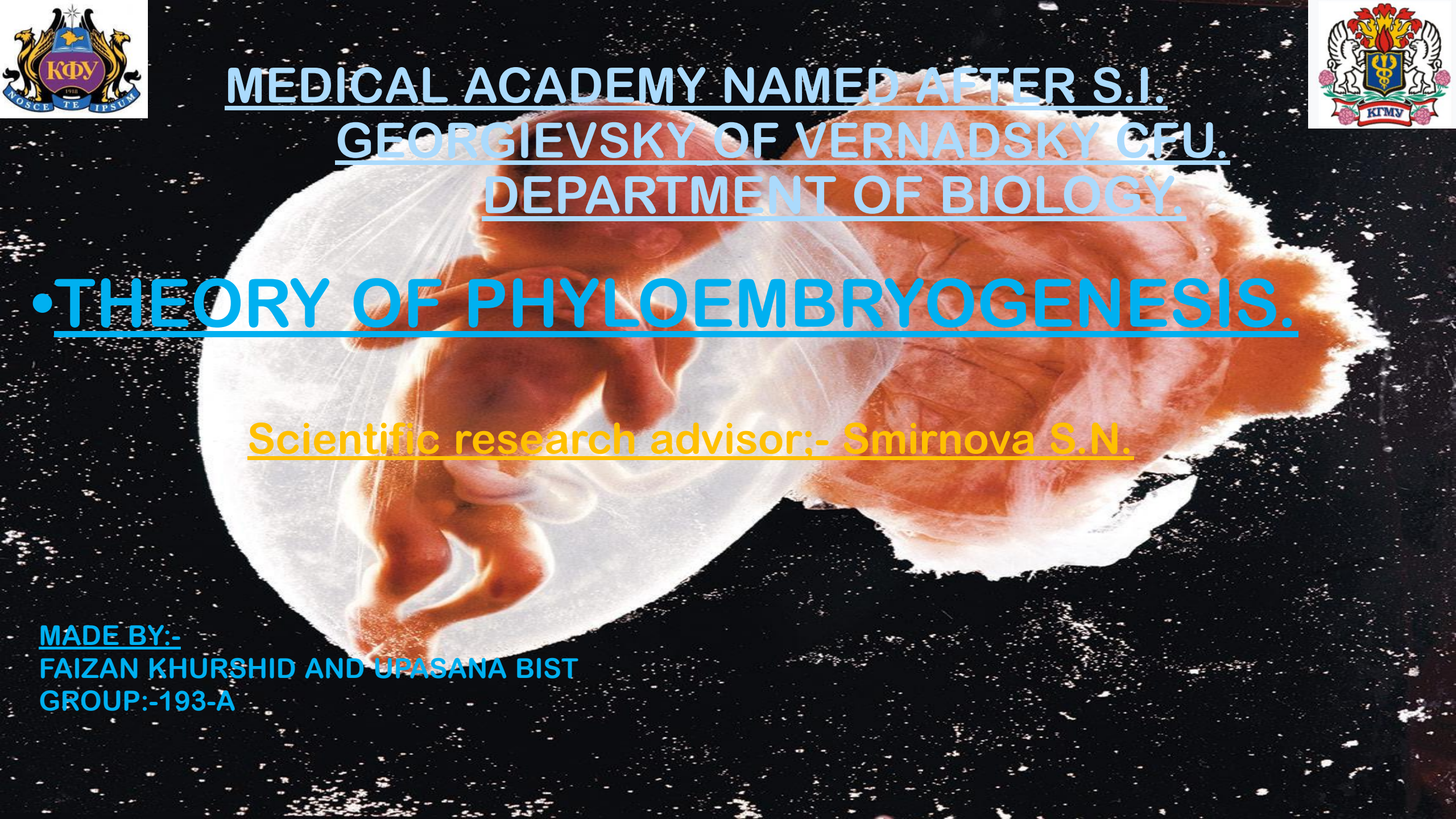


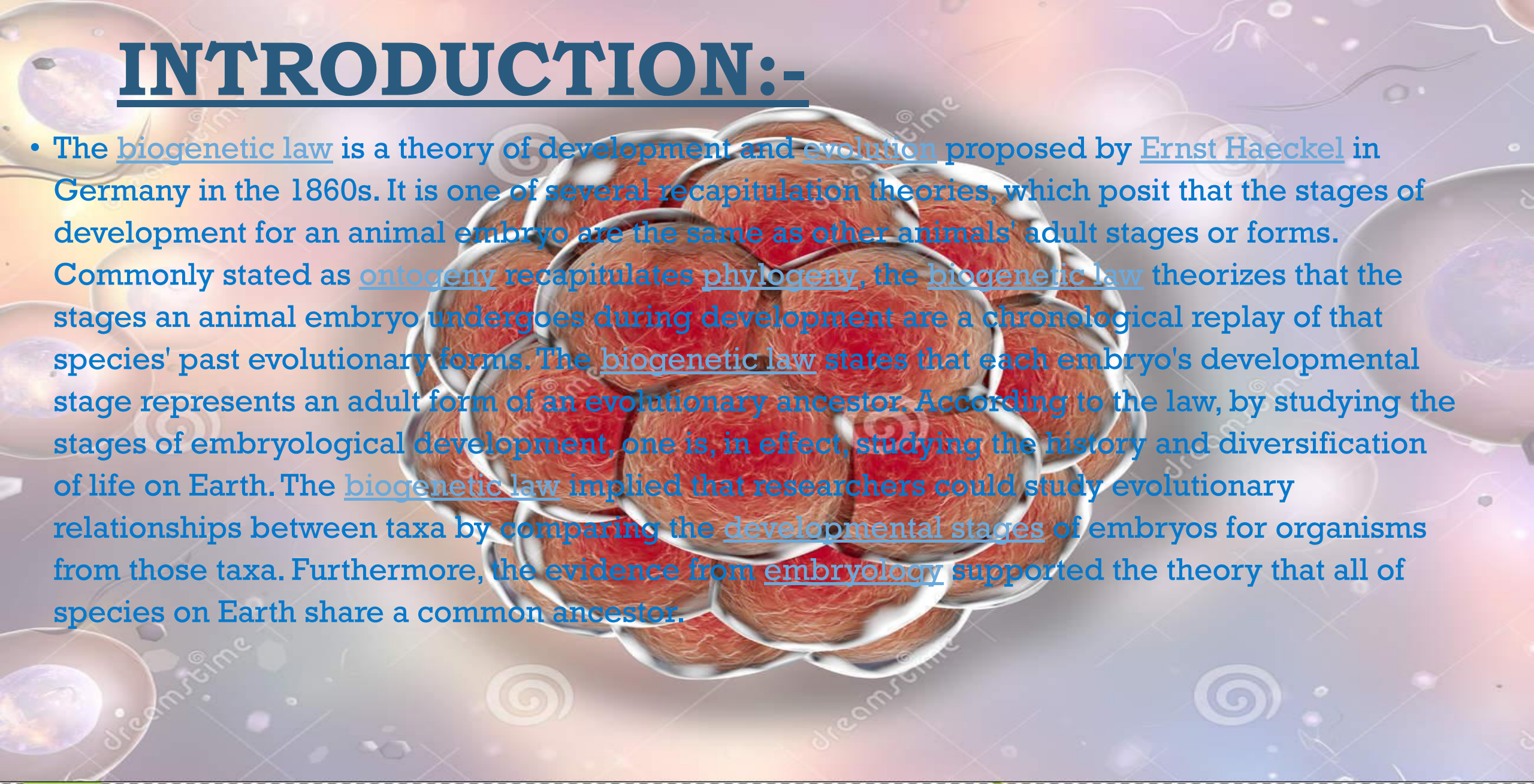
MEDICAL ACADEMY NAMED AFTER S.I. GEORGIEVSKY OF VERNADSKY CFU.
DEPARTMENT OF BIOLOGY.

•THEORY OF PHYLOEMBRYOGENESIS.

Scientific research advisor;- Smirnova S.N.

MADE BY:-
FAIZAN KHURSHID AND UPASANA BIST
GROUP:-193-A

INTRODUCTION:-



- The biogenetic law is a theory of development and evolution proposed by Ernst Haeckel in Germany in the 1860s. It is one of several recapitulation theories, which posit that the stages of development for an animal embryo are the same as other animals' adult stages or forms. Commonly stated as ontogeny recapitulates phylogeny, the biogenetic law theorizes that the stages an animal embryo undergoes during development are a chronological replay of that species' past evolutionary forms. The biogenetic law states that each embryo's developmental stage represents an adult form of an evolutionary ancestor. According to the law, by studying the stages of embryological development, one is, in effect, studying the history and diversification of life on Earth. The biogenetic law implied that researchers could study evolutionary relationships between taxa by comparing the developmental stages of embryos for organisms from those taxa. Furthermore, the evidence from embryology supported the theory that all of species on Earth share a common ancestor.

