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Kinomics Background

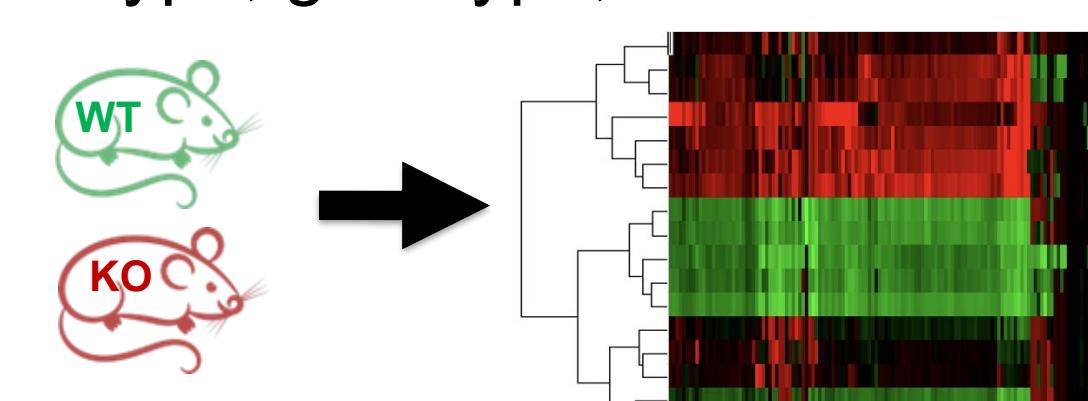
Kinomics is the study of kinase signaling within cellular or tissue lysates. Kinomics can help elucidate cellular signaling pathways altered by treatment (i.e. drug or condition change), or for comparison of different phenotypes (i.e. proliferative vs. non-proliferative). Our PamStation Kinomic Array platform measures the phosphorylation of up to 196 tyrosine or 144 serine/threonine kinase substrates that are imprinted on PamChip microarrays. Kinetic and steady state changes in individual peptide phosphorylation are imaged with FITC-phosphospecific antibodies, and signal is processed and quantified with BioNavigator software. Lists of altered peptides are then exported and analyzed for probable upstream kinases with tools such as Kinexus Phosphonet, as well as advanced Pathway Analysis and Network Modeling using GeneGo MetaCore.

www.kinomecore.com

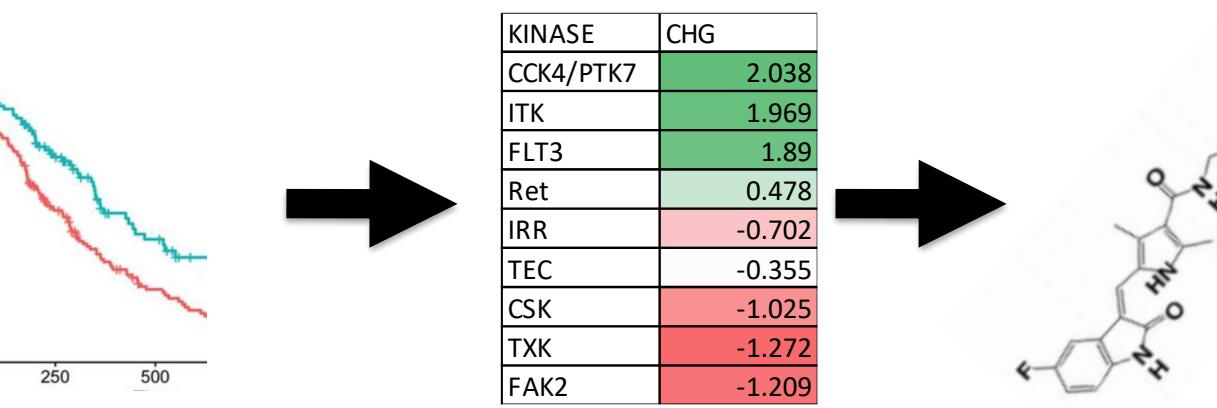


What Can Kinomics Do?

