## Summary

- Cellular signaling pathways are primarily mediated by phosphorylation, and dysregulation of these pathways is the cause of many diseases such as cancer
- Understanding signaling pathways and developing targeted clinical therapies would benefit from measuring every component of the pathway.
- Current measurements are limited to large samples or a handful of proteins
- P-SCOPE allows measuring hundreds-thousands of phosphoproteins for low-abundance samples
- P-SCOPE's carrier design can be extended to other post-translational modifications, such as glycosylation or ubiquitination
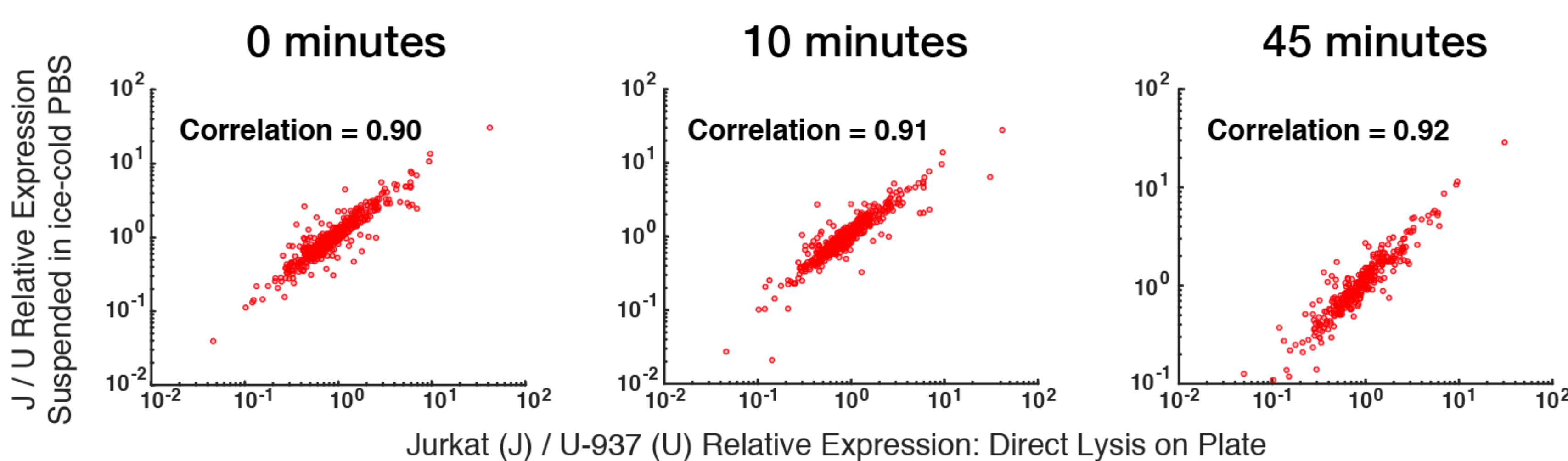
Dysregulated signaling pathways can lead to diseases such as cancer

