Actionable Pathomics

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ITCR PI Meeting
Active ongoing collaborations with Immuno-Oncology Biomarker Group and FDA

Tumour Infiltrating Lymphocytes (TILs) in Cancer: perils and pitfalls and how to avoid these. A report from the International Immuno-Oncology Biomarker Group

The evaluation of tumor-infiltrating lymphocytes (TILs) in breast cancer: recommendations by an International TILs Working Group 2014


Published: 11 September 2014 Article history ▼

Editor's Choice
Tumor infiltrating lymphocytes are prognostic in triple negative breast cancer and predictive for trastuzumab benefit in early breast cancer: results from the FinHER trial


Published: 07 March 2014 Article history ▼
Computable Cancer Phenotype Information from Whole Slide Images

- Enhance SEER registry data with Pathomics
- The New Jersey State Cancer Registry, Georgia and Kentucky State Cancer Registries
- Prostate Cancer, Lymphoma and NSCLC
- Creation of population cohorts containing linked Pathomics and clinical attributes
- Response to checkpoint inhibitor therapy
Coordinated TIL/Tumor Maps
Can select portion of TIL map and zoom into corresponding region of whole slide image
Can select portion of TIL map and zoom into corresponding region of whole slide image
Characterization of TIL Pattern and Relationship to Molecular Immune Subtype

- The *quantity and pattern* of immune infiltrate
- Division of immune infiltrate between different compartments
- Does it surround tumor region? Present in tumor, invasive margin?
- https://www.tilsinbreastcancer.org/
CVPR ‘19 GAN based nuclear segmentation – tissue synthesis and training augmentation

(a) Hundreds of hours to label a few types

Resulting model fails on some unseen tissue types

(b) Unlabeled patches sampled from every whole slide image in TCGA

Synthesize both texture and ground truth structures in an unsupervised manner

Model Generalizes well on every tissue type
QuIP Tools and Sample Collaborations

- NCI Surveillance, Epidemiology, and End Results Program (SEER)
- International Immuno-Oncology Biomarker Working Group
- MD Anderson Melanoma SPORE
- Institute for Systems Biology (ISB)
- The Cancer Imaging Archive (TCIA)
- Cancer Research Institute (CRI) iAtlas
- NCI Early Disease Research Network (EDRN)
- Division of Cancer Epidemiology & Genetics
QuIP ITCR Team

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