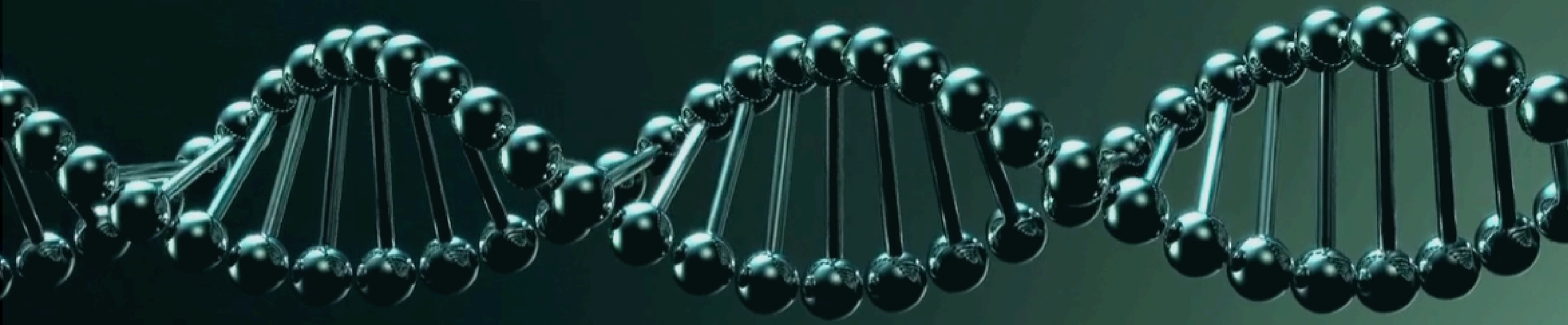
Shift Happens

REDUCE - REUSE - RECYCLE



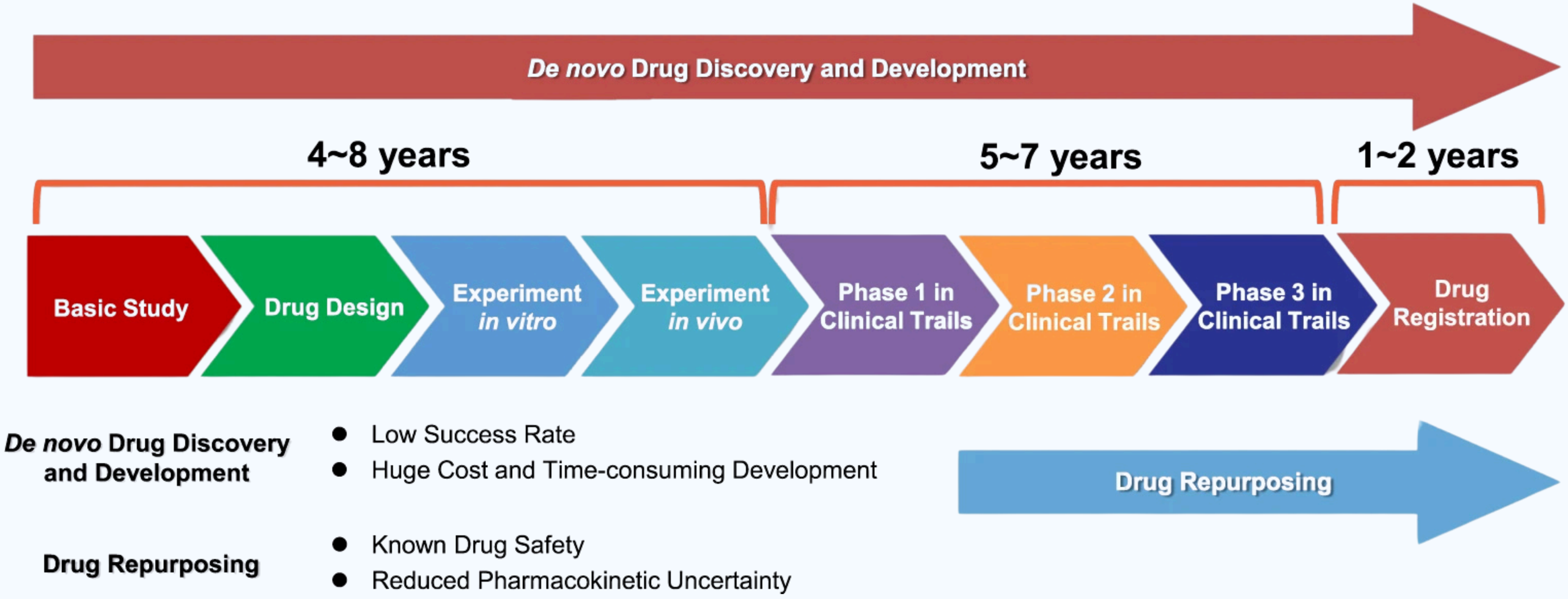


Figure 1: De novo drug discovery and development vs. drug repurposing.
(Source: Lu et al., Signal Transduction and Targeted Therapy, 2020)

This isn’t just theory. In fact, it’s personal.

My cousin Ariana has been living with a rare genetic mutation, and for years, her family has travelled across Europe, desperately searching for answers.

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But what if there was a tool that could instantly connect her gene to drugs already out there?