Guertin and Sabatini 2007, *Cancer Cell*

Growth Survival Proliferation
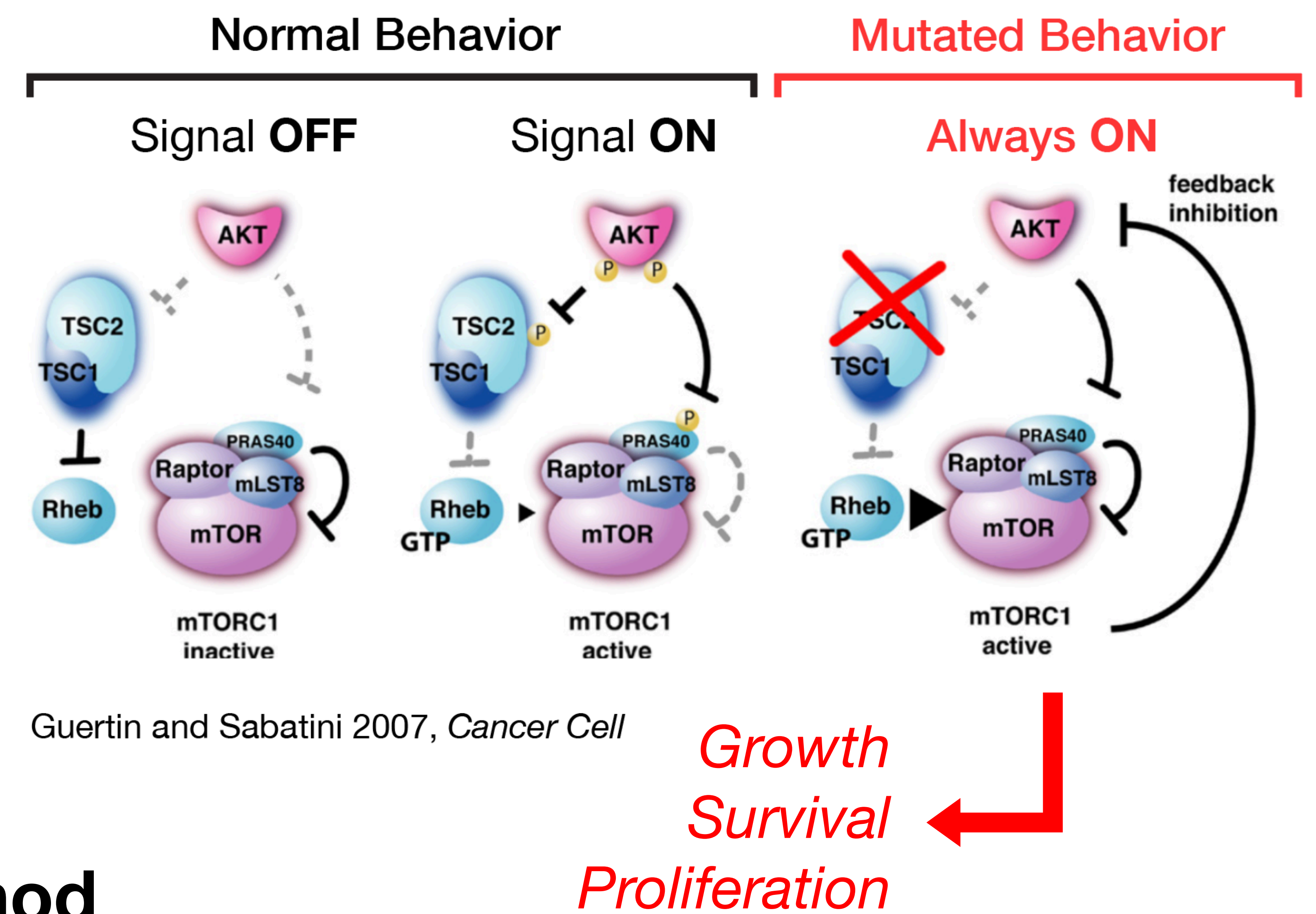
