

Beyond the plasma membrane: subcellular distribution of ADAM10 in human cortical neurons

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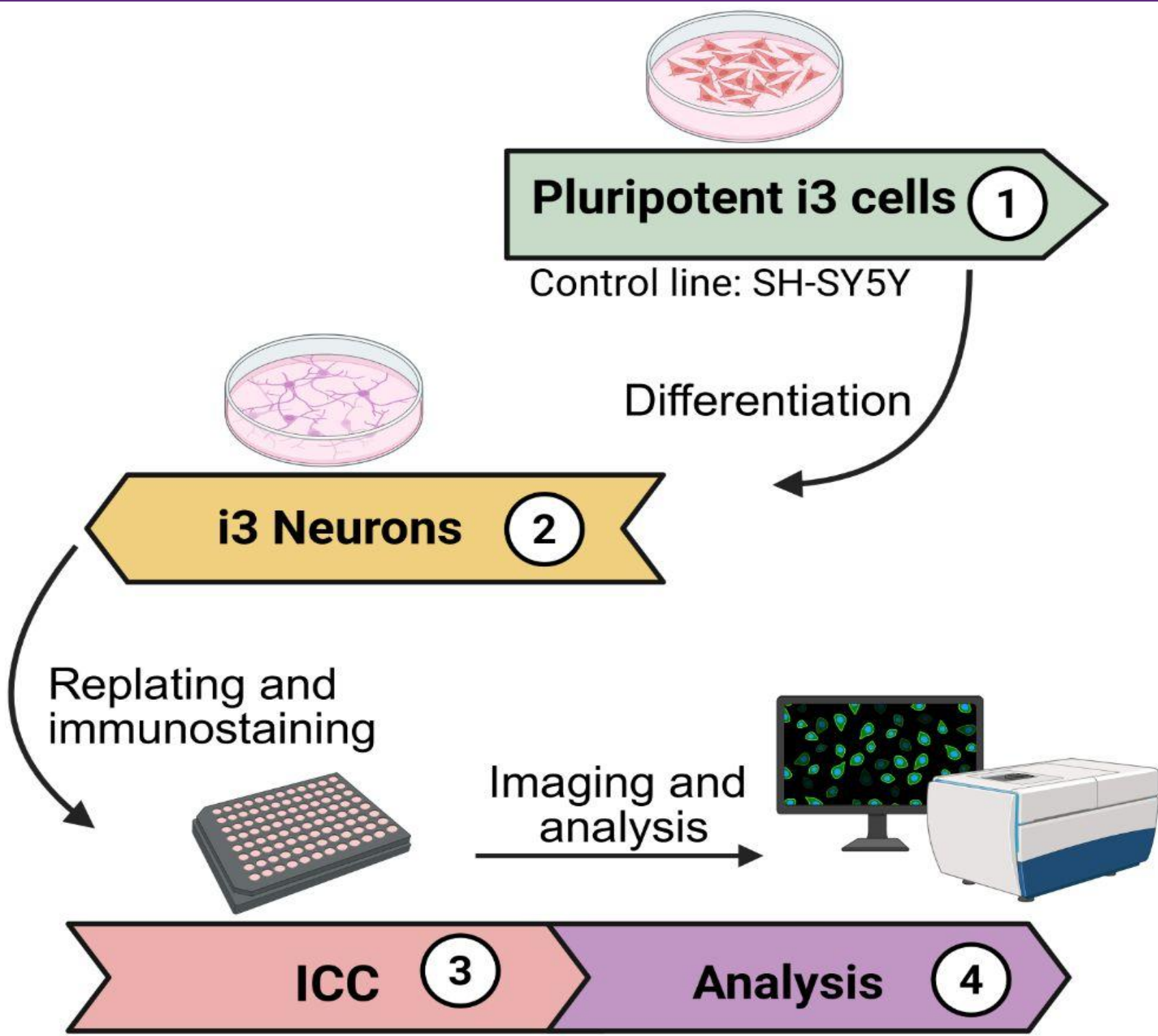
ADAM10 displays an unexpected nuclear staining pattern in i3-derived cells, suggesting a potentially underexplored aspect of ADAM10 biology.

