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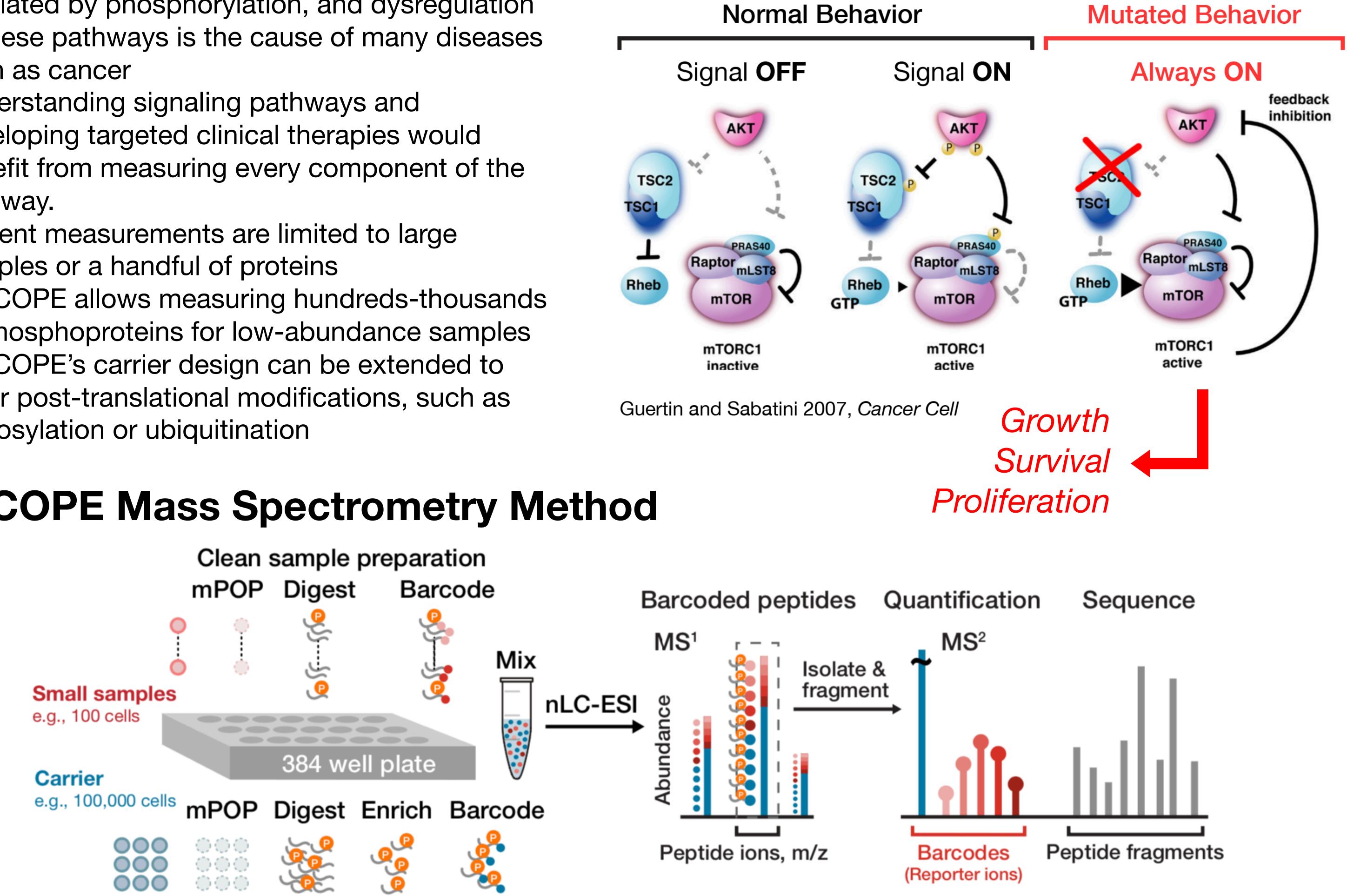
#### **P-SCOPE: Carrier-enabled low-input** phosphoproteomics by mass spectrometry

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# 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

