

Machine learning algorithm to predict malignancy in thyroid nodules

Value Proposition

An estimated 10% of the general population in the United States are expected to develop a thyroid nodule in their lifetime. Although the vast majority of thyroid nodules are noncancerous, a small proportion of thyroid nodules do contain thyroid cancer. Fine-needle aspiration biopsy is the widely accepted modality for the evaluation of thyroid nodules. In some cases, however, biopsy results in indeterminate diagnoses that can lead to unnecessary surgery. Accordingly, tools that can aid in the refinement of the indeterminate diagnoses are needed.

Technology

Researchers at Duke have developed a machine learning algorithm for the prediction of thyroid malignancy in cytopathology images. The algorithm was developed to analyze whole slide images of analysis of thyroid fine needle aspiration biopsy slides for the detection of regions of interest and the prediction of malignancy. The algorithm provides a conclusive diagnosis that can be used as an assistive diagnostic tool, helping pathologists resolve indeterminate cases.

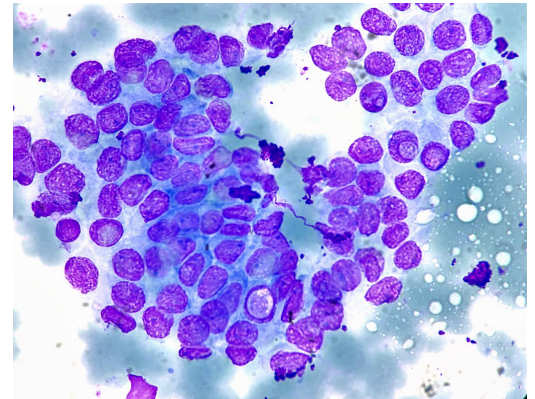
Advantages

- Improves pathologists' decisions in indeterminate cases
- Provides a correct and conclusive diagnosis
- May be used in remote areas where the availability of expert pathologists is limited

Publications

- [Application of a machine learning algorithm to predict malignancy in thyroid cytopathology \(Cancer Cytopathology, 2020\)](#)
- [AI-Assisted Thyroid Malignancy Prediction From Whole-Slide Images \(The Frontier of AI-Assisted Care Scientific Symposium at Stanford, 2019\)](#)

Duke
LICENSING
& VENTURES



 **Duke File (IDF) #**

T-006876

 **Inventor(s)**

- Elliott Range, Danielle "Danielle"
- Carin, Lawrence "Larry"
- Cohen, Jonathan "Yoni"
- Dov, David
- Kovalsky, Shahar

 **Links**

- [From the lab of Dr. Danielle Elliott Range](#)
- [From the lab of Dr. Shahar Kovalsky](#)
- [From the lab of Dr. Lawrence Carin](#)
- [From the lab of Dr. Jonathan Cohen](#)
- [Dr. David Dov - Google Scholar Citations](#)

 **College**

School of Medicine (SOM)

**For more information
please contact**

Chang Villacreses, David

9196683401

david.chang@duke.edu