

BioArt: Visualizing Malignant Tissue Under the Microscope

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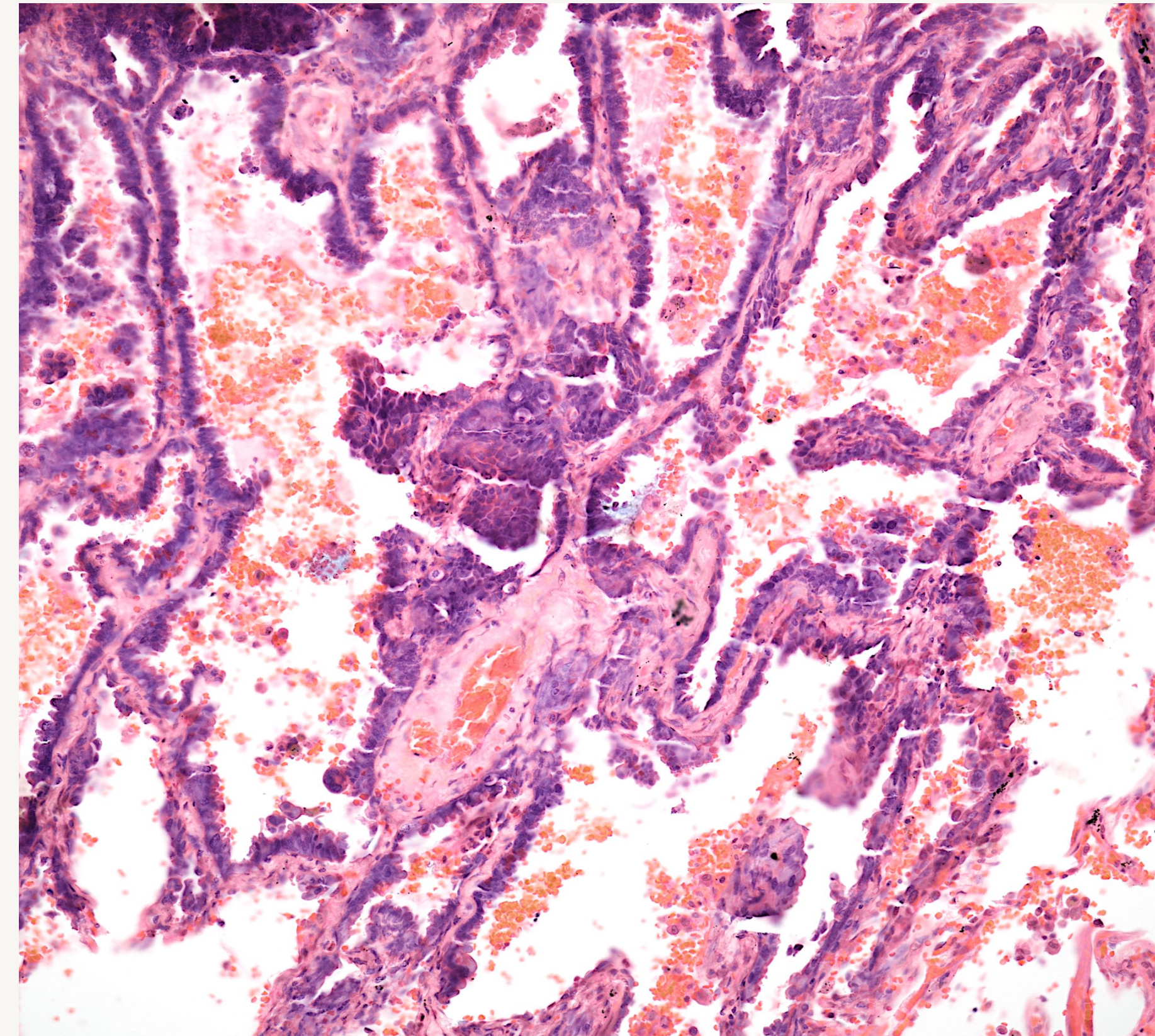
Introduction

- Bio Art utilizes living systems as artistic subjects, often times on the micro-scale. It is an interdisciplinary field, integrating both traditional artistic media and biological media (Melkozernov & Sorensen, 2021). It employs laboratory techniques such as microscopy and imaging, with artistic practices such as composition.
- Bio-art presents complex biological processes in visual forms that make scientific concepts more understandable for broader audiences, while also supporting public engagement. Bio Art also plays a crucial role in critically challenging emerging life science applications, and contributing to new research and technologies (Yetisen et al., 2015).
- This project focused on six tissue sites, including the liver, the lung, the ovaries, the breast, and the colon.
- This project aims to educate and spread awareness on cancer and its biology through the integration of microscopy and art. By visually examining malignant tissues, it highlights the structural differences between healthy and cancerous cells, including changes in organization, growth patterns, and tissue structure.

