

in the lumbar enlargement of the spinal cord and in the axon terminals of musculus interosseus samples. Number of motor neurons in the spinal cord was measured with the disector method.

**Results:** Acute passive transfer with blood serum of ALS patients induced elevation of intracellular calcium level and increase of lipofuscin vesicle volume. Significant decrease could be documented in the number of motor neurons in the spinal cord. Changes in calcium homeostasis and motor neuronal loss were most prominent in C9ORF72 mutation. Furthermore, partial mitochondrial volume decreased in SOD1 point mutations.

**Conclusion:** Our previous experiments demonstrated the central role of intracellular calcium level elevation in ALS. Our current findings proved that different mutations induced similar morphological alterations, but to different extent. The extensive loss of motoneurons and changes in intracellular calcium level suggest that C9ORF72 mutation might present a more progressive phenotype.

#### Acknowledgements:

This work was financially supported by the GINOP-2.3.2.-15-2016-00001, the GINOP-2.3.2.-15-2016-00034 and GINOP-2.3.3-15-2016-00001 programs. This research work was conducted with the support of the Szeged Scientists Academy under the sponsorship of the Hungarian Ministry of Human Capacities (EMMI:13725-2/2018/INTFIN). Our work was also supported by the UNKP-18-2 New National Excellence Program of the Ministry of Human Capacities.

#### References:

- [1] Tripolszki, K., Csányi, B., Nagy, D., Ratti, A., Tiloca, C., Silani, V. and Széll, M. (2017). Genetic analysis of the SOD1 and C9ORF72 genes in Hungarian patients with amyotrophic lateral sclerosis. *Neurobiol. Aging*, 53, 195.e1–195.e5.
- [2] Engelhardt, J.I., Siklos, L., Appel, S.H. (1977). Altered calcium homeostasis and ultrastructure in motoneurons of mice caused by passively transferred anti-motoneuronal IgG. *J. Neuropath. Exp. Neurol.*, 56, 21–39.
- [3] Obál, I., Nógrádi, B., Meszlényi, V., Patai, R., Ricken, G., Kovacs, G.G., Tripolszki, K., Széll, M., Siklós, L. and Engelhardt, J.I. (2019). Experimental motor neuron disease induced in mice with long-term repeated intraperitoneal injections of serum from ALS patients. *Int. J. Mol. Sci.*, 20, 2573.

## HEART RATE VARIABILITY CORRELATES OF EXPRESSIVE WRITING

Teresa Jacques<sup>1</sup>, Francisca Costa<sup>1</sup>, Setareh Fadaei<sup>1</sup>, José Carlos Paiva<sup>2</sup>, Rui Alexandre Alves<sup>1</sup>, José Paulo Leal<sup>2</sup>, Fernando Barbosa<sup>3</sup>

<sup>1</sup>Neurocognition and Language lab, Department of Psychology and Educational Sciences, University of Porto;

<sup>2</sup>Department of Computer Science, University of Porto;

<sup>3</sup>Neuropsychophysiology lab, Department of Psychology and Educational Sciences, University of Porto

**Introduction:** Numerous studies have used the expressive writing task (writing about a personally upsetting experience) and have shown benefits on physical and mental health in various pathologies. These pathologies include eating disorders, depression, anxiety, and cancer.

**Aim:** Despite the awareness of these positive health outcomes, the underlying relationship between expressive writing and health is yet to be understood. By understanding this

relationship, we can develop expressive writing as a complementary treatment method in disease.

**Methods:** Participants were first-year university students at the University of Porto (n = 57). Each participant was randomly assigned to one of two groups. They either described their daily routine (control group) or a traumatic experience (expressive writing group) for 15 minutes. During the writing task electrocardiogram (ECG) data was recorded. The recorded ECG was divided into five, 5-minute parts (1' baseline; 3' writing; 1' post-writing). Data analysis was conducted by calculating three heart rate variability measures (HRV): SDNN, RMSSD, and LF/HF ratio, representing respectively, overall HRV, parasympathetically mediated HRV and sympathovagal balance. Writing measures were calculated using HandSpy 2.3, to assess for writing processes correlates of expressive writing.

**Results:** Results showed that HRV seems to increase from the beginning to the end of the task, regardless of the assigned group, with the expressive group showing significantly higher sympathetically mediated HRV.

**Conclusion:** These findings suggest that expressive writing has a physical effect on the body through cardiovascular changes, with HRV patterns differing significantly between groups. This could indicate that emotional regulation and coping mechanisms are active while writing about a personally upsetting experience, but not during a neutral writing task.

#### Acknowledgements:

This study was conducted within the research project: “Mind-Body Interactions in Writing” (M-BW), funded by BIAL Foundation (Grant 312/16).

## Oncology & Molecular Biology

### DETERMINATION OF ANDROGEN RECEPTOR METHYLATION PATTERN IN THREE PROSTATE CANCER CELL LINES THROUGH BISULFITE SEQUENCING

Mariana Brütt<sup>1,2</sup>, Rui Henrique<sup>1,3,4</sup>, Vânia Camilo<sup>1</sup>, C. Joana Marques<sup>5,6</sup>, Carmen Jerónimo<sup>1,4</sup>

<sup>1</sup>Cancer Biology & Epigenetics Group – Research Center, Portuguese Oncology Institute of Porto (CI-IPOP), Porto, Portugal; <sup>2</sup>Master in Oncology, Institute of Biomedical Sciences Abel Salazar – University of Porto (ICBAS-UP), Porto, Portugal; <sup>3</sup>Department of Pathology, Portuguese Oncology Institute of Porto (IPOP), Porto, Portugal; <sup>4</sup>Department of Pathology and Molecular Immunology, Institute of Biomedical Sciences Abel Salazar – University of Porto (ICBAS-UP), Porto, Portugal; <sup>5</sup>Department of Genetics, Faculty of Medicine, University of Porto, 4200-319 Porto, Portugal. cmarques@med.up.pt; <sup>6</sup>I3S-Instituto de Investigação e Inovação em Saúde, Universidade do Porto, 4200-135 Porto, Portugal

**Introduction:** When diagnosed, most of prostate cancer (PCa) patients display androgen-dependent tumors, but an important proportion of those tumors progress to a castration-resistant state after androgen-deprivation therapy (ADT). This progression is due to androgen receptor (AR) signaling pathway deregulation by several genetic mechanisms, regardless of androgen circulating levels. From these, 20–30% of androgen-independent cancers that display AR loss of expression do not harbor AR genetic alterations. DNA promoter methylation