CONTINUE……

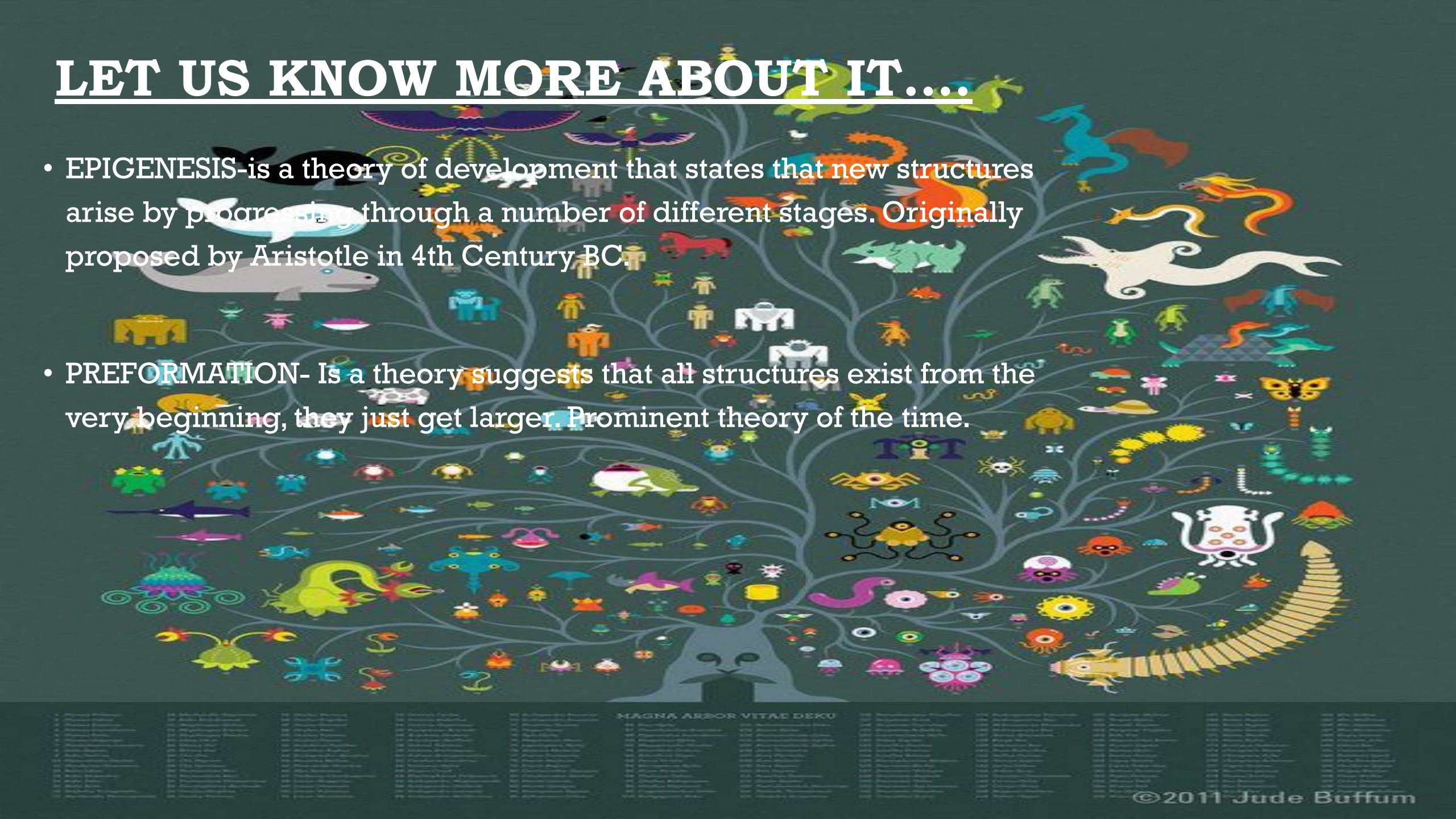
- Developmental Biology deals with complex mechanisms and many layers of "biological information" superimposed one upon another.
- Recent advances in cell biology, genetics and molecular biology has and will continue to further our understanding of development unlike any time in the past.

EMBRYOGENESIS AND ORGANOGENESIS:-

- EMBRYOGENESIS-Embryonic development also **embryogenesis** is the process by which the embryo forms and develops. In mammals, the term refers chiefly to early stages of prenatal development, whereas the terms fetus and fetal development describe later stages.

- ORGANOGENESIS-O**rganogenesis** is the **process** by which the three germ tissue layers of the embryo, which are the ectoderm, endoderm, and mesoderm, develop into the internal organs of the organism. ... For example, some cells in the ectoderm will express the genes specific to skin cells.

LET US KNOW MORE ABOUT IT….



- EPIGENESIS-is a theory of development that states that new structures arise by progressing through a number of different stages. Originally proposed by Aristotle in 4th Century BC.

- PREFORMATION- Is a theory suggests that all structures exist from the very beginning, they just get larger. Prominent theory of the time.

ARKHALLAKSIS:-

Is characterized by the fact that change of an initial laying of body is observed at early stages of an embryogenesis and changes the further course of ontogenesis.

A complex of the theoretical generalizations describing communication between individual and historical development of live organisms.

A number of forms through which there passes the individual organism at the development, beginning from an ovum and finishing quite developed state, is the short, compressed repetition of the long line of forms passed by animal ancestors of the same organism or patrimonial forms of its look since the most ancient times of so-called organic creation, up to the present», i.e. «ontogenesis is bystry and short repetition of phylogenesis.