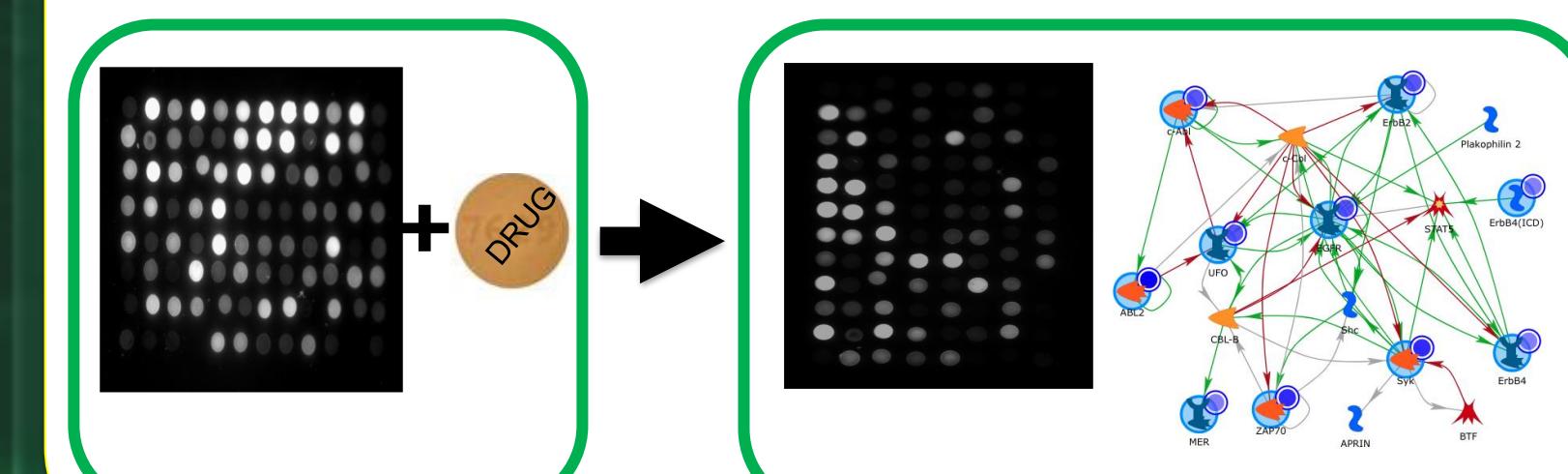
Identify Kinase **Signatures** associated with phenotype, genotype, etc.



Identify Kinase **Targets** for intervention and molecular signaling.



Identify Kinase **Responses** post treatment and compensatory signaling.

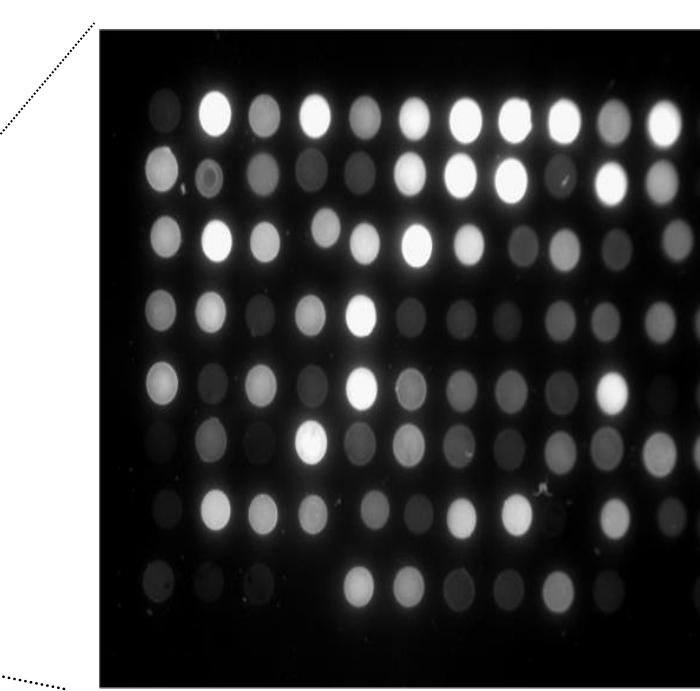


How Does It Work?

