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The Incredible Design of the Human Eye

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We find evidence that God designed all of creation at every level of the universe, from the perfect distance between giant stars to the powerful intricacies of the miniscule motor of a virus. Each design reveals the marvelous wisdom of the Creator, yet none of these examples can compare to the incredible complexity of the image-bearers of God. It is easy to forget that each person is formed by the Designer and treat this familiar creation as unspectacular. However, our unfathomable God crafts each person before they are born, designing everything from the brain to the smallest ATP synthase machine (*The Holy Bible: English Standard Version Containing the Old and New Testaments,* Ps. 139.13-14). The more we learn about the amazing body God has gifted to us, the more we can appreciate how this body helps us enjoy life. Perhaps nothing is as incredible as the human eye God contrived that allows a person to take in the wondrous colors of the daily sunrise, the beautiful faces of family members and friends, and the very words on this page. The human eye is marvelous evidence that God designs everything to perfectly suit the needs of His different creations.

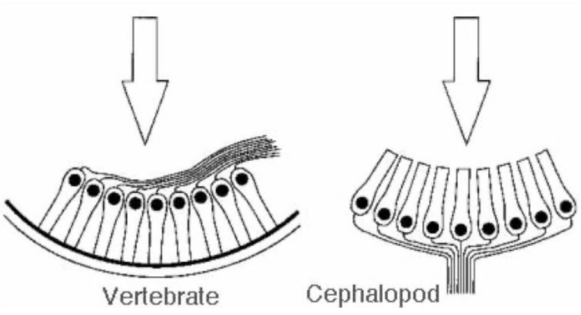
We are blessed with the gift of sight, which can hardly be considered ordinary. Scripture is clear that God created the eye as Proverbs states, “the hearing ear and the seeing eye, the Lord has made them both” (Prov. 20.12). When we survey this masterpiece of God, we are astounded by how every part of the eye works together to allow us to see. The clear vision we enjoy comes

from over 120 million rods and 7 million cones in each compact eye. Every component, from the eye muscles to the vitreous fluid, works in unity to create smooth movement of the eye, protect it from outside particles and internal toxins, and change the focal length to establish our sensation of sight. No man-made optical device can compare to the magnificence of God's engineering. According to Motion Designer Caleb Ward, the focal length, shutter speed and resolution of the human eye can scarcely be equaled by a theoretical 35 million dollar, four ton camera (Ward). God gave humans the best vision possible in a compact organ, allowing us to take in incredible amounts of information and process millions of different colors. Every aspect of the optical system plays a critical role in the quality of the images we perceive, and as we discover more about this marvelous organ that God gives to each individual, we can appreciate the extraordinary complexities of the eye and praise Him for how each part works together.

God's design is superior to any human construction, and even those who do not believe in God cannot help but respond in awe when studying the eye. Evolutionist Robert Jastrow, after studying the intricacies of the eye, concluded that "the eye appears to have been designed; no designer of telescopes could have done better" (Jastrow). Even as an agnostic, Jastrow did not deny the clear evidence that our complex eye is designed to provide us the vision that we need. Any study of the eye, even by evolutionists, requires acknowledgment of the presence of design in the eye. In the prestigious review of "The Optical Design of the Human Eye" in the Journal of Optometry, Professor Rafael Navarro of the Spanish National Research Council ends his study by claiming, "the optical system of the eye seems to combine smart design principles with outstanding flaws" (Navarro). Navarro wonders at the unexpected complexity of the human lens throughout the review, but his perspective of evolution forces him to move past the clear

evidence of design and focus on the flaws. Still, Navarro uses the term “design” because the incredible workings of the eye cannot be described in any other way. Even the most knowledgeable scientists have a finite level of understanding, whereas God, who in His infinite wisdom created the eye from nothing, has a purpose in designing every part of the eye. The right response to a study of the eye is to gratefully worship an infinitely wise Creator who gives man the ability to appreciate the rest of creation.

However, not everyone responds to the incredible complexity of the eye by giving God glory. Evolutionists attempt to explain the wonders of the human eye from a human perspective. Like Navarro, they claim that the human eye is flawed and use its supposed imperfections as evidence against an intelligent Designer. Evolutionists attack the way vertebral eyes are structured, attempting to debunk the notion that the eye is proof of intelligent design. In vertebrates, the light-sensing cells face the back of the retina away from the incoming light, which initially seems counterintuitive. In contrast, the photoreceptors in cephalopods point towards the light. Evolutionists choose to describe the vertebrate eye as backwards and inside-out, deciding that the cephalopod design is right and the vertebrate design is wrong. The figure below shows the light source, depicted by the arrows, and the orientation of the respective photoreceptors. Evolutionists claim that an intelligent designer such as God would never create the inverted vertebrate eye with this “mistake”.



Dr. Nathan Lents, Professor of Molecular Biology at John Jay College, asserts that because of the inverted human eye, “photons of light must travel around the bulk of the photoreceptor cell [and]

through a thin layer of tissue and blood supply before reaching the photoreceptors" (Lents). Lents then concludes, "all available evidence supports the notion that the inverted vertebrate retina is inferior to the more logical design of the cephalopods" (Lents). The capillaries and ganglion cells that are in front of the human retina supposedly distort the perceived image because light is scattered as it navigates through the human neural connections and blood vessels. Brown University biology professor Kenneth Miller believes that "visual quality is degraded" because the nerve cells and blood vessels are positioned "directly in front of the light-sensitive layer" (Miller). The images that we perceive are inferior to what we would see if our eyes were verted, according to evolutionists. Evergreen State College details how cephalopods can see polarized light and have several focal points while having no blind spot ("Cephalopods"). Because these characteristics are only present in the verted eye, a quick comparison of both eye designs may move some to conclude that the human eye is not proof of an intelligent designer. However, a deeper look at the human eye shows how God provides for all of His creation in the best way imaginable.

