

Evidence for small-scale and large-scale evolution

Dr Michael Jarvis

In scientific literature some scientists speak of micro-evolution as small changes within a species but not necessarily leading to formation of new species. Macro-evolution describes changes above the species level, resulting in formation of new species. However, some biologists lump all changes together and consider macro-evolution to be simply the result of micro-evolution proceeding over longer time scales.

Evolution within a species (micro-evolution?)

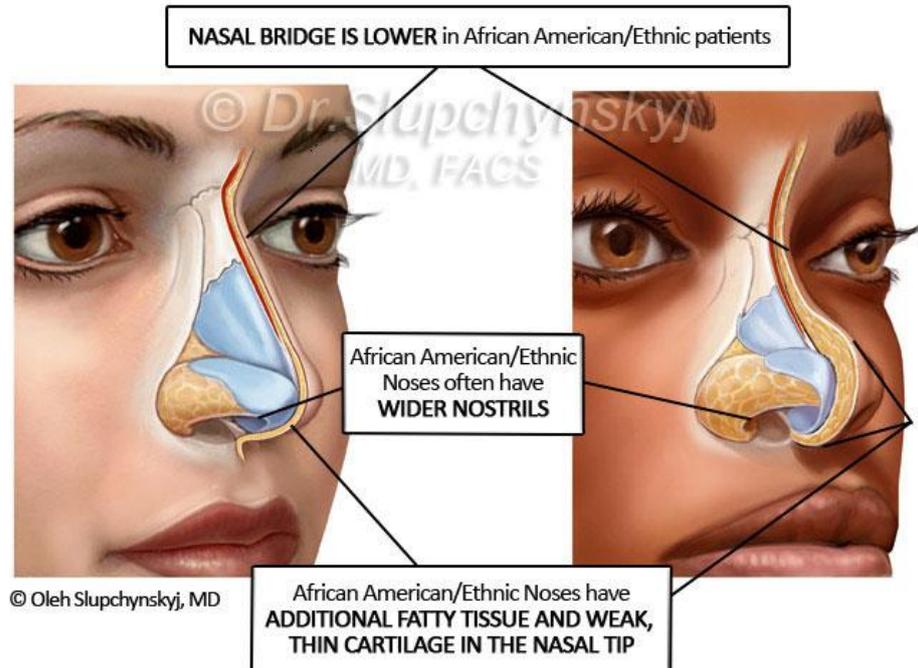
Humanity might be given as an example of micro-evolution. We see a great variety of racial characteristics but we are still all members of one species.



The extremes in racial characteristics can be shown by comparing Pygmies from the Congo forest with an average sized European

In addition to racial variations in skin colour, hair structure and body size, studies of anatomy and physiology have shown that races of mankind have become adapted to the environment in which they live, particularly in regard to climatic temperatures.

Three Main Differences Between Caucasian and African American/Ethnic Nasal Anatomy



For instance, a comparison of African Americans who ancestrally came from warm tropics in Africa and Caucasians of European descent, originating from colder climates, showed that nose anatomy has adapted. In hot African situations there is no need to warm the air entering the lungs. As a result noses are on average wider and shorter. However, populations originating from much colder climates with freezing winters have narrower and longer noses. This aids warming of the air before it reaches the lungs (Raymond 2011).

A Study of human adaptation to Arctic climates has shown that metabolism has also changed in order to increase survival chances in extreme cold. For instance, a study by Leppaluoto and Hassi (1991) on four groups of people who were subjected to all-night cold. These groups were Australian aborigines, Nomadic Lapps, Eskimos, and cold-exposed Norwegians.

Population group	Core body temperature	Skin temperature	Metabolism
Australian aborigines	decreased	decreased	decreased
Nomadic Lapps	decreased	increased	decreased
Eskimos	no change	increased	no change
Cold exposed Norwegians	no change	increased	increased

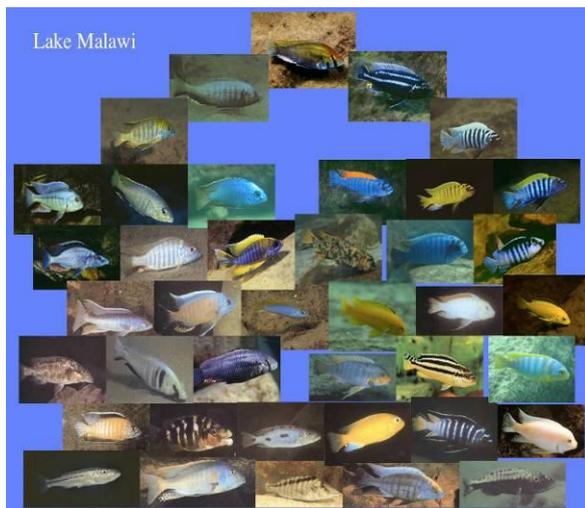
These changes in anatomy and physiology have, from a biological point of view, taken place through the environment selecting individuals who had slightly different genetic makeup that enabled them to survive, on average, better than some of their neighbours. As a result, over a number of generations more and more of the better adapted individuals survived and gave birth to children who were themselves more likely to carry the same genetic characteristics.

