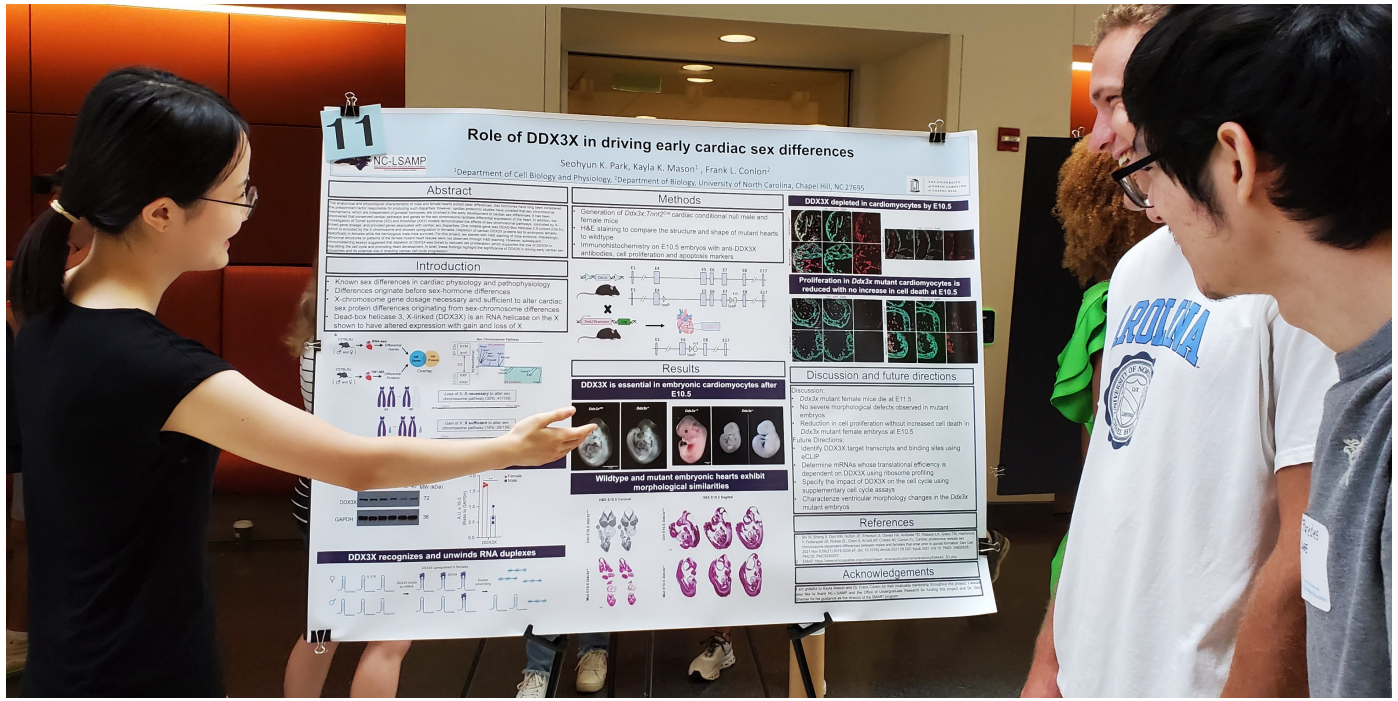
Investigating the role of DDX3X in driving early cardiac sex differences



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Research question

- What is the role of the X-linked gene *DDX3X* in driving early cardiac sex differences?

Why is it important?

- The distinctive anatomical and physiological differences male and female hearts have traditionally been attributed to sex hormones. However, recent studies have revealed the involvement of sex chromosomal pathways in generating these divergences. A series of experiments identified *DDX3X* (*DEAD Box Helicase 3, X-linked*) as a candidate gene for initiating the differential expression of cardiac proteins in males and females. Investigating the biological role of DDX3X in cardiac development will provide invaluable insights into comprehending the unique characteristics of male and female hearts.

Results and discussions

- DDX3X is essential in female embryonic cardiomyocytes after embryonic day 10.5. The internal morphology of cardiac DDX3X depleted embryos and wildtype embryos exhibit similarities. Proliferation of cardiac DDX3X depleted embryos is reduced at E10.5 with no increase in cell death.
- Understanding the essential role of DDX3X sheds light on the biological mechanisms regulating cardiac development. The insights gained from these findings may hold promising implications for cardiac health, providing the way for developing targeted therapies that precisely address sex-specific factors.