1 The **role** of the **immune system** is to protect our body from any foreign matters that might cause any damage or homeostasis imbalance. ... When an organism is threatened by microorganisms, viruses, or cancer cells,**COVID-19** the **immune system** acts to provide protection.Vasculature has many important functions including **regulation** of vascular tone, molecular exchange between blood and tissue compartments, hemostasis and signaling for the immune **regulation** and inflammation.The **endothelium** is a thin membrane that lines the inside of the heart and blood vessels. **Endothelial** cells release substances that control **vascular** relaxation and contraction as well as enzymes that control blood clotting, immune **function** and platelet (a colorless substance in the blood) adhesion.

2 The ****adductor canal**** (Hunter’s canal, subsartorial canal) is a narrow conical tunnel located in the thigh.

It is approximately 15cm long, extending from the apex of the femoral triangle to the adductor hiatus of the adductor magnus. The canal serves as a ****passageway**** from structures moving between the anterior thigh and posterior leg.

It transmits the ****femoral artery****, femoral vein (posterior to the artery), nerve to the vastus medialis and the saphenous nerve – the largest cutaneous branch of the femoral nerve. As the femoral artery and vein exit the canal, they are called the ****popliteal artery**** and ****vein**** respectively.

3 EXTRAOCULAR MUSCLES: There are seven **extraocular muscles** - the levator palpebrae superioris, superior rectus, inferior rectus, medial rectus, lateral rectus, inferior oblique and superior oblique. Functionally, they can be divided into two groups: Responsible for **eye** movement - Recti and oblique **muscles, **Responsible for superior eyelid movement****– Levator palpebrae superioris.

Levator palpebrae superioris: ****Attachments:****Originates from the lesser wing of the sphenoid bone, immediately above the optic foramen. It attaches to the superior tarsal plate of the upper eyelid (a thick plate of connective tissue). ****Actions:****Elevates the upper eyelid. ****Innervation:**** The levator palpebrae superioris is innervated by the oculomotor nerve(CN III).

****Superior Rectus: Attachments****: Originates from the superior part of the common tendinous ring, and attaches to the superior and anterior aspect of the sclera. ****Actions****: Main movement is elevation. Also contributes to adduction and medial rotation of the eyeball. ****Innervation****: Oculomotor nerve(CN III).

****Inferior Rectus: Attachments****: Originates from the inferior part of the common tendinous ring, and attaches to the inferior and anterior aspect of the sclera. ****Actions****: Main movement is depression. Also contributes to adduction and lateral rotation of the eyeball. ****Innervation****: Oculomotor nerve (CN III).

****Medial Rectus: Attachments****: Originates from the medial part of the common tendinous ring, and attaches to the anteromedial aspect of the sclera. ****Actions****: Adducts the eyeball. ****Innervation****: Oculomotor nerve (CN III).

****Lateral Rectus: Attachments****: Originates from the lateral part of the common tendinous ring, and attaches to the anterolateral aspect of the sclera. ****Actions****: Abducts the eyeball. ****Innervation****:Abducens nerve (CN VI).

****Superior Oblique: Attachments****: Originates from the body of the sphenoid bone. Its tendon passes through a trochlear, and then attaches to the sclera of the eye, posterior to the superior rectus. ****Actions****: Depresses, abducts and medially rotates the eyeball. ****Innervation****: Trochlear nerve (CN IV).

****Inferior Oblique: Attachments****: Originates from the anterior aspect of the orbital floor. Attaches to the sclera of the eye, posterior to the lateral rectus. ****Actions****: Elevates, abducts and laterally rotates the eyeball. ****Innervation****:Oculomotor nerve (CN III).

INTRAOCULAR MUSCLES: The intraocular muscles include the cilliary muscle, the sphincter pupillae, and the dilator pupillae. The ciliary muscle is a **smooth muscle** ring that controls accommodation by altering the shape of the lens, as well as controlling the flow of aqueous humor into Schlemm's canal. The ciliary muscle is attached to the zonular fibers which suspend the lens.Upon contraction of the ciliary muscle, the tension on the lens is lessened which causes it to adopt a more spherical shape to focus on near objects. Relaxation of the ciliary muscle has the opposite effect, optimising distant focus.

The sphincter pupillae and dilator pupillae are also composed of smooth muscle. The sphincter pupillae encircles the pupil and is responsible for the constriction of its diameter, while the dilator muscle is arranged radially and increases the pupillary diameter.

NERVE SUPPLY: The short ciliary nerves originate from the ciliary ganglion and carry parasympathetic and sympathetic fibers to the iris and ciliary body.The long ciliary nerves branch off of the nasociliary nerve and carry postsynaptic sympathetic fibers to the dilator pupillae and afferent fibers from the cornea and iris. The sphincter pupillae is parasympathetically-stimulated while the dilator pupillae is sympathetically-stimulated.