould have been wondrous to witness. The icky parts essential to life hung on for all these millennia.

The point is, while we are undeniably unique, we are also deeply connected to the rest of the animal kingdom through a shared evolutionary history. Understanding these connections not only enriches our knowledge of biology but also fosters a deeper appreciation for the interconnectedness of all living things.

We make fun of vegans and those people who wouldn't hurt a fly. If you look at some of the genetic info I've presented, maybe we'll think again about squishing that spider, or pulling out that dandelion.

It's all very interesting to think about, but evolution is a very slow process. Until dogs can talk and monkeys can give me the middle finger, I think I'll enjoy my place in the food chain.

But I will have more respect for the flora and fauna that grace this planet of ours.