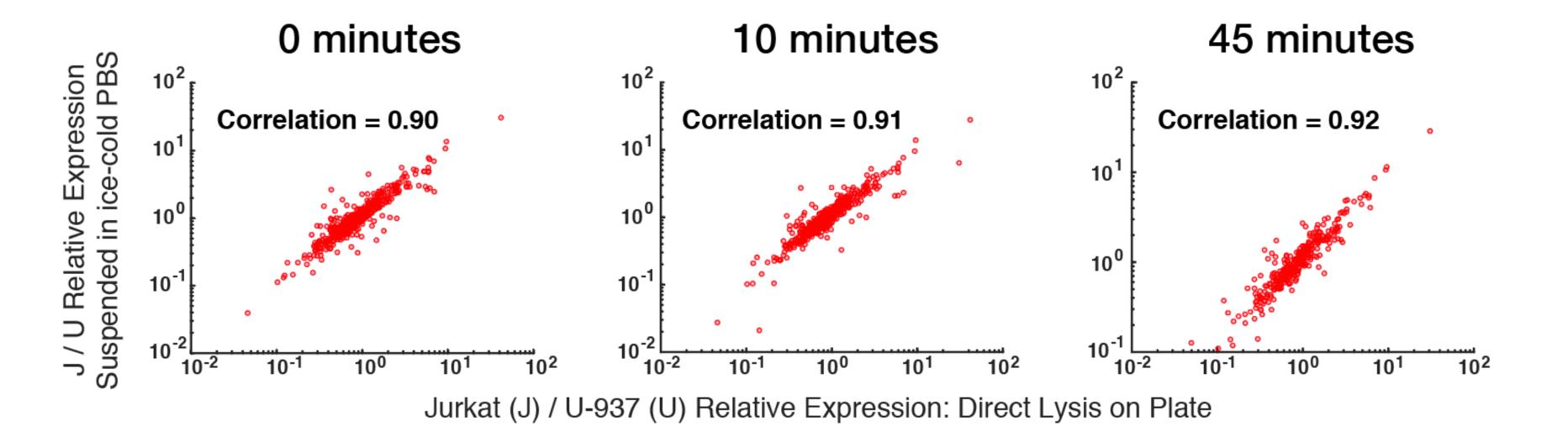
# **Dysregulated signaling pathways can** lead to diseases such as cancer



