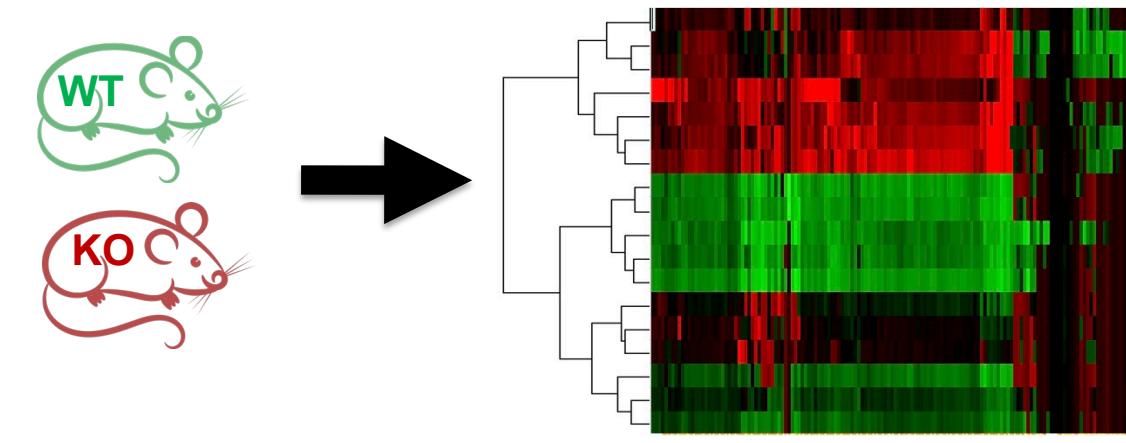


Kinomics Background

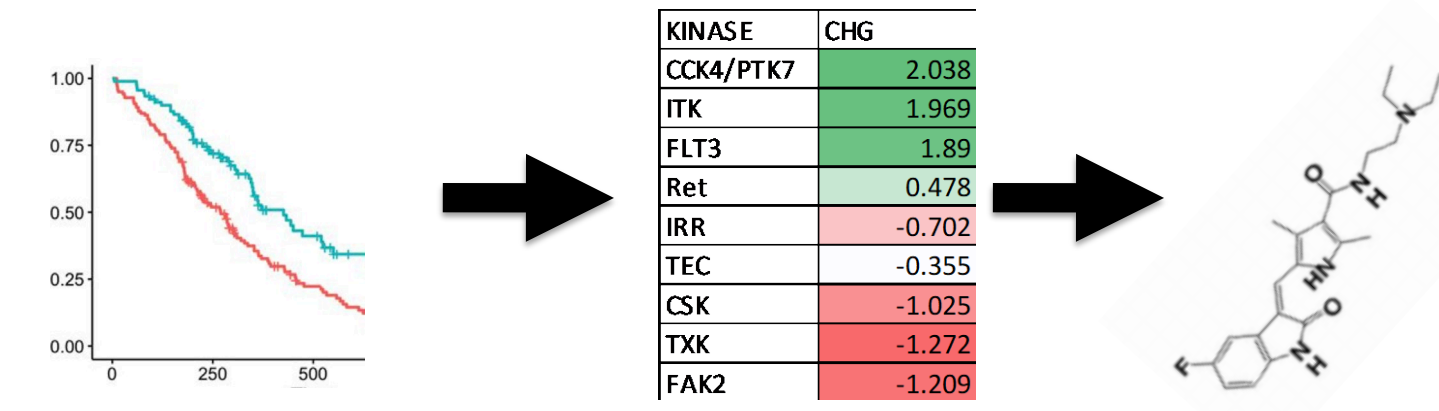
Kinomics is the study of kinase signaling within cellular or tissue lysates. Kinomics can help elucidate cellular signaling pathways altered by treatment (i.e. drug or condition change), or for comparison of different phenotypes (i.e. proliferative vs. non-proliferative). Our PamStation Kinomic Array 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 computer quantified in BioNavigator. 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.

What Can Kinomics Do?

