Observing Cellular Reproductive Anatomy Through Microscopic Bio-Art

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Background:

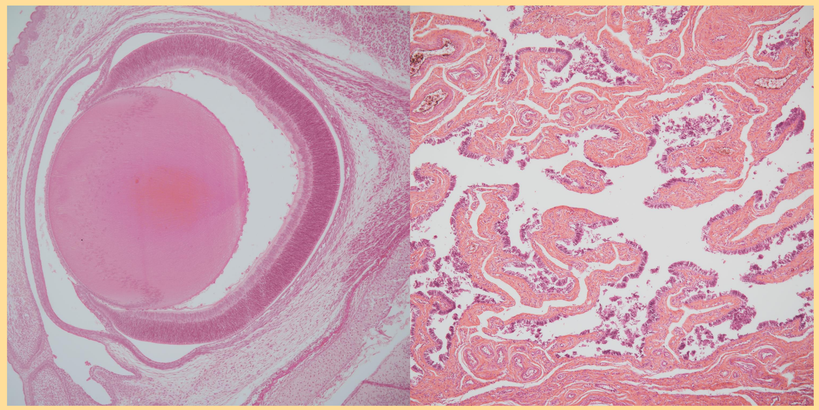
- Microscopic bio-art is a unique field that allows for the visualization of biological processes through an artistic lens, encouraging wider audiences' curiosity in biological and molecular processes.
- Microscopes are an integral aspect of creating bio-art, and different microscopy techniques were used to enhance and provide various visual effects on samples of the female reproductive system, enhancing the clarity and visual appeal of the samples.
- Exploring female reproductive cells through an artistic lens allows not only for a deeper understanding of cellular anatomy but also for an exploration of the beauty and complexity of the human body.

Introduction:

- Bio-art has gained global recognition in its spread from laboratories to STEM programs in schools, art galleries, and museums.
- Microscopes are an integral aspect of creating bio-art, and different microscopy techniques were used to enhance and provide various visual effects on samples of the female reproductive system.
- This study chose to highlight the female reproductive system to display its beauty and complexity.
- By presenting the female reproductive system through bio-art, this study showcases how microscopic bio-art can make complex biological systems and structures more engaging and accessible to a broader audience. Sharing an in-depth look at the cells that create life.

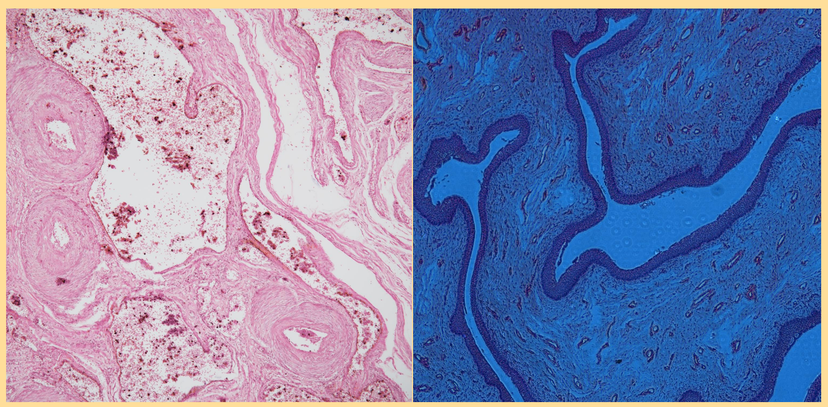
Methods:

- The method for this study includes a variety of microscopy techniques, including brightfield, darkfield, and phase contrast, as well as photo-editing techniques.
- The samples used in the bio-art project were sourced through Carolina Biological. The researcher teams were trained at the National High Magnetic Field (MagLab) in Tallahassee, Florida.
- Digital arts tools such as Adobe Photoshop were employed to improve the image quality and add artistic value to the specimens used.
- Data was collected in the MagLab, using the Nikon light microscope and a variety of microscopy techniques including Köhler illumination, dark field microscopy, brightfield microscopy, and phase contrast.



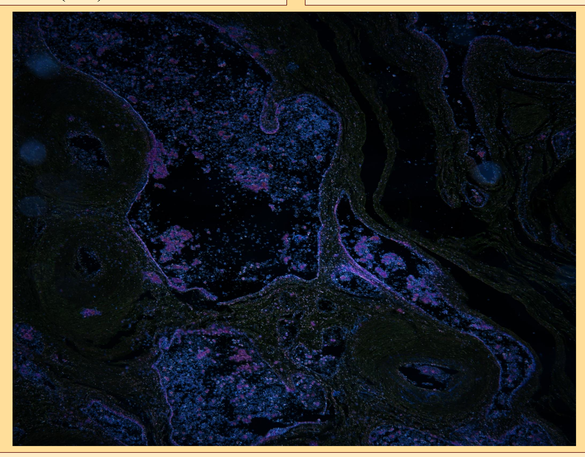
Mammal uterus pregnant in Köhler illumination (10x).

Human fallopian tube in Köhler illumination (10x)



Human ovary inactive in Köhler illumination (10x).

Female vagina in phase contrast (10x).



Human ovary active in dark field (10x).

Results

- The specimens chosen for photographic presentation include female reproductive cells.
- Their unique structures provide the viewer with a preview of their remarkable abilities.
- During their functional lifetime, reproductive cells house maternal genetic material, provide structures and nutrients for early embryonic growth, and facilitating fertilization.
- The images were taken with a Nikon compound microscope and edited with Adobe Photoshop to present the final products that are on this presentation.
- The cells photographed are pre-prepared by Carolina Biological and treated with formalin chemicals.

Discussion:

Closer attention paid to these molecules by audiences of all kinds opens the door for deeper discussion and interest. Understanding the “why” behind important biological functions is a privilege that not everyone may experience. Turning these images into a spectacle of art and creativity can spark curiosity and engagement in biological research. Displaying female anatomy in this way sheds light on the complex structures within reproductive systems. The female reproductive system not only executes essential daily functions but create and houses human life. This project hopes to shed light on the intricacies of female anatomy and bring awareness to the wonder of biological research.

Resources:

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Acknowledgements:

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