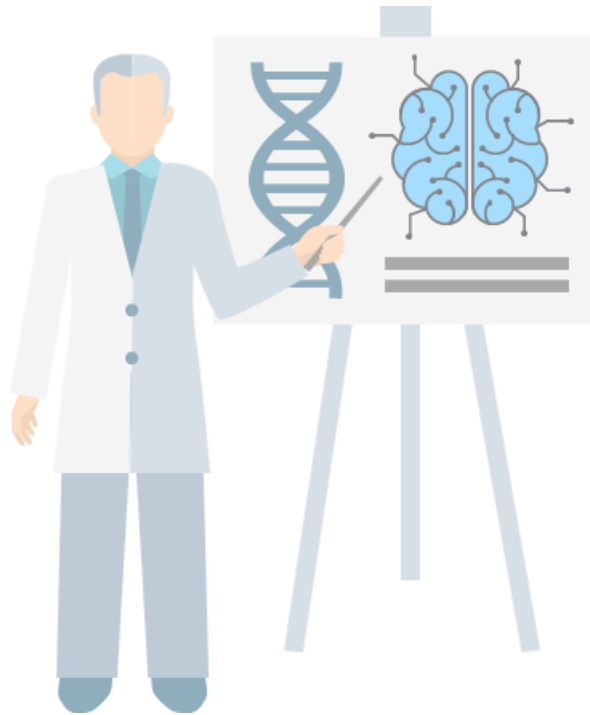


Identification of deregulated microRNAs in a Portuguese population of patients with Amyotrophic Lateral Sclerosis



Nuno Peixinho

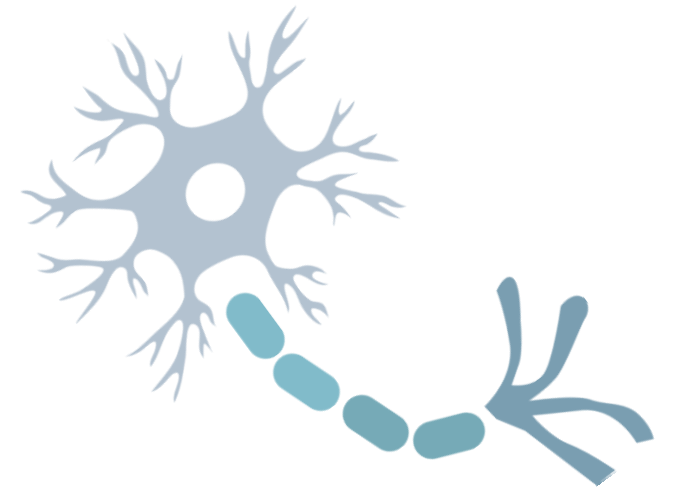
nuno.peixinho@nms.unl.pt

Msc in Neurosciences – FML (Lisbon Faculty of Medicine)