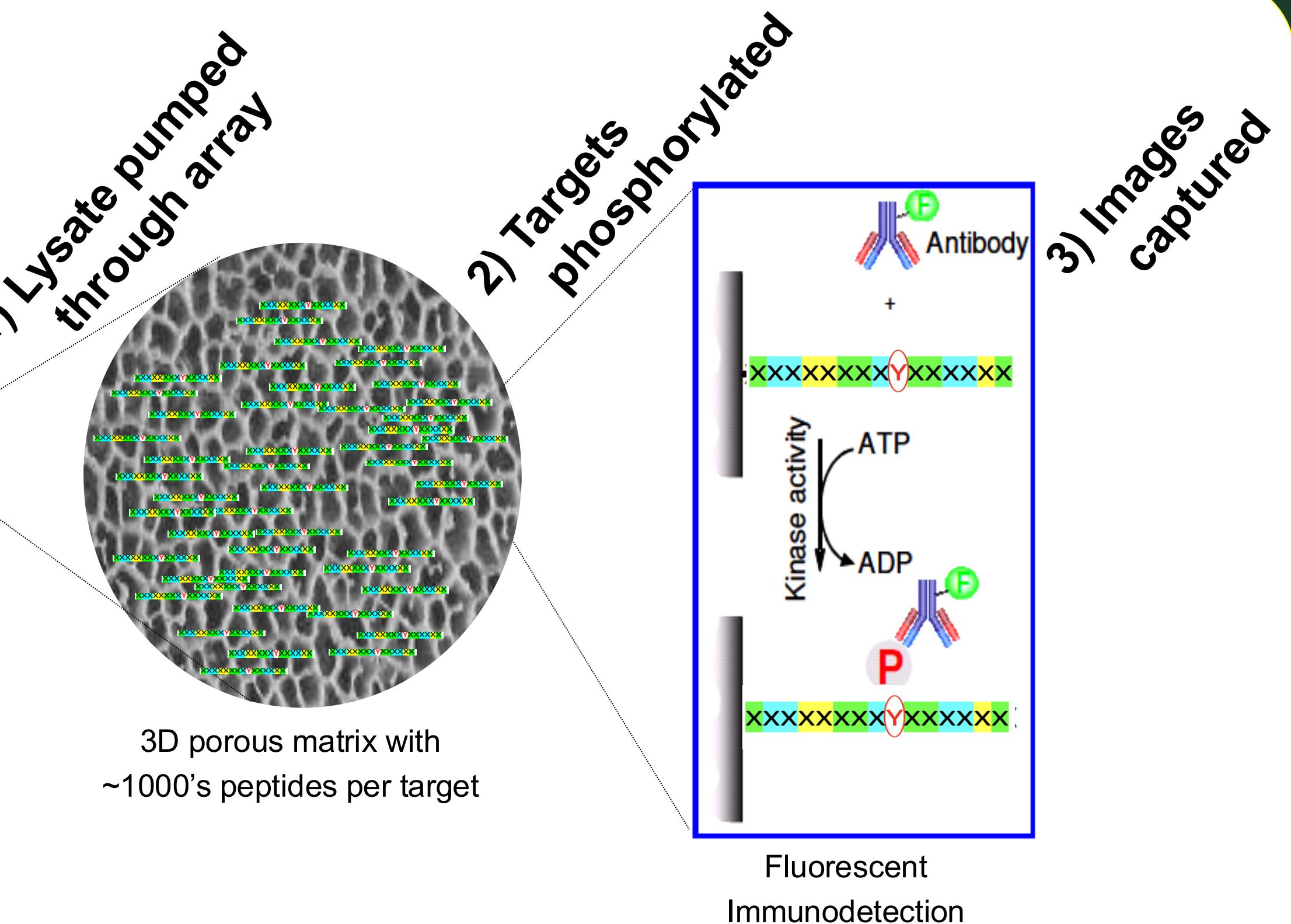
Kinomics Array Platform



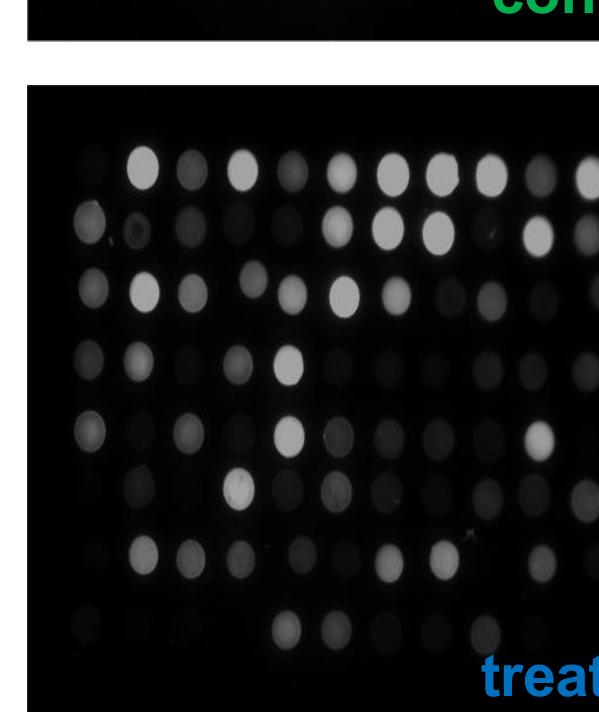
