



MG38396 | HUMAN EYE WITH PATHOLOGY (CATARACT)



This oversized and sectioned eye model offers a detailed representation of internal ocular anatomy. It stands out by including five interchangeable lenses that illustrate various types of cataract conditions, such as subcapsular, capsular, mature, cortical, and nuclear, in addition to having a removable lens (crystalline lens) and cornea for in-depth study.

Applications:

Ideal for studying and understanding the internal anatomy of the eye and cataract pathologies. It is an exceptional tool for encouraging learning and support in medicine, ophthalmology, nursing, and other healthcare courses, allowing for comparative analysis of anatomical structures and improvement of knowledge in ocular pathophysiology.

Technical Differentiators:

- * Oversized model for clear and detailed visualization.
- * Precise cut that reveals the complex internal anatomy of the eye.



- * Inclusion of five interchangeable lenses that demonstrate different stages and types of cataracts (subcapsular, capsular, mature, cortical, and nuclear).
- * Removable components (lens/crystalline lens and cornea) for interactive study and exploration of internal structures.

3D Technology and Augmented Reality:

Our anatomical models offer an innovative visual complement through informative cards that activate 3D models viewable in augmented reality (AR). This exclusive interactive platform stimulates learning, allowing for comparative analysis of anatomical structures and offering opportunities for continued education in anatomy, physiology, and pathophysiology.

Technical Specifications:

Main Structures:

Structures of the Ocular Model (Cutaway View): The cross-sectional model allows for an in-depth visualization of the various layers and internal components of the eye, facilitating the understanding of spatial relationships between the sclera, choroid, retina, vitreous humor, and other structures essential for vision.

Sclera: It is the outermost and most resistant layer of the eyeball, white and opaque, responsible for protecting the internal structures of the eye and maintaining its shape. It acts as an insertion point for the extraocular muscles that control eye movement.

Choroid: Located between the sclera and the retina, the choroid is a highly vascularized and pigmented layer. Its main function is to nourish the outer layers of the retina and absorb excess light, preventing internal reflections that could distort the visual image.

Retina: The retina is the innermost and light-sensitive layer of the eye, containing photoreceptors (rods and cones) that convert light into electrical signals. These signals are then processed and transmitted to the brain via the optic nerve, forming the basis of visual perception.

Retinal Blood Vessels: A complex network of arteries and veins that traverse the surface of the retina, providing the essential blood supply for the nutrition and functioning of photoreceptor and neuronal cells. The integrity of these vessels is crucial for visual health.

Optic Nerve: Composed of millions of nerve fibers that emerge from the retina, the optic nerve is responsible for transmitting visual impulses from the eye to the brain. It is a vital component of the visual system, connecting the eye to the visual cortex for image interpretation.

Vitreous Humor: A gelatinous and transparent substance that fills most of the internal



space of the eyeball, between the lens and the retina. Its main function is to maintain the spherical shape of the eye, support the retina, and allow light to pass through to the photoreceptors.

Crystalline Lens: A biconvex and transparent lens located behind the iris and pupil. Its main function is to focus light on the retina, adjusting its curvature to allow for clear vision of objects at different distances, a process known as accommodation.

Iris: The colored part of the eye, a muscular diaphragm that controls the size of the pupil. Through the contraction and relaxation of its muscles, the iris regulates the amount of light that enters the eye, protecting the retina from excessive brightness and optimizing vision in different lighting conditions.

Pupil: The central opening in the center of the iris, which appears as a black circle. The pupil is the hole through which light enters the eye to reach the retina. Its size is controlled by the iris, dilating in dark environments and contracting in bright environments.

Cornea: The transparent and protective layer that covers the front part of the eye (iris, pupil, and anterior chamber). It is the first and most important lens of the eye's optical system, responsible for most of the refraction of incoming light, helping to focus images on the retina.

Ciliary Body/Ciliary Muscle: A structure located behind the iris, which produces the aqueous humor and contains the ciliary muscle. The ciliary muscle is crucial for visual accommodation, as its contraction and relaxation change the shape of the lens, adjusting the focus for near or far vision.

Interchangeable Lenses (Showing Types of Cataracts): The model includes removable lenses that simulate different manifestations of cataracts, an ocular condition characterized by opacification of the crystalline lens. This allows students and professionals to visually compare and understand the pathological variations of the disease.

Subcapsular Cataract Lens: This type of cataract forms on the back or front of the lens, just below the capsule that surrounds it. It usually affects near vision and may be associated with diabetes or prolonged steroid use.

Capsular Cataract Lens: Refers to opacification that occurs directly on the lens capsule, either on the anterior or posterior part. Although less common as an isolated type, it may be present in conjunction with other forms of cataracts.

