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rAAV Nuclear Translocation Assay

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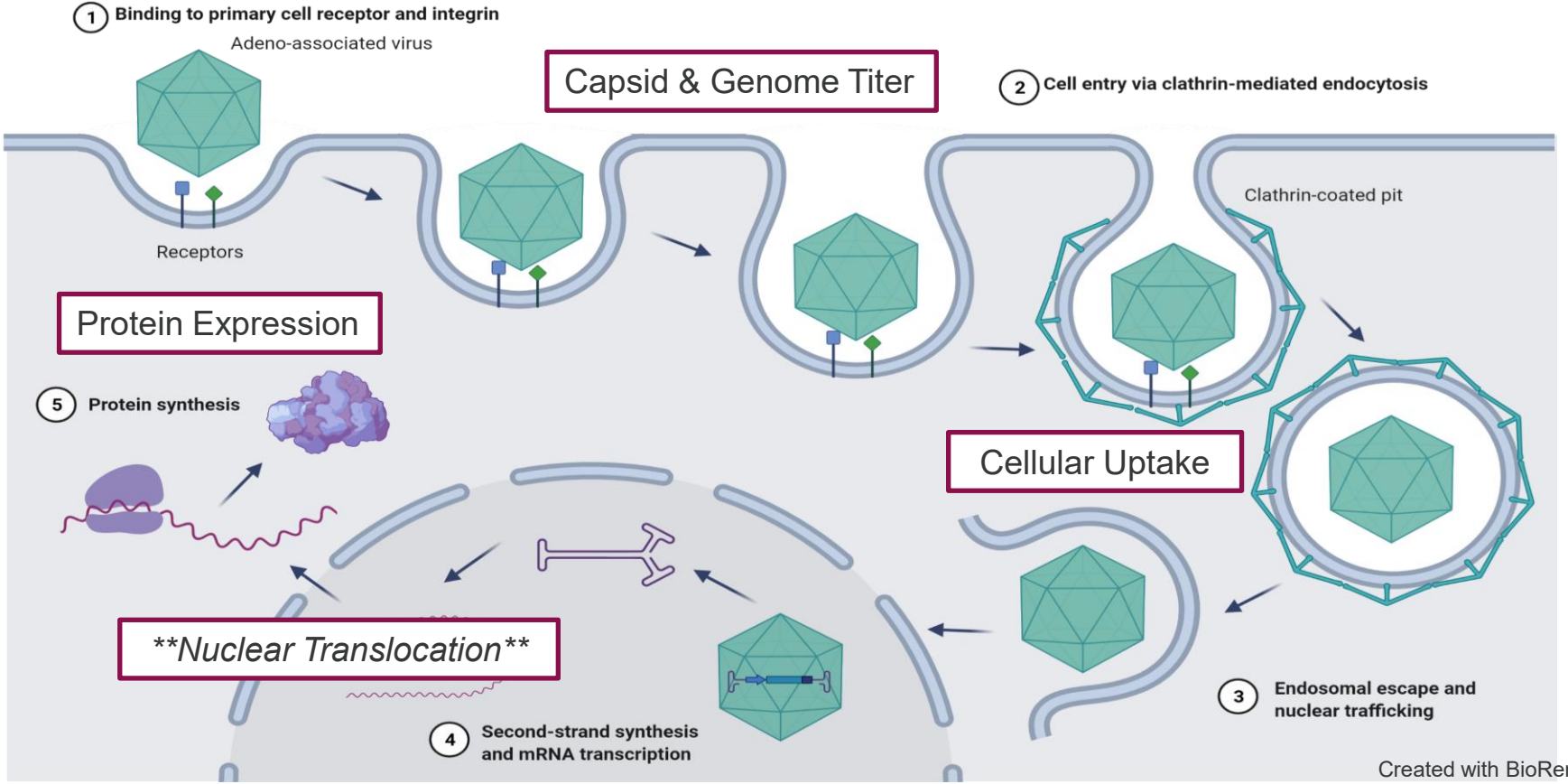
Biogen