Up to 12x samples per run



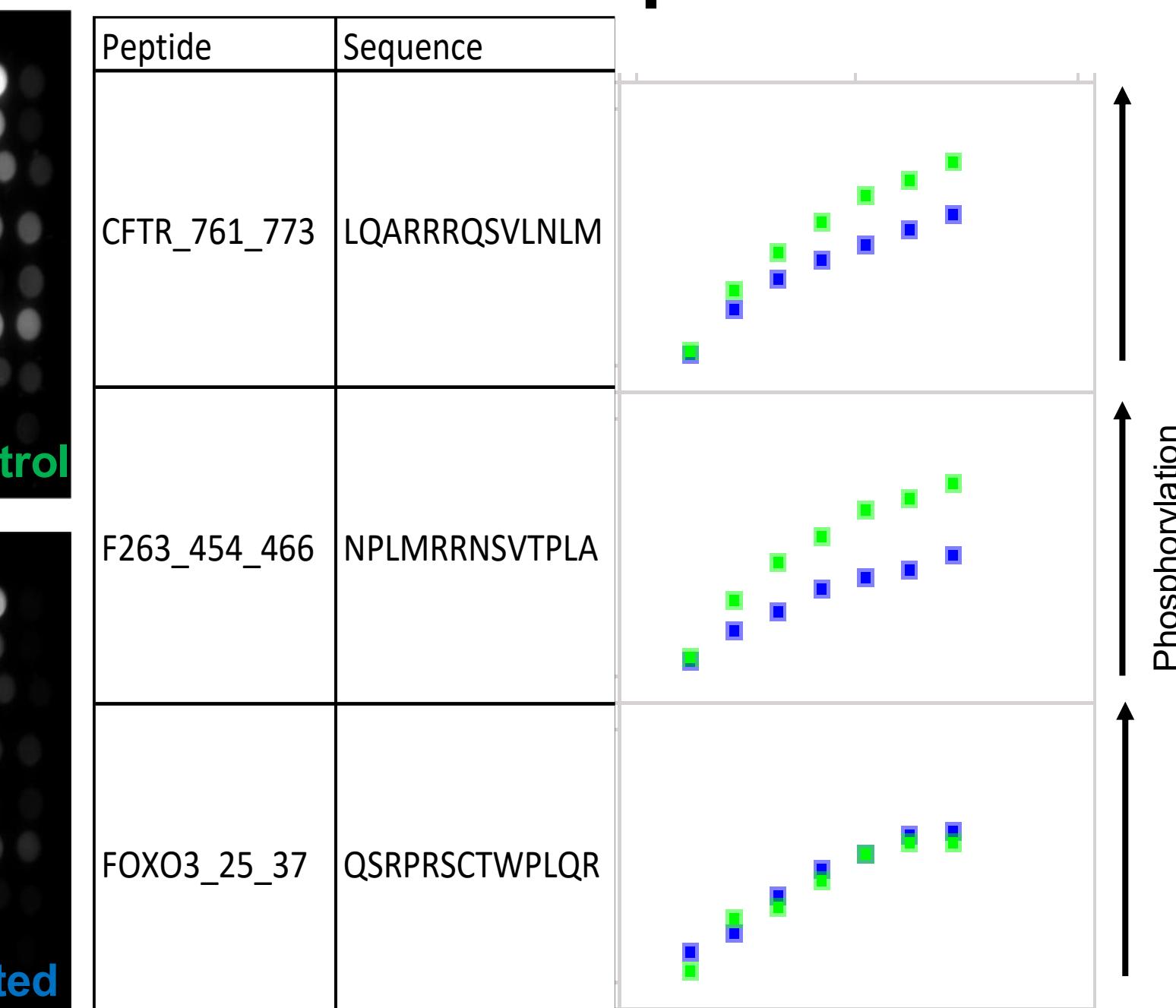