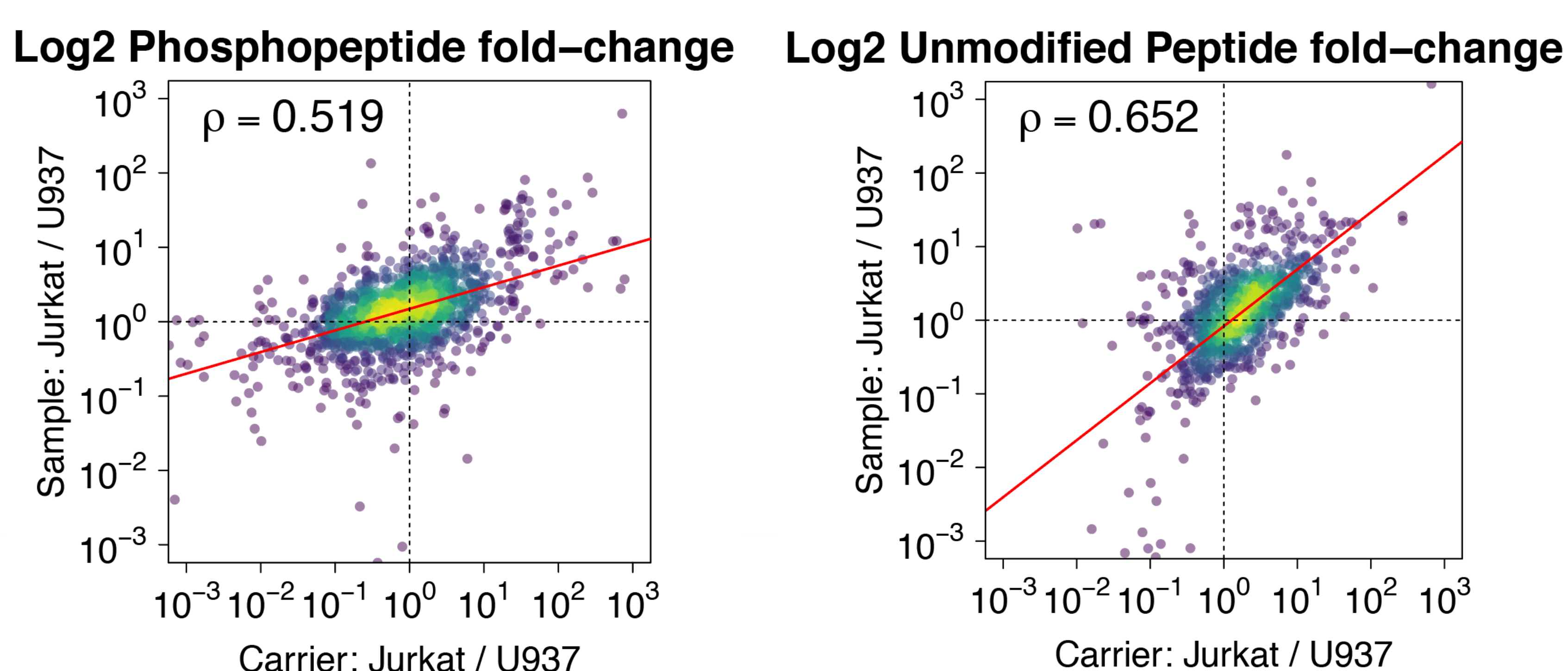## P-SCOPE Mass Spectrometry Method
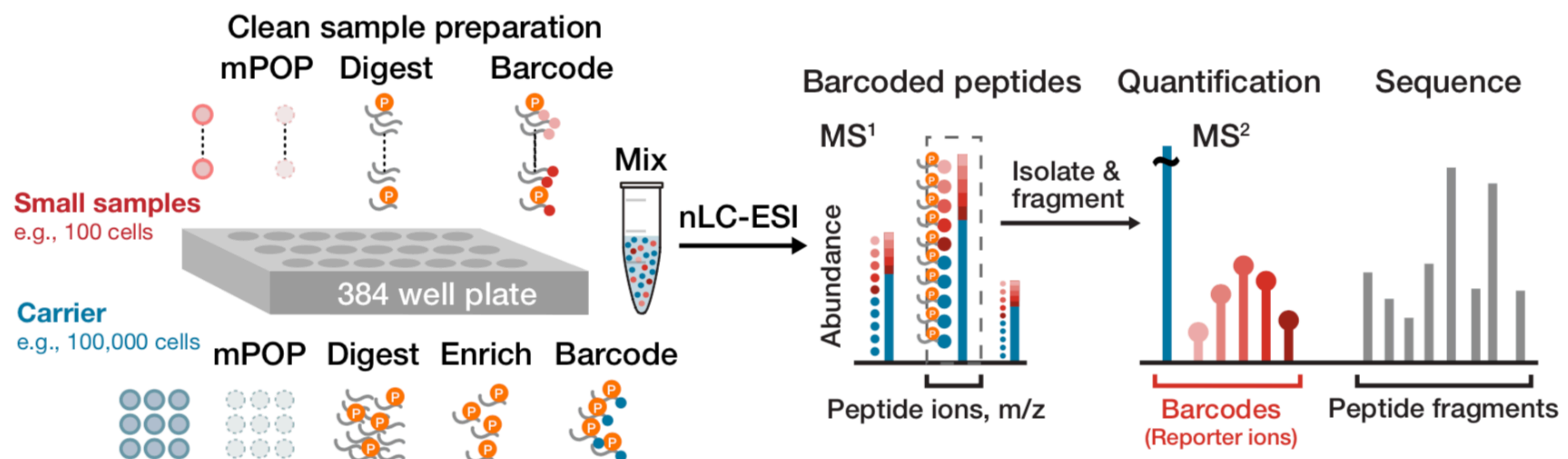

