REPURPOSING DRUGS USING
HIGH-THROUGHPUT SCREENING (HTS)
Looking in the existing medicine cabinet to treat new diseases

1
Approved drugs are safe and proven effective against a disease or condition.
Before drugs are approved, scientists test and measure many parameters of each drug to ensure they can do what they’re designed to do.

Is it SAFE?
Is it SOLUBLE? (properly absorbed by the body?)
Is it SELECTIVE? (targets the thing it’s intended to?)
Is it STABLE? (lasts on the shelf?)
Is it POTENT? (works at low doses?)

2
LET’S TEACH OLD DRUGS NEW TRICKS!
Measuring every parameter of a drug takes a lot of time and resources; both are scarce in a pandemic. Instead, scientists build a screening library to screen thousands of drug molecules quickly using automation.

One Drug Screening Library

For a new disease, researchers screen thousands of drug molecules for activity that an existing drug might have. For COVID-19, this activity could serve to:

1) stop the replication of the virus in cells or

2) prevent the virus from entering the cell.


3
“HIGH-THROUGHPUT” MEANS:

Automated
Miniaturized
Parallel
Lower Cost
Reproducible
Faster rate
Safer
Robots can’t get sick!

4
After we screen, we look at the data and choose the most “active” drugs — those that best achieve the desired outcome.

Goal: Active drugs cluster together based on properties that meet the parameters.

% of response
parameter