~144-196 biomarkers/array



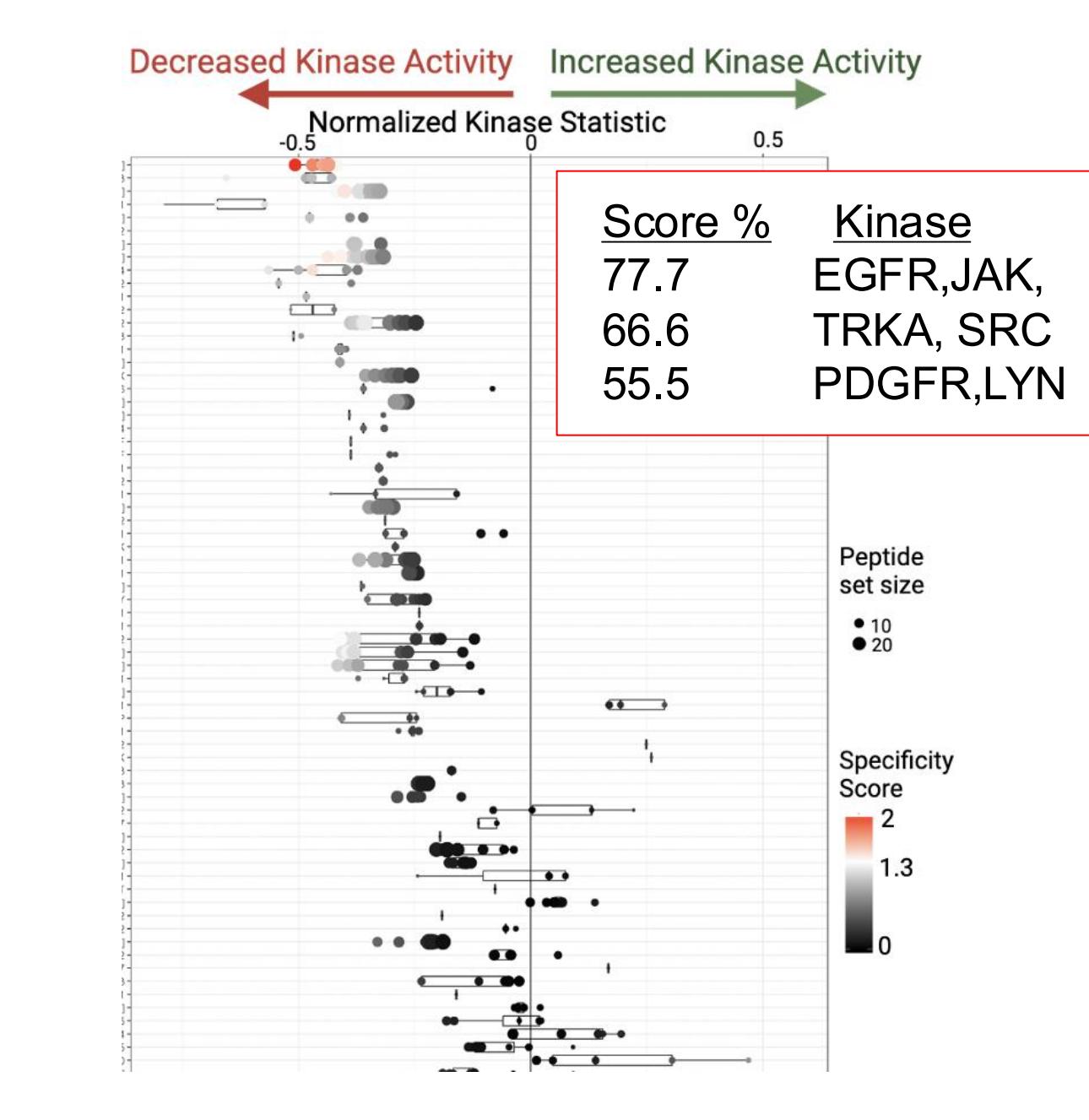
What Can It Tell Me?