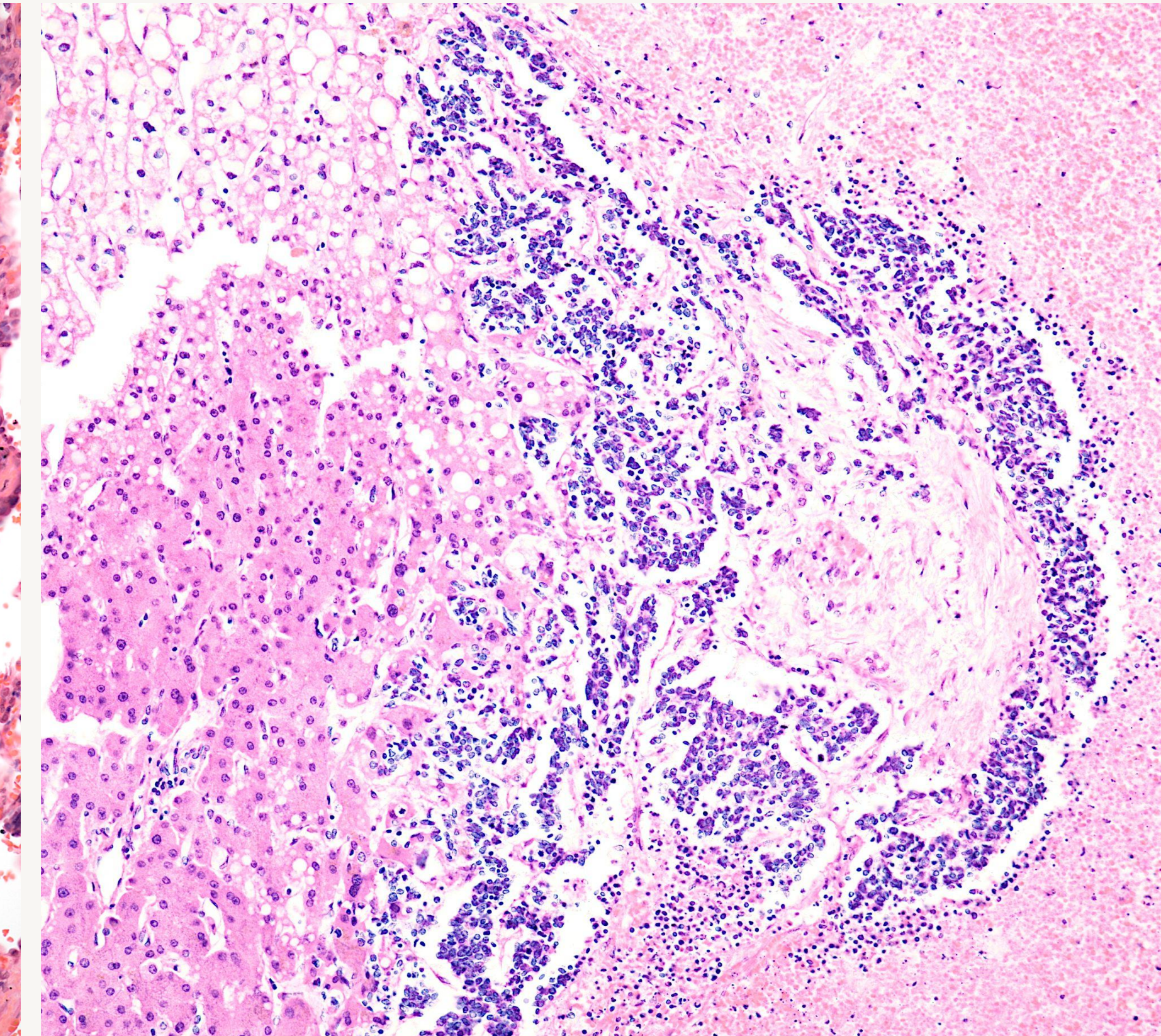
Significance

- Cancer is caused by the unregulated division of cells, cells that then spread to surrounding tissues.
- This unregulated division often requires intensive treatment that can significantly affect overall health and long-term quality of life.
- Using malignant cells allows the project to highlight the structural differences between healthy and cancerous tissue, helping foster an understanding of how cancer alters normal cellular organization.
- The tissues selected for this project represent some of the most common sites where cancer develops, emphasizing the widespread impact of this disease.
- This project aims to raise awareness of cancer's biological and human impact, encouraging viewers to reflect on the importance of research, early detection, and education.

