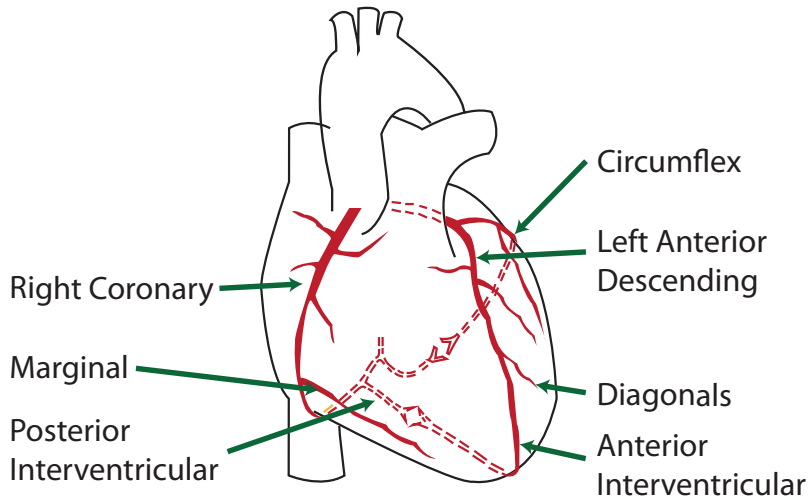


Second 2011
VIVA 1

Describe the anatomy of the coronary circulation.

Subsequent questions explored knowledge of factors that affect coronary artery blood flow (including diagrams), and physiology of beta-receptors.

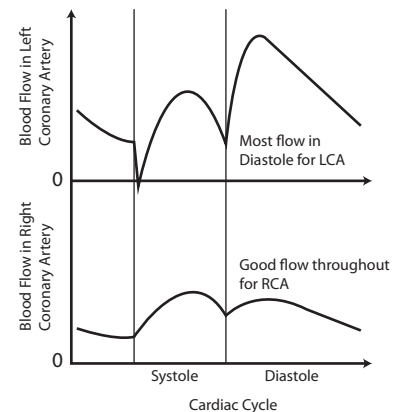
“Please draw the adult coronary blood circulation”



Venous system
Drains via coronary sinus
Into the right atria
30% saturation due to high extraction ratio of the heart

“Describe how coronary flow varies during the cardiac cycle in the left and right atria”

flow = pressure difference/resistance,
the heart demonstrates autoregulation
flow is not constant however throughout the coronary system
wall tension in the left ventricle creates a Starling resistor model
during systole blood flow may become retrograde in the LV as a result



“Please describe the beta receptors and their function”

there are three β receptor subtypes (β_1 , β_2 , and β_3)
they are G protein coupled receptors
all couple to G_s and activate adenylyl cyclase and lead to accumulation of cyclic AMP
beta Receptors regulate numerous functional responses,
including heart rate and contractility (mostly β_1)
smooth muscle relaxation - bronchodilation and tocolysis (mostly β_2)
multiple metabolic events - glucose metabolism, lipolysis (mostly β_2 and β_3)