Shift Happens

Balahură Vlad

2nd year
CS student

Moga Antonia

2nd year
CS student

Ruse Teodor

3rd year
CS student

Rusu Dana

3rd year
CS student

Stan Ariana

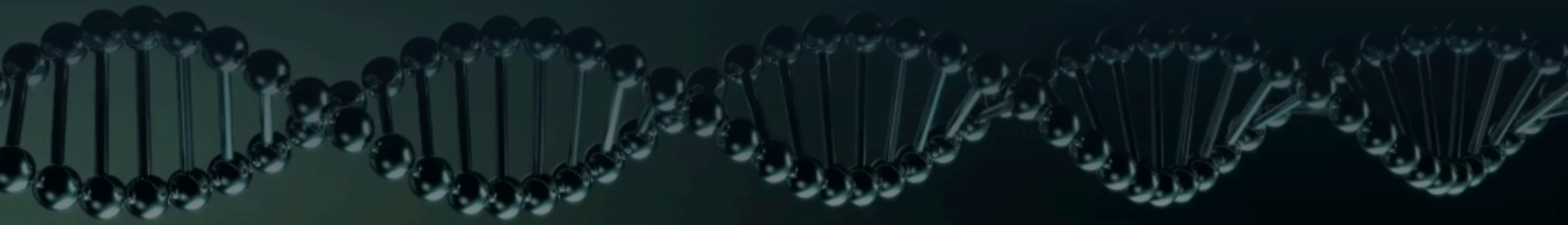
3rd year
CS student