Stepwise Quantification of AAV Transduction



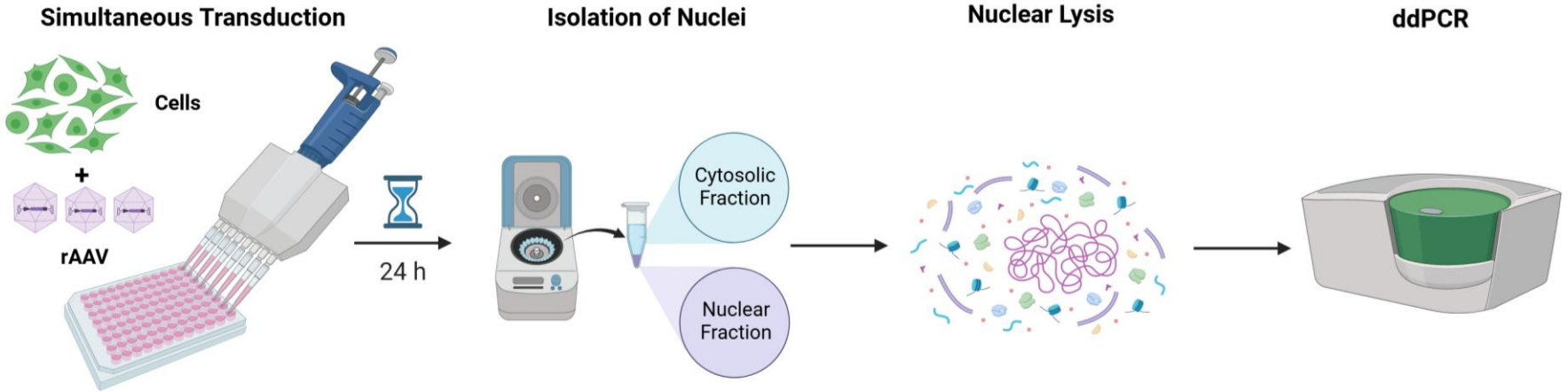
Bridging the Gap Between Cell Entry and Transgene Expression

Capsid changes can impair productive intracellular trafficking. Vectors can internalize but fail to reach the nucleus

Cellular uptake assays cannot distinguish productive from non-productive nuclear entry

Early process decisions require functional readouts before traditional potency assays are available

Nuclear Translocation Assay Workflow



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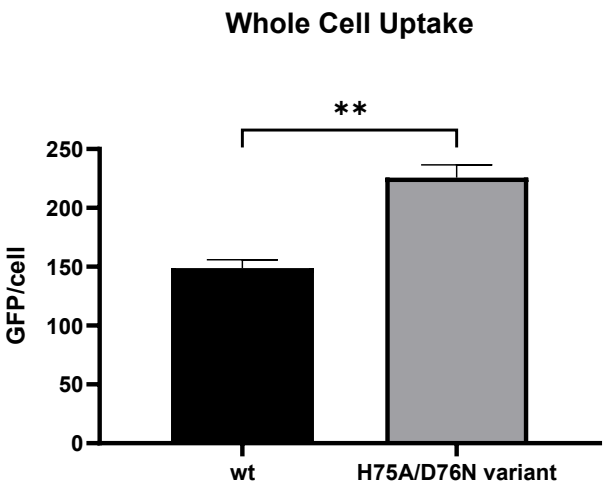
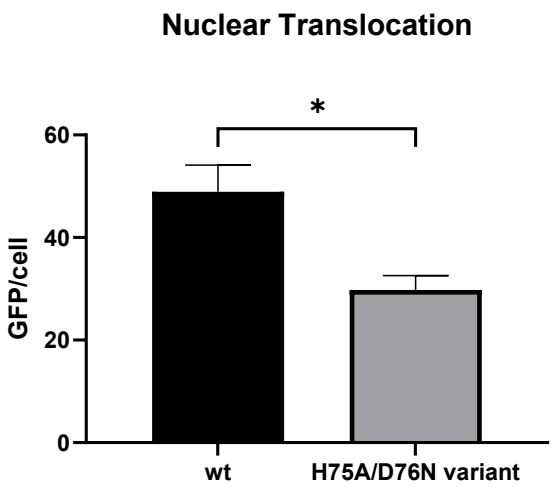
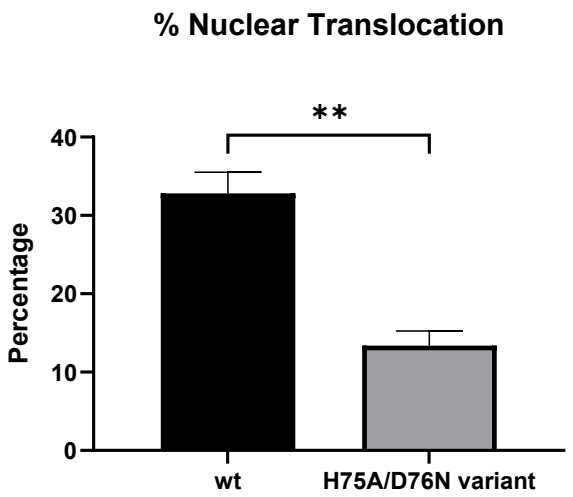
Nuclear Translocation Assay Detects Trafficking Impairment

