

## PRODUCT

Clinical decision support tool for predicting and ranking chemotherapy drug sensitivity on an individual basis

## INDICATION

Cancer

## VALUE PROPOSITION

Personalized chemotherapy based on individual gene expression level, thereby preventing excessive toxicity and drug resistance

## DEVELOPMENT STAGE

Proof of concept that presents transcriptomic signatures can predict chemotherapy response and correctly assign rankings of chemotherapy drug sensitivity on an individual basis

## INTELLECTUAL PROPERTY

Patent Pending

## CONTACT INFORMATION

Giedre Ruzgaite, PhD, CLP  
Associate Director of Business  
Development & Licensing  
ruzgaig@ccf.org  
216.704.0352  
CCF ref: IDF 2023-096

# Personalizing Chemotherapy Drug Selection Using a Transcriptomic Chemogram

**Inventors:** *Kristi Lin-Rahardja, Jessica Scarborough PhD, Jacob Scott MD*  
*Cleveland Clinic Lerner Research Institute*

## UNMET NEED

Standard chemotherapy regimens adopt a one-size-fits-all approach where patients without targetable mutations receive some combination of drugs that work for most patients, or improve outcomes to some degree compared to previous regimens, based on clinical trials. However, every cancer patient has a unique tumor and chemosensitivity profile. Precision medicine, particularly therapy targeting druggable mutations, improves on the issues imposed by the one-size-fits-all approach to chemotherapy, yet it is estimated that only 14% of all cancer patients are eligible for targeted therapy, and a mere 7% of all cancer patients respond to such treatments.

Personalizing chemotherapy using gene expression-based predictive signatures will make precision medicine far more accessible to patients with and without targetable mutations, as well as aid in the treatment of patients with chemo-resistant tumors.

## SOLUTION

Cleveland Clinic investigators have developed a unified framework, the “chemogram”, to integrate multiple gene expression signatures, each associated with a response to an individual chemotherapy drug, as well as forecast and rank the predicted sensitivity of different chemotherapy drugs in a given individual.

The chemogram ranks up to 10 commonly used chemotherapy drugs, allows physicians to easily identify drugs that would fit best into a patient’s chemotherapy plan at any given time, and provides a clinical workflow to personalize chemotherapy that improves outcomes for patients.

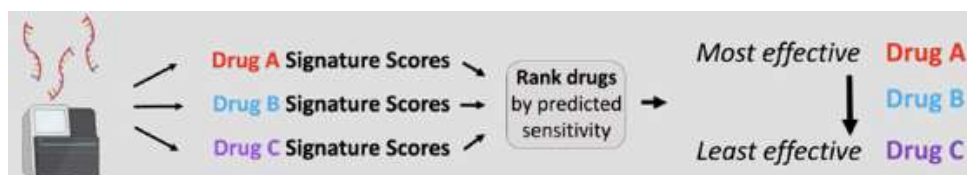


Figure 1: schematic overview of chemogram functionality