Shift Happens

Precision Connection Care

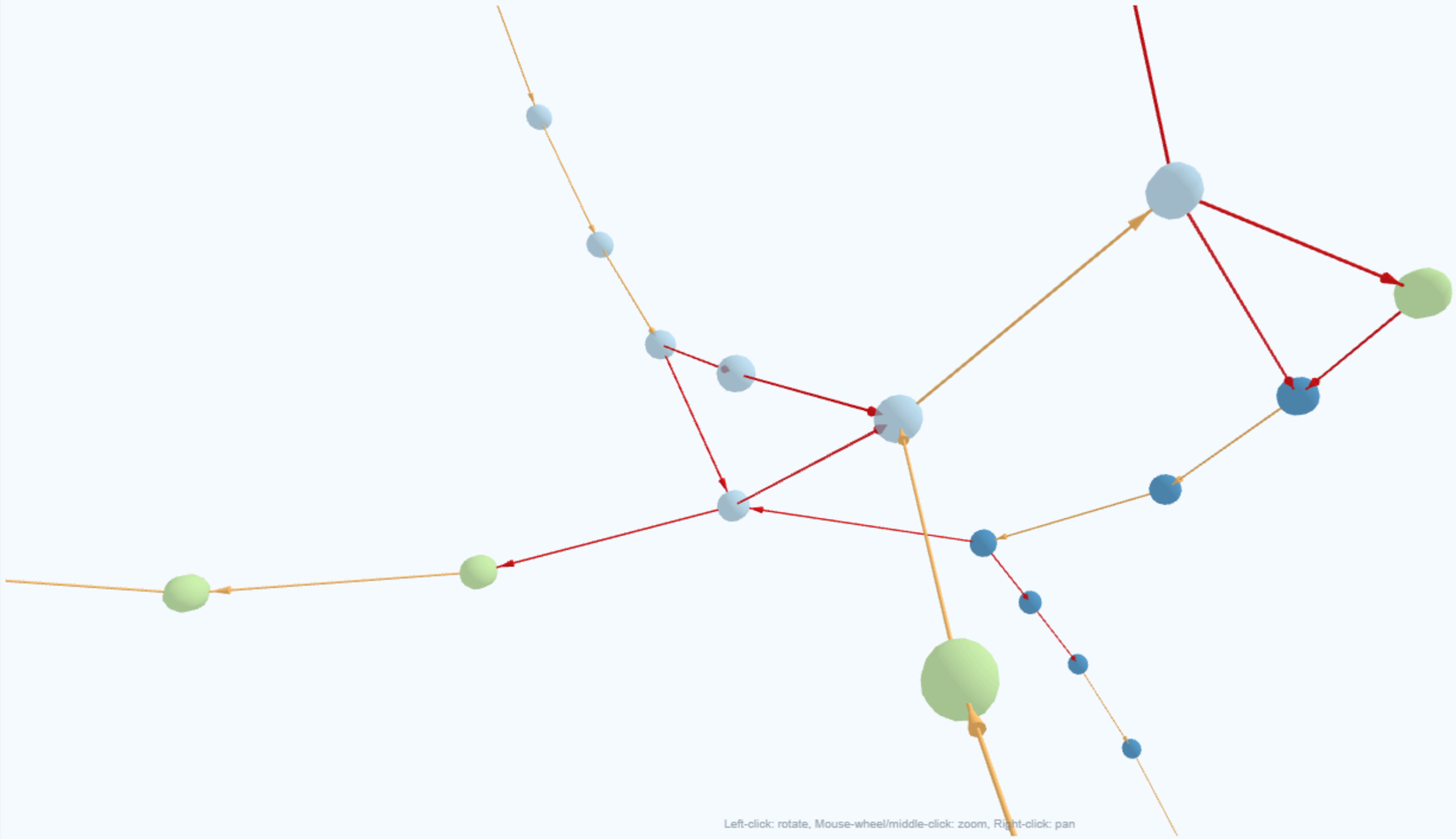
Visualize relationships between medicines, genes, and conditions — intelligently

Search gene . . .



Activate Windows
Go to Settings to activate Windows.