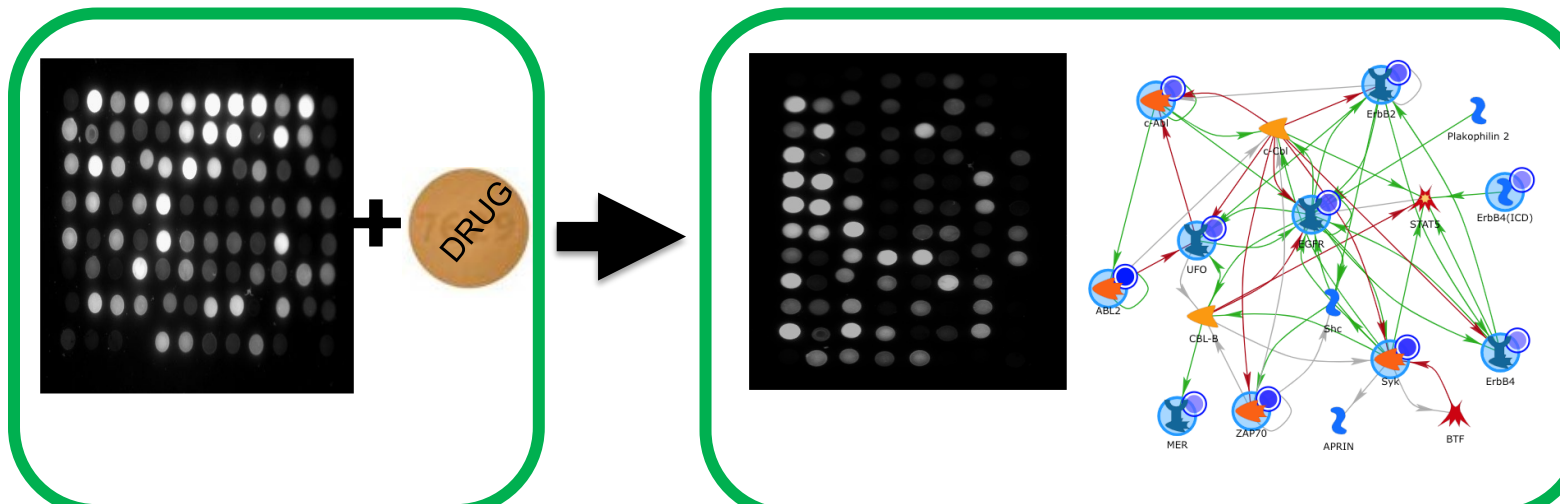
Identify Kinase **Signatures** associated with phenotype, genotype, etc.



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

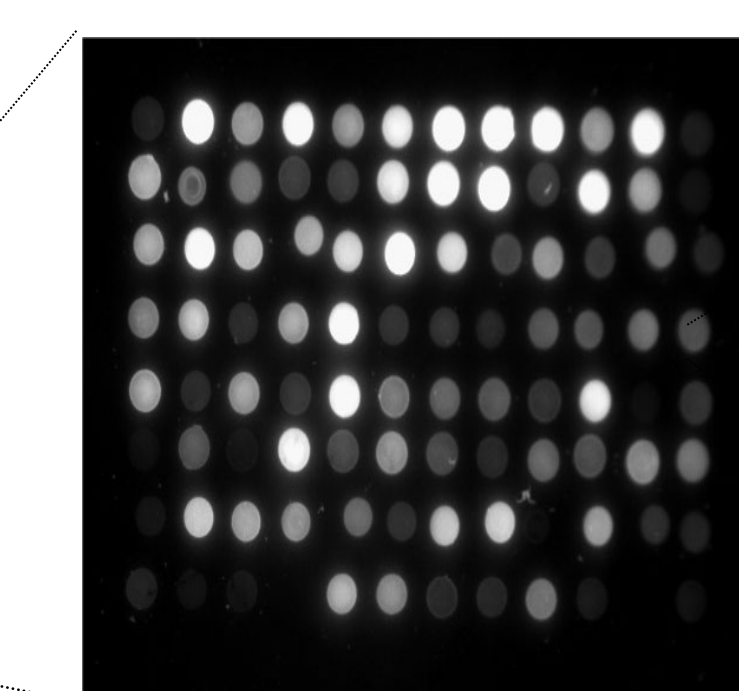


Identify Kinase **Responses** post treatment and compensatory signaling.