- 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

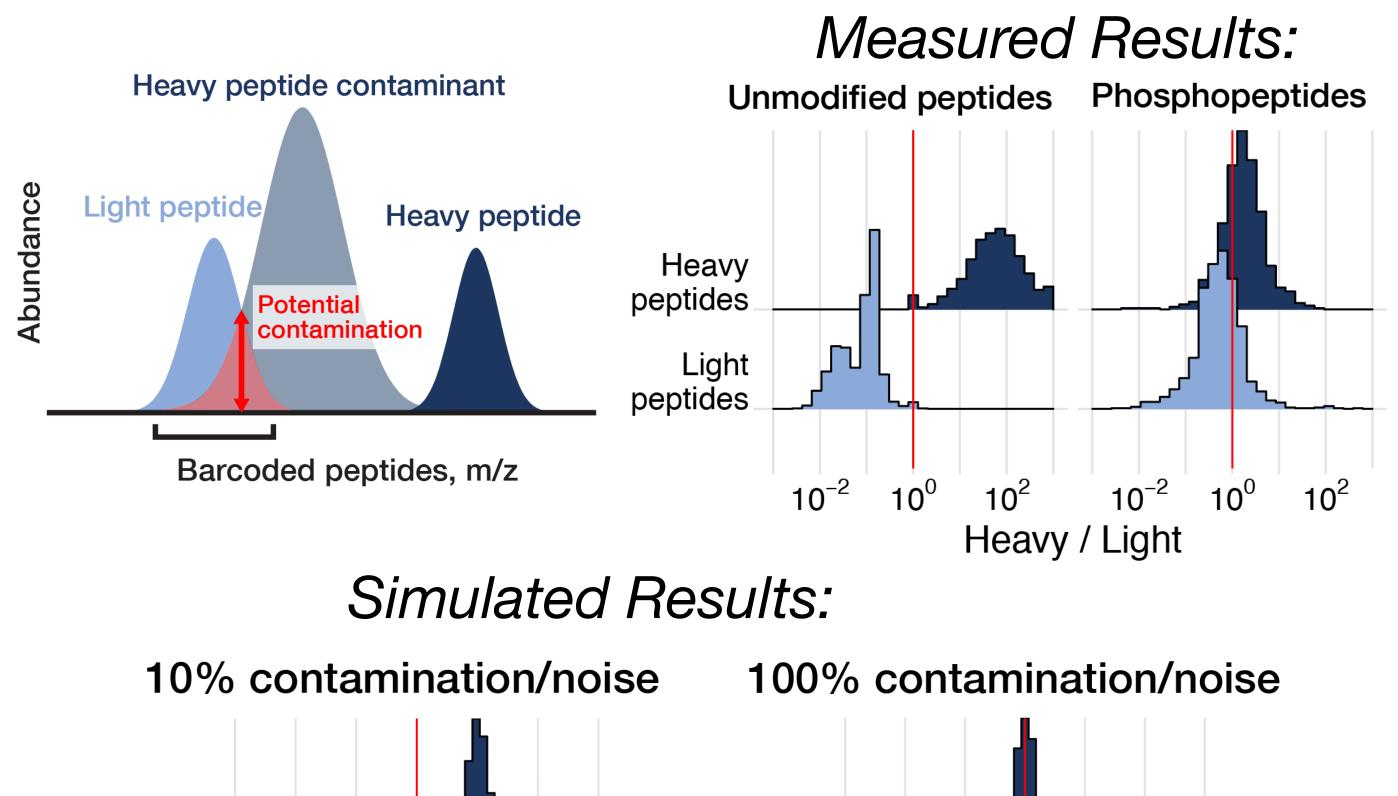
## **P-SCOPE Mass Spectrometry Method**

### **P-SCOPE** preserves protein phosphorylation



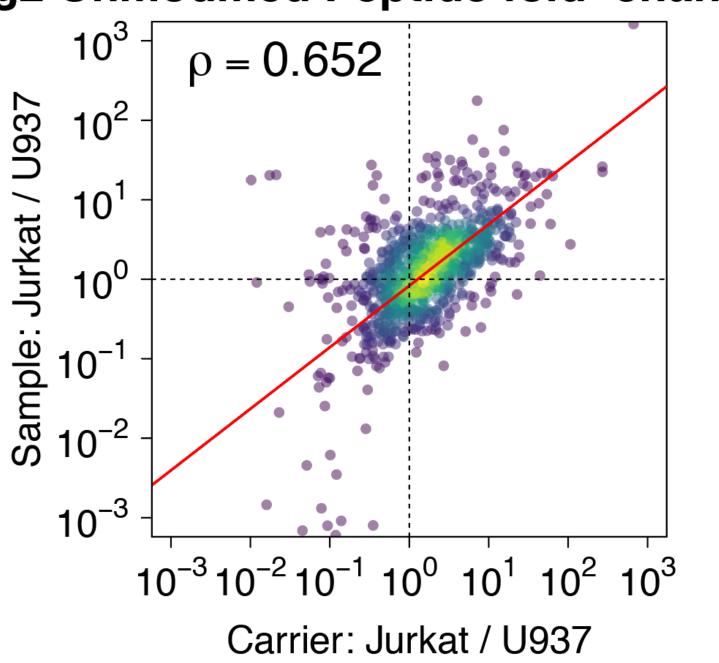
Phosphorylation motifs in small samples are not lost during realistic cell sorting timelines (< 45 min, suspended in PBS, on ice), compared to cell lysis on plate

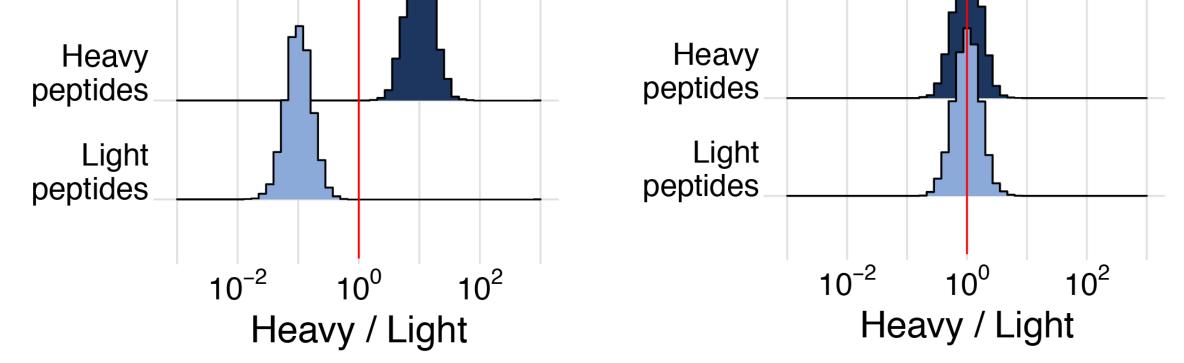
### Measuring signal-to-noise and potential contamination



### Measuring differential expression between **T-cells and monocytes**

Log2 Phosphopeptide fold-change Log2 Unmodified Peptide fold-change  $10^{3}$  $10^{3}$  $\rho = 0.519$ U937 Jurkat / U937 10<sup>2</sup> 10<sup>2</sup>  $10^{1}$ 10 Jurkat / 10 -10<sup>-1</sup> Samble: 01 S Sample: 01 Sample: 10<sup>-2</sup>  $10^{-3}$  $10^{-3}$  $10^{-3} 10^{-2} 10^{-1} 10^{0} 10^{1} 10^{2} 10^{3}$ Carrier: Jurkat / U937





 Additional modifications to preparatory, analytical, and computational methods needed to reduce noise and potential contamination

#### Acknowledgements

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