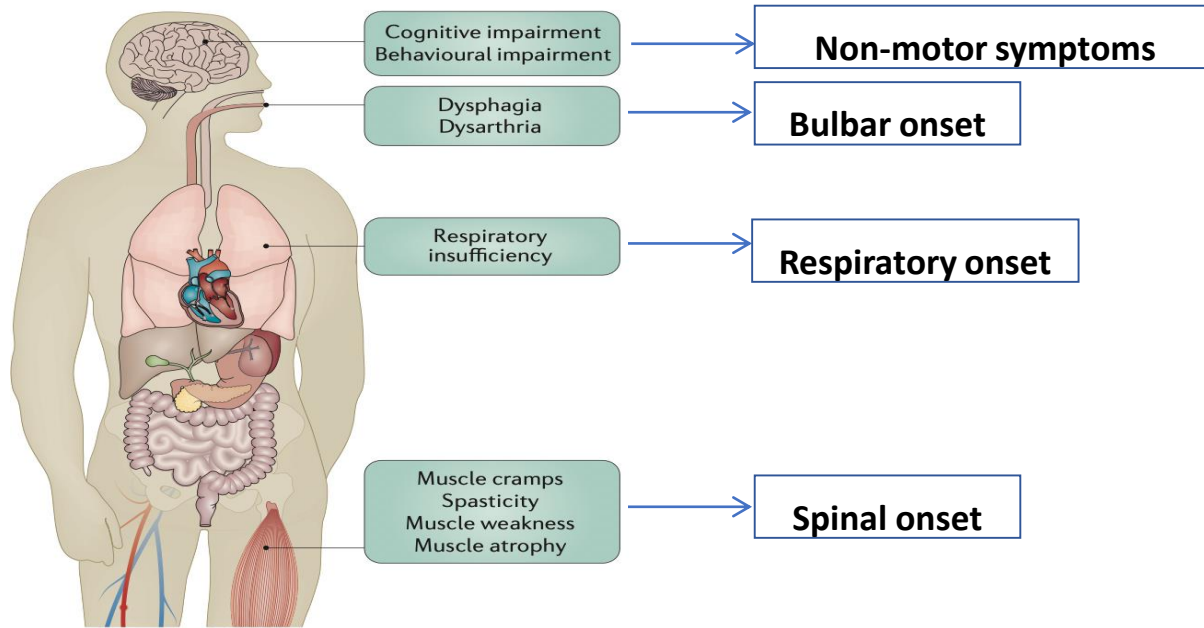
NOVA Medical School – ToxOmics

Physiology Institute – Mamede de Carvalho Lab

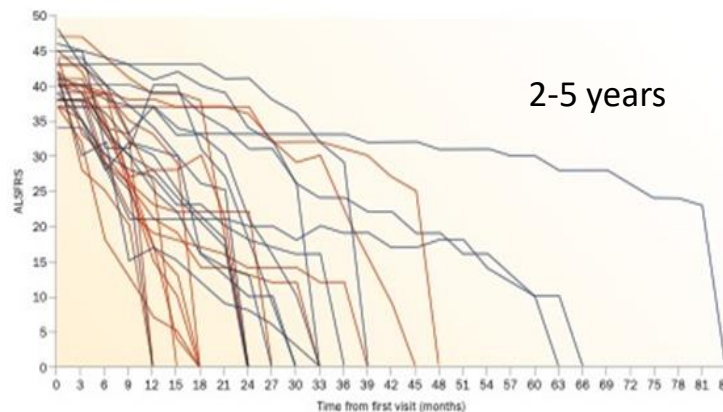
Lisbon, 2022



Amyotrophic Lateral Sclerosis (ALS)

