Informatics Tools for Spatial Intra-Tumor Heterogeneity in Multiplexed Fluorescence Images

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Intra-Tumor Spatial Heterogeneity Complicates Accurate Diagnosis/Prognosis

Continuum of H&E, IHC and Multiplexed/Hyperplexed IF Computational Pathology Tools to Address Heterogeneity in Tissue Context

H&E stained whole tissue section from FFPE tumor sample

Multi to hyperplexed fluorescence imaging of whole section for higher spatial resolution and tissue context
Multiplexed IF
• 9 biomarkers
• Up to 60Ab
• Multiple FISH

Gerdes et al. PNAS 2013;110:11982-11987
Spatial Intra–Tumor Heterogeneity

1. Quantitate spatial intra-tumoral heterogeneity (ITH)
   - Quadratic entropy, Shannon index, Pointwise Mutual Information and others

2. Test spatial ITH metrics for correlation with tumor stage, grade and clinical outcome

3. Interaction with multiplexed/hyperplexed IF images and visualize spatial ITH
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