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From a scientific understanding it has taken many generations to reach the racial diversity we see today. However, all of these changes have taken place within the same species. Some biologists would classify this as micro-evolution.

Evolution leading to new species (macro-evolution?)

Other studies might fall somewhere between micro- and macro-evolution. For instance, studies of cichlid fishes in Africa's Lake Victoria (Taked 2013). There used to be over 500 species until exotic predator fish were introduced into the lake. Nevertheless there are still many species in rift valley lakes, including Lake Victoria



Genetic studies of these cichlid fishes showed that **there was less genetic variation between them than exists within human genetics.**

In other words, very slight changes in the arrangement of segments of the DNA genetic code have led to different fish colouration, body shape and behaviour.

As a result these closely related species do not interbreed, even though existing in the same lake systems. One biological definition of a species is a group that do not inter-breed, even when living with closely related species.

Evolution leading to increased genetic complexity (mega-evolution?)

There is, in my opinion, a need to create this new category, perhaps best called mega-evolution. **This could be described as changes leading to greater genetic complexity. For instance, changes from uni-cellular to multi-cellular, from invertebrate to vertebrate, from fish to amphibian, from amphibian to reptile or reptile to mammal or early mammals to the most complex, such as mankind.**

As a general rule more complex creatures have a greater amount of genetic material in each of their body cells. For instance we have over a 1000 times more DNA in each of our cells than an average single-celled organism.

Within this totality of genetic material there are sequences of the genetic DNA code that are known to control the production of specific proteins. We call these sections genes. Although there is a tendency for more genes in more complex organisms there are exceptions. However, **if we take the totality of genes plus the other DNA in cells of organisms we do find that greater complexity is combined with a greater amount of DNA in each cell of the organism.**

Initially biologists thought much of the DNA existing outside of the genes was non-functional – so called 'junk DNA'. However, we are rapidly discovering that most, if not all of this DNA actually does perform vital functions within living cells.

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The need for a separate category, such as 'mega-evolution', is also shown by the fossil record. We can find numerous fossils of creatures within each level of genetic complexity but we struggle to find convincing examples of intermediates between each level of genetic complexity.

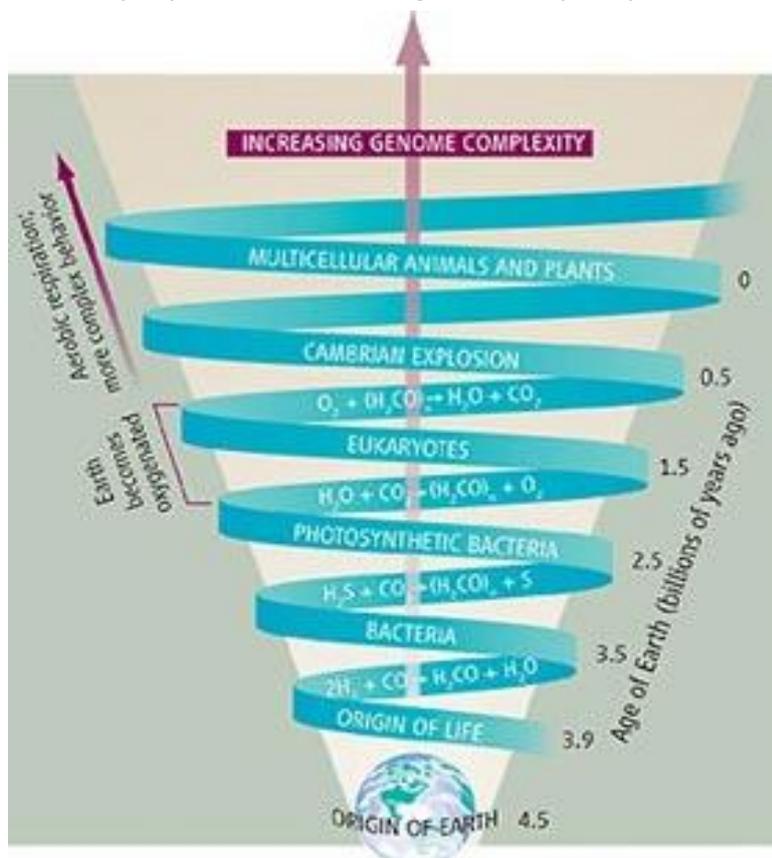
Yes we do have a very small number of fossils that might fit somewhere between two levels of genetic complexity. However, if evolution between these levels of complexity has been basically the same as the evolution within species or between closely related species, then we would expect to find vast numbers of intermediary fossils between levels of genetic complexity.