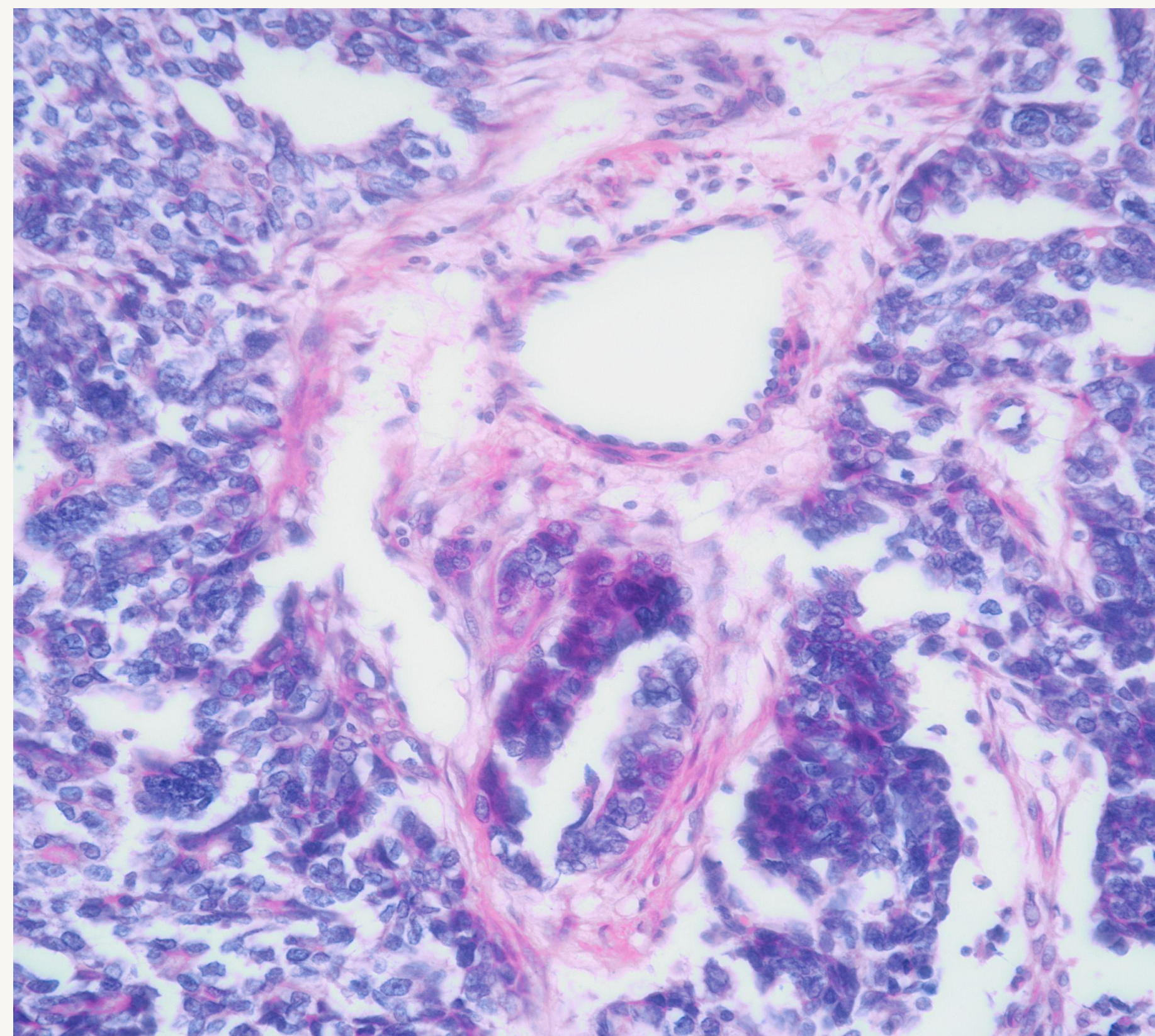
Results



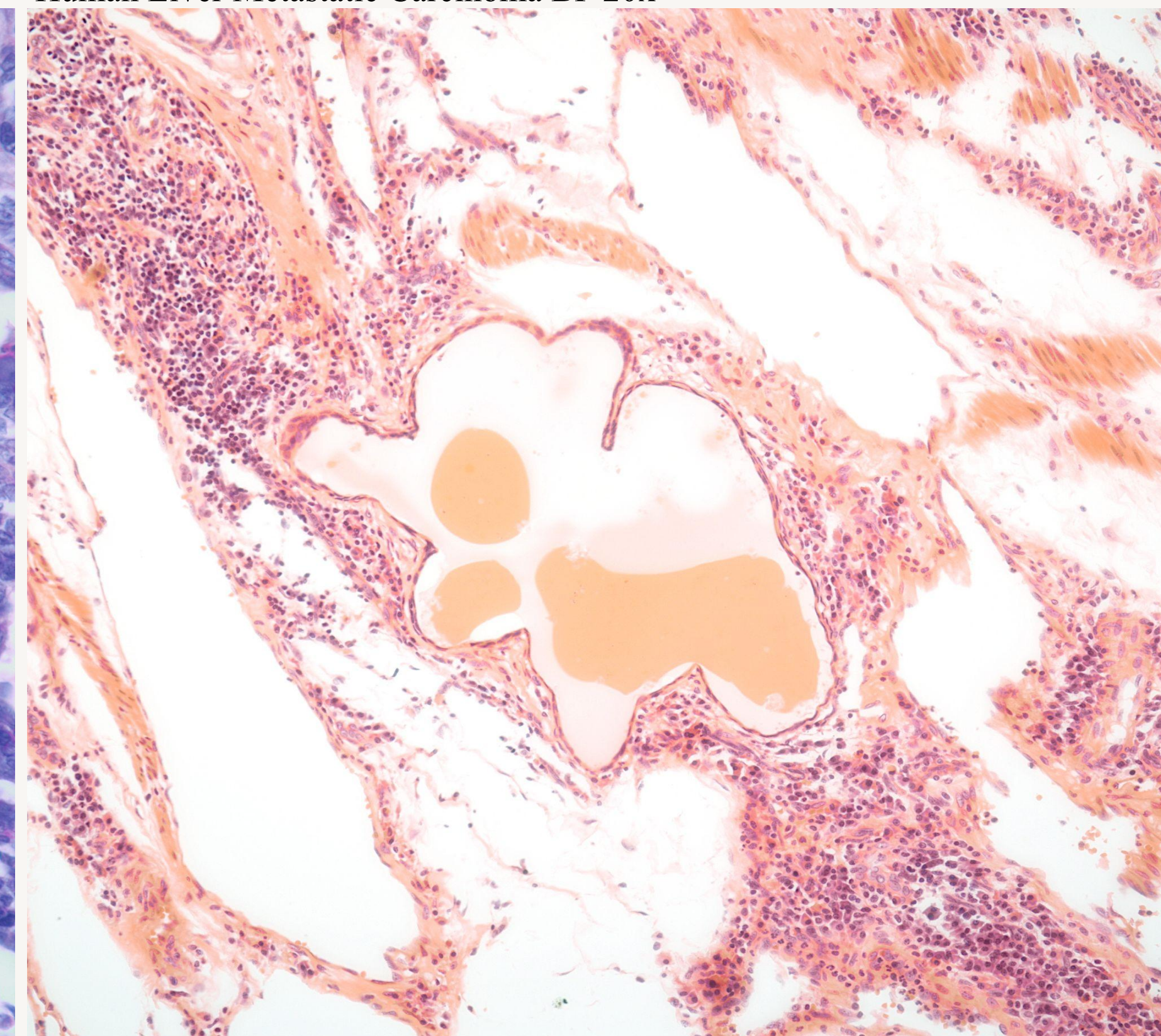
Human Alveolar Cell BF 20x



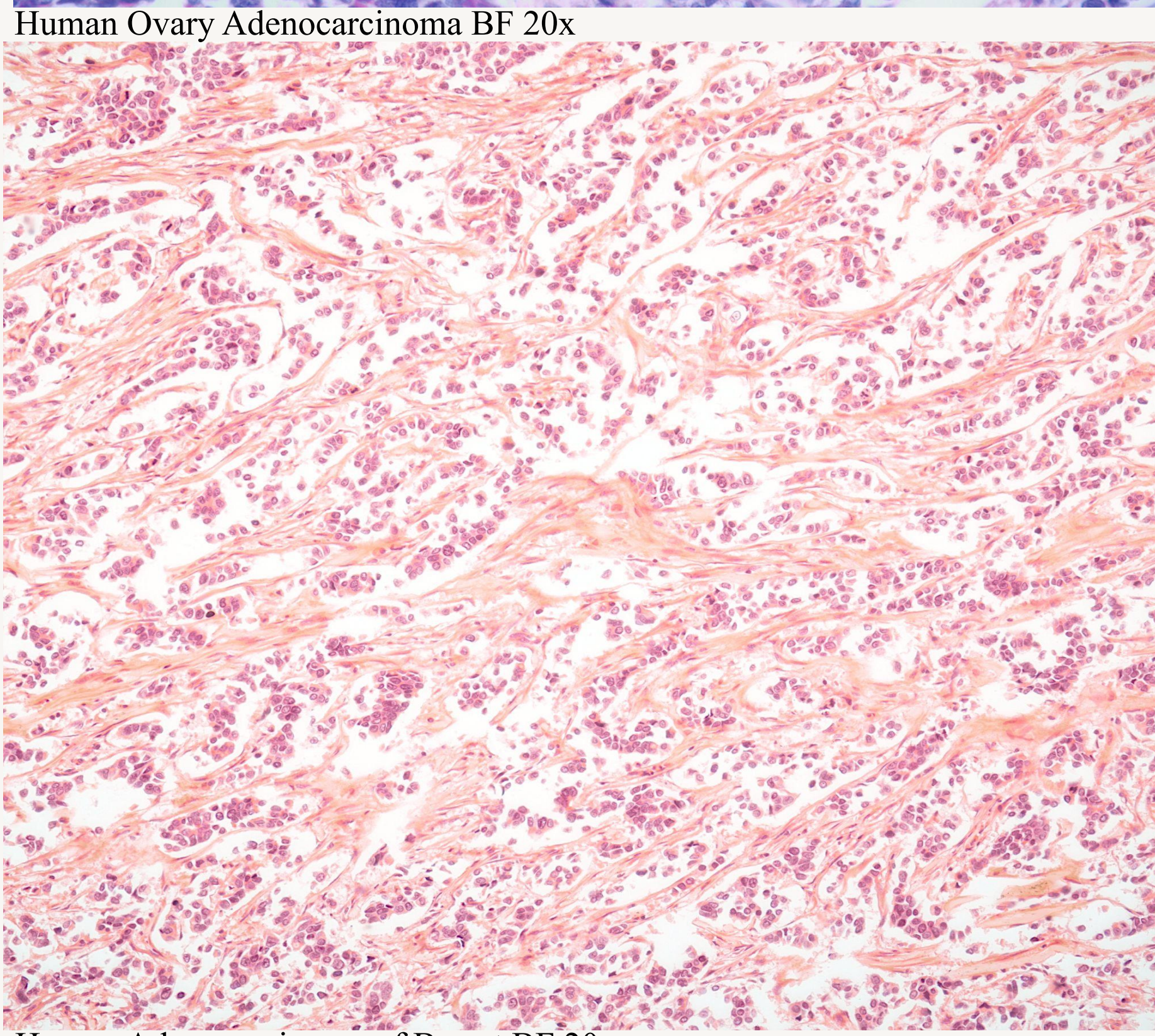
Human Liver Metastatic Carcinoma BF 20x



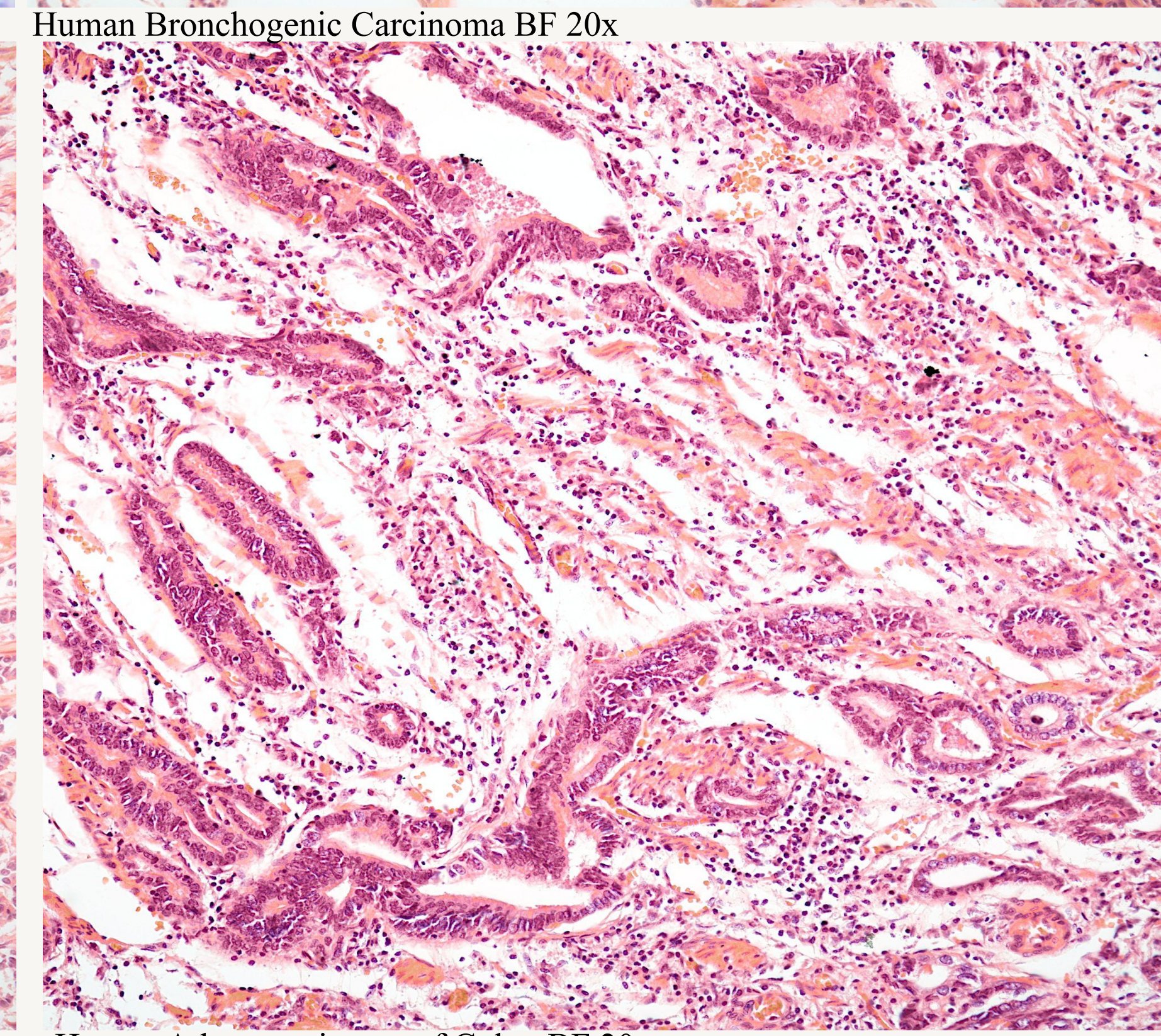
Human Ovary Adenocarcinoma BF 20x



Human Bronchogenic Carcinoma BF 20x



Human Adenocarcinoma of Breast BF 20x



Human Adenocarcinoma of Colon BF 20x

Methods

- Various microscopy techniques were employed in order to capture the different tissue structures:
 - Brightfield and Darkfield Microscopy
 - Differential Interference Contrast
- Objectives: 40x and 20x
- The microscope used was the Nikon Ni-U.
- Photographed by the Nikon Camera.
- Prepared histological slides were obtained from Carolina Biological Supply:
 - adenocarcinoma of the lung, breast, ovary
 - carcinoma of the liver
 - bronchogenic carcinoma and a human alveolar cell
- Images were processed and edited using DaVinci Resolve and Photoshop.

References

- Yetisen, A, Davis, J, Coskun, A, Church, G, & Yun, S. 2015. Bioart. Trends in Biotechnology, Cell Press Journal. 33: 724-734. 10.1016/j.tibtech.2015.09.011
- Melkozernov, A, & Sorensen, V. 2020. What drives bio-art in the twenty-first century? Sources of innovations and cultural implications in bio-art/biodesign and biotechnology. SpringerNature. 36: 131-1321. <https://doi.org/10.1007/s00146-020-00940-0>

Acknowledgments

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