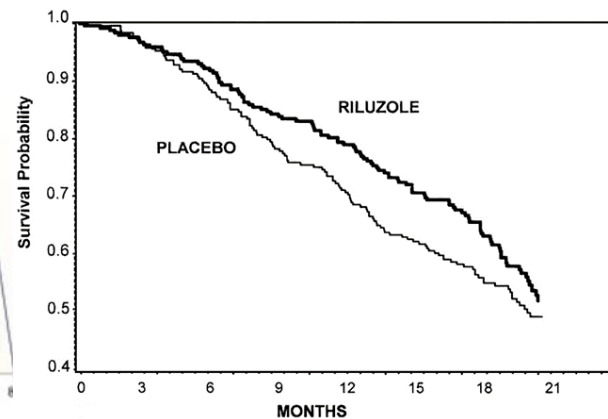


Survival



Swinnen, B. and Robberecht, W. 2014

No effective treatment



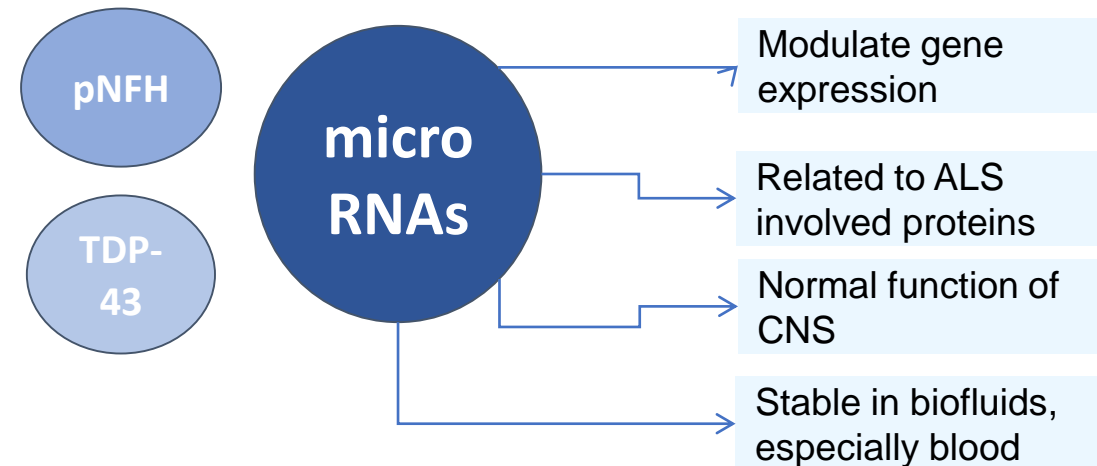
Thakore, N.J. *et al.* 2019

Improving clinical trial outcomes in amyotrophic lateral sclerosis

NATURE REVIEWS | NEUROLOGY <https://doi.org/10.1038/s41582-020-00454-z>

- Enhanced clinical trial designs, including multi-arm, multi-stage platform trials, that incorporate biomarkers of treatment responses will accelerate drug discovery and increase trial participation.
- Improved patient stratification and patient-reported outcome measures, including home assessments, will improve the reliability and sensitivity of trial endpoints.

Biomarkers – Diagnostic & Prognostic



Objectives

01

Identify de-regulated miRNAs in samples of plasma from patients with ALS

02

Confirm the de-regulated miRNAs in individual samples of plasma

03

Perform a longitudinal analysis of changes in miRNAs profiles

04

Combine these results with clinical phenotypes and descriptions

Diagnostic Biomarker

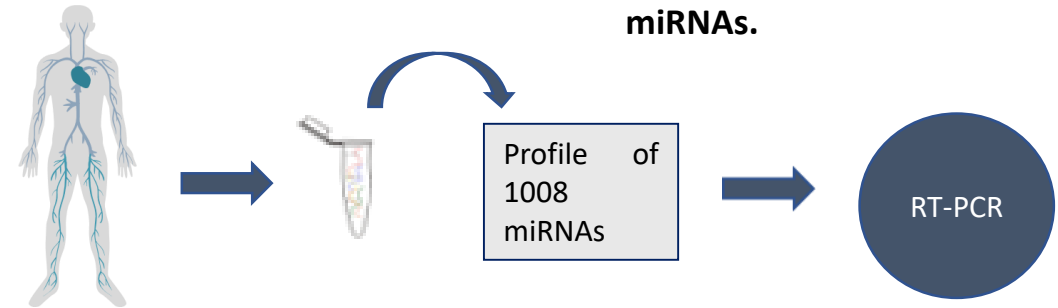
Prognostic Biomarker

Methods

3 Groups (n°)

- ALS patients (116)
- Healthy controls (17)
- ALS mimic-disorders patients (28)

- 16 samples of each group were selected to create a pool;
- Quantification by PCR;
- Statistical analysis to obtain the most significantly de-regulated miRNAs.

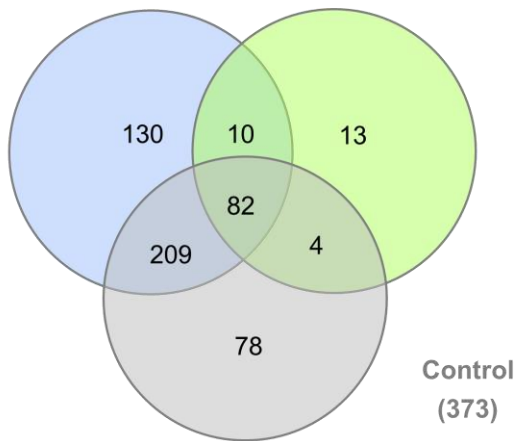


Each sample confirmed individually for the relative expression of each deregulated miRNAs

Each patient has different samples spaced in time

Results (work in progress)

ALS
(431)



Mimic
(109)

Control
(373)

