

DIGITAL PATHOLOGY-BASED DEEP LEARNING SIGNATURE PREDICTS IMMUNOTHERAPY OUTCOMES IN GASTRIC CANCER

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Poster

Oesophagus

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A deep learning model analyzing digital pathology images (DPIRS) was developed to predict immunotherapy response in gastric cancer patients, achieving AUC >0.85 in validation cohorts.

KEY POINTS

- Retrospective study of 110 gastric cancer patients receiving immune checkpoint inhibitors at a single center between 2019–2023 used ResNet18 neural network trained on H&E-stained whole-slide images segmented into 256×256 pixel tiles.
- Patients with high DPIRS scores had significantly longer progression-free survival and overall survival ($p < 0.01$), higher PD-L1 expression, and greater tumor-infiltrating lymphocyte density compared to those with low scores.
- Multivariate Cox regression confirmed DPIRS as an independent prognostic factor for immunotherapy efficacy, with model performance validated in internal and TCGA cohorts.
- The authors characterize DPIRS as a novel non-invasive biomarker and state it has potential for clinical application in personalized treatment strategies for gastric cancer patients being considered for immunotherapy.

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