

## **Cell image classification: methods and applications**

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Cell image classification methods are currently being used in numerous applications in cell biology and medicine. Applications include understanding the effects of genes and drugs in screening experiments, understanding the role and sub-cellular localization of different proteins, as well as diagnosis and prognosis of cancer from images acquired using cytological and histological techniques. We review three different approaches for cell image classification: numerical feature extraction, end-to-end classification with neural networks, and transport-based morphometry. In addition, we provide comparisons on four different cell imaging datasets to highlight the relative strength of each method.