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## Human neuropathology/novel methods

# The status of digital pathology and machine learning within Alzheimer's Disease Centers

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## Abstract

**Background:** Digital pathology and machine learning (ML) workflows have paradigm shifting potential especially in the field of Alzheimer's disease and related disorders. However, many institutions/centers may not have access to these technologies. To provide benchmark data, a survey was developed and distributed to National Institutes of Health's Alzheimer's Disease Centers (ADCs) in the United States.

**Method:** Survey questions covered topics such as: infrastructure (i.e. type of digital slide scanners used), funding sources (i.e. how the scanner was funded), and data management/storage (i.e. size of digital files). After development, review, and approval by the ADC digital pathology working group, the survey was distributed via email to 35 past and current ADC directors and/or ADC neuropathology core leaders. Participation in the survey was completely voluntary and answers did not contain any personal data.

**Result:** The survey generated over a 90% response rate, and the majority of those who completed the survey were neuropathology core leaders; 81% stated their ADC had access to a digital slide scanner, most common brand being Aperio/Leica. One third of respondents stated there was a fee for service to utilize the scanner. For digital pathology and/or ML resources, 40% of respondents stated none are supported in any way by their ADC. To cover the purchase and operation of the scanner, 50% stated they had institutional support. Many were unsure of the approximate average scanned file size of digital images (37%) and total amount of storage space that files occupied (50%). Many (75%) were aware of other departments at their institution working with digital pathology and/or ML, but a similar percentage was unaware of multi-university or industry partnerships.

**Conclusion:** These results demonstrate many ADCs have access to a digital slide scanner and had institutional support to cover the purchase. However, further investigation is needed to understand hurdles and barriers for implementing both digital pathology and ML workflows aiding in standardized methods across ADCs.