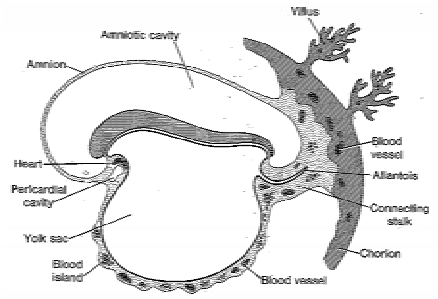
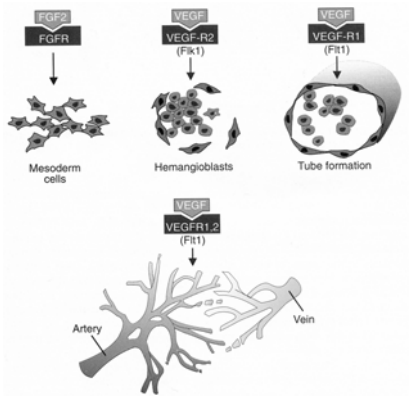
CARDIOVASCULAR SYSTEM I

Taube P. Rothman
tpr2@columbia.edu

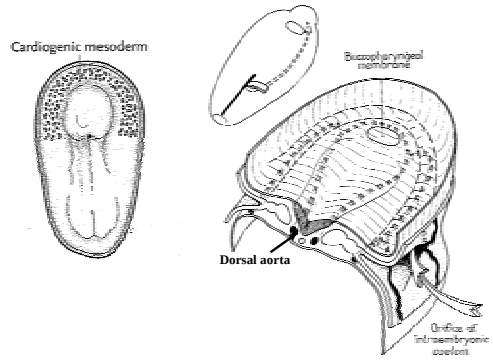


Vasculogenesis

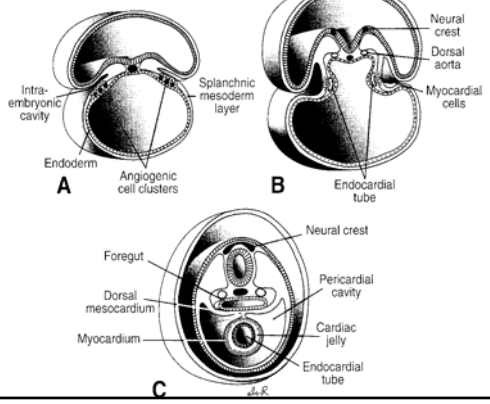
Angiogenesis



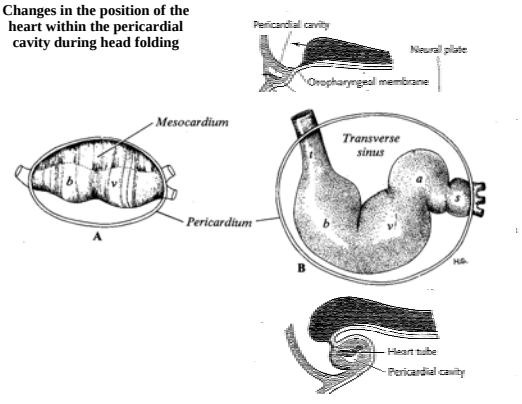
Formation of the cardiac primordium



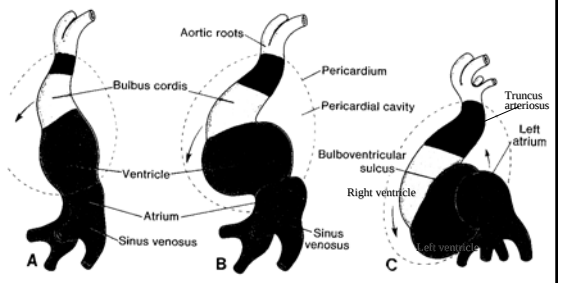
Formation of a single heart tube from paired primordia

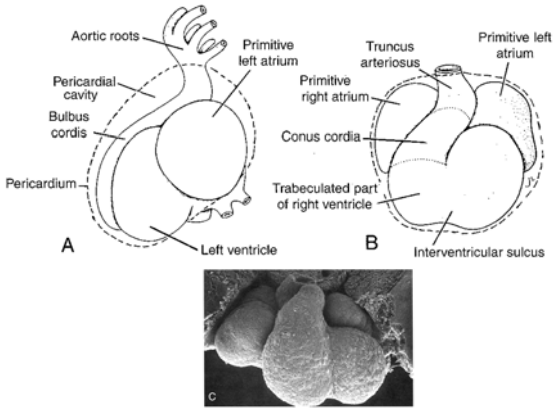


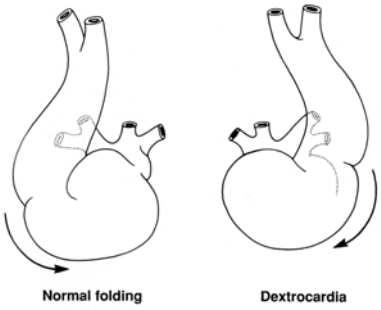
Changes in the position of the heart within the pericardial cavity during head folding



