

Cardiovascular Biology and Tissue Engineering Laboratory



Edward Via College of
Osteopathic Medicine

CAROLINAS

PI: **Zoltan Hajdu, MD**

Associate Professor for Anatomical Sciences
VCOM, Carolinas Campus

Alumni:

Ryan Shephard, DO
Andrea Rivero, DO
Daniel Gonzalez, DO
Artem Boyev, DO
Briggs Westby, DO
Emily Medhus, DO
Zachary Kline, DO
Michael Pavy, DO
Hannah Simpson, DO
Eshaan Zaveri, DO
Hunter Peden, DO
Ashley Harvey, OMS IV
Haley Cook, OMS IV

Students:

Alexander Holland, OMS-III
Robyn Sawyers, OMS-III
Gabrielle Aluisio, OMS-II
Matthew Fitzpatrick, OMS-II
Tyler Aluisio, OMS-II

Main Applied technics:

- Histology and Immunocyto- and Immunohistology
- Microscopy (Light and Laser Confocal)
- Macro-, Microdissection and Surgery

Research Fair, VCOM
December 4, 2023

Little History...



➤ **Anatomical variation of the common carotid artery origins**

➤ **Intimal thickening formed by hematopoietic-derived cells**

➤ **Causes intimal thickening**

Project II: Coronary Arteries and Bypasses

Running Hypotheses:

1. The coronary branching pattern predisposes for intimal thickening
2. The blood vessels used for bypass surgeries will clog up due to intimal thickening formed by hematopoietic-derived cells

Methods:

- Pictures and sample collection from the Anatomy Lab (Block 4)
- 3D reconstruction of the coronary tree, flow simulation, calculation of the shear stress
- Histology/immunohistochemistry of the coronary sections
- Imaging (light- and laser confocal microscopy) of the coronary sections

Opening for Students:

- 2-3
- Starting by the end of Block 3 – Block 4

Project I: Pulmonary Myocardium

Left atrial myocardium outgrowths onto the pulmonary veins – cause of over 90% of supraventricular arrhythmias



Running Hypothesis:

- The presence of fast-conductive/low molecular weight gap junctions are responsible for the pulmonary myocardium overtaking the sinus node as the lead impulse generator

Methods:

- Dissections of the pulmonary vein trees from the lungs (Block 4)
- Histological analysis of the samples
- Imaging (light- and laser confocal microscopy) of the pulmonary vein sections
- Western Blots of the pulmonary vein lysates

Opening for Students:

- 2-3 —————> starting by the end of Block 3 – Block 4