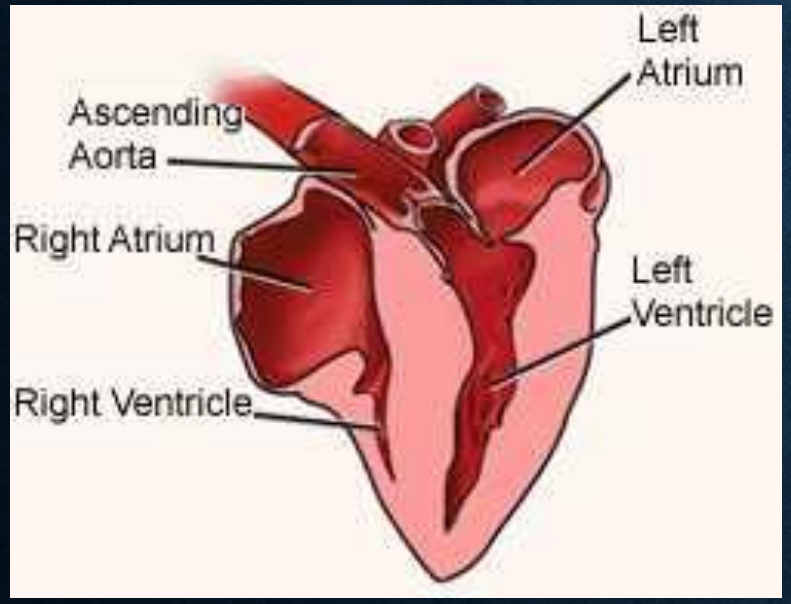
PHYLOGENESIS OF AVIAN VASCULAR SYSTEM:-

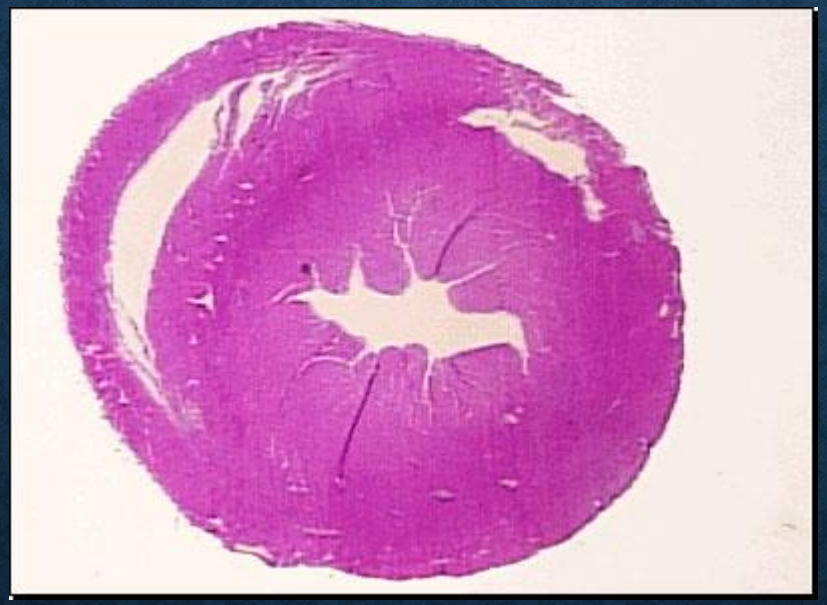
- Birds have evolved a high-performance cardiovascular system to meet the rigorous demands of running, flying, swimming, or diving in a variety of environments, some of them extreme. Sustained high levels of activity in these environments place severe demands on the cardiovascular system to provide adequate delivery of oxygen to working vascular beds and to provide efficient removal of metabolic products.
- Furthermore, birds are endothermic organisms and the cardiovascular system plays a major role in conserving or removing body heat. The descriptions of the component parts of the circulatory system in this chapter illustrate that these transport requirements are met in a variety of ways in birds inhabiting particular environmental niches.
- A common thread running through this discussion is that the component parts of the circulation must function in an integrated fashion to ensure tissue oxygen delivery matches tissue demands. This is accomplished through the integrative control of circulation by autoregulatory, humoral, and neural mechanisms`

