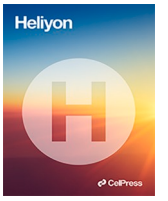
Heliyon 10 (2024) e26080

Contents lists available at ScienceDirect

Heliyon

journal homepage: www.cell.com/heliyon



Editorial

Heliyon Neurology: Leveraging cell biology concepts for advancing clinical neurology development

The development of disease and therapeutic concepts in clinical neurology was stimulated decisively by the emergence of cell biology concepts in the past decades. The introduction of L-DOPA, for example, in the treatment of Parkinson's disease in the 1970's was prompted by Arvid Carlsson's discovery in 1957 that L-DOPA administration is able to antagonize the consequences of dopamine depletion in the mouse and rabbit brain, thus reversing motor deficits associated with the lack of L-DOPA [1]. In multiple sclerosis, evidence of immunomodulatory effects of β-interferons from the 1970's led to the observation in 1981 that intrathecally administered human fibroblast β-interferon reduces multiple sclerosis relapses [2]. In ischemic stroke, tissue-plasminogen activator, which post-ischemia is physiologically released by endothelial cells and other vascular cells, was found to induce thromboembolic clot lysis in 1995, thus improving clinical outcome when administered within 3 hours after symptom onset [3].

Cellular biology concepts have greatly advanced ever since, with gene editing currently revolutionizing the therapeutic repertoire of clinical neurologists. The discovery of the CRISPR/Cas9 technology by Emmanuelle Charpentier and Jennifer A. Doudna in 2012, which was awarded with the Nobel Prize in Chemistry in 2020, boosted this development. By enabling genomic editing, it has become possible to introduce gene sequences into genomes with unprecedented precision rapidly by CRISPR/Cas9 [4]. The application to eukaryotic cells opened unprecedented possibilities in genome editing. CRISPR/Cas9 has meanwhile become a cornerstone in biotechnology, which provides novel perspectives in the treatment of neurodegenerative diseases, such as Huntington's disease [5] and spinal muscular atrophy (SMA) [6]. These discoveries strongly boosted gene therapy activities. In patients with SMA, an adeno-associated virus-based gene vector, onasemnogene abeparvovec, has been approved by the FDA and EMA in 2019 and 2020, respectively, based on efficacy data in randomized controlled clinical trials [7,8].

Since its foundation in 1974, the journal *Cell* has been a cornerstone in the publication of impactful research on cell physiology and pathophysiology across biosciences. Following the formation of *Cell Press* in 1986, the journal moved to Elsevier in 1999. According to ScienceWatch (https://archive.sciencewatch.com/), the journal was listed first overall in the category of highest-impact journals, and according to the Journal Citation Reports (https://clarivate.com/products/scientific-and-academic-research/research-analytics-evaluation-and-management-solutions/journal-citation-reports/), the journal ranks first out of 298 journals in "Biochemistry & Molecular Biology". With the open access journal *Cell Reports*, *Cell Press* has continued to expand its profile of publication portfolio. As a subsequent step, *Heliyon* was established in 2015 as an effort to ramify open access research into various research areas.

In continuation of these developments, *Heliyon Neurology* was founded as a section within the *Heliyon* journal in December 2023, for which we are proud to take over the role as founding section editors. *Heliyon Neurology* is a strictly peer-reviewed online journal. The journal publishes scientifically sound papers in all areas related to translational and clinical neurology. *Heliyon Neurology* is dedicated to publishing valuable output across the spectrum of nervous system diseases, including but not limited to vascular neurology, neurodegenerative diseases, cognitive disorders, movement disorders, neuroimmunological diseases, nervous system infections, neurooncology, neurotrauma, sleep disorders and epilepsy. The journal targets clinicians and scientists from the neurology, neurosurgery, neuropathology, neuroimaging, and neurogenetics fields. It particularly aims to attract contents related to neurological disease concepts, diagnostics and treatment. *Heliyon Neurology* welcomes a variety of article types, including original research, reviews, case reports, negative results, meaningful incremental advances, and replication studies.

