



Trends in **Molecular Biology** • Special issue

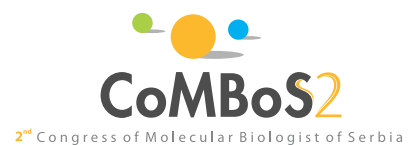
# Abstract Book

## CoMBoS2

2<sup>nd</sup> Congress of Molecular Biologist of Serbia

Belgrade • 2023

ISBN-978-86-82679-15-8



**CoMBoS2 – the Second Congress of Molecular Biologists of Serbia,  
Abstract Book – Trends in Molecular Biology, Special issue**

06-08 October 2023, Belgrade, Serbia

**Online Edition**

<https://www.imgge.bg.ac.rs/lat/o-nama/kapacitet-i-oprema/istrazivacka-delatnost>

<https://indico.bio.bg.ac.rs/e/CoMBoS2>

**IMPRESSUM**

PUBLISHER:

**Institute of Molecular Genetics and Genetic Engineering (IMGGE),  
University of Belgrade**

FOR THE PUBLISHER:

Dr. Sonja **Pavlović**

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Belgrade, 2023

ISBN 978-86-7078-173-3

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Belgrade • 2023

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## NEUROFILAMENT AS A BIOMARKER OF RESPONSE TO GENETICALLY DESIGNED THERAPIES FOR SPINAL MUSCULAR ATROPHY

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Considering the substantial impact of genetic therapies for spinal muscular atrophy (SMA), longitudinal follow-up of patients undergoing treatment is crucial to effectively monitor treatment response. While functional rating scales are commonly used as primary outcome measures, they may not fully capture all the therapeutic benefits. To address this limitation, the phosphorylated neurofilament heavy chain (pNF-H) protein has emerged as a promising biomarker for evaluating treatment response. pNF-H is a neuron-specific filament that exhibits increased levels in the cerebrospinal fluid (CSF) and plasma in the presence of neuronal degeneration. Our study includes individuals treated with Nusinersen (CSF and plasma samples) and Risdiplam (plasma), as well as age- and sex-matched control subjects (CSF and plasma). By examining the dynamics of pNF-H levels in these groups, we sought to identify significant differences indicative of treatment response. Before treatment, SMA individuals typically exhibit higher levels of pNF-H compared to non-SMA individuals. Elevated levels of pNF-H are associated with more severe clinical manifestations of the disease. During Nusinersen treatment, a notable decline in pNF-H levels during the first 2 months can be observed. Current findings suggest that genetic therapies have a notable impact on reducing pNF-H levels over time. By examining the changes in pNF-H levels, our study offers valuable insights into the underlying biochemical alterations associated with these therapies. Furthermore, it supports the use of pNF-H as a complementary measure to functional rating scales and as a potential biomarker for evaluating treatment effectiveness and monitoring disease progression in SMA.

Key words: Spinal muscular atrophy; Neurofilament; Nusinersen; Risdiplam

Acknowledgements: This study was financially supported by the Association SMA Serbia.