MicroRNAs of Interest

miR-26a-1-3p

miR-361-5p

miR-224-5p

miR-152-3p

miR-7-2-3p

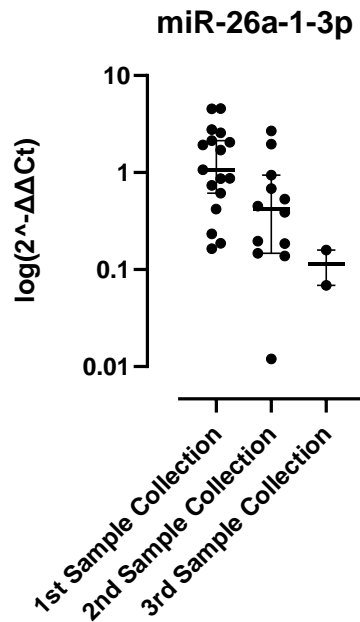
miR-93-3p

miR-206

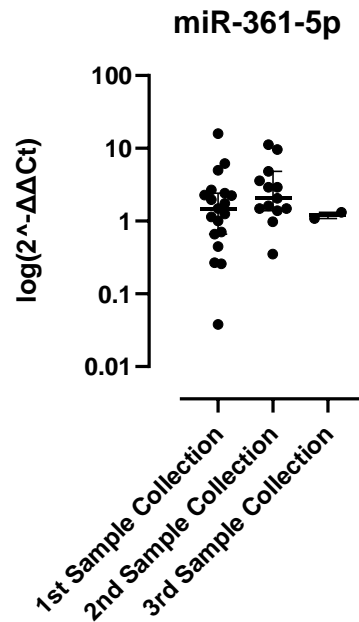
miR-9-5p

miR-630

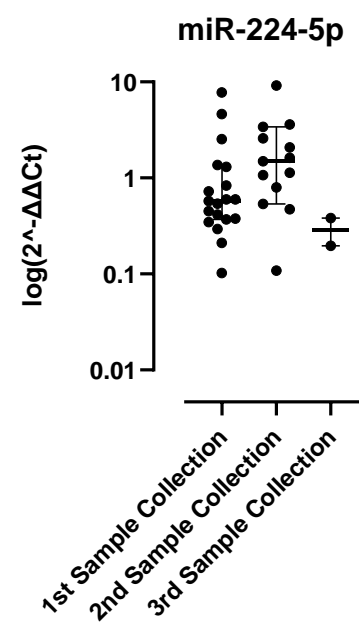
miR-3159



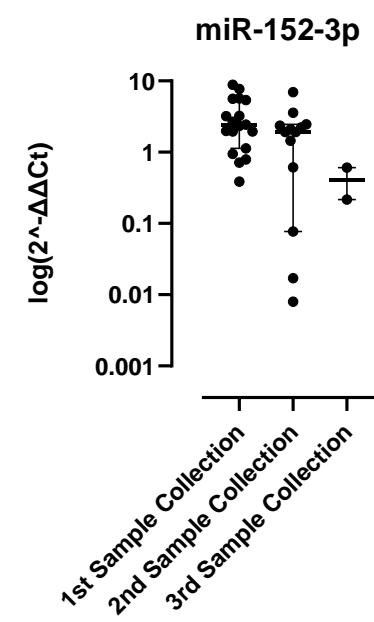
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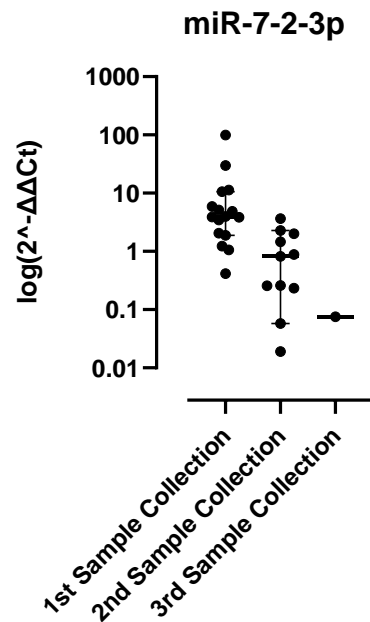
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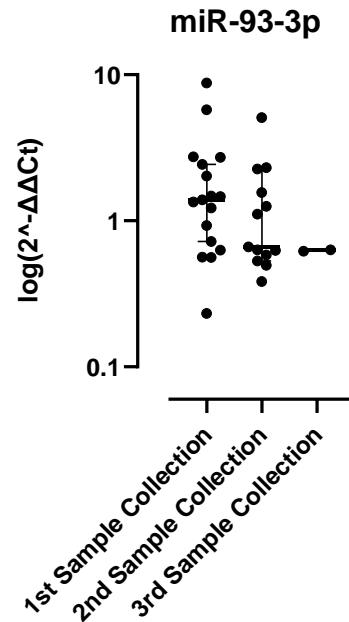
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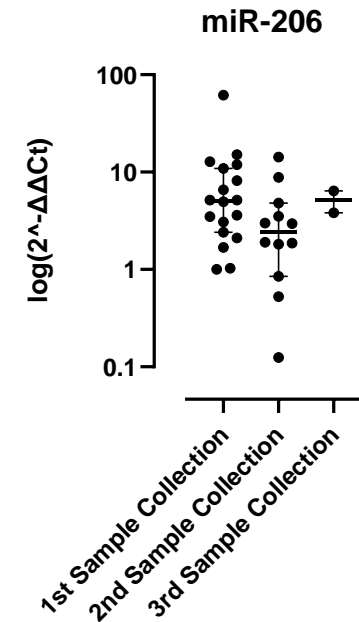
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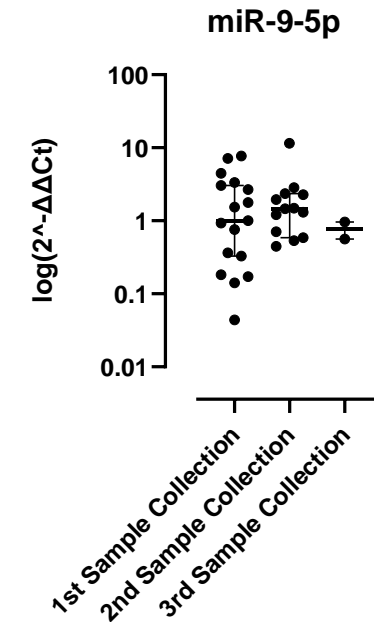
ALS