BRCA1



Drug Repurposer

Score: 0.56

GLABRIDIN
Score: 0.56

CHEMBL:CHEMBL1333798
Score: 0.56

CHEMBL:CHEMBL446567
Score: 0.56

2-PHENYLQUINOLINE
Score: 0.56

CHEMBL:CHEMBL1404865
Score: 0.56

CHEMBL:CHEMBL1320798
Score: 0.56

CHEMBL:CHEMBL1481721
Score: 0.56

CHEMBL:CHEMBL273891
Score: 0.56

7-HYDROXYFLAVONE
Score: 0.56

IROFULVEN
Score: 0.37

SEMUSTINE
Score: 0.28

CHEMBL:CHEMBL589207
Score: 0.28

CHEMBL:CHEMBL1078244
Score: 0.28

CHEMBL:CHEMBL153505
Score: 0.28

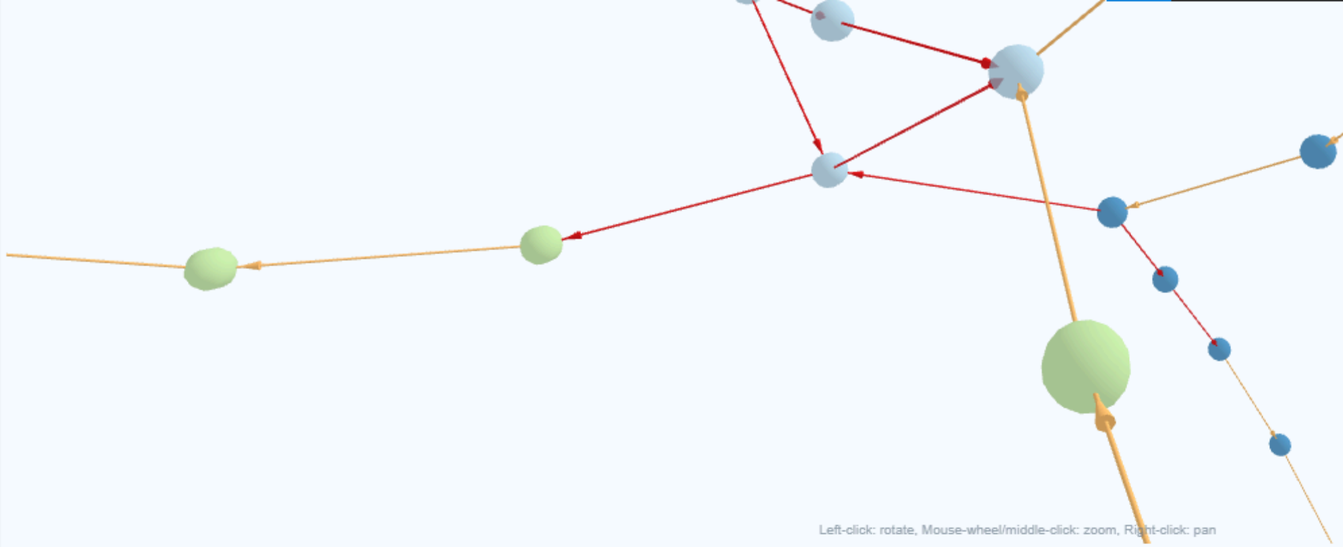
CHEMBL:CHEMBL600315
Score: 0.28

TIAPROFENIC ACID
Score: 0.28

Activate Windows
Go to Settings to activate Windows.

General Info | Purpose | Genetic Info & Map Location | Related Genes

BRCA1



CHEMBL:CHEMBL1481721
Score: 0.56

CHEMBL:CHEMBL273891
Score: 0.56

7-HYDROXYFLAVONE
Score: 0.56

IROFULVEN
Score: 0.37

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Score: 0.28

TIAPROFENIC ACID
Score: 0.28

General Info | Purpose | Genetic Info & Map Location | Related Genes

BRCA1

Nomenclature Name: BRCA1 DNA repair associated

Summary: This gene encodes a 190 kD nuclear phosphoprotein that plays a role in maintaining genomic stability, and it also acts as a tumor suppressor. The BRCA1 gene contains 22 exons spanning about 110 kb of DNA. The encoded protein combines with other tumor suppressors, DNA damage sensors, and signal transducers to form a large multi-subunit protein complex known as the BRCA1-associated genome surveillance complex (BASC). This gene product associates with RNA polymerase II, and through the C-terminal domain, also interacts with histone deacetylase complexes. This protein thus plays a role in transcription, DNA repair of double-stranded breaks, and recombination. Mutations in this gene are responsible for approximately 40% of inherited breast cancers and more than 80% of inherited breast and ovarian cancers. Alternative splicing plays a role in modulating the subcellular localization and physiological function of this gene. Many alternatively spliced transcript variants, some of which are disease-associated mutations, have been described for this gene, but the full-length natures of only some of these variants has been described. A related pseudogene, which is also located on chromosome 17, has been identified. [provided by RefSeq, May 2020]

Activate Windows
Go to Settings to activate Windows.

