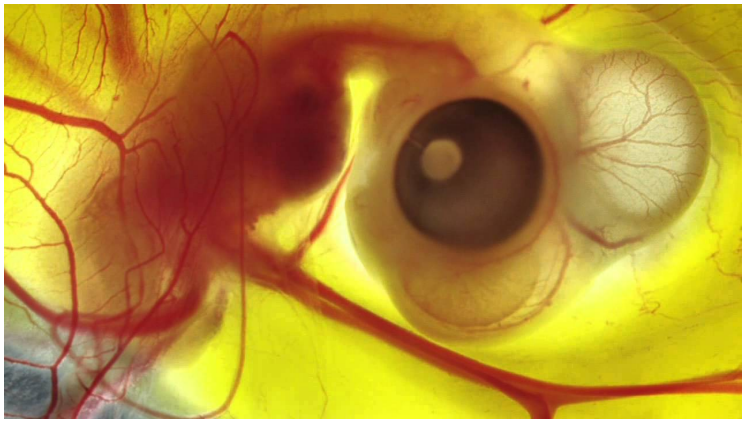
BIOTECHNOLOGY
NC STATE UNIVERSITY

BIT 495/595: Developmental Biotechnology: Embryogenesis

Overview:

Students will be introduced to the chicken embryo model and methodologies for evaluating the molecular regulation of development. Students will learn how to manipulate and sample embryos at various stages of development. By experimental manipulation of incubation conditions, students will formulate hypotheses, design experiments, collect samples, generate molecular data, and draw conclusions.



Lectures:

1. Regulation of development
2. Chicken embryo as model
3. Experimental design and data analysis
4. Measuring gene expression with real-time PCR
5. Epigenetic analysis with bisulfite DNA sequencing
6. Measuring protein expression by ELISA

Labs:

1. Evaluation of factors regulating axis development in the chicken by measuring gene expression.
2. Evaluating the epigenetic effects of fetal alcohol syndrome on DNA methylation by bisulfite sequencing.
3. Evaluating the effects of low oxygen levels on respiratory physiology by measuring blood metabolites.
4. Evaluating the the effects of angiogenic factors on cardiovascular development by measuring circulating proteins.
5. Student designed experimentation.