ALS

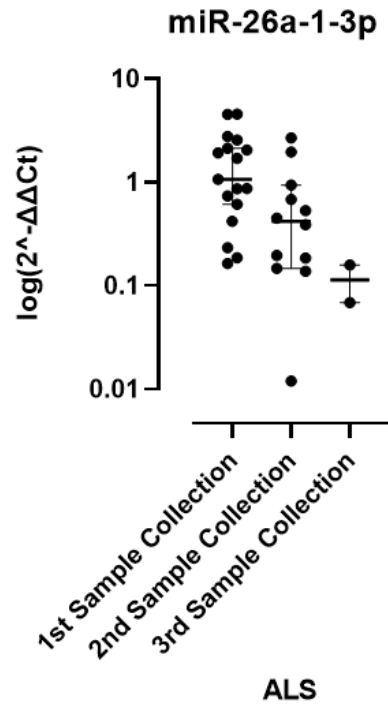


ALS



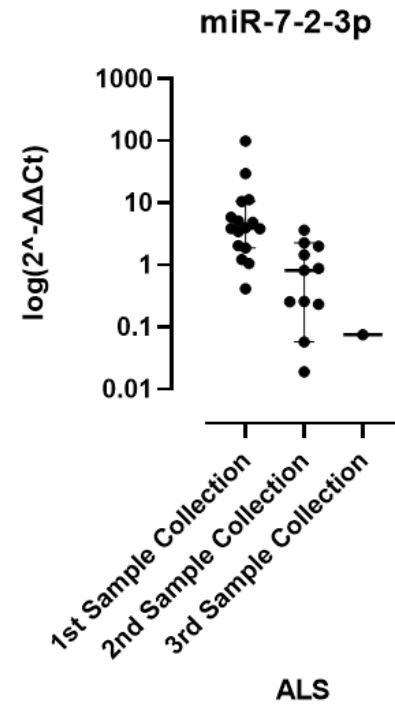
ALS

Preliminary data



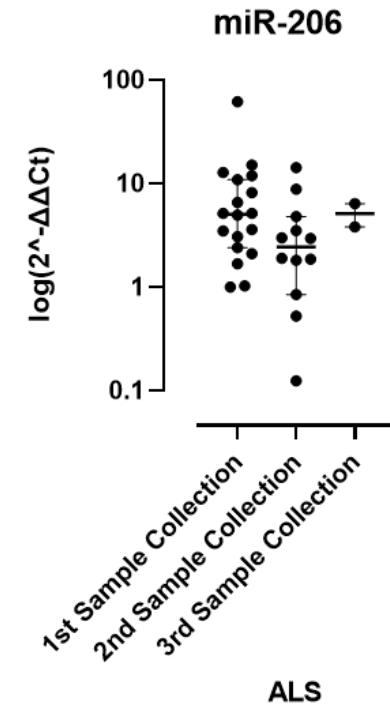
Not related with ALS in the literature

Negative regulation of interleukins, heart rate and involved in myelin maintenance



Not related with ALS in the literature

Role unclear. Targets cancer-related genes (especially evident in papillary thyroid carcinoma)



MyomiR that promotes re-innervation and regeneration of neuromuscular synapses

Different modulation according to disease velocity (animal model)

Acknowledgements



- Professor Mamede de Carvalho Lab



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