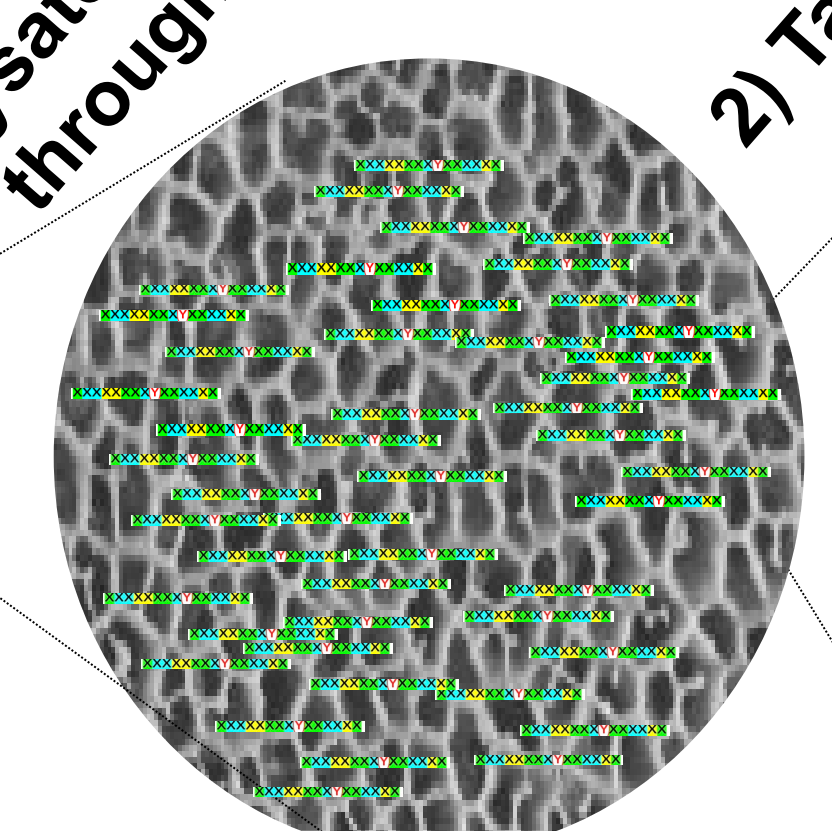


How Does It Work?