We are thrilled to take over this important new role at *Heliyon Neurology*, since it will allow us to build upon cell biological excellence established within *Cell Press*. We would like to utilize synergies with *Cell Press* to develop the section's profile as a publication organ leveraging cell biological concepts for translational and clinical neurology development. Concepts in cell biology are

https://doi.org/10.1016/j.heliyon.2024.e26080
Received 7 February 2024; Accepted 7 February 2024
Available online 19 February 2024

currently evolving at an unprecedented speed. The insights obtained in cell science boost basic, translational and clinical neuroscience developments, which profoundly deepens our understanding of nervous system diseases, expands our tool kits in disease classification and diagnostics, and fosters the development of new therapies for the benefit of our patients. Besides gene editing and therapy, fundamental discoveries are currently made in the areas of single cell transcriptomics, proteomics, metabolomics and imaging. These developments will revolutionize the building blocks of clinical neurologists, neurosurgeons, neuropathologists and neuroradiologists, thus enabling new diagnostics and treatments, which are still unimaginable today. For enabling a well-structured peer review process, we established a highly motivated and experienced Associate Editor board, which handles individual papers and provides recommendations about their publication. We will further expand this Associate Editor board in the near future. Our vision is to position *Heliyon Neurology* as a major journal for all in the neurology field. With this idea in mind, we would like to invite you to submit your high-quality papers to *Heliyon Neurology*!

References

[1] A. Carlsson, M. Lindqvist, T. Magnusson, 3,4-Dihydroxyphenylalanine and 5-hydroxytryptophan as reserpine antagonists, Nature 180 (1957) 1200, https://doi.org/10.1038/1801200a0.

[2] L. Jacobs, J. O'Malley, A. Freeman, R. Ekes, Intrathecal interferon reduces exacerbations of multiple sclerosis, Science 214 (1981) 1026–1028, https://doi.org/10.1126/science.6171035.

[3] NINDS-rt-PA-Stroke-Study-Group, Tissue plasminogen activator for acute ischemic stroke, N. Engl. J. Med. 333 (1995) 1581–1587, https://doi.org/10.1056/nejm199512143332401.

[4] M. Jinek, K. Chylinski, I. Fonfara, M. Hauer, J.A. Doudna, E. Charpentier, A programmable dual-RNA-guided DNA endonuclease in adaptive bacterial immunity, Science 337 (2012) 816–821, https://doi.org/10.1126/science.1225829.

[5] K.H. Morelli, Q. Wu, M.L. Gosztyla, H. Liu, M. Yao, C. Zhang, J. Chen, R.J. Marina, K. Lee, K.L. Jones, et al., An RNA-targeting CRISPR-Cas13d system alleviates disease-related phenotypes in Huntington's disease models, Nat. Neurosci. 26 (2023) 27–38, https://doi.org/10.1038/s41593-022-01207-1.

[6] M. Zhou, Z. Hu, L. Qiu, T. Zhou, M. Feng, Q. Hu, B. Zeng, Z. Li, Q. Sun, Y. Wu, et al., Seamless genetic conversion of SMN2 to SMN1 via CRISPR/Cpf1 and single-stranded oligodeoxynucleotides in spinal muscular atrophy patient-specific induced pluripotent stem cells, Hum. Gene Ther. 29 (2018) 1252–1263, https://doi.org/10.1089/hum.2017.255.

[7] E. Mercuri, F. Muntoni, G. Baranello, R. Masson, O. Boespflug-Tanguy, C. Bruno, S. Corti, A. Daron, N. Deconinck, L. Servais, et al., Onasemnogene abeparvovec gene therapy for symptomatic infantile-onset spinal muscular atrophy type 1 (STR1VE-EU): an open-label, single-arm, multicentre, phase 3 trial, Lancet Neurol. 20 (2021) 832–841, https://doi.org/10.1016/s1474-4422(21)00251-9.

[8] J.W. Day, R.S. Finkel, C.A. Chiriboga, A.M. Connolly, T.O. Crawford, B.T. Darras, S.T. Iannaccone, N.L. Kuntz, L.D.M. Peña, P.B. Shieh, et al., Onasemnogene abeparvovec gene therapy for symptomatic infantile-onset spinal muscular atrophy in patients with two copies of SMN2 (STR1VE): an open-label, single-arm, multicentre, phase 3 trial, Lancet Neurol. 20 (2021) 284–293, https://doi.org/10.1016/s1474-4422(21)00001-6.

Dirk M. Hermann*
Department of Neurology, University Hospital Essen, University of Duisburg-Essen, Essen, Germany

Jinming Han
Department of Neurology, Xuanwu Hospital, Capital Medical University, Beijing, China

* Corresponding author. Dementia and Ageing Research Department of Neurology, University Hospital Essen Hufelandstr. 55, D-45122 Essen, Germany.
E-mail address: dirk.hermann@uk-essen.de (D.M. Hermann).