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TITLE OF HIS PRESENTATION

Bioinformatics prediction of the expected outcome of malignant cancer

RESULTS FOR THE TALENTUM PRIZE 2024 NOMINATION

By analyzing large transcriptomic databases, it becomes possible to prioritize new oncology targets, ensuring that the most promising candidates advance to clinical trials while avoiding the investigation of those likely to be ineffective.

RESEARCH AREA

He has considerable experience in creating web-based bioinformatics analysis portals for cancer researchers, which are now widely used. The first such portal, the Kaplan-Meier plotter, was created in 2010 and is now a leader in validating and ranking survival biomarkers. Another portal compares cancerous, normal and metastatic tissue, using data from 60,000 samples to identify biomarkers. It has also created a portal for the validation of predictive biomarkers with ROC curves and a new tool for multiple hypothesis testing. His group has also performed several in vitro studies to analyse prognostic and predictive biomarkers. They have studied, among others, the relationship between TP53 mutation and energy metabolism, genes involved in breast cancer, hereditary mutations in colorectal cancer, and the role of DNA methylation. Next-generation sequencing was used to evaluate the effects of clinical sampling and the consequences of cell dispersion on tumour heterogeneity.

TECHNIQUES AVAILABLE IN THE LAB

- bioinformatics data analysis
- development of omics databases
- transcriptomic, proteomic and genomic data analysis methods
- web programming

SELECTED PUBLICATIONS

*Nagy Á, Munkácsy G, Györfy B. Pancancer survival analysis of cancer hallmark genes. *Sci Rep*. 2021 Mar 15;11(1):6047. doi: 10.1038/s41598-021-84787-5. PMID: 33723286

*Menyhart O, Weltz B, Györfy B. MultipleTesting.com: A tool for life science researchers for multiple hypothesis testing correction. *PLoS One*. 2021 Jun 9;16(6):e0245824. doi: 10.1371/journal.pone.0245824. eCollection 2021. PMID: 34106935

*Müller D, Györfy B. DNA methylation-based diagnostic, prognostic, and predictive biomarkers in colorectal cancer. *Biochim Biophys Acta Rev Cancer*. 2022 May;1877(3):188722. doi: 10.1016/j.bbcan.2022.188722. Epub 2022 Mar 17. PMID: 35307512.

Parreno V, Loubiere V, Schuettengruber B, Fritsch L, Rawal CC, Erokhin M, Györfy B, Normanno D, Di Stefano M, Moreaux J, Butova NL, Chiolo I, Chetverina D, Martinez AM, Cavalli G. Transient loss of Polycomb components induces an epigenetic cancer fate. *Nature*. 2024 May;629(8012):688-696. doi: 10.1038/s41586-024-07328-w. Epub 2024 Apr 24. PMID: 38658752

*Kovács SA, Fekete JT, Györfy B. Predictive biomarkers of immunotherapy response with pharmacological applications in solid tumors. *Acta Pharmacol Sin*. 2023 Sep;44(9):1879-1889. doi: 10.1038/s41401-023-01079-6. Epub 2023 Apr 13. PMID: 37055532; PMCID: PMC10462766.