rAAV H75A/D76N variant shows 3-fold reduction in % Nuclear Translocation

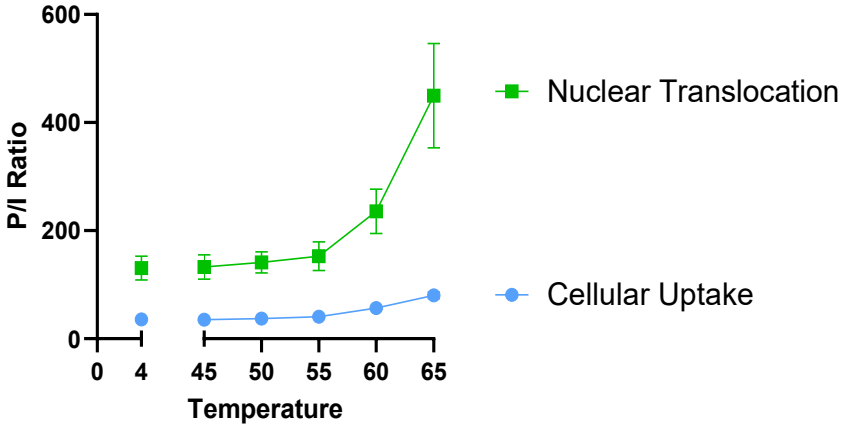




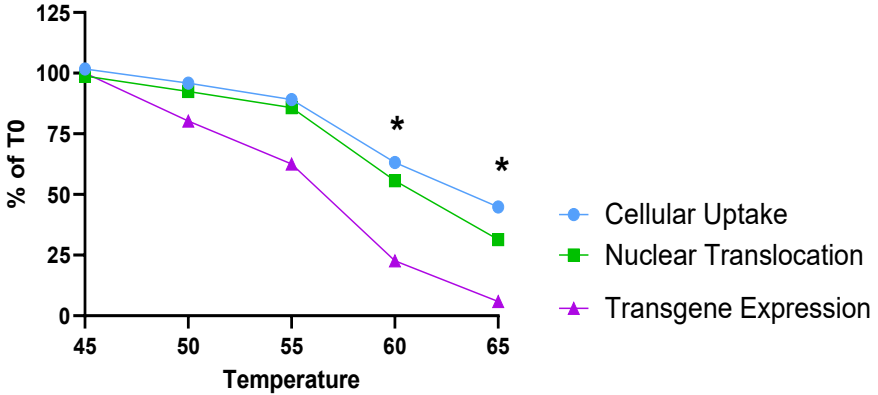


Nuclear Translocation Assay Reveals Thermal Stress-Induced Trafficking Defects

Nuclear translocation better captures stress-induced trafficking defects



Nuclear translocation distinguishes trafficking defects from functional loss



Summary and Impact

A 96-well ddPCR-based nuclear translocation assay provides a scalable functional readout between cellular uptake and protein expression

The assay detects capsid quality defects from mutations and process stress that are missed by uptake assays

Nuclear translocation paired with uptake data supports earlier, more informed process development decisions

Acknowledgements

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For the full methodology and assay performance data, please visit Poster 1!