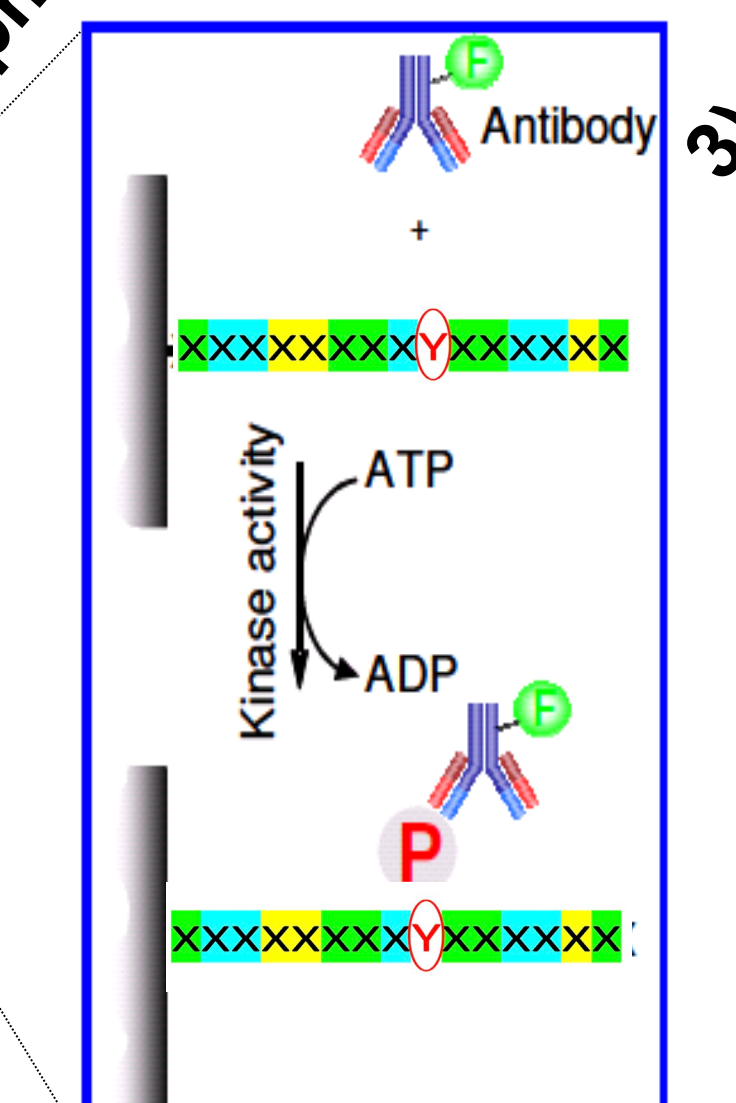
Kinomics Array Platform



1) Lysate pumped through array



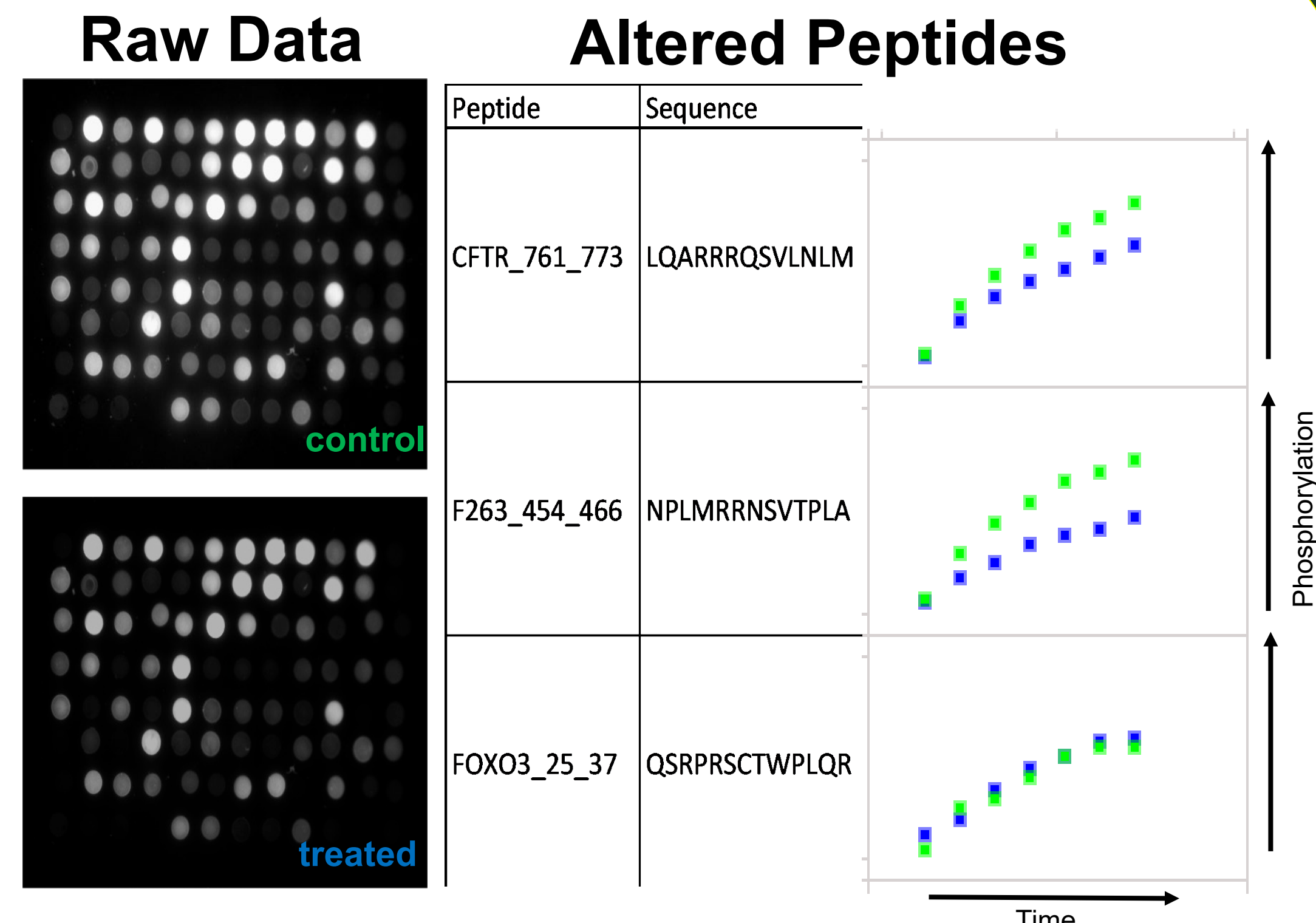
2) Targets phosphorylated



3) Images captured

Fluorescent Immunodetection

What Can It Tell Me?