P-SCOPE preserves protein phosphorylation

- Phosphorylation motifs in small samples are not lost during realistic cell sorting timelines (< 45 min, suspended in PBS, on ice), compared to cell lysis on plate

Measuring differential expression between T-cells and monocytes

Measuring signal-to-noise and potential contamination

Measured Results:

Simulated Results:
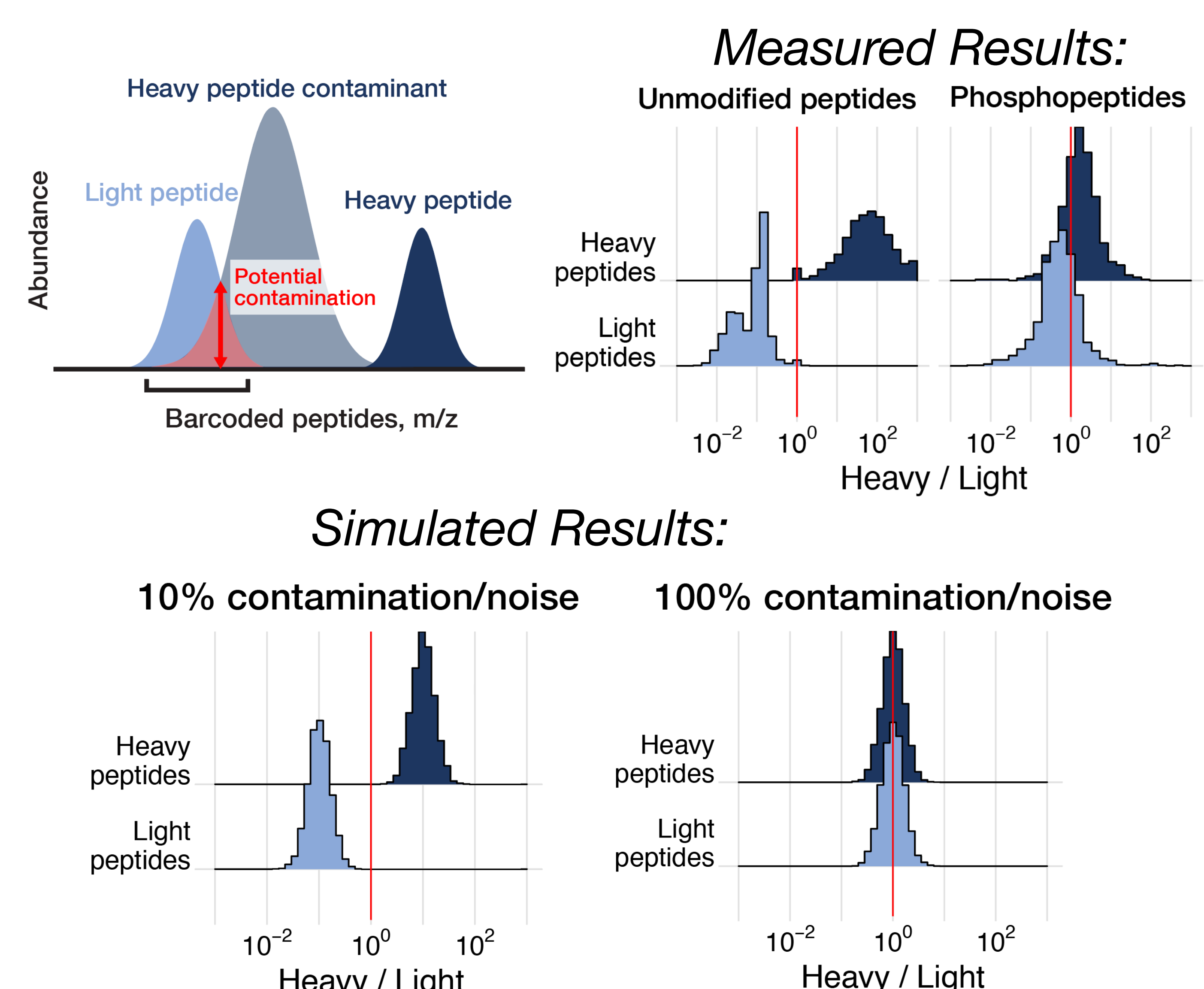
- Additional modifications to preparatory, analytical, and computational methods needed to reduce noise and potential contamination

Acknowledgements