The reason for this expectation is that classical evolution theory has been telling us that evolution proceeds by small mutations within the DNA genetic code of animals, being acted upon by selective forces exerted from the environment in which those creatures exist. In this way, over very long time-scales the small random mutations that happen to be beneficial to survival of the creature, will lead to those mutations being retained in the population. The emphasis is on small mutations because larger ones are normally fatal.

We can see within the fossil record that there appear to have been great diversification and speciation within each level of genetic complexity. For instance, the first fishes were followed by a great diversity of other fish species. In like manner the first reptiles gave rise to many other species of reptiles. This pattern has been repeated after each increase in complexity appeared in the fossils.

However, if the same evolutionary processes have led to the 'genetic upgrades', namely dramatic increases in genetic complexity, then we would expect to find literally millions of intermediary stages recorded in the fossil record. Clearly these vast numbers of intermediates have not been found in the fossils.

The Theory of Evolution, as popularly presented until very recently, cannot explain the mega-evolution jumps from one level of genetic complexity to another.



Possible mechanism causing mega-evolution's 'genetic upgrades' are now the subject of much debate within the scientific community

The diagram gives a summarised sequence of mega-evolution steps and increasing genetic complexity. The totality of genetic complexity is often referred to as the 'Genome'.

More complex organisms have more genetic material (DNA) in each of their body cells than less complex organisms, even though the number of protein coding segments (genes) does not always follow this pattern.

Major new discoveries possibly relating to Mega-Evolution

These major discoveries are:

1. Discovery of so-called Orphan Genes in all creatures so far studied.
2. The impact of DNA outside of the Genes, affecting body form and function: called epigenetics.

Orphan genes

An article in New Scientist Journal reads: *When biologists began sequencing genomes, they discovered that **up to a third of genes in each species seemed to have no parents or family of any kind.** Nevertheless, some of these “orphan genes” are high achievers, and a few even seem to have played a part in the evolution of the human brain.*

But where do they come from? With no obvious ancestry, it was as if these genes had appeared from nowhere, but that couldn't be true. Everyone assumed that as we learned more, we would discover what had happened to their families. But we haven't –quite the opposite, in fact (Pilcher 2013)

Biologists are now developing theories to explain the origin of “orphan genes”. Clearly their existence seems to conflict with the previous assumption that all evolution progresses via a slow, small step by small step process. Orphan genes suggest sudden large changes without ancestry!

If we can in time discover how “orphan genes” suddenly appear this might give us a clue as to why the fossil record shows very sudden advances in complexity of life forms. However, it is unfortunate that the presentation of evolution theory to the public has not yet admitted to the enormity of this “orphan gene” discovery, nor how it impacts on traditional viewpoints, such as Richard Dawkins 1976 book ‘The selfish gene’.

Epigenetics

The term ‘Epigenetics’ refers to an array of complex molecular mechanisms within cells that act to modify or even totally inhibit the normal expression of genes. In other words, although the DNA code is responsible for initiating and guiding the creation of chemicals, leading to formation of specific proteins needed in living organisms, these genes can nevertheless be ‘switched off’. The switching off can have long-lasting effects that persist through cell division and sometimes through sexual reproduction – thus potentially affecting the next generation.

This relatively new study also has the potential of forcing us to revise our concepts of how evolution works within living creatures.

Theological implications of these discoveries

I have often stated my own position regarding the evolutionary processes seen in nature, such as the evolution of our universe over billions of years, the evolution of our earth through many slow geological processes, and the evolutionary processes discovered in life. I have attempted to demonstrate that, if our concept of God is big enough then he can be the one who not only initiated the universe, but is still intimately and continually aware of every process and event. Furthermore,

whenever he has seen the need to guide apparently random events in one specific direction, then he is able to influence the event, so as to guide evolution towards pre-determined outcomes.

On my webpage www.factandfaith.co.za I attempt to demonstrate why the Universe demands that the Creator has to be incredibly wise and powerful. This is summarised in the free download DVD extracts, such as 'The size and age of the universe', 'Quantum physics and the Timeless Dimension', and 'Creator'.