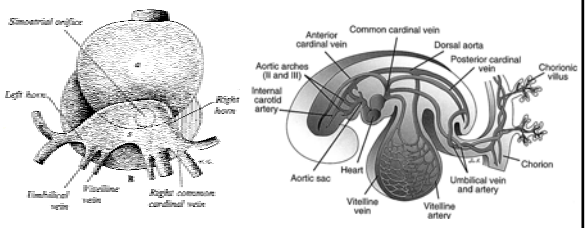
Formation of the cardiac loop



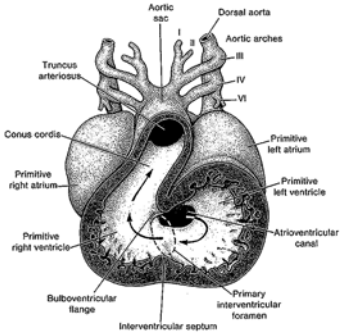




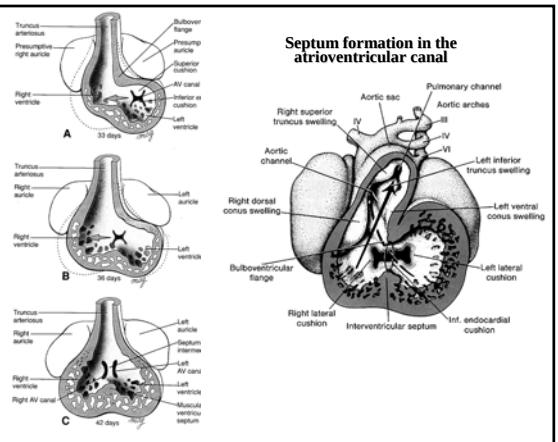
The embryonic circulation at the end of the 4th week



Blood flows in a single stream through the unpartitioned heart



Septum formation in the atrioventricular canal



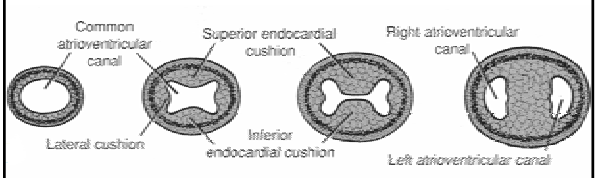
What are endocardial cushions?

- Regions of dense connective tissue that form at *specific cardiogenic sites* where endocardial cells undergo mesenchymal transformation and invade cardiac jelly.

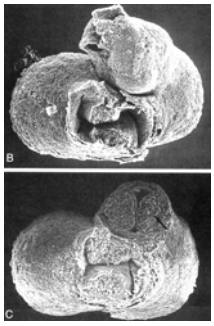
Where are they located?

- Form septum intermedium (separates right and left AV canals)
- Participate in atrial septum(separates right and left atria)
- Participate in ventricular septum (membranous portion)
- Participate in aorticopulmonary septum (separates pulmonary and aortic outflow tracts-seeded by neural crest cells)

Formation of Septum Intermedium

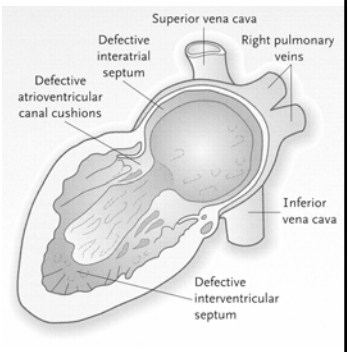


Endocardial cushions partition the AV canal



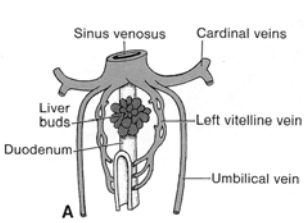
normal

Persistent atrioventricular canal

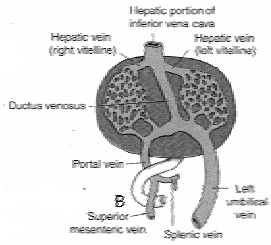


Venous System is Remodeled

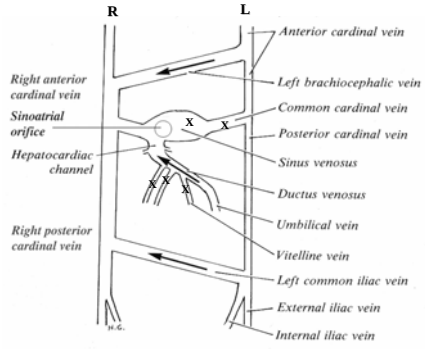
Development of the IVC



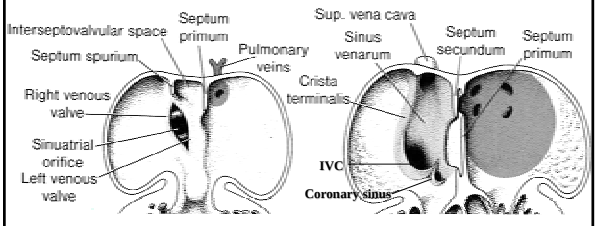
The embryonic circulation at the end of the 4th week



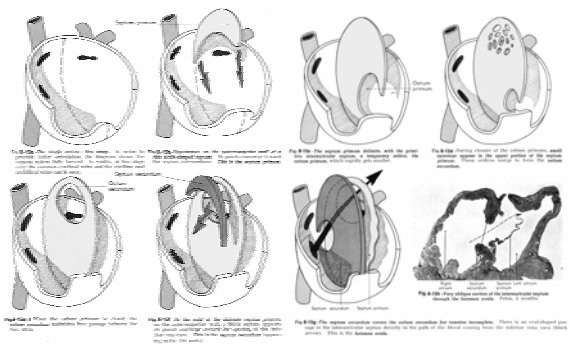
Left to Right shunts



Development of the atria



ATRIAL SEPTATION BEGINS IN THE 5TH WEEK



To be continued tomorrow
Dr. Daphne T. Hsu
Children's Hospital of New York