Shift Happens

SRC

BOSUTINIB

Recommended for: Gene **SRC**

Interaction Score: 0.17

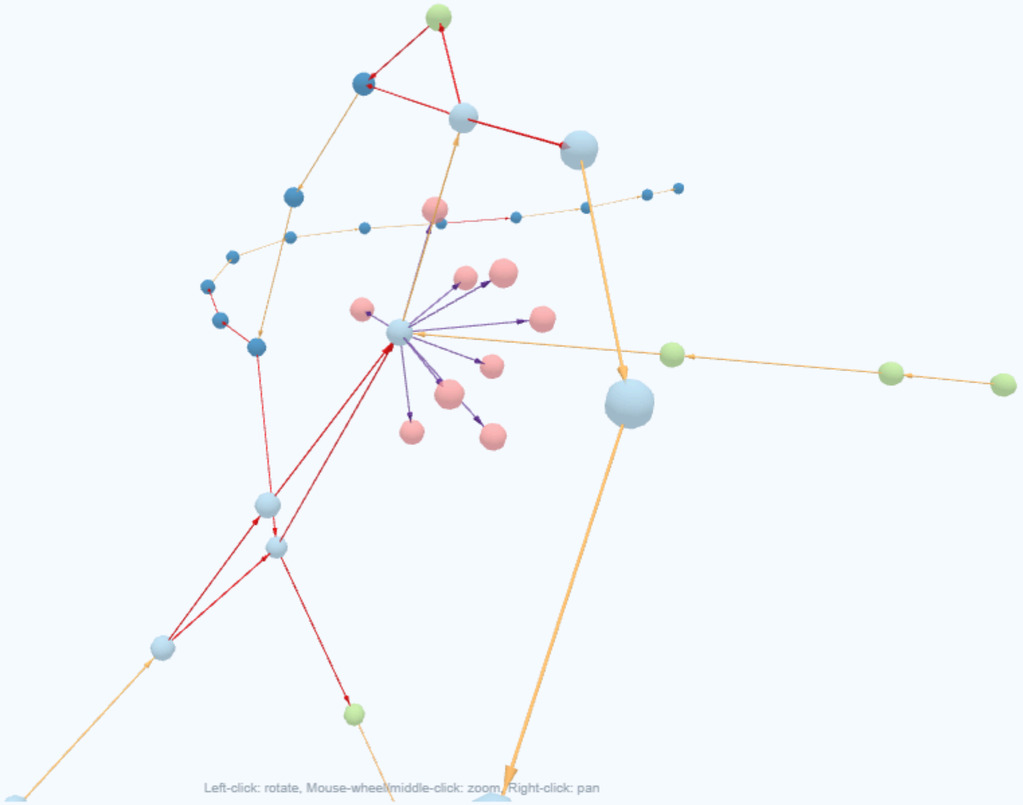
General Info:

1: Brand: BOSULIF | Generic: BOSUTINIB | Manufacturer: Pfizer Laboratories Div Pfizer Inc | Purpose: No purpose info available
2: Brand: BOSULIF | Generic: BOSUTINIB | Manufacturer: U.S. Pharmaceuticals | Purpose: No purpose info available

Activate Windows
Go to Settings to activate Windows.

Shift Happens

BRCA1



Drug Repurposer

CHEMBL:CHEMBL1709259
Score: 0.56

GAMMA-FAGARINE
Score: 0.56

CHEMBL:CHEMBL12658
Score: 0.56

WISTIN
Score: 0.56

GLABRIDIN
Score: 0.56

CHEMBL:CHEMBL1333798

Shifty

Hi! Ask me something about your gene.

How do i prevent breast cancer ?

Preventing breast cancer involves a combination of genetic, lifestyle, and environmental factors. Here are some ways to reduce your risk:

Lifestyle Factors:

1.

Maintain a healthy weight

: Excess body fat can increase the risk of breast cancer.

2.

Exercise regularly

: Regular physical activity can help reduce the risk of breast cancer.

3.

Don't smoke

: Smoking is linked to an increased risk of breast cancer, as well as other types of cancer.

