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SOP and tick-sheet for using TDP-43 RNA aptamer (TDP-43APT) to detect pathological TDP-43 in FFPE-preserved human tissue, as described in Spence and Waldron et al., 2024 (Acta Neuropathologica)

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DISCLAIMER

Authors declare no conflicts of interest.

MANUSCRIPT CITATION:
RNA aptamer reveals nuclear TDP-43 pathology is an early aggregation event that coincides with STMN-2 cryptic splicing and precedes clinical manifestation in ALS.
Holly Spence*, Fergal M. Waldron*, Rebecca S. Saleeb, Anna-Leigh Brown, Olivia M. Rifai, Martina Gilodi, Fiona Read, Kristine Roberts, Gillian Milne, Debbie Wilkinson, Judi O'Shaughnessy, Annalisa Pastore, Pietro Fratta, Neil Shneider, Gian Gaetano Tartaglia, Elsa Zacco, Mathew H. Horrocks, Jenna M. Gregory (2024). *Acta Neuropathologica* (in press at the time of release of this SOP on 01/03/2024).
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Protocol status: Working
We use this protocol and it's working

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ABSTRACT

Here we provide a SOP to outline the correct procedures for performing Immunohistochemistry (IHC) to detect pathological TDP-43 in FFPE-preserved human tissue using the TDP-43 RNA Aptamer (TDP-43^{APT}), as described in Spence and Waldron et al., 2024 published in *Acta Neuropathologica* (in press at the time of release of this SOP on
01/03/2024)

Users with access to Sequenza immunostaining racks and histological facilities (with fume hood) should be able to carry out all steps over two days.

This protocol uses the TDP-43^{APT} sequence published in Zacco *et al.*, 2022. The sequence is: CGGUGUUGCU with a 3' Biotin-TEG modification, purified using HPLC, scale: 1.0 µM synthesis.

Reference for citations of this method
RNA aptamer reveals nuclear TDP-43 pathology is an early aggregation event that coincides with STMN-2 cryptic splicing and precedes clinical manifestation in ALS.
Holly Spence*, Fergal M. Waldron*, Rebecca S. Saleeb, Anna-Leigh Brown, Olivia M. Rifai, Martina Gilodi, Fiona Read, Kristine, Roberts, Gillian Milne, Debbie Wilkinson, Judi O'Shaughnessy, Annalisa Pastore, Pietro Fratta, Neil Shneider, Gian Gaetano Tartaglia, Elsa Zacco, Mathew H. Horrocks, Jenna M. Gregory (2024). *Acta Neuropathologica* (in press at the time of release of this SOP on 01/03/2024).
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ATTACHMENTS

TDP-43 RNA Aptamer_IHC_SOP_v1.0_01Mar24.pdf

TDP-43 RNA Aptamer_IHC_TS_v1.0_01Mar24.pdf

IMAGE ATTRIBUTION

Jenna M Gregory

GUIDELINES

This protocol is designed for users with access to Sequenza immunostaining racks and histological facilities (with fume hood) should be able to carry out all steps over two days.

BEFORE START

Please see appendix for materials required to carry out this protocol.

MATERIALS

See SOP appendix for materials.

SAFETY WARNINGS

Safety First

Before starting, please ensure all relevant Health & Safety documentation is in order including the following

- COSHH assessment
- Risk assessment
- Safe System of Work
- SOP read and understood

BEFORE START INSTRUCTIONS

Please see appendix for materials required to carry out this protocol.