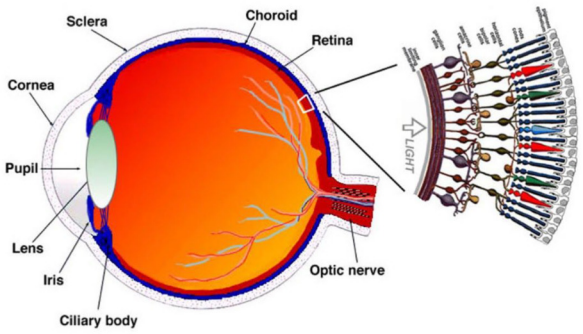
A creationist can study the different designs present in creation and know God made each eye perfectly suited to the creature. The comparison of the cephalopod and vertebrate eye is a perfect example of God's wisdom. Creationist Jerry Bergman, an expert in biological fields, explains that "although cephalopods can perceive shape, light intensity, and texture, they lack many of the advantages of an inverted retina, such as the ability to perceive small details" (Bergman). While cephalopod eyes are able to distinguish polarized light, they are unable to see in color. Vision as we know it would be drastically altered if we were to have verted eyes. God designed our eyes in an inverted manner to allow us to perceive color and details, spurring us on

to make incredible achievements in technology and research. Cephalopod eyes are perfectly designed to track movement of prey and predators in their dark, underwater world. To address the notion that cephalopod eyes provide superior optical quality, a German study on the applications of ophthalmological developments revealed that cephalopod eyes are much slower at transmitting visual information to the brain and have fuzzier vision, whereas in vertebrates the nerves that are next to the photoreceptors in the retina can rapidly send visual images to the brain (Zrenner). The supposedly bad design of the vertebrate eye, in which the nerves degrade the visual quality, actually allows humans to enjoy the sensation of sight in a clear, quick manner. This is not to say that cephalopod eyes are inferior to vertebrate eyes. Cephalopods are extremely dependent on vision for finding and avoiding prey, as well as communication, whereas humans are not designed to rely on vision for survival. In his article in Evolution News, Creationist Walter Myers III notes that each type of eye "has a specific plan suited to the requirements of their respective organisms" (Myers). The verted eye allows cephalopods to collect the small amount of light present underwater in an optimal manner, while our inverted eye makes it possible for us to take in the vividness and intricacies of our wonderful world God has placed us in. These are amazing examples of how God perfectly designs each creature for their setting.

Beyond the incredible transmission of clear visual signals to the brain, the human eye meets every other challenge of converting light into information the brain can use. The inverted design is the best design that meets every demand of the human eye. Although light is minimally scattered as it enters the human eye, light has a clear path to an area in the retina called the macula because nerves are displaced to the side. Dr. Bergman explains, "vision is the sharpest at the macula, which is critical in providing the brain with information needed to construct an

image...the information obtained by the peripheral areas of the retina helps to provide both spatial and contextual information" (Bergman). Light is unobstructed on its way to the macula, allowing the brain to perceive maximum detail without being overloaded with too many details. The rest of the retina constantly surveys a large visual area to determine where to focus the macula, but does not distract the brain's focus. If the human retina was verted, the brain would not function due to too much light intensity. While scattered light is an issue that the human eye encounters, God has equipped the inverted eye with the right level of sensitivity to manage scattered light and allow each person to appreciate their physical surroundings.

Most importantly, the human eye can only stay healthy because of the inverted design. In a 2018 Evolution News article, Creationist Jonathan Wells reveals how the orientation of the photoreceptors and retina allows for the best quality of vision. In the image to the right, the outermost layer of the enlarged retina is the retinal pigment epithelium. The retinal pigment epithelium stores vitamin A for photoreceptor synthesis, removes waste from the photoreceptor metabolism, and absorbs excess light to improve visual acuity. This layer of cells improves optical quality by absorbing scattered light and engulfing waste. All these aspects, Wells shows, cannot be present in the supposedly correct verted orientation. Furthermore, the photoreceptors in humans require the most nutrients of any body tissue, and a network of capillaries behind the retina deliver the necessary oxygen and nutrients to keep the eye healthy. The capillary network that is so important to the human eye would block the majority of incoming light if the human eye was positioned like the cephalopod



eye (Wells). Light can cause permanent damage to the human eye, but the retina can counter the toxins and heat generated by the incoming light and the metabolic process. In order to preserve light-detecting tissue and remove toxins and heat, photoreceptors must be inverted. In this orientation, photoreceptors can contact the opaque retinal pigment epithelium and avoid overheating. If the eye were to be verted, the dense retinal pigment epithelium would block almost all incoming light and prevent humans from being able to see anything. The human eye is remarkable in how well it addresses each factor while maintaining high sensitivity to light and high visual quality. Because God created the eye, He knows exactly why humans should have their light-sensitive cells facing away from the light with a bundle of capillaries scattering the incoming light. The human eye is structured perfectly to fit the demands of a human. Fallible scientists cannot imagine how the human eye structure could be beneficial, but as science advances, God's incredible wisdom is proven over and over.

A careful study of the human eye shows that the inverted design is an amazing solution to the conditions humans face that allows us to enjoy sight as God designed. We cannot come close to designing anything that meets the specific needs of a human, such as a steady flow of nutrients and a quick transfer of visual information. Our finite minds cannot always understand why God creates things in a specific manner, but an objective study of creation and a careful study of Scripture will reveal that seemingly "backwards, inefficient" designs are intentionally created by God to provide humans with the best vision possible. The human eye is simply one design in a world filled with incredible evidence of God's wisdom, and as we study the eye further, we will be moved even more to worship God for allowing us to see and enjoy a marvelous world!

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