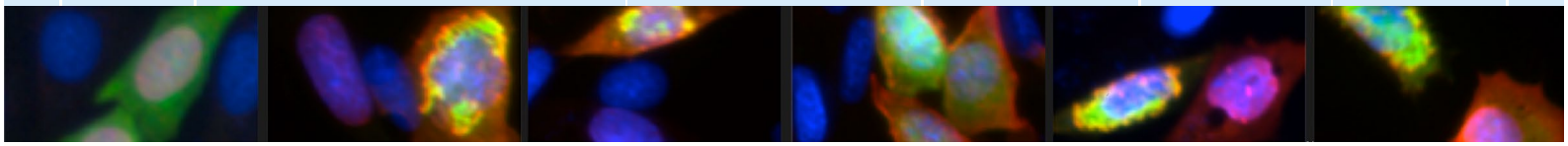

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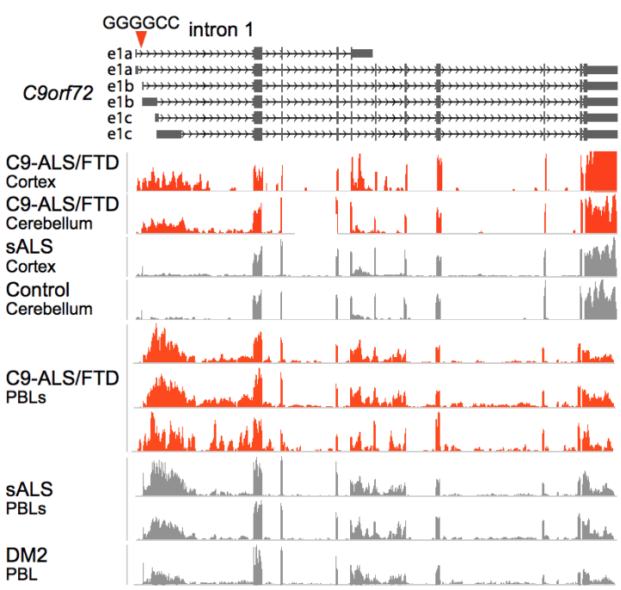
A New Test for C9orf72 ALS?

April 10, 2018 News in Brief Michelle Pflumm

A simple blood test may help diagnose and develop therapies for the most common genetic form of ALS. The strategy, proposed by a research team led by the University of Florida's Maurice Swanson in Gainesville, screens for the presence of a key intron in transcripts of the C9orf72 gene.

The approach is based on RNA-seq analysis, which suggests that GC-rich repeat expansions, linked to ALS, interfere with mRNA splicing, leading to the retention of the first intron in the C9orf72 ALS gene (see also Niblock et al., 2016).

The strategy is potentially a key alternative to existing PCR-based approaches for detecting repeat expansions in larger populations including in genome-wide association studies (GWAS) and in clinical trials. The approach builds on previous studies, which found that repeat-rich C9orf72 RNAs "escape" the nucleus via a SRSF1-based mechanism (see July 2017 news; Niblock et al., 2016; Hautbergue et al., 2017).



Finding introns? *A new approach may provide a key alternative to repeat-primed PCR to detect C9orf72 repeat expansions in large cohorts. The RNA-seq-based strategy, in part, uses IRFinder to screen for intron retention (Middleton et al., 2017). [Courtesy of Sznajder et al., 2018, Proceedings of the National Academy of Sciences.]*

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The study is published on April 2 in the *Proceedings of the National Academy of Sciences.*

Featured Paper

Sznajder ŁJ, Thomas JD, Carrell EM, Reid T, McFarland KN, Cleary JD, Oliveira R, Nutter CA, Bhatt K, Sobczak K, Ashizawa T, Thornton CA, Ranum LPW, Swanson MS. Intron retention induced by microsatellite expansions as a disease biomarker. Proc Natl Acad Sci U S A. 2018 Apr 2. [PubMed].

References

Middleton R, Gao D, Thomas A, Singh B, Au A, Wong JJ, Bomane A, Cosson B, Eyras E, Rasko JE, Ritchie W. IRFinder: assessing the impact of intron retention on mammalian gene expression. Genome Biol. 2017 Mar 15;18(1):51. [PubMed].

Hautbergue GM, Castelli LM, Ferraiuolo L, Sanchez-Martinez A, Cooper-Knock J, Higginbottom A, Lin YH, Bauer CS, Dodd JE, Myszczynska MA, Alam SM, Garneret P, Chandran JS, Karyka E, Stopford MJ, Smith EF, Kirby J, Meyer K, Kaspar BK, Isaacs AM, El-Khamisy SF, De Vos KJ, Ning K, Azzouz M, Whitworth AJ, Shaw PJ. SRSF1-dependent nuclear export inhibition of C9ORF72 repeat transcripts prevents neurodegeneration and associated motor deficits. Nat Commun. 2017 Jul 5;8:16063. [PubMed].

Niblock M, Smith BN, Lee YB, Sardone V, Topp S, Troakes C, Al-Sarraj S, Leblond CS, Dion PA, Rouleau GA, Shaw CE, Gallo JM. Retention of hexanucleotide repeat-containing intron in C9orf72 mRNA: implications for the pathogenesis of ALS/FTD. Acta Neuropathol Commun. 2016 Feb 25;4:18. [PubMed].

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