Mature Cataract Lens: Represents an advanced stage of lens opacification, where the cataract is dense and covers most of the lens. Results in significant vision loss, making the lens opaque and hindering the passage of light.



Cortical Cataract Lens: Characterized by opacities that begin at the outer edge of the lens (cortex) and progress towards the center, resembling rays or wedges. It can cause blurred vision and problems with glare.

Nuclear Cataract Lens: This type of cataract develops in the center of the lens (nucleus), causing gradual hardening and yellowing. It often leads to progressive myopia and may temporarily improve near vision before worsening overall vision.

Smart Tags:

Designed to provide comprehensive training in the healthcare field, with interactive simulations covering Retina exams. This solution assists in the development of diagnostic skills in different clinical scenarios, allowing professionals and students to explore and enhance their skills with greater safety and accuracy.

Retinal exams: Simulate 39 retinal conditions, from normal and diabetic retinopathy (various stages) to rare diseases like retinitis pigmentosa and macular degeneration.

- Normal
- Tessellated Fundus
- Large Optic Disc Cupping
- DR1 (Diabetic Retinopathy - Stage 1)
- DR2 (Diabetic Retinopathy - Stage 2)
- DR3 (Diabetic Retinopathy - Stage 3)
- Branch Retinal Vein Occlusion (BRVO)
- Central Retinal Vein Occlusion (CRVO)
- Retinal Artery Occlusion (RAO)
- Rhegmatogenous Retinal Detachment
- Central Serous Chorioretinopathy (CSCR)
- Vogt-Koyanagi-Harada Disease (VKH)
- Maculopathy
- Epiretinal Membrane (ERM)
- Macular Hole (MH)
- Pathological Myopia
- Possible Glaucoma
- Optic Atrophy
- Severe Hypertensive Retinopathy
- Optic Disc Swelling and Elevation
- Displaced Optic Disc
- Congenital Optic Disc Anomaly
- Retinitis Pigmentosa
- Bietti's Crystalline Dystrophy
- Peripheral Retinal Degeneration and Tear
- Myelinated Nerve Fibers
- Particles in Vitreous



- Fundus Neoplasia
- Massive Hard Exudates
- Yellowish-White Spots (Flecks)
- Cotton Wool Spots
- Vessel Tortuosity
- Chorioretinal Atrophy - Coloboma
- Preretinal Hemorrhage
- Fibrosis
- Laser Marks
- Silicone Oil in Eye
- Blurred Fundus Without PDR (Proliferative Diabetic Retinopathy)
- Blurred Fundus With Suspected PDR (Proliferative Diabetic Retinopathy)

Virtual Patient Monitor: Provides an immersive and realistic training environment for healthcare students. It allows instructors to customize parameters for various vital signs, empowering students to interpret signals, develop critical thinking, and enhance their clinical reasoning skills through realistic scenarios.

Customizable Vital Signs

- Blood Pressure
- SpO2
- Heart Rate

ECG Interpretation: Train on 18 diverse ECG scenarios, including: Atrial Fibrillation, Ventricular Tachycardia and Heart Blocks. The monitor also simulates synchronized pulses with ECG for truly realistic cardiology training.

ECG Patterns

- Sinus Rhythm
- Atrial Extrasystole
- Atrial Flutter
- Atrial Fibrillation
- Paroxysmal Supraventricular Tachycardia (PSVT)
- Ventricular Extrasystole
- Ventricular Tachycardia (VT)
- Ventricular Fibrillation (VF)
- First-Degree Atrioventricular Block (AVB)
- Second-Degree Atrioventricular Block
- Third-Degree Atrioventricular Block (Complete Block)
- Long QT Syndrome
- ST Segment Elevation
- ST Segment Depression
- T Wave Inversion
- Left Ventricular Hypertrophy (LVH)



- Right Ventricular Hypertrophy (RVH)
- Wolff-Parkinson-White Syndrome (WPW)

Breathing Patterns

- Normal
- Dyspnea
- Apnea
- Cheyne-Stokes
- Biot
- Kussmaul

About Anatomical Models:

They are developed with resin replication technology, addressing the scarcity of natural anatomical pieces for teaching and research. They present all the essential morphological characteristics with excellent cost-benefit, resistance, manual painting, and numbering for precise identification of structures.

List of all visible structures:

- Eye Model Structures (Cutout View):
 - Sclera
 - Choroid
 - Retina
 - Retinal Blood Vessels
 - Optic Nerve
 - Vitreous Humor
 - Lens
 - Iris
 - Pupil
 - Cornea
 - Ciliary Body/Muscle
- Interchangeable Lenses (Showing Cataract Types):
 - Subcapsular Cataract Lens
 - Capsular Cataract Lens
 - Mature Cataract Lens
 - Cortical Cataract Lens
 - Nuclear Cataract Lens