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Computational Pathology: What's New

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The term computational pathology (CPath) has become a buzz-word among the digital pathology community. Advances in scanning systems, imaging technologies and storage devices are generating an ever-increasing volume of whole-slide images (WSI) acquired in clinical settings, which can be computationally analyzed using artificial intelligence (AI), such as deep learning technologies, in a new area of development called CPath. The purpose of the review is to disseminate the latest news and futures perspectives by CPath. Deep learning in the context of CPath has methodological contributions that can be distinguished into approaches based on the final purpose of the analysis: predicting clinical endpoints such as cancer subtype, patient survival or genetic mutations from WSI and AI-based assistive tools, such as segmentation methods for WSI or virtual staining. The emergence of multiplex imaging, spatially resolved genomic assays and 3D pathology, among other methodologies, will accelerate this trend, providing new opportunities for

multimodal integration and discovering new biomarkers. Additionally, these developments will help automating labor-intensive manual work and reducing inter-observer variability diagnosis between pathologists, contributing to a better patient care. CPath will underpin the development of the next generation of cancer therapies and diagnostics, changing the clinical research and ultimately leading towards new cures or improved patient outcomes.

Keywords: Digital Pathology, Computational Pathology, Artificial Intelligence