

Automated Quantification for Fast and Accurate Analysis of Diagnostic Biopsies

A Lightweight Computer-Automated IHC (COMPAI) Image Analysis Application

Inventor

[Marina Guvakova](#), Brian Tong

STATE OF DEVELOPMENT

- Application as standardized analysis tool in both research and clinical settings.

DESIRED PARTNERSHIP

- License
- Collaboration

APPLICATIONS

- Application as standardized analysis tool in both research and clinical settings.

LEARN MORE

Matt Pink
MattPink@upenn.edu
215-746-7041

Docket #16-7653

Problem

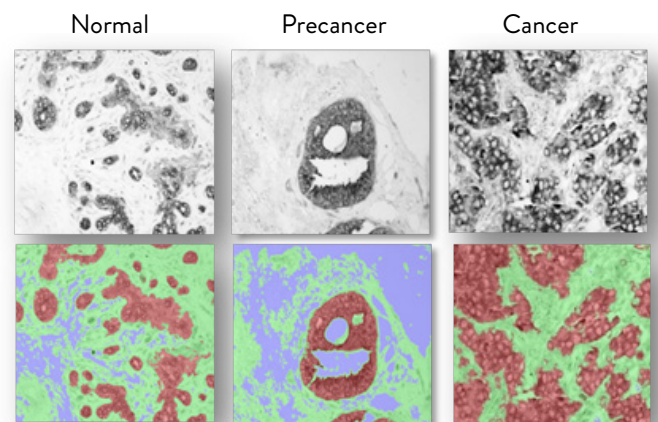
Immunohistochemistry (IHC)-stained slide analysis is a slow process that involves manual segmentation and scoring. Multiplied across thousands of slides per study, this process is often the bottleneck for achieving faster biomarker research and diagnosis. Manual analysis of IHC images is also prone to operator bias and can result in inter-observer variability in the measurements. Current commercial software systems for IHC analysis are expensive and require significant technical training for proper operation.

Solution

Dr. Guvakova's lab has developed a lightweight computer-automated IHC (COMPAI) image analysis application that addresses the problems described above and utilizes standard file formats like TIFF. COMPAI is fully automated, and is currently optimized for the segmentation and quantification of IHC-stained breast tissue. The application interface is simple and requires almost no training to use. COMPAI also implements a novel continuous scale scoring system for more robust measurements of protein expression. When tested against commercially available image quantification platforms using breast tissue IHC, COMPAI achieves better scoring accuracy and comparable speed improvements.

Advantages

- Reduce human labor and potential variability
- Lightweight application that runs on consumer grade hardware
- Novel scoring provides more robust measurements.



Segmentation of original IHC images (upper row) by COMPAI (low row): epithelia (red), stroma (green), and other (purple) regions.