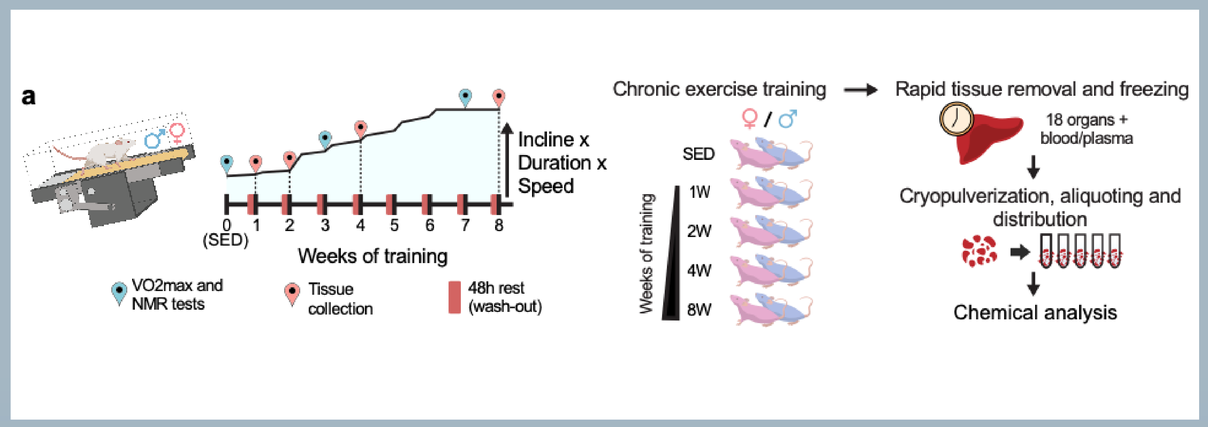
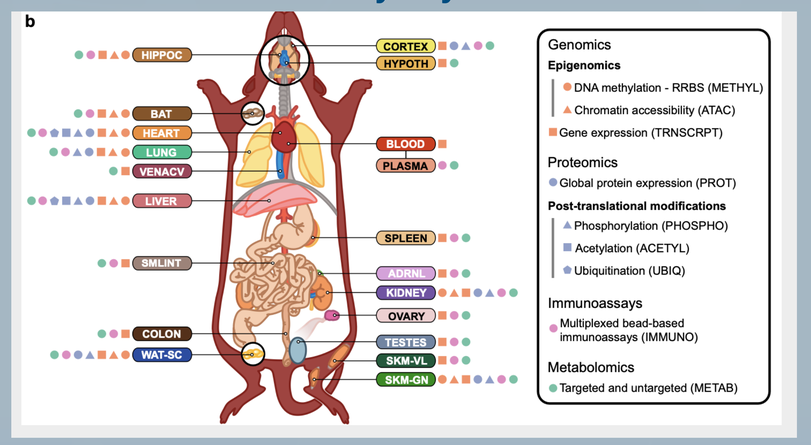
Temporal dynamics of the multi-omic response to endurance exercise training

Christopher A. Jin, Jin Ning Tian on behalf of the MoTrPAC study group. Nature, 2024