Genetic Factors:

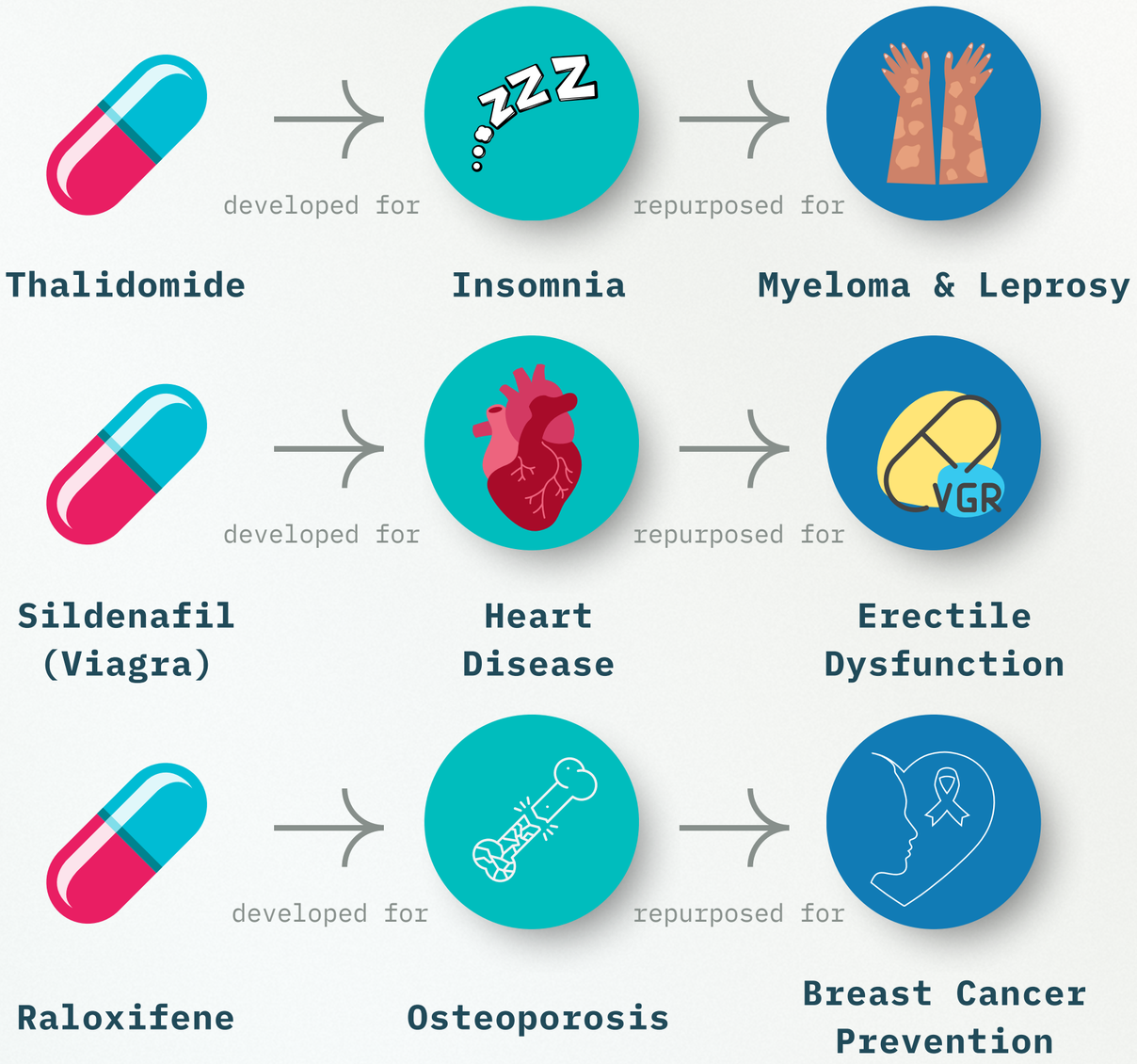
1.

Ask something...

Activate Windows
Go to Settings to activate Windows.

General Info	Purpose	Genetic Info & Map Location	Related Genes
	Used in cancer treatment and gene expression regulation.		

