

Symposium Title:

Advancing Neurorehabilitation: New Frontiers in Spinal Cord Injury and Stroke Treatments, Cellular Therapy, and Neuromodulation

Organizers:

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Symposium Description:

Provide a concise overview of the symposium content, including the theoretical and/or clinical background and the key topics to be discussed. If possible formulate the key topics as specific research questions and mention the research methods that have been used to answer each research question. Do not provide research data.

Recent advances in the treatment of acute spinal cord injury (SCI) have shown significant promise in enhancing recovery outcomes. Emerging therapeutic approaches, including neuroregenerative agents like anti-Nogo, are designed to facilitate neural repair and improve motor function in patients with acute SCI, offering new hope for more effective recovery.

In the acute phase of stroke management, timely interventions such as intravenous thrombolysis and endovascular thrombectomy are critical. Administered within the appropriate time window, these therapies, either individually or in combination, have been shown to significantly reduce long-term disability. As the field of neurorehabilitation evolves, there is an increasing focus on integrating innovative therapies to enhance recovery and improve functional independence for stroke survivors.

Cellular therapies, particularly stem cell treatments, continue to represent an essential option to restore tissue for neural repair and regeneration in both SCI and brain injury cases. The early experience indicated that transplantation of cell lines had modest effects. Greater attention to the phenotype and circuit integration is needed to improve efficacy. Biomaterials are also likely to be important to support directed axonal growth and tissue reconstitution. Cell therapies have been explored in multiple subacute and chronic neurological conditions, including acute injury and neurodegenerative diseases.

Neuromodulation techniques, including transcranial magnetic stimulation (TMS), transcranial direct current stimulation (tDCS), invasive and no-invasive spinal cord stimulation, have gained recognition for their ability to reveal preserved

connections, facilitate neuroplasticity and improve motor function. By modulating neural circuits, these methods can be particularly effective when combined with the rehabilitation strategies, enhancing the overall efficacy of therapy for patients with stroke and spinal cord injuries.

Rationale and relevance of Symposium:

Explain the rationale for the symposium and why it is important and timely in the context of current research, clinical applications, and challenges in neural rehabilitation and repair.

The symposium explores advances in neural regeneration, plasticity, and repair through cutting-edge therapies and their clinical applications. Key topics include neuroregenerative agents, stroke treatments, stem cell therapies, and neuromodulation. Discussions will cover efficacy, safety, integration with traditional methods, and implementation challenges.

Learning Objectives:

1. Emerging neuroregenerative therapies for acute spinal cord injury
2. Innovations in acute stroke treatments
3. Advances in neuroregeneration and plasticity-enhancing strategies
4. Latest neuromodulation techniques

Proposed Speakers & Presentations:

Provide a list of proposed speakers and the title of their presentations. If possible, include their academic affiliation and relevant expertise.

1. Armin Curt, MD, PhD. Prof. Balgrist University-Zurich

Presentation Title: The Latest Advances in acute Spinal Cord injury treatments.

2. Xabier Urrea, MD, PhD. Prof. Head of Neurology of Hospital Clinic-Barcelona.

Presentation Title: Time Is Brain: The Evolving Landscape of Acute Stroke Therapies

3. James Guest, MD, PhD. Prof of Neurological Surgery, The Miami Project to Cure Paralysis. Miller School of Medicine. Miami, FL

Presentation Title: The Evolution of Neuroregenerative Therapies. Fact and Fiction.

4. Hatice Kumru, MD, PhD. Prof-Institut Guttmann. Barcelona

Presentation Title: Stimulating Progress: The Latest Neuromodulation Approaches in Neurorehabilitation