Hunter College of the City University of New York
Department of Biological Sciences
Spring 2024 Inga Richter Seminar Series

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Cellular responses to injury in the human peripheral nervous system

Tissues from the peripheral nervous system (PNS) are naturally endowed with a strong self-repair capacity in part due to the presence of Schwann cells, the PNS-resident ensheathing glial cells. It is known that mature Schwann cells are able to reprogram their phenotype to promote nerve regeneration after injury. However, our understanding of the molecular and cellular mechanisms of injury-driven Schwann cell reprogramming is based, almost entirely, on rodent models of nerve damage. To learn whether similar changes occur in humans, we collaborated with clinicians conducting a nerve transplantation trial who provided biospecimens of donor-matched intact and injured nerves for immunohistochemical and OMICs analysis. Our studies revealed that human Schwann cells do not work alone but together with heterogeneous populations of nonglial, mesenchyme-like cells which also reprogram their phenotype to mediate a concerted injury response.

Relevant publications:

Monje P.V. (2020) The properties of human Schwann cells: lessons from in vitro culture and transplantation studies. Glia 68 (4): 797-810. PMID: 32027424

Monje P.V., Deng L, Xu, X.M. (2021) Human Schwann cell transplantation in spinal cord injury: prospects and challenges for translational medicine. Frontiers in Cellular Neuroscience https://doi.org/10.3389/fncel.2021.690894

Chau M.J., Quintero J.E., Monje P.V., Voss R., Gerhardt G., van Horne C. (2022) Using an injury paradigm to enhance the regenerative mechanisms of an investigational human cell therapy. Cell Transplantation. doi: 10.1177/09636897221123515. PMID: 36169034; PMCID:

Monday, April 1, 2024, 12:30pm
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Host: Carmen Melendez-Vasquez