Gene repurposing has proven successful in real cases



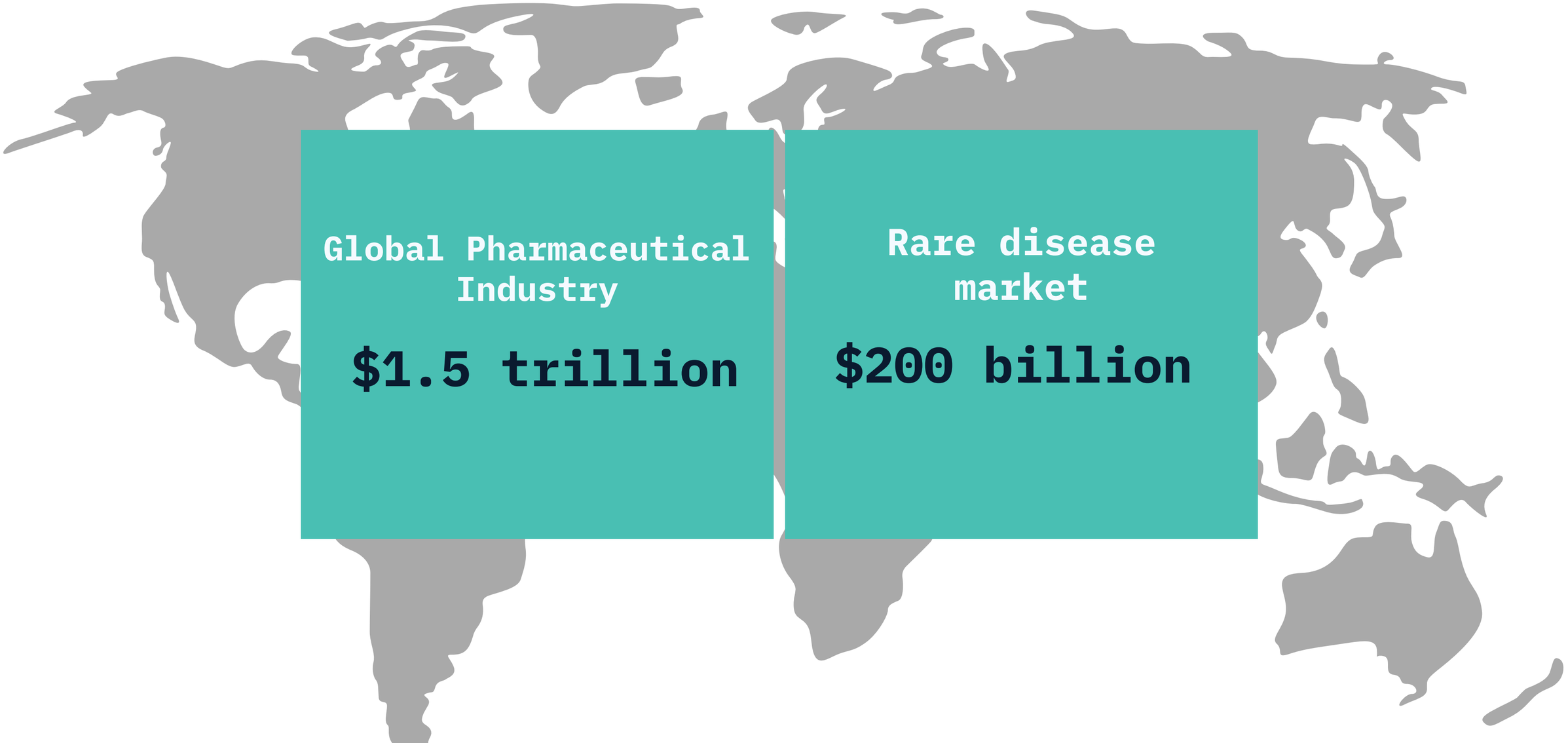
SELECT * FROM

DGIdb

KEGG Kyoto Encyclopedia of Genes and Genomes

NCBI National Center for Biotechnology Information

MARKET SIZE



Global Pharmaceutical Industry

$1.5 trillion

Rare disease market

$200 billion

MARKET SIZE

30 million

people affected
by rare diseases
in the **EU**

25 million

people affected
by rare diseases
in the **U.S.**

300 million

people affected
by rare diseases
around **the world.**

Source: The Lancet Global Health. (2024). Rare diseases and equity: Time to think globally. The Lancet Global Health, 12(3), e315.

