AI-based Computational Pathology Predicts Origins of Metastatic and Unknown Primary Cancers

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Motivation

• Cancers of Unknown Primary (CUP): an enigmatic group of diagnoses where the primary anatomical site of tumor origin is undetermined
• Median survival 2.7-16 months; patients undergo a complete workup of pathology, clinical, radiological, endoscopy, molecular testing etc. towards determining origin
• Typical workflow is resource intensive, might significantly delay administration of suitable treatment and is not always successful.

Study Design

Evaluation on Tumors of Known Primary

Primary vs. Metastatic Prediction

Performance on Metastatic Tumors and CUPs

Tumor Origin Assessment via Deep-learning (TOAD)

Clinical Utility: Assisting Physicians in Differential Diagnosis

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