

HISTOLOGICAL STUDY OF ARTERIES & VEINS

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Layer / Type	General Scheme of Blood Vessels	Large Elastic Arteries	Medium Muscular Arteries	Small Arteties (Arterioles)
Name Lumen & Wall Example		Elastic / Conducting Arteries Wide Lumen + Thick Wall The Aorta	Distributing Arteries More smooth ms & Less Elastic fibers in T. Media Axillary Artery, Radial & Ulnar Arteries	Arterioles Gradual decrease, very small -----
Tunica Intima	Endothelium: Simple Squamous Epithelium on Basal Lamina. Function: Smooth surface for blood flow + Thin layer for gas exchange. Subendothelium: Loose areolar CT to support endothelium IEL: Condensed elastic fibers forming fenestrated membrane allowing diffusion of nutrients to vessel wall & Preventing occlusion of arteries.	Endothelium: The same Subendothelium: THICK Loose CT Rich in elastic fibers & Longitudinal Collagen Fibers. IEL: Non-clear since its similar to media.	Endothelium: The same Subendothelium: Rich in Elastic & Collagen fibers. IEL: Prominent, distinguishes muscular from elastic.	Endothelium: Rest on thin Basement Membrane Subendothelium: Very thin IEL: Very thin, gradually disappear
Tunica Media	Smooth MS: Circularly arranged, regulates blood flow + Make ECM Elastic Fibers: Variable Reticular Fibers Ground Substance: Proteoglycans EEL: Same as IEL	Mostly Elastic Fibers: 40 - 70 Layers Circularly arranged, Fenestrated to allow diffusion of nutrients Smooth MS: Some circularly arranged fibers. Collagen, Ground substance: Some present EEL: Non-clear & Non Prominent	Almost entirely Circular Smooth MS Fibers Elastic Fibers: In between Collagen, Ground substance: Present EEL: Recognizable in many.	Smooth Muscles: One or two layers.
Tunica Adventatia	Collagen Fibers: Longitudinal, prevent overdistention. Elastic Fibers: Few, circularly arranged. Fibroblasts in between fibers Nervi Vasorum: Autonomic nerves controlling smooth muscles. Vasa Vasorum: BVs in adventatia of large vessels, especially veins.	Thin Loose CT Layer formed of: Collagen: Longitudinal with fibroblasts between. Elastic Fibers: Circularly arranged Vasa Vasorum & Nervi Vasorum: Present	Thin Loose CT formed of: Collagen: Longitudinally Arranged Elastic Fibers: Few Vasa Vasorum: In large muscular arteries.	Not well defined CT Sheath. Very Thin
Extra Info	IEL Only present in Arteries and not veins - Arteries have thick Tunica Media & Thin T. Intima - Veins have thicker Tunica Adevantatia & Thin T. Media - Damage of Endothelium → Thrombus Formation	- Carry blood from the heart to rest of the body. - Have increased elastic fibers everywhere. Yellowish in fresh sections.	- They deliver blood to organs. Large ones Have Vasa Vasorum - Have increased Smooth MS in T. Media Commonest Type of arteries in body.	Met-arterioles: Terminal portions of arterioles that drain into capillaries Precapillary Sphincter: Thickening of smooth ms. Controls blood flow to capillaries
Layer / Type	Large Veins (Inferior Vena Cava)		Medium Veins	Small Veins (Venules)
Lumen & Wall Example	Thick Wall & Wide Lumen Like IVC & SVC		Thin wall & Wide lumen that collapses after death Like Large Saphenous Vein	Smallest type
Tunica Intima	Endothelium: The same as scheme Subendothelial CT: Has some Smooth Muscle IEL: Non-clear		Thin unfolded layer Elastic Fibers: Poor NO IEL	Endothelium: Rest on thin basal lamina Subendothelial CT: Thin NO IEL
Tunica Media	Relatively Thin Mostly Circularly arranged Smooth Muscle		Thin Layer Mostly Smooth Muscle & Few Elastic Fibers NO EEL	Only Pericytes & Reticular Fibers In Post-capillary venules No Smooth Ms: Gradually appear as diameter increases. NO EEL
Tunica Adventatia	LONGITUDINAL SMOOTH MUSCLE FIBERS That fascilitate elongation and shortening of vena cava		Thick	Relatively Thick
Extra Info	Valves: Semilunar folds of T. Intima of medium & some large veins. Present particularly in Lower Limb Veins to prevent retrograde flow of blood due to gravity. Subendothelial CT of valves rich in Elastic Fibers			