Kinomic Toolbox: Online QC

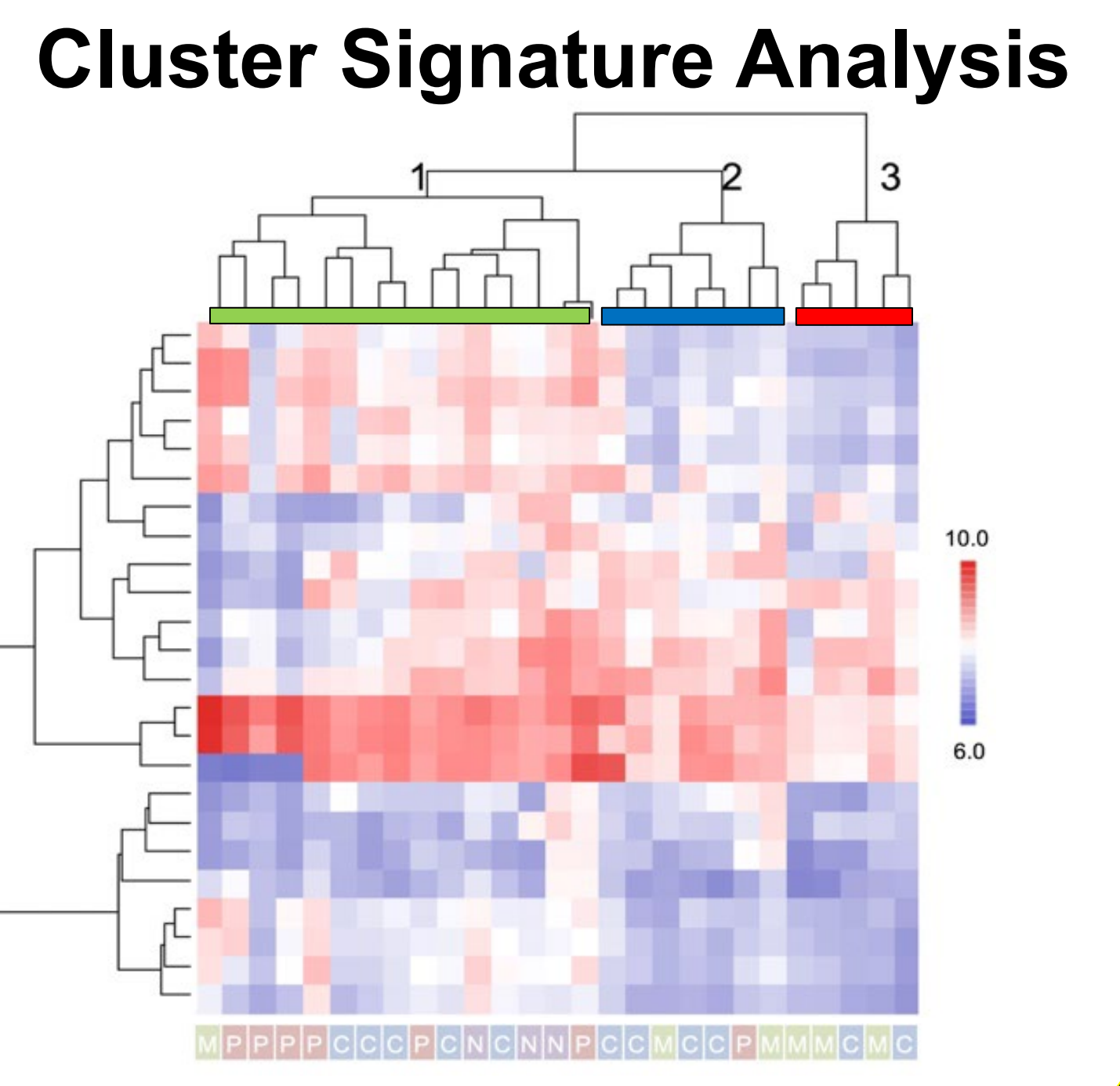
