DIGITAL TOTAL

Identification of differentially expressed biclusters for unsupervised patient stratification

Unexplored molecular heterogeneity of human diseases causes treatment inefficacy and hinders the investigation of causative disease mechanisms. Since the number and frequencies of disease subtypes are usually unknown, unsupervised methods are applied to omics data to identify patients subgroups with similar molecular profiles. Here, we present UnPaSt, a novel biclustering algorithm for unsupervised patient stratification and demonstrate its superior performance compared to traditionally used clustering, factorization, and biclustering methods in benchmarks with simulated and real data. Moreover, besides accurate identification of well-known PAM50 subtypes of breast cancer, UnPaSt detected the rare neuroendocrine subtype, which was overlooked in previous analyses due to its low frequency.

Find me @ my poster

1,2,3,4

Keywords

patient stratification
clustering
biclustering
disease heterogeneity
omics

Autoren: HARTUNG, Michael (Universität Hamburg); MAIER, Andreas (Institute for Computational Systems Biology); DELGADO CHAVES, Fernando Miguel (Universität Hamburg); BURANKOVA, Yuliya (Technical University of Munich, University of Hamburg, Germany); ISAEVA, Olga (The Netherlands Cancer Institute); HE, Daniel (University of British Columbia); KAUFMANN, Katharina (Universität Hamburg); MALTA DE SÁ PATRONI, Fábio (University of Campinas); SAVCHIK, Alexey (ACMetric); CHERVONTSEVA, Zoe (Universität Hamburg); PROBUL, Niklas (Universität Hamburg); ABISHEVA, Alexandra (Altius Institute for Biomedical Sciences); ZOTOVA, Evgenia (Altius Institute for Biomedical Sciences); TSOY, Olga (Universität Hamburg); BLUMENTHAL, David (Universität Erlangen); Prof. ESTER, Martin (Simon Fraser University; Vancouver Prostate Centre); ZOLOTAREVA, Olga (Universität Hamburg); BAUMBACH, Jan (Universität Hamburg)