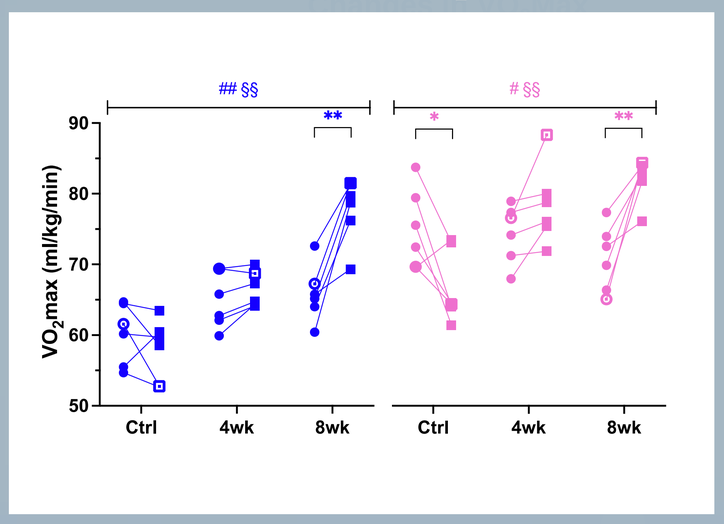
Experimental design & tissue processing



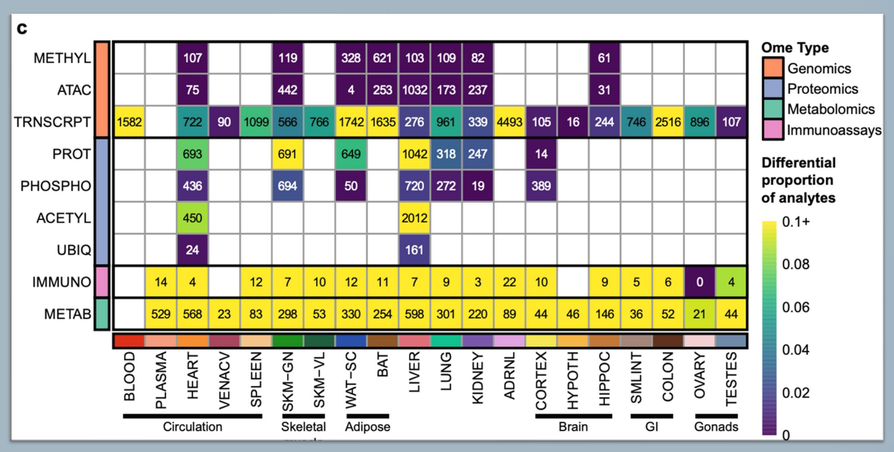
Omic assays by tissue



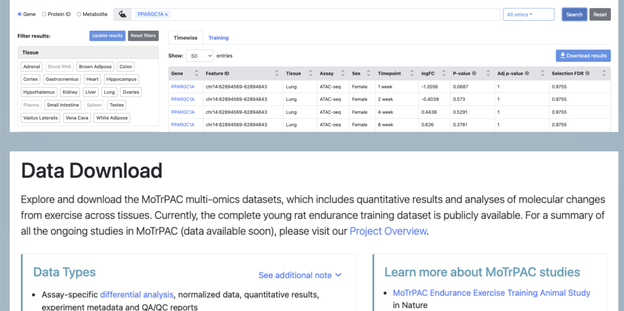
Changes in VO_2Max



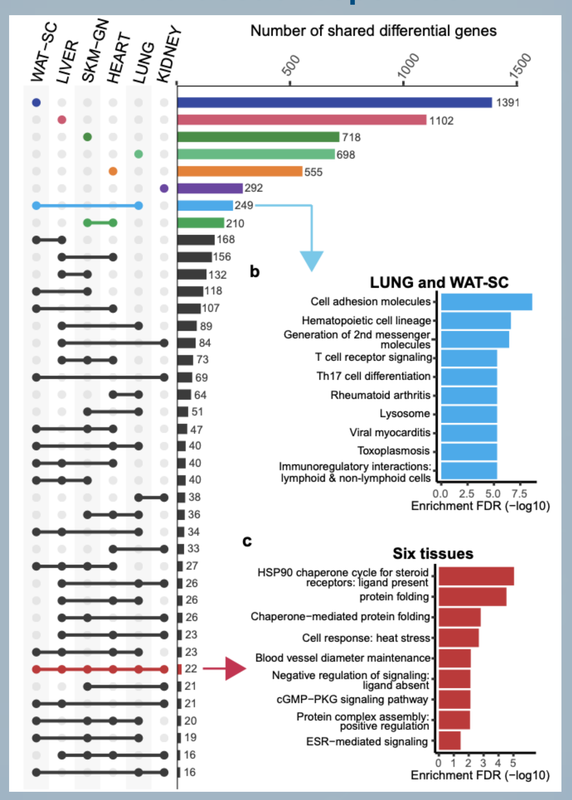
Training-regulated features at 5% FDR



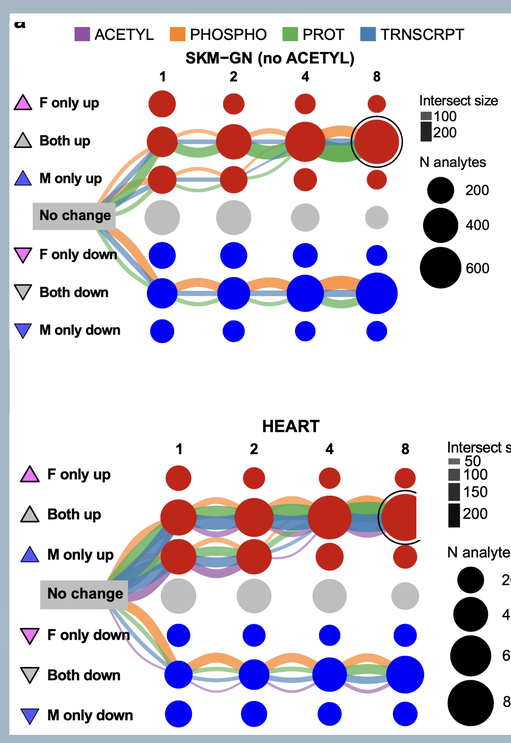
Direct Feature Visualization



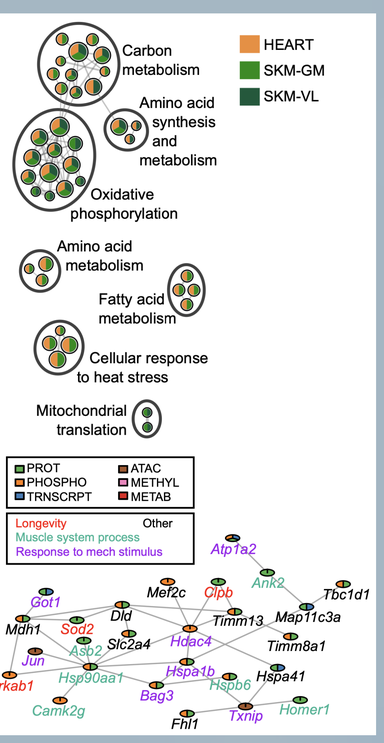
Multi-tissue responses



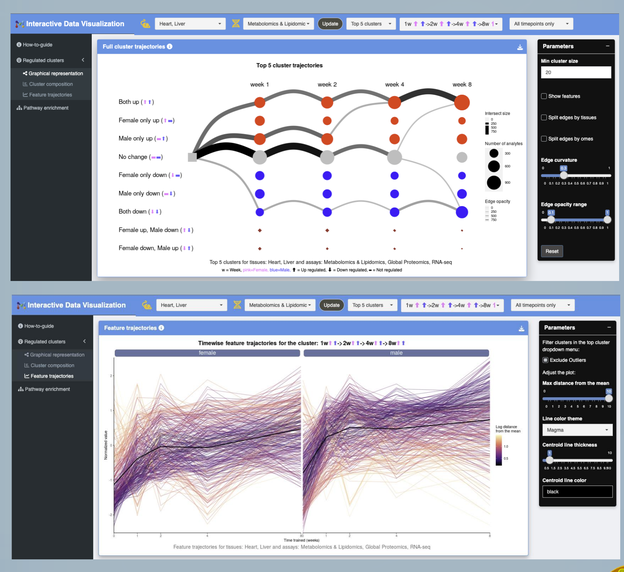
Temporal patterns of responses in muscle

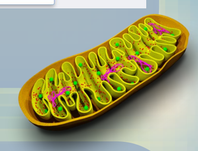


Nodes of features enriched after 8 weeks in muscle



Interactive Graphical Representation for Enrichment Results





Conclusions and Future Perspectives

- MoTrPAC provides an unprecedented view of the effects of exercise across 18 tissues, revealing mechanistic details of how exercise impacts mammalian health.
- Findings reveal numerous pathways are affected in a tissue and sex-specific manner
- Interpretation of systemic and tissue-specific molecular adaptations will foster hypothesis-driven research of the health benefits induced by exercise
- All data are available in a public repository, and processed data, analysis results, and code to reproduce major analyses are additionally available in convenient R packages.

MoTrPAC
http://motrpac-data.org