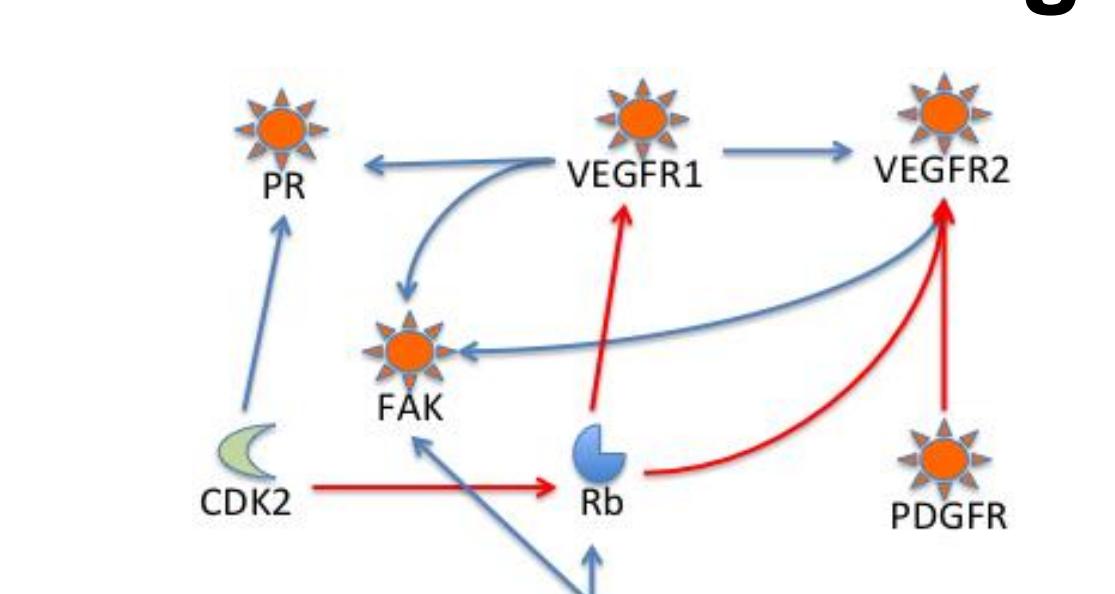
Altered Peptides



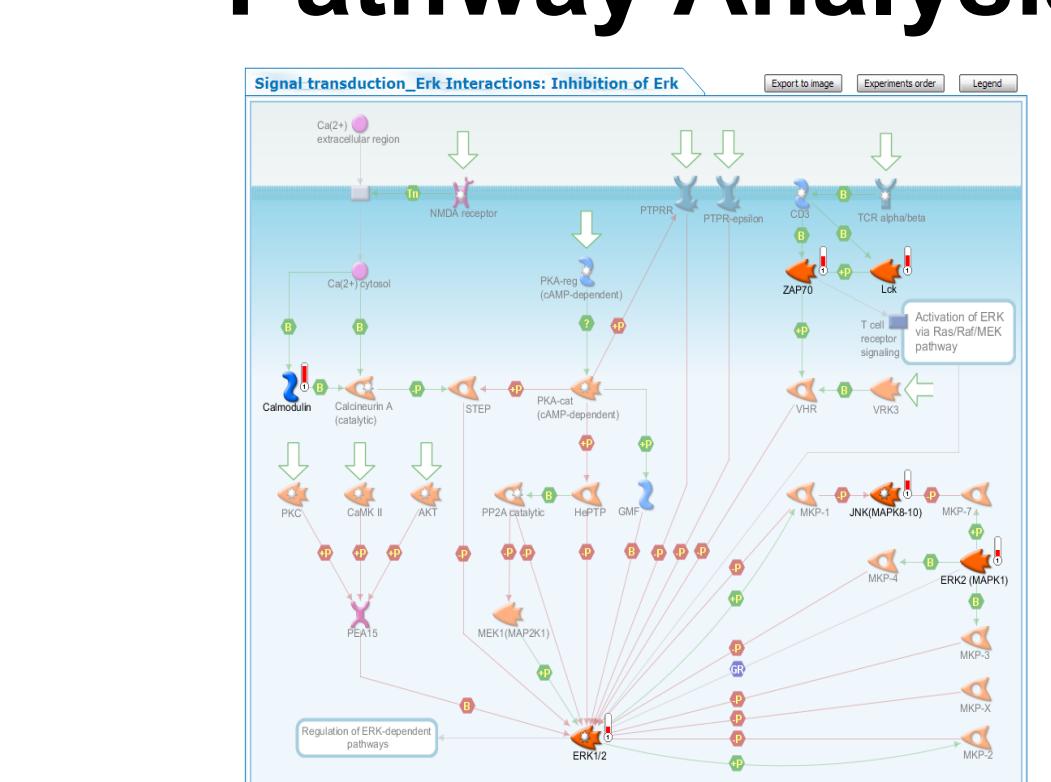
Upstream Kinases



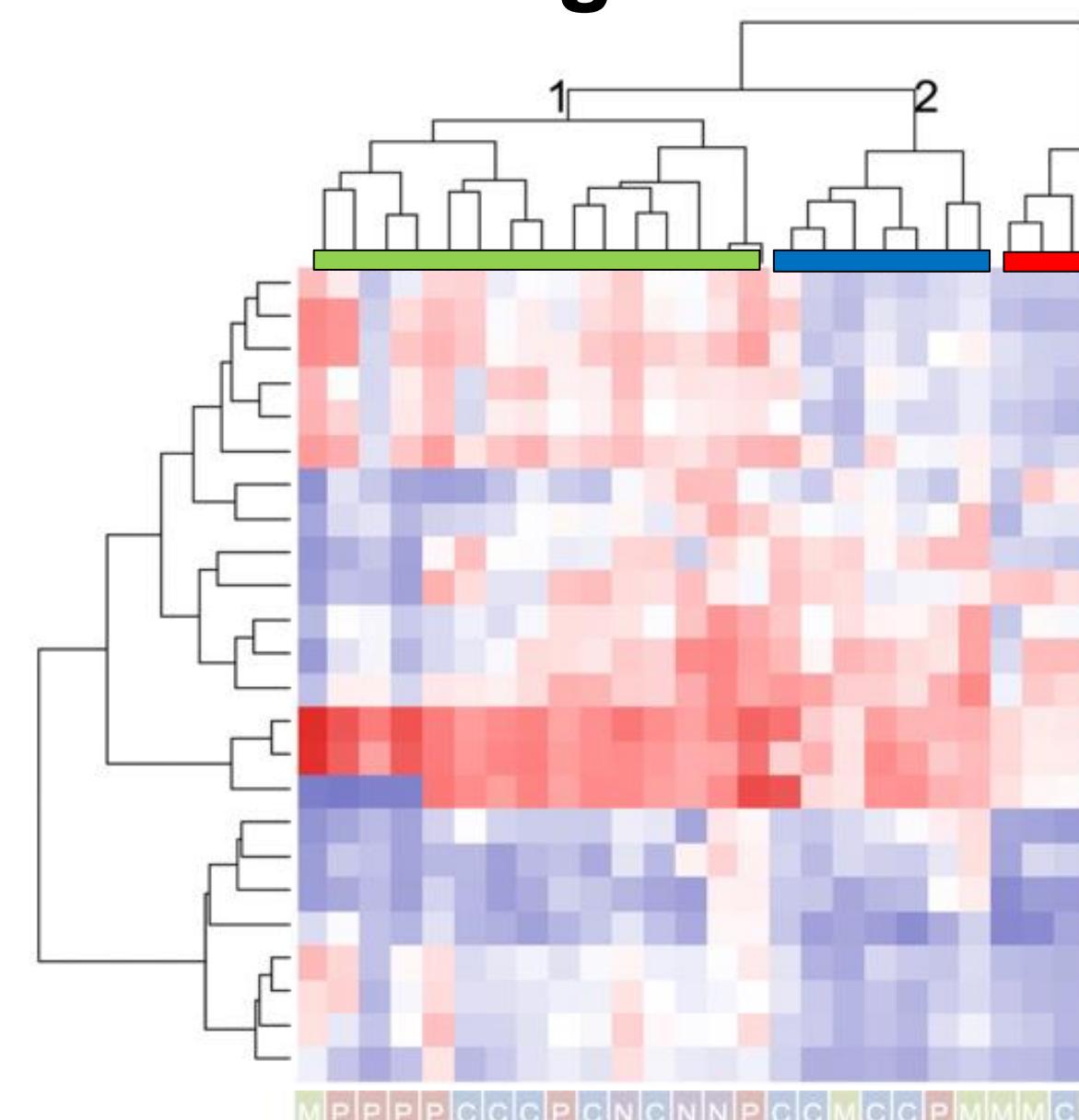
Network Modeling



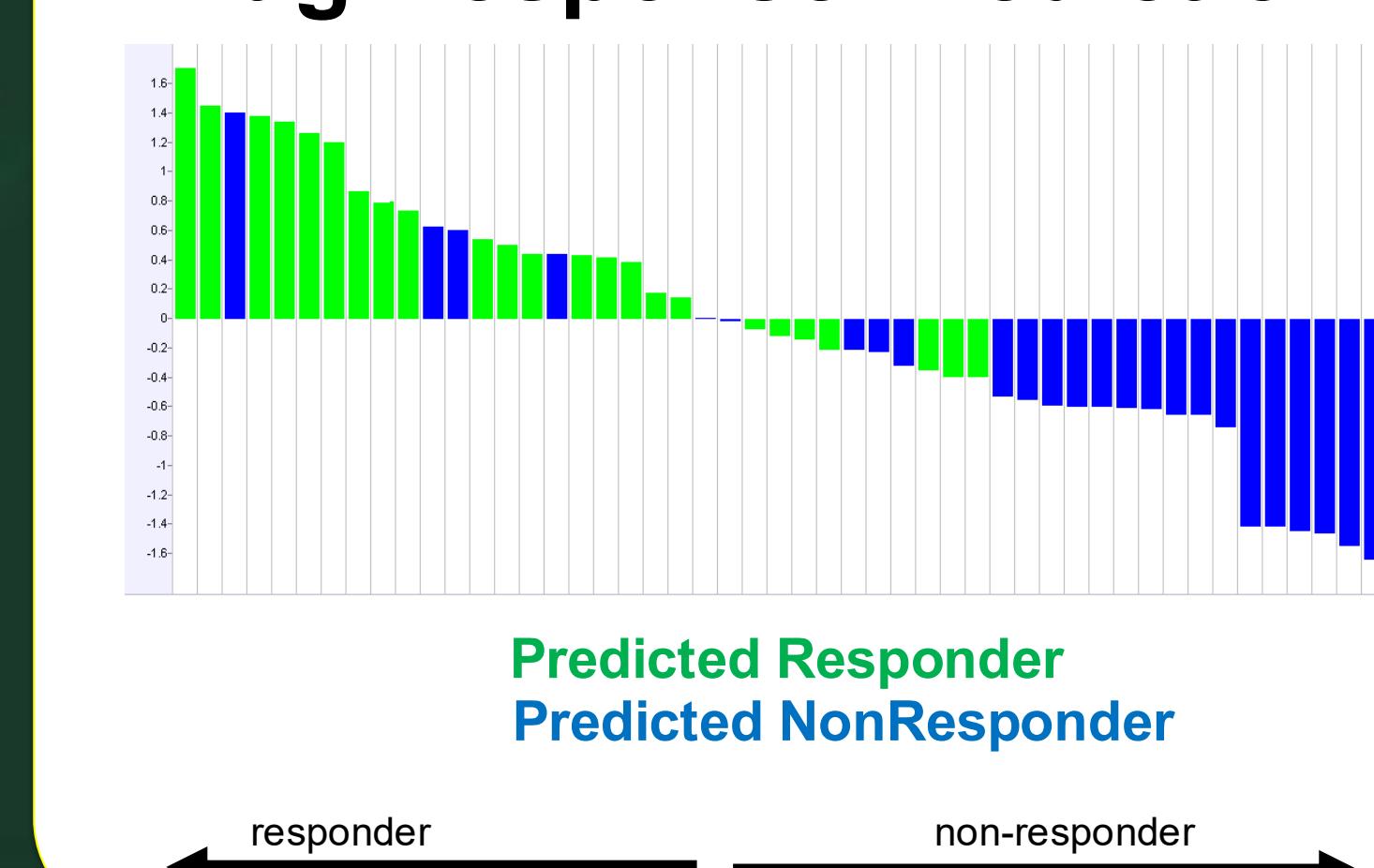
Pathway Analysis



Cluster Signature Analysis



Drug Response Prediction



Example Findings

Drug X likely **targets** EGFR, SRC family signaling.

Gene X knockout cells have altered Erk response.

Drug Y induces JAK/STAT pathway signaling in resistant cells.

Drug Z resistant kinomic **signatures**, can be used to prospectively classify new tumors as resistant/sensitive.

Select Publications

Shen H, et al. Selective suppression of melanoma lacking IFN- γ pathway by JAK inhibition depends on T cells and host TNF signaling. *Nat Commun.* 2022 Aug 25;13(1):5013.

Umbarkar P, et al. Fibroblast GSK-3 α Promotes Fibrosis via RAF-MEK-ERK Pathway in the Injured Heart. *Circ Res.* 2022 Sep 16;131(7):620-636.