As a theist (someone who believes in a God who is in intimate and continual control of the universe) I have no problem with science progressively revealing how the universe works and how life has changed over millions of earth years. My theistic concept of God was greatly reinforced through real-life experiences outlined in my article 'Personal journey of discovery'. I experienced dramatic God inputs into my life and this convinced me that, if God could be aware of my personal situations and so by implication the personal situations of millions around the world, then I should not have a problem visualising Him having detailed and on-going inputs into details of evolution.

Young Earth Creationists have a problem

People who hold onto the belief that God made everything over six days, about 6000 years back, face major problems reconciling their belief with the discoveries of science.

Young Earth Creationists suggest that God created a limited number of so-called 'kinds' of creatures about 6000 years back and that these then diversified into the many species we see today. In other words they seem to suggest that evolution can be witnessed between closely related species but that larger changes can only be explained by specific creative acts by God.

This same group usually admit that speciation can take place; otherwise they encounter the problem of explaining their interpretation of the Bible account of a world-wide flood in the days of Noah.

The Bible chronology suggests such a flood took place about 2500 BC. Clearly the recorded dimensions of Noah's Ark could not by any stretch of imagination contain all the millions of species of life, together with food and fresh water for the recorded full year that they were in the Ark. I suggest you read my previous article 'Evidence AGAINST a world-wide flood'. Obtain a free download from my webpage www.factandfaith.co.za . Go to 'Free downloads' and then to 'updates'.

In order to explain why the world now contains literally millions of species that could not have survived a world-wide flood, the Young Earth Creationist theory suggests that after the flood the few 'kinds' diversified into all the species we see today. In other words they admit the existence of evolutionary processes and in addition admit that such processes must be amazingly rapid, since it is claimed that they have all taken place in only about 4000 years since the flood.

For those Christians, myself included, who accept that complex life has been on our planet for at least 600 million years, and that the Bible account of a great flood refers to a specific and limited area of the earth, the discussion of evolutionary processes is still vitally important. Firstly, we ask how these processes could result in life as we see it today. Secondly, we ask what role was performed by the Creator, right down the centuries of time.

My question to Christians who hold to the Young Earth Creation view and a world-wide flood is, since you admit rapid evolution since Noah's flood, why do you fight against evidence for other

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evolutionary processes stretched over long time-scales. Surely, in your understanding, God must have been intimately involved in evolution over the past 6000 years since the biblical date of Adam?

Surely he was intimately involved in the diversification that you suggest took place since Noah's flood? Since I am sure you will agree that God has been intimately involved in events since Noah's time, why do you feel the need to fight against evolutionary processes over millions of years?

My appeal to Young Earth Creationists is to greatly expand your concept of God. This has the potential of liberating you from the fear that God is being pushed out of his universe by discoveries of science. In my view, it is vital to reject any 'God of the gaps' theology. In other words to place God in everything we cannot at present understand scientifically. If we do cling to this 'God of the gaps' view then our God will become progressively smaller.

However, if our concept of God is great enough, then he is aware of every event and process and science is merely 'thinking his thoughts and actions after him'. He becomes a very 'hands-on God'.

I am sure my Young Earth Creationist friends will still raise other questions, such as the Bible creation account, the biblical meaning of 'original sin' and the 'atonement'. As a Theistic Evolutionist I have also looked in detail at these questions. They are all reconcilable with a Theistic Evolution world view. If you are motivated to see how I personally see these questions, I do cover them in free downloads from my webpage:

Go to 'Free Downloads', then to 'Updates'. This will open up topics such as:

Reconciling the Bible creation account with science.

The gospel of Jesus Christ in our ancient and evolving universe.

Evolution and the character of God.

An appeal to Christians

As a scientist who believes in a theistic God and who accepts all the foundational teachings of the Christian faith, I appeal to fellow believers to take these questions very seriously. From personal experience and from many emails sent to me by people entering my webpage, it is clear that any presentation of the Bible that insists on a Young Earth interpretation and a world-wide flood, creates an ENORMOUS 'stumbling block' in the way of the vast majority of our generation taking the Bible seriously.

If people raised in our scientific and technological generation cannot take the Bible seriously, due to Young Earth Creationist presentations, then they will normally not look further into the person and claims of Jesus Christ.

It is my hope and prayer that Christians can at least come to the place of admitting that there is more than one legitimate way of understanding the Bible account of creation. Furthermore, that Christians make it a decision to state publically that believing in the God who created over vast time-scales by manipulating and guiding the laws he initiated, does not make you an inferior Christian, nor does it make God any smaller. In fact I believe it makes him much greater!

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Dr Michael Jarvis

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PhD (1971) Zoology, from University of Cape Town

Director: Fact and Faith Publications

Webpage: www.FactandFaith.co.za

Email: mike@factandfaith.co.za

O Box, 292, Wellington, 7654, South Africa

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