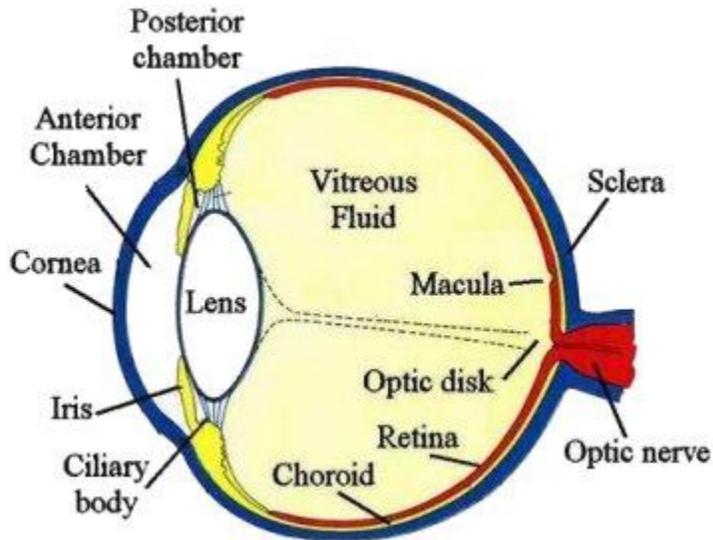


Human Eye: poorly designed ?

Dr Michael Jarvis



People, who accept that our universe was designed and brought into existence by God, often point to the thousands of examples of structures and chemical processes within life forms, that seem to demand the operation of a designing mind. However, there are some scientists who have an atheistic agenda, who try to find examples of poor design. They seem to believe that discovery of a poor design will present powerful evidence against intelligent design.

One example often mentioned as evidence of a complex design that could not be the result of blind chance is the human eye. It is therefore not surprising that great efforts have been made to show that, in spite of its complexity, it nevertheless could have been designed much better.

The well known Atheist Richard Dawkins was one of the scientists to raise this argument. He claims that the vertebrate eye is functionally sub-optimal because the retina photoreceptors are oriented away from incoming light. I quote from his book 'The blind watchmaker'. (1986).

Any engineer would naturally assume that the photocells would point towards the light, with their wires leading backwards towards the brain. He would laugh at any suggestion that the photocells might point away from the

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light, with their wires departing on the side nearest the light. Yet this is exactly what happens in all vertebrate retinas. Each photoreceptor is, in effect, wired in backwards, with its wire (nerve) sticking out on the side nearest the light. The wire has to travel over the surface of the retina, to a point where it dives through a hole in the retina (the so-called 'blind spot') to join the optic nerve. This means that the light, instead of being granted an unrestricted passage to the photoreceptors, has to pass through a forest of connective wires, presumably suffering at least some attenuation and distortion (actually probably not much but, it is the principle of the thing that would offend any tidy-minded engineer).

Others have followed in the same argument against Intelligent Design.

However, these claims of poor design have been challenged by research since the year 2000. For instance, a study by Berman (2000) has shown that a major reason for the retina reversal is that it allows the rods and cones (light receptive cells) of the retina to interact with the retinal pigment epithelium cells that provide nutrients to the retina, recycle photo pigments, provide an opaque layer to absorb excessive light, and perform other functions. This design is superior to other systems, because it allows close association with the pigmented epithelium required to maintain the photoreceptors. It is also critical in both the development and normal function of the retina.

This example of the eye, **has recently been further turned on its head** by research from Israel's internationally recognized Technion-Israel Institute of Technology in Haifa. Research by Amichai Labin and Erez Ribak has shown that the surface of the retina has so-called Muller cells.

The research showed that these Muller cells not only compensate for the light sensitive receptors being 'back to front'. **Their function actually results in vision being better than it would have been if the light sensitive cells had been the so-called 'right way round'.**

The research suggests that sending light via the Muller cells offers several advantages. A 2010 report on these findings (McAlpine 2010), notes as follows, *At least two types of light get inside the eye: light carrying image information, which comes directly through the pupil, and "noise" that has*

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already been reflected multiple times within the eye. The simulations showed that the Muller cells transmit a greater proportion of the former to the rods and cones below, while the latter tends to leak out. This suggests the cells act as light filters, keeping images clear.

The researchers also found that light that had leaked out of one Muller cell was unlikely to be taken up by a neighbour, because the surrounding nerve cells help disperse it. What's more, the intrinsic optical properties of Muller cells seemed to be tuned to visible light, leaking wavelengths outside and on the edges of the visible spectrum to a greater extent.

The cells also seem to help keep colours in focus. Just as light separates in a prism, the lenses in our eyes separate different colours, causing some frequencies to be out of focus at the retina. The simulations showed that Muller cells' wide tops allow them to "collect" any separated colours and refocus them onto the same cone cells, ensuring that all the colours from an image are in focus.

"It suggests that light-coupling by Muller cells is a crucial event that contributes to vision as we know it, says Kristian Franze, a neurophysicist at the University of Cambridge ...

In summary, the idea that our eyes are poorly designed has been given a 'punch in the eye'. Human wisdom suggested it was a mistake to have the light sensitive cells facing backwards in the retina of our eyes. However, it turns out that this arrangement plus the Muller cells, actually results in better sight than if the retina had been put together as suggested by Richard Dawkins and others.

Psalm 19 declares that the glory of God is proclaimed by the heavens. It is science that is greatly enlarging the 'voice of God' speaking to us through scientific revelations of the heavens, and revelations about the complexity of life. We are increasingly discovering complex chemical reactions taking place in each cell of our body. Thousands of complex reactions all taking place simultaneously and in harmony.

These discoveries seem to 'cry out' design. This does not have to mean that God made all this design instantly or in six creative days. His voice, speaking to us from science, shows that He probably used processes and long periods of time. However, as explained in my webpage www.factandfaith.co.za , if our concept of God is big enough then we can

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start to understand that he can be in total control of all processes and events in the Universe. Scientists, many of whom are Christians, can progressively piece together how certain processes take place, but their scientific tools cannot allow them to comment on a God who guides the details and processes with the power of his mind. Small inputs from the awesome mind of God can direct apparently random events towards pre-determined outcomes.

Surely we can echo the words of Psalm 139, verse 14: *I praise you because I am fearfully and wonderfully made; your works are wonderful, I know that full well.*

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