MORE ABOUT AVIAN VASCULAR SAYSTEM:-

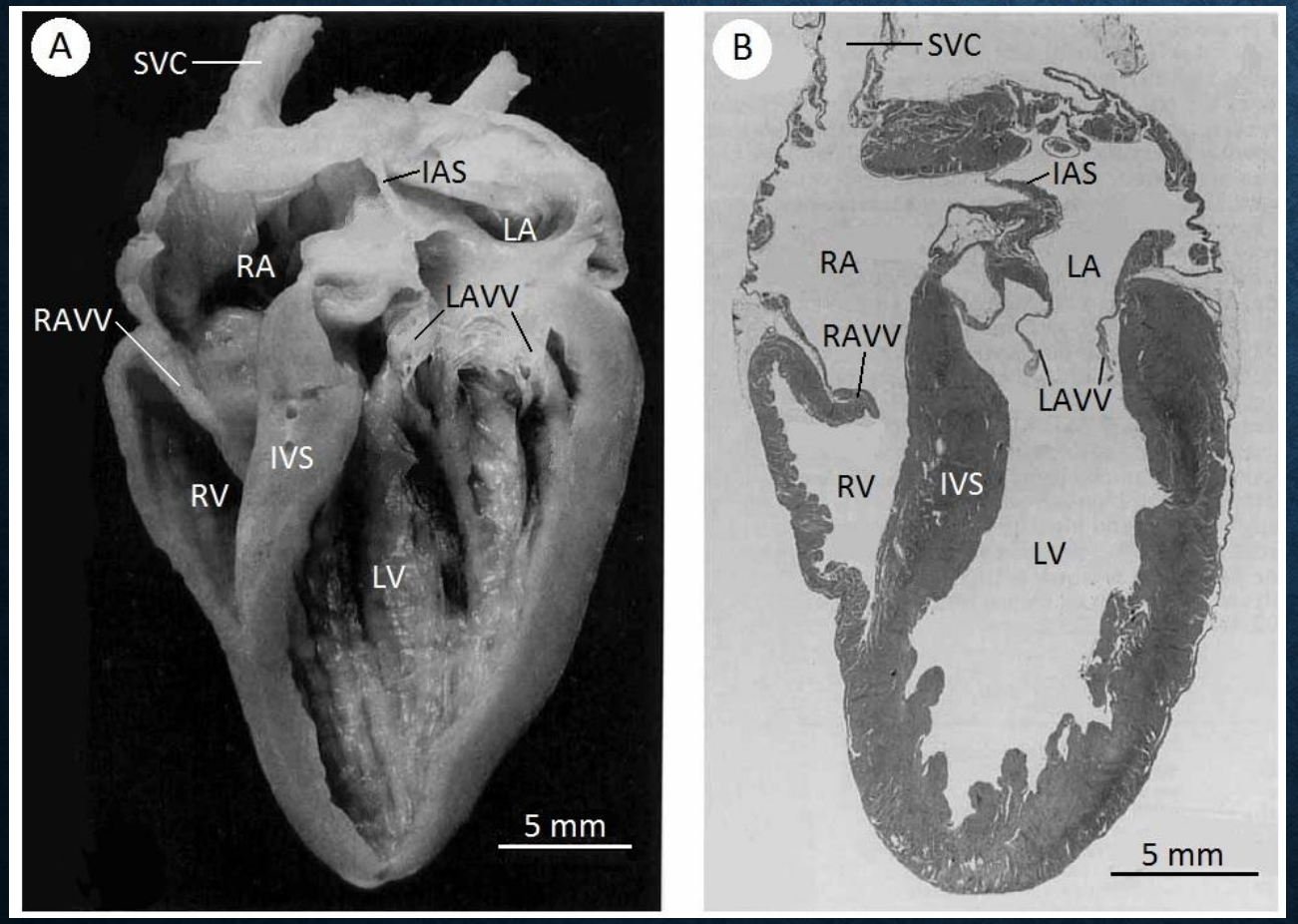
- **Birds have very efficient cardiovascular systems** that permit them to meet the metabolic demands of flight (and running, swimming, or diving). The cardiovascular system not only delivers oxygen to body cells (and removes metabolic wastes) but also plays an important role in maintaining a bird's body temperature. The avian circulatory system consists of a heart plus vessels that transport:
- nutrients
- oxygen and carbon dioxide
- waste products
- hormones
- heat

- Birds, like mammals, have a 4-chambered heart (2 atria & 2 ventricles), with complete separation of oxygenated and de-oxygenated blood. The right ventricle pumps blood to the lungs, while the left ventricle pumps blood to the rest of the body. Because the left ventricle must generate greater pressure to pump blood throughout the body (in contrast to the right ventricle that pumps blood to the lungs), the walls of the left ventricle are much thicker & more muscular.



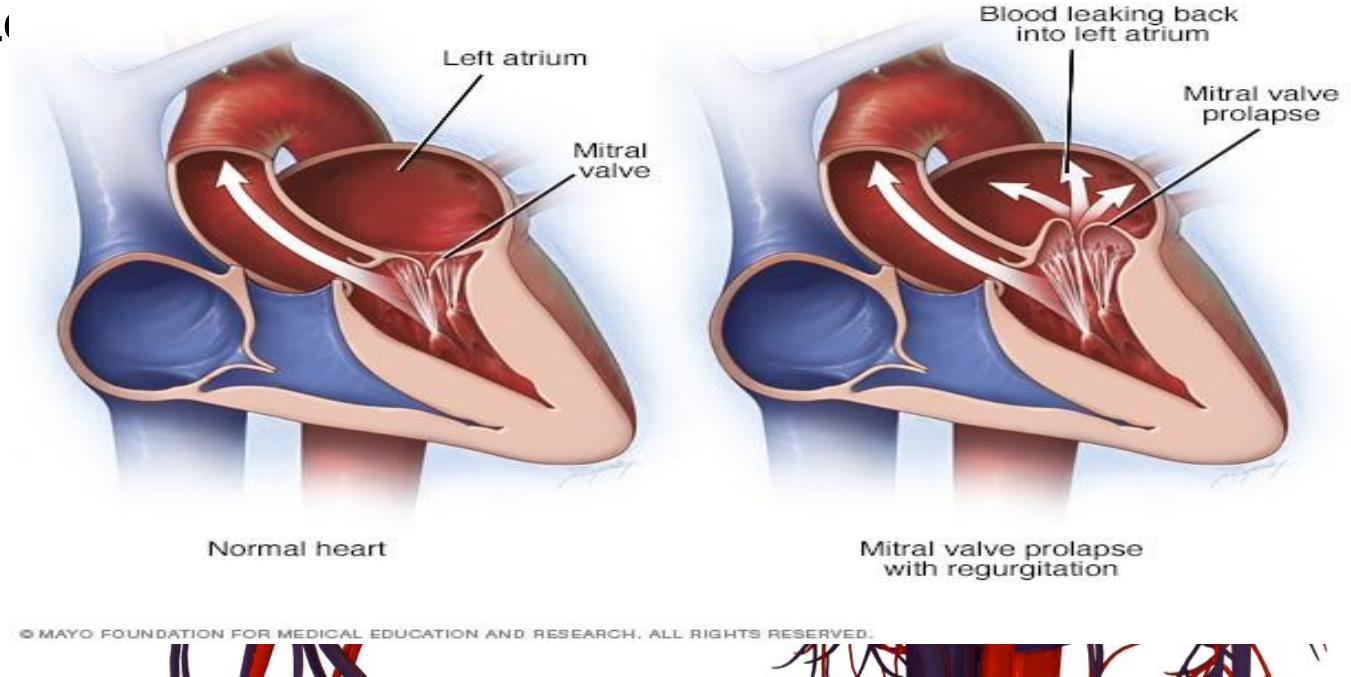


- Avian hearts also tend to **pump more blood** per unit time than mammalian hearts. In other words, cardiac output (amount of blood pumped per minute) for birds is typically greater than that for mammals of the same body mass. Cardiac output is influenced by both heart rate (beats per minute) and stroke volume (blood pumped with each beat). 'Active' birds increase cardiac output primarily by increasing heart rate.