Davenport ML, et al. miR-31 Displays Subtype Specificity in Lung Cancer. *Cancer Res.* 2021 Apr 15;81(8):1942-1953.

Shinde A, et al. Spleen tyrosine kinase-mediated autophagy is required for epithelial-mesenchymal plasticity and metastasis in breast cancer. *Cancer Res.* 2019 Feb 7.

Walker K, et al. Kinomic profiling of glioblastoma cells reveals PLGCG1 as a target in restricted glucose. *Biomark Res.* 2018 Jun 14;6:22.

Gilbert AN, et al. Generation of using 3D human biogel culture system and patient-derived glioblastoma cells for kinomic profiling and drug response testing. *J Vis Exp.* 2016 Jun 9;(112)

Dussaq AM, et al. Mechanistic parameterization of the kinomic signal in peptide arrays. *J Proteomics Bioinform.* 2016 May;9(5):151-157

Anderson JC, et al. Kinomic alterations in atypical meningioma. *Med Res Arch.* 2015 Jul;2015(3)

Isayeva T, et al. The protective effect of p16(INK4a) in oral cavity carcinomas: p16(INK4a) dampens tumor invasion-integrated analysis of expression and kinomics pathways. *Mod Pathol.* 2015 May;28(5):631-53

Anderson JC, et al. Kinomic exploration of temozolomide and radiation resistance in Glioblastoma multiforme xenolines. *Radiother Oncol.* 2014 Jun;111(3):468-74

Anderson JC, et al. Kinomic profiling of electromagnetic navigational bronchoscopy specimens: a new approach for personalized medicine. *PLoS One.* 2014 Dec 30;9(12):e116388

Duverger A, et al. Kinase control of latent HIV-1 infection: PIM-1 kinase as a major contributor to HIV-1 reactivation. *J Virol.* 2014 Jan;88(1):364-74



BASE PRICING

Price is per sample but sample number 4x, 8x, 12x, etc. are required

PTK (Tyrosine Kinome Analysis) ~ \$550 per sample

STK (Serine/Threonine Kinome) ~ \$550 per sample

Additional Advanced Analysis and processing fees may apply

*external non-UAB clients incur an additional % cost

Please contact us for experimental design optimization.