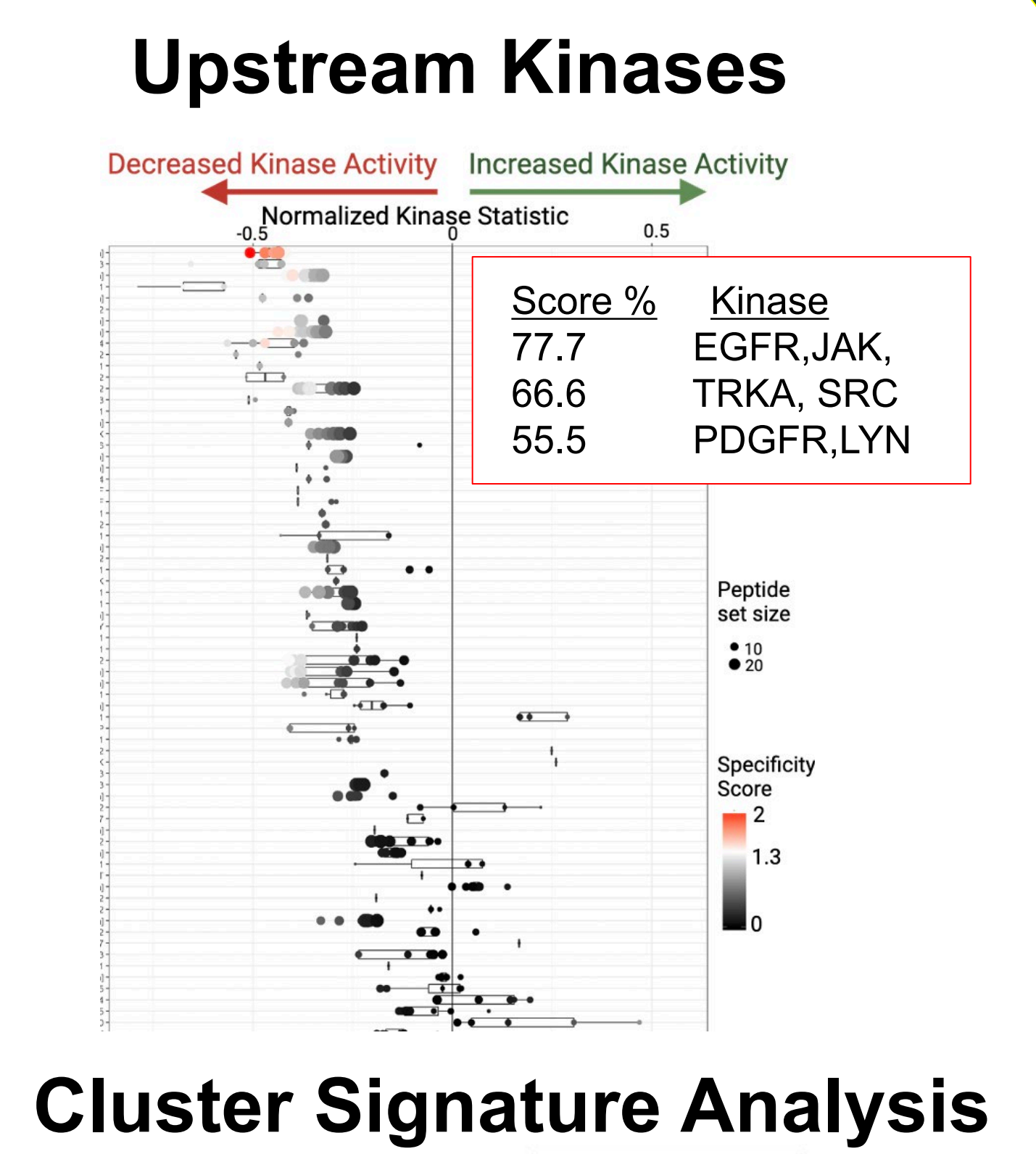
Peptide Picker Cycle Exposure