DISEASE OF VASCULAR SYSTEM:-

- **Congenital mitral valve anomalies:-** Congenital mitral valve anomalies are defects present at birth (congenital) that affect the heart's mitral valve. The mitral valve is located between the heart's upper left chamber (left atrium) an

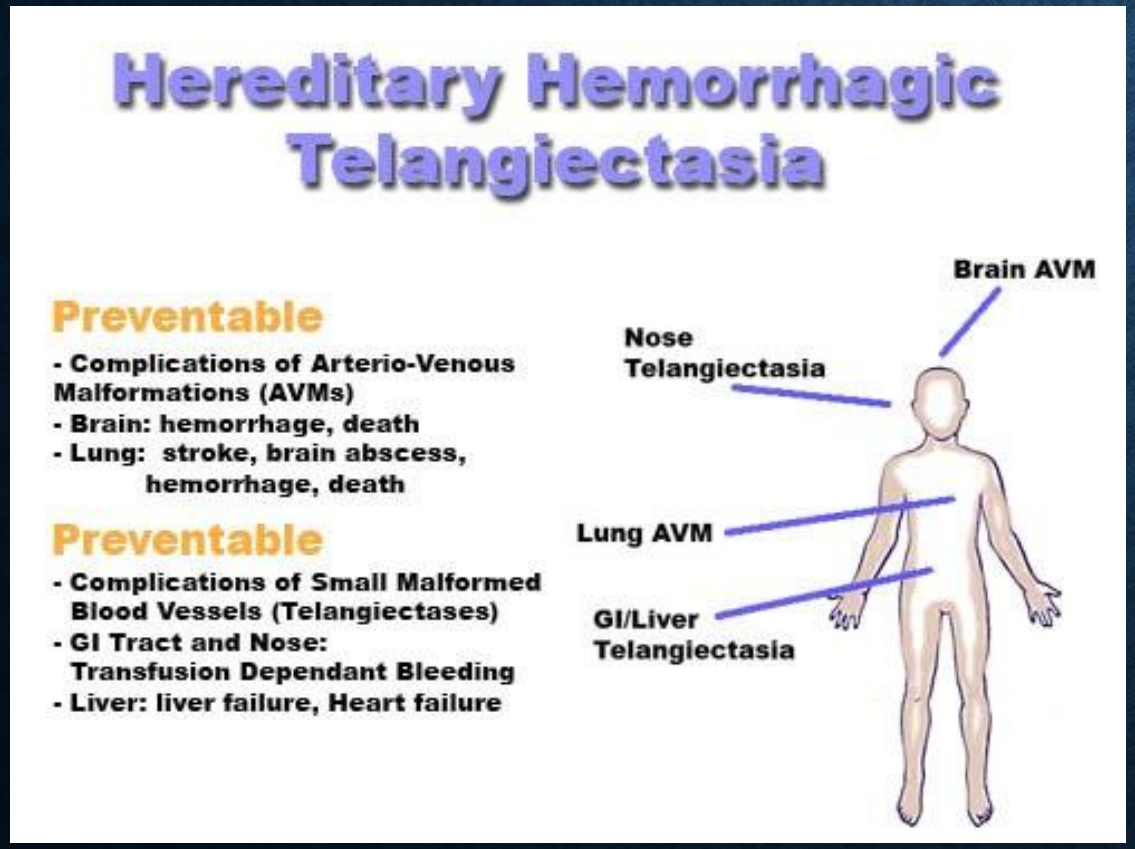


- **<u>Velocardiofacial Syndrome (VCFS):-</u>**Velocardiofacial syndrome, or 22q11 deletion syndrome, is known by many names, including Shprintzen syndrome, craniofacial syndrome, DiGeorge syndrome, or conotruncal anomaly face syndrome.