INTRODUCTION

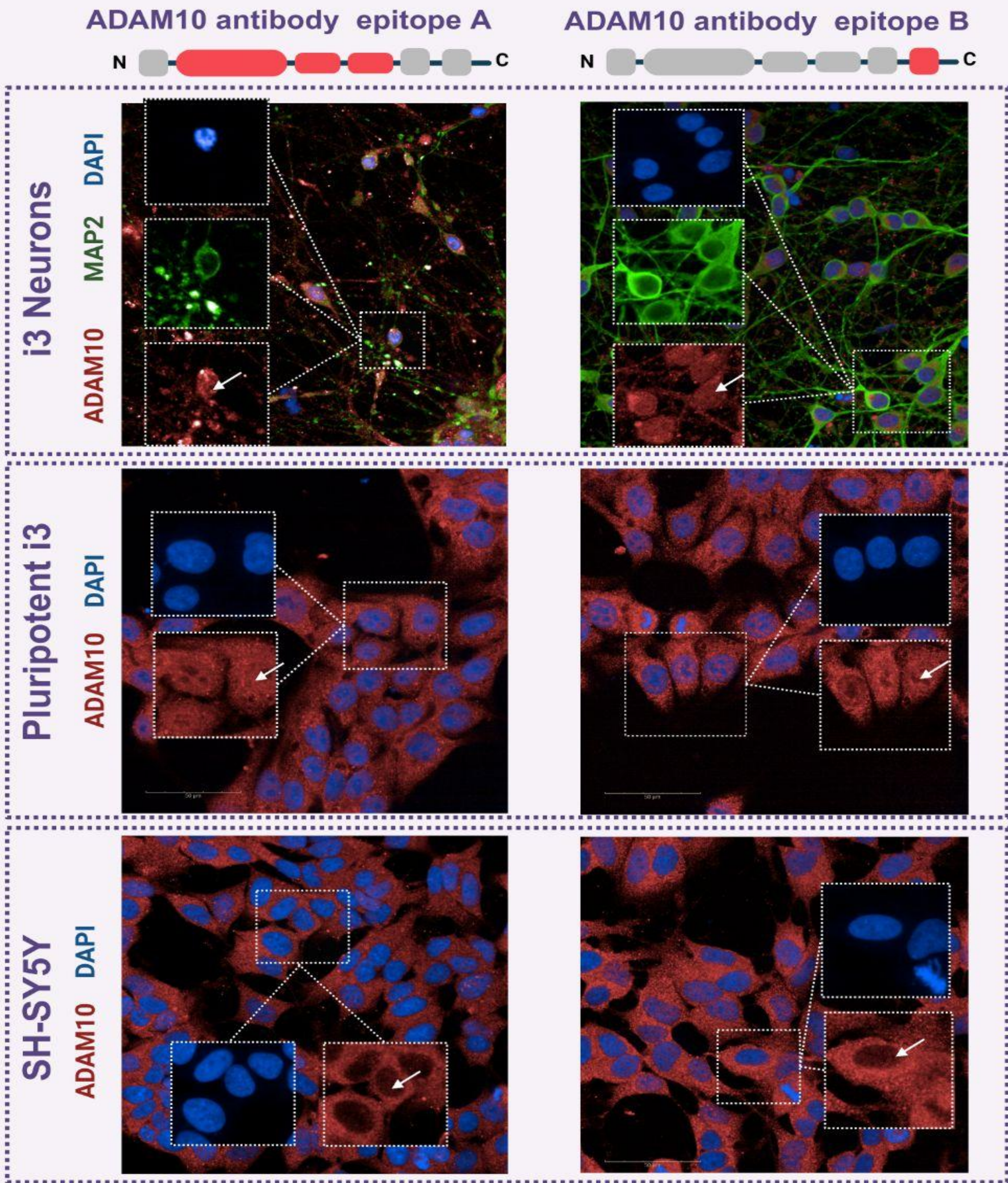
ADAM10 is the principal α -secretase in the central nervous system and plays key roles in cell-to-cell communication, immune responses, synaptic plasticity, and the non-amyloidogenic processing of amyloid precursor protein (APP), thereby preventing amyloid- β production¹.

Despite its central role in neuronal physiology, the precise cellular and subcellular distribution of ADAM10 in nervous system cells remains incompletely characterized. This study aims to characterize the subcellular localization of ADAM10 in cortical neuron models, as these cells are particularly vulnerable to Alzheimer's disease pathology.

METHODS



RESULTS



Investigation of ADAM10 subcellular localization in cortical neurons: ADAM10 subcellular localization in cortical neurons, i3 pluripotent cells, and SH-SY5Y cells. DAPI (blue), MAP2 (green), and ADAM10 (red). (A) Ectodomain-targeting antibody. (B) Cytoplasmic tail-targeting antibody. Arrows indicate differences in nuclear staining.

CONCLUSIONS

The unexpected nuclear localization of ADAM10 in i3 pluripotent and neuronal cells opens new questions:

- Is ADAM10 truly localized within the nucleus?
- Is this a cell type-specific phenomenon?
- What functional role might ADAM10 play in this compartment?

Previous studies have also reported nuclear localization of ADAM10 in other cell types, suggesting that this phenomenon may not be restricted to i3 cells²⁻⁴. These findings are preliminary and will be further investigated to validate the nuclear localization of ADAM10 and explore its potential functional significance.

REFERENCES

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