Sample: 631308612_1 Peptide Search: mgexp

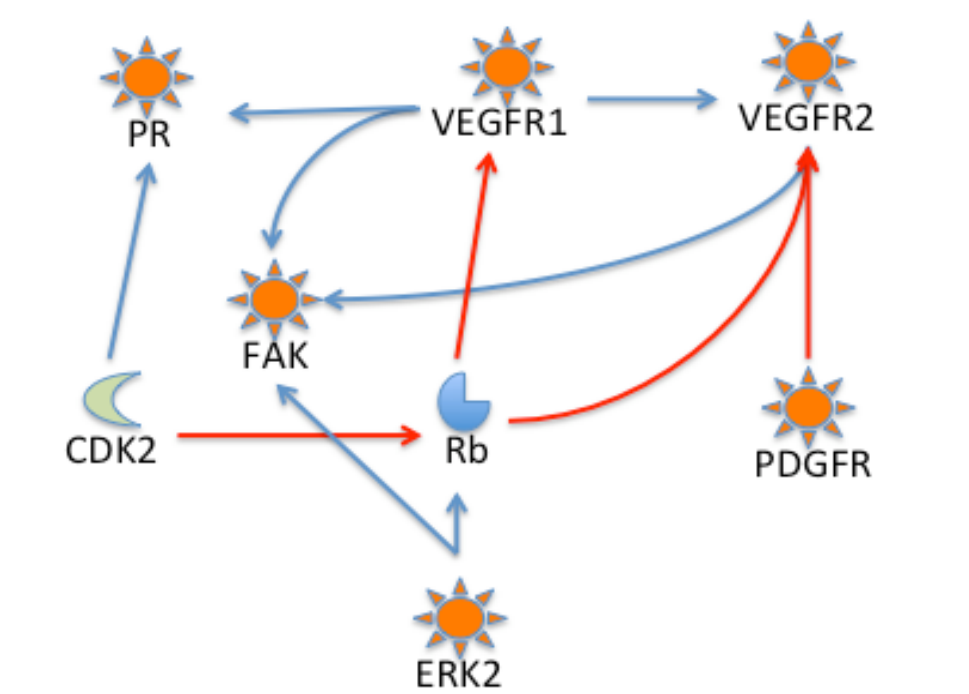
Peptide: LQARRRQSVLNL

Peptide Information

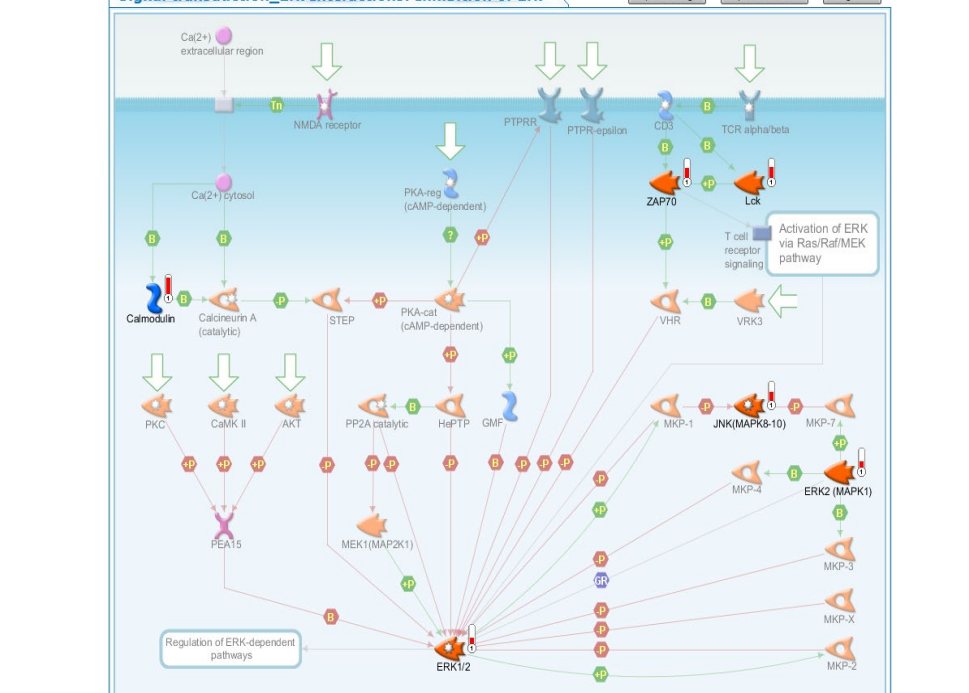
Name: CD79A_181_193
Sequence: EYEDSNLYEGLNL
Phosphorylation: 1000.0
Amino Acid: Tyr
Position: 182,188
Description: B-cell antigen receptor complex-associated protein alpha-chain-receptor
Uniprot Accession: P11912
Data: Image: 631308612_W1_F1_T50_P154_I1256_A29
Measurement: Value: 4018, 566
Cyclic Exposure: Post Wash: 50