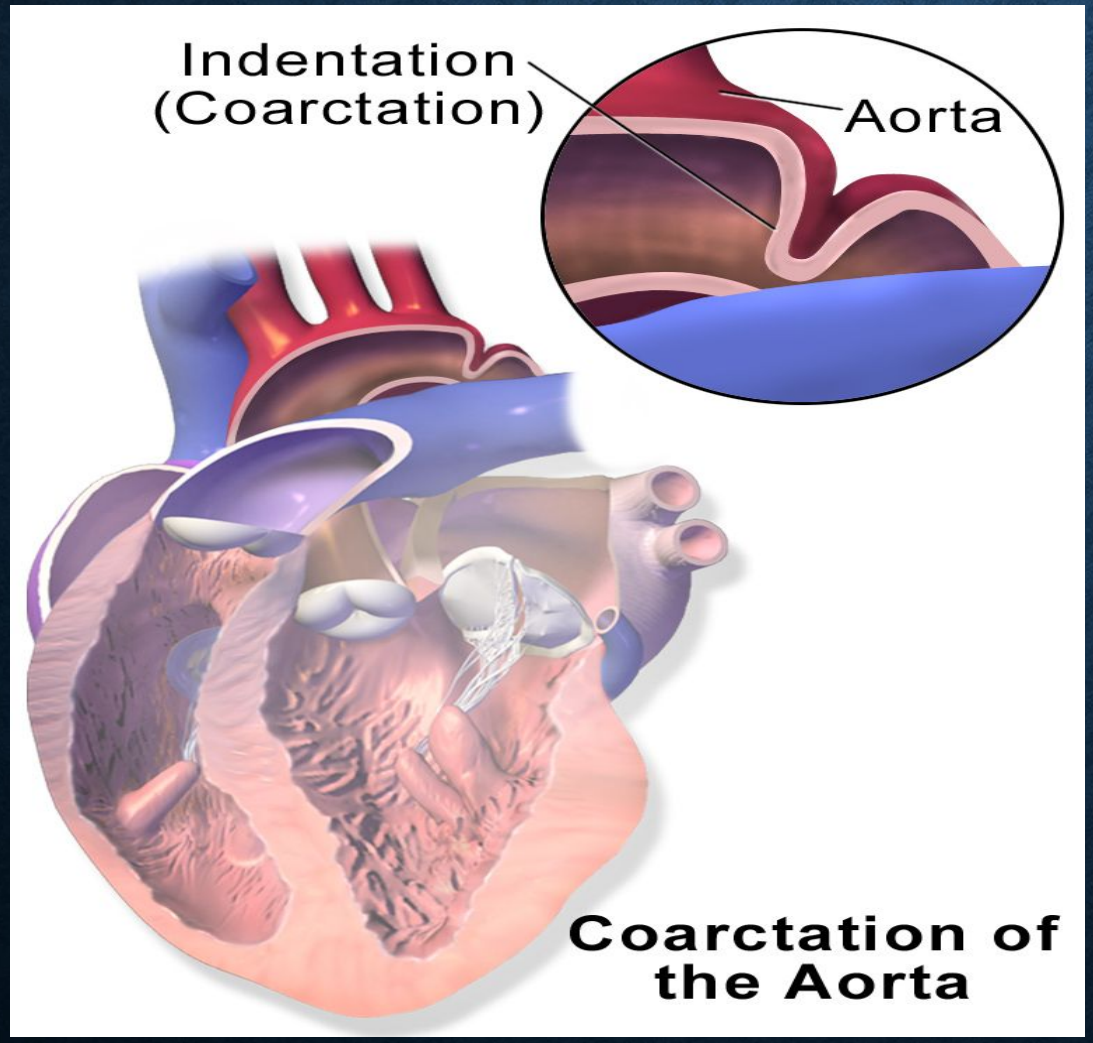
- *Choanal atresia:*-Congenital anomaly in which a bony or membranous occlusion blocks the passageway between the nose and pharynx.

• *Hereditary hemorrhagic telangiectasia (HHT):-*

- Autosomal dominant disorder characterized by telangiectasias (permanent dilation of preexisting small blood vessels, creating focal red lesions) on the face, lips, tongue, fingers, and chest and arteriovenous malformations (AVMs, an abnormal tangle of arteries and veins in which the arteries feed directly into the veins without a normal intervening capillary bed.) within the lungs, liver, and brain are common

