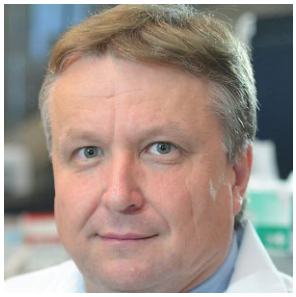

Laszlo Nagy, M.D., Ph.D.

Titles & Department

Professor of Medicine, Professor of Biological Chemistry

Specialization Area

Transcriptional regulation via lipid activated transcription factors, nuclear receptor regulation of organ homeostasis and metabolism, epigenomic and transcriptional regulation of cell type specification, epigenomic regulation of macrophage differentiation and function in injury and tissue repair, and molecular and cellular interactions during muscle regeneration in health and disease.

Unmet Need

The research aims to study what causes cells to use certain pieces of genetic information and not others, while evaluating the entire genome. This approach makes it more likely to discover key changes related to a particular disease and to find reliable biomarkers to monitor that disease. Those answers may lead to better diagnoses and novel therapies.

Summary of Research & Work

Dr. Nagy's research focuses on identifying and understanding how the identity of cells develops and how their differentiation contributes to human diseases. He seeks to understand how the extra- and intracellular lipid environment contributes to cellular development and differentiation, and what impact that has on components of the immune system. In this context, Dr. Nagy also studies what causes cells to use certain pieces of genetic information and not others, and what causes that process to sometimes result in diseases such as chronic inflammation, tissue degeneration or cancer.

Value Proposition

- Innovation of synergistic treatments for muscular dystrophy.
- Development of therapeutics to improve muscle recovery following acute injury.

Recent Publications

- Andreas Patsalos, Laszlo Halasz, Miguel A. Medina-Serpas, Wilhelm K. Berger, Bence Daniel, Petros Tzerpos, Mate Kiss, Gergely Nagy, Cornelius Fischer, Zoltan Simandi, Tamas Varga, Laszlo Nagy. A growth factor–expressing macrophage subpopulation orchestrates regenerative inflammation via GDF-15. J Exp Med (2022) 219 (1): e20210420.
- Patsalos A, Tzerpos P, Halasz L, Nagy G, Pap A, Giannakis N, Lyroni K, Koliaraki V, Pintye E, Dezso B, Kollias G, Spilianakis CG, Nagy L. The BACH1-HMOX1 Regulatory Axis Is Indispensable for Proper Macrophage Subtype Specification and Skeletal Muscle Regeneration. J Immunol. 2019 Sep 15;203(6):1532-1547.

- Giannakis N, Sansbury BE, Patsalos A, Hays TT, Riley CO, Han X, Spite M, Nagy L. Dynamic changes to lipid mediators support transitions among macrophage subtypes during muscle regeneration. Nat Immunol. 2019 Apr 1.
- Daniel B, Nagy G, Czimmerer Z, Horvath A, Hammers DW, Cuaranta-Monroy I, Poliska S, Tzerpos P, Kolostyak Z, Hays TT, Patsalos A, Houtman R, Sauer S, Francois-Deleuze J, Rastinejad F, Balint BL, Sweeney HL, Nagy L. The nuclear receptor PPARγ controls progressive macrophage polarization as a ligand-insensitive epigenomic ratchet of transcriptional memory. Immunity. 2018 Oct 16;49(4):615-626.
- Czimmerer Z, Daniel B, Horvath A, Rückerl D, Nagy G, Kiss M, Peloquin M, Budai MM, Cuaranta-Monroy I, Simandi Z, Steiner L, Nagy B Jr, Poliska S, Banko C, Bacso Z, Schulman IG, Sauer S, Deleuze JF, Allen JE, Benko S, Nagy L. The Transcription Factor STAT6 Mediates Direct Repression of Inflammatory Enhancers and Limits Activation of Alternatively Polarized Macrophages. Immunity. 2018 Jan 16;48(1):75-90.e6.
- Varga T, Mounier R, Patsalos A, Gogolák P, Peloquin M, Horvath A, Pap A, Daniel B, Nagy G, Pintye E, Póliska S, Cuvellier S, Larbi SB, Sansbury BE, Spite M, Brown CW, Chazaud B, Nagy L. Macrophage PPARγ, a lipid activated transcription factor controls the growth factor GDF3 and skeletal muscle regeneration. Immunity. 2016 Nov 15;45(5):1038-1051.

Awards & Honors

- Elected member of EMBO, European Molecular Biology Organisation (EMBO), 2007
- Elected Member of Academia Europaea, Academia Europaea, 2012
- Elected Member of The Henry Kunkel Society, 2014
- Boehringer Ingelheim Research Award, Boehringer Ingelheim Fund, 1999
- Cheryl Whitlock/Pathology Prize, Stanford University, 1998