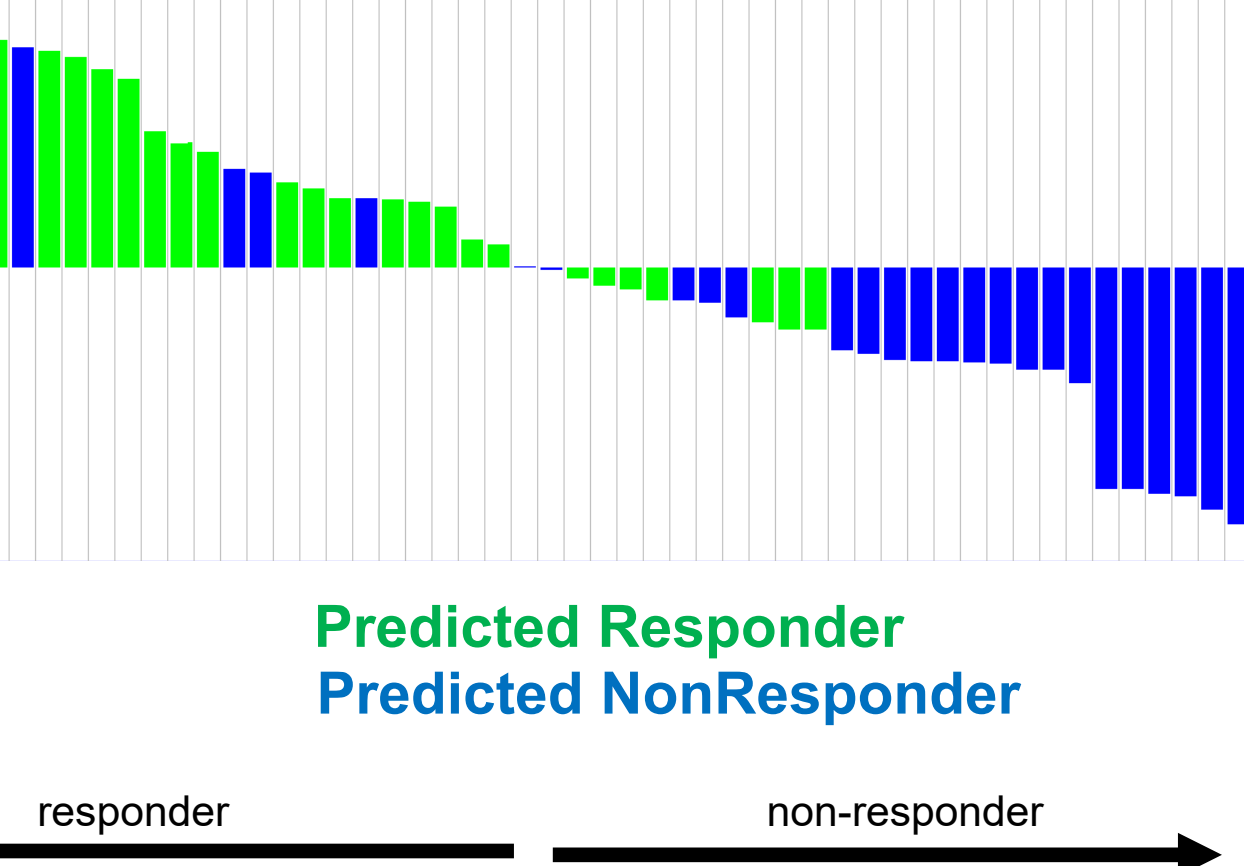
Network Modeling



Pathway 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-3α 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 PLCG1 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)

Dussa 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 xenografts. *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):364-76

PRICING
PTK (Tyrosine Kinome Analysis) UAB: \$1200 (4 samples) External: \$1350
STK (Serine/Threonine Kinome) UAB: \$1700 (4 samples) External: \$1900

Please contact us for experimental design optimization.