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RESEARCH AREA

The immune system has to differentiate between harmful and non-harmful agents. Inadequate immune recognition can lead to infectious diseases, allergy, autoimmunity and cancer.

We examine the adaptive immune recognition and its role in different diseases. We are focusing on MHC molecules, which are essential elements of this process by presenting short peptide fragments to immune cells. The genes encoding these molecules show extreme genetic variability, which means that two individuals rarely carry the same MHC variants.

During our work, we analyze large datasets to reveal general features of MHC molecules, which make people susceptible to different diseases.

TECHNIQUES AVAILABLE IN THE LAB

Programming in "R" language; big data analysis; modern statistics; database processing, data visualization.

SELECTED PUBLICATIONS

Manczinger, Mate, et al. "Negative trade-off between neoantigen repertoire breadth and the specificity of HLA-I molecules shapes antitumour immunity." bioRxiv (2020).

Manczinger, M., Boross, G., Kemény, L., Müller, V., Lenz, T. L., Papp, B., Pál, C. (2019). Pathogen diversity drives the evolution of generalist MHC-II alleles in human populations. **PLoS biology,17(1):** e3000131.

Manczinger, M., Kemény, L. (2018). Peptide presentation by HLA-DQ molecules is associated with the development of immune tolerance. **PeerJ 6:** e5118.

Manczinger, M., Bodnár, V., Papp, B. T., Bolla, B. Sz., Szabó, K.,Balázs, B., Csányi, E., Szél, E., Erős, G.,Kemény, L. (2018) Drug repurposing by simulating flow through protein – protein interaction networks. **Clin Pharmacol Ther 103:** 511-520.

Manczinger, M., Kemény, L. (2013) Novel factors in the pathogenesis of psoriasis and potential drug candidates are found with systems biology approach. **PLoS One 8:** e80751.

Manczinger, M., Szabó, E.Z., Göblös, A., Kemény, L., Lakatos, L. (2012) Switching on RNA silencing suppressor activity by restoring argonaute binding to a viral protein. **J Virol 86:** 8324-7.