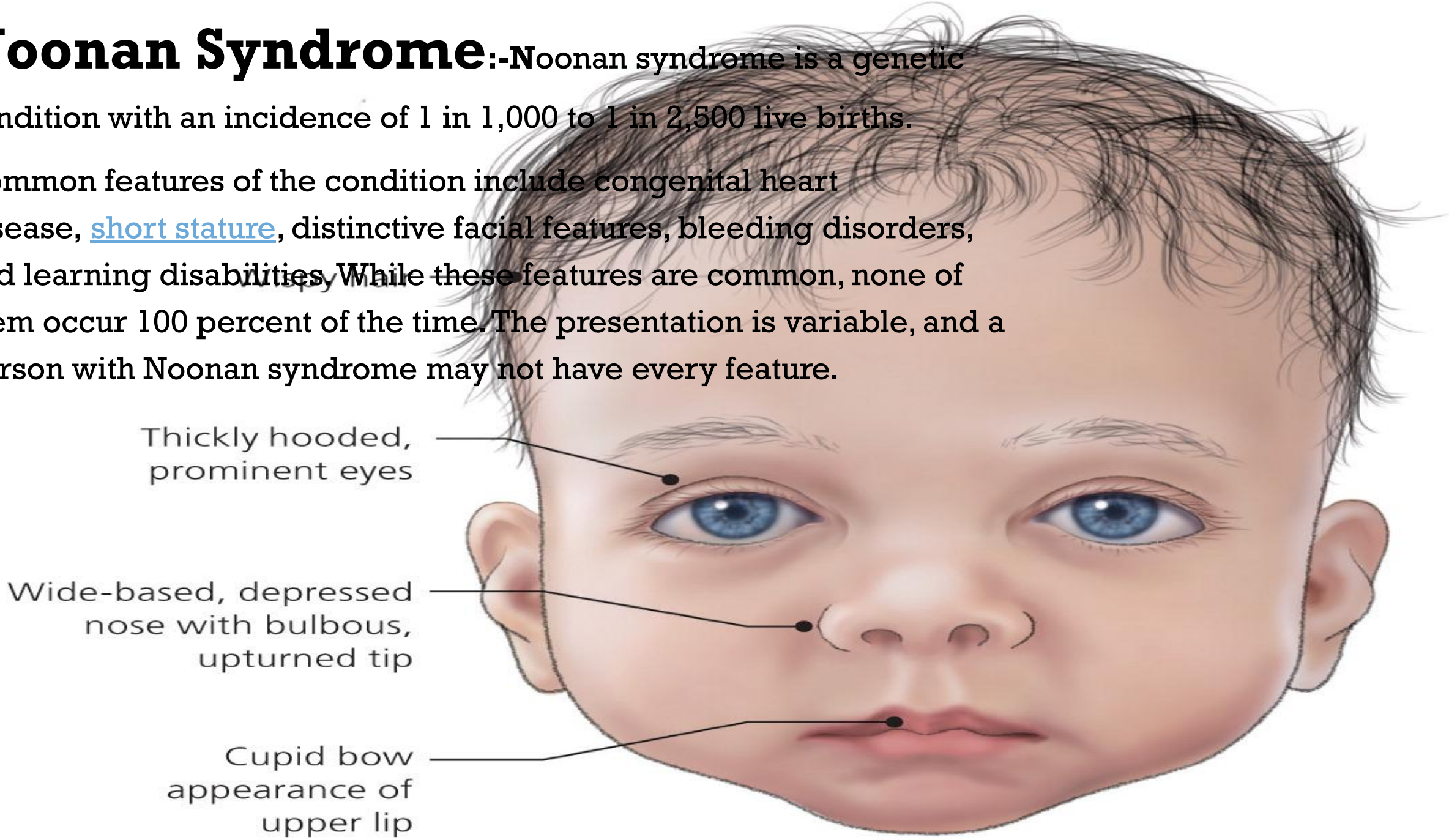


- ***Coarctation of the aorta:-*** Congenital anomaly of the heart in which there is a narrowing of the aorta (usually transverse or descending aorta), resulting in abnormal/obstructed blood flow.



•Noonan Syndrome:-Noonan syndrome is a genetic condition with an incidence of 1 in 1,000 to 1 in 2,500 live births.

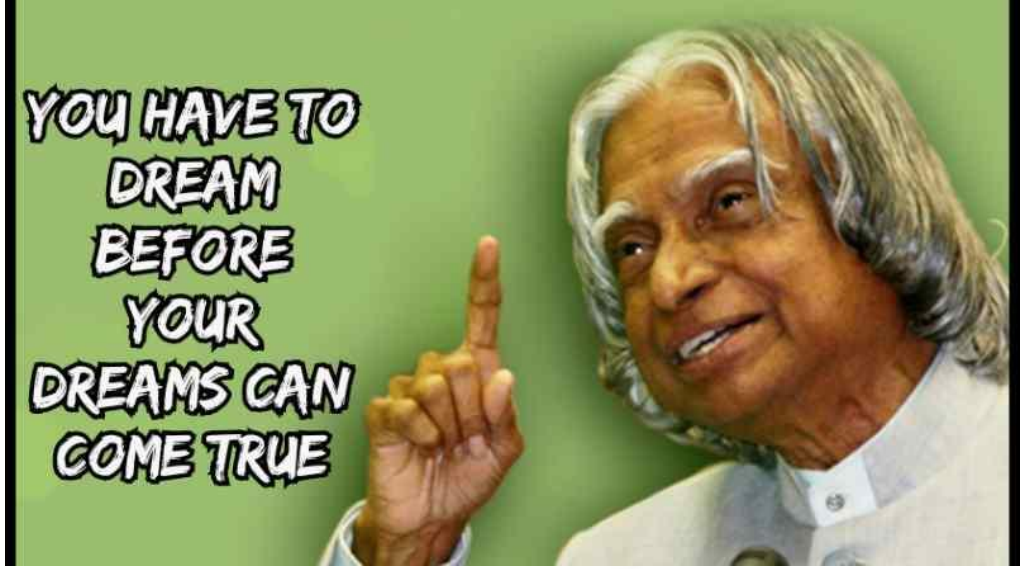
- Common features of the condition include congenital heart disease, short stature, distinctive facial features, bleeding disorders, and learning disabilities. While these features are common, none of them occur 100 percent of the time. The presentation is variable, and a person with Noonan syndrome may not have every feature.



- https://www.youtube.com/watch?v=OgLsLC28x_A
- https://www.youtube.com/watch?v=la8tz3DdQek
- https://www.youtube.com/watch?v=EO-PS0tTr9Y
- https://www.youtube.com/watch?v=lTCF8y7e1Bw

Evolution is not a **speculation** but a fact; and it takes place by epigenesis.

"Thomas Huxley"



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