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(54) Title: PATIENT RESPONSE-BASED BIOMARKER TOPOLOGY QUANTIFICATION AND ASSESSMENT FOR MULTI-
PLE TISSUE TYPES

(57) Abstract: Described herein are methods and computer systems for classification of CD8 T-cell topology using a patient re-
sponse-based linear cutoff model. A plurality of histology images of tissue samples in a plurality of patients are received by a computer
system. An image analysis of the plurality of histology images is performed to obtain a CD8+ T-cell abundance in the tumor parenchyma
and stroma in each of the plurality of histology images. Real inflammation scores and tumor infiltration scores are determined based on
a polar coordinate transformation of the CD8+ T-cell abundance in the tumor parenchyma and stroma. Based on the real inflammation
scores and tumor infiltration scores, a feature space is generated, and linear boundaries or linear cutoffs between a plurality of classifi-
cations in the feature space are identified based on the real inflammation scores, the tumor infiltration scores, and patient response data.



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