DRUG REPURPOSING
ONE TREATMENT. MANY USES.

Drug Repurposing

Using a drug that was developed or approved to treat one disease as a treatment for another.

So, what does that mean?

Diseases may look different on the outside, but may **share** many of the **same features** on the inside.

That means that a **drug** originally developed to treat one disease may also be **effective for other diseases** that impact the **same underlying processes** in the body.

Why repurpose?

Finding new drugs is tough, but **getting** those **drugs approved** for use in humans is even more **daunting**.

It often takes about **$2.6 billion** and more than **10 years** to move a drug from the lab to the clinic.

Using drugs that have **already passed part of the process**, such as safety testing, may **save precious resources** and **time**, and more quickly get effective **treatments to the people who need them most**.

$2.6 BILLION + 10 YEARS

Metabolism
The total sum of the chemical reactions in the body that fuel life.

Insulin
A hormone produced by the pancreas that helps the body process sugar, which is either used as energy for cells or stored for later use.

Take diabetes and Parkinson's disease, for example.

Diabetes
Affects the body's ability to process sugar, resulting in too much being absorbed into the blood.

Type 1 diabetes typically arises in childhood, while type 2 diabetes usually occurs later in life. Most people with diabetes have type 2.

Similarities
People with diabetes have a slightly increased risk for developing Parkinson's, and the two disorders might share some underlying molecular changes.

GLP-1 receptors, which help cells communicate, are associated with both diseases and are found both in the gut and in the brain.

Insulin plays an important role in processing sugar and helps protect brain cells from stress.

Both diseases are linked to problems with the way cells produce and process energy.

Parkinson's
Marked by rigidity and gradual loss of movement as well as non-motor symptoms such as loss of sense of smell and gastrointestinal issues.

Most are cases diagnosed after age 50. Less than 10 percent of Parkinson's cases are inherited. The remaining 90 percent likely occur due to a combination of genetic, epigenetic and environmental factors.

References

Gang H, Jousilahti P, Bidel S, Antikainen R, Toumilehto J. 2007. Type 2 diabetes and the risk of Parkinson's disease. Diabetes Care 30(4):842–847.

Cost to develop and win market approval for a new drugs is $2.6 billion [press release]. Tufts Center for the Study of Drug Development; November 18, 2014 [accessed July 3, 2017]. http://csdd.tufts.edu/news/complete_story/pr_tufts_csdd_2014_cost_study.

GLP-1 agonists—the facts. London (UK): The Cure Parkinson's Trust [accessed June 19, 2017]. www.cureparkinsons.org.uk/glp-1-agonists-the-facts.

Hölscher C. 2012. Potential role of glucagon-like peptide-1 (GLP-1) in neuroprotection. CNS Drugs 26(10):871–882.

VAN ANDEL RESEARCH INSTITUTE®