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(54) Title: THREE-DIMENSIONAL CELL AND TISSUE IMAGE ANALYSIS FOR CELLULAR AND SUB-CELLULAR MORPHOLOGICAL MODELING AND CLASSIFICATION

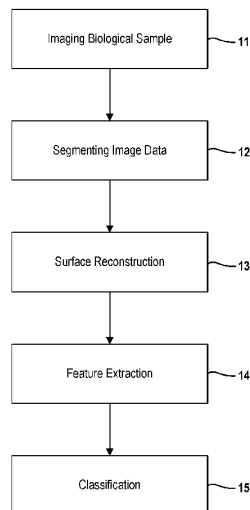


FIG. 1

(57) Abstract: The ability to automate the processes of specimen collection, image acquisition, data pre-processing, computation of derived biomarkers, modeling, classification and analysis can significantly impact clinical decision-making and fundamental investigation of cell deformation. This disclosure combine 3D cell nuclear shape modeling by robust smooth surface reconstruction and extraction of shape morphometry measure into a highly parallel pipeline workflow protocol for end-to-end morphological analysis of thousands of nuclei and nucleoli in 3D. This approach allows efficient and informative evaluation of cell shapes in the imaging data and represents a reproducible technique that can be validated, modified, and repurposed by the biomedical community. This facilitates result reproducibility, collaborative method validation, and broad knowledge dissemination.

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