MARKET SIZE

Global Pharmaceutical Industry

$1.5 trillion

Rare disease market

$200 billion

Drug repurposing saves up to...

- **90% of the time**
- **80% of the cost**

... of new drug development

30 million

people affected by rare diseases in the **EU**

25 million

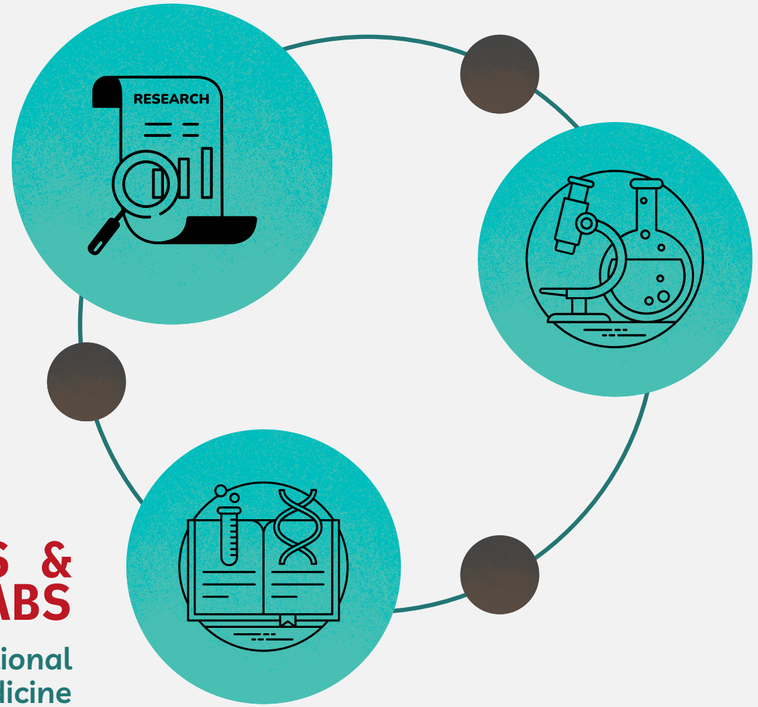
people affected by rare diseases in the **U.S.**

TARGET AUDIENCE

RESEARCHERS & CLINICIANS

working in genetic research, rare diseases, and drug discovery

roughly 6.7 million researchers*



PHARMACEUTICAL COMPANIES

exploring repurposing strategies

In 2023 spending $300 billion globally *

UNIVERSITIES & ACADEMIC LABS

involved in translational medicine

* Source: World Health Organization. (2023, March). Health researchers (in full-time equivalent) as a proportion of all researchers. Global Observatory on Health R&D.

Shift Happens

STRATEGY OVERVIEW

Tell Stories, Not Just Stats

Highlight real-world impact with emotional stories saving time, money, lives.

Educate & Engage

Publish whitepapers and articles

Get in the Right Rooms

Attend key conferences & summits and run live demos

STRATEGY OVERVIEW

Tell Stories, Not Just Stats

Highlight real-world impact with emotional stories saving time, money, lives.

Fuel Innovation

Continuously improve the platform with feedback from early users and research pilots

Educate & Engage

Publish whitepapers and articles

Strategic Partnerships

Collaborate with foundations, labs, and research groups

Get in the Right Rooms

Attend key conferences & summits and run live demos

Targeted Outreach

Run targeted campaigns offering early access to researchers

Business Model

Individual Access - $**70**/month

Team Access - $**200**/month for a **5**-user plan

Enterprise Licensing - starting at $**10,000**/year (custom pricing)

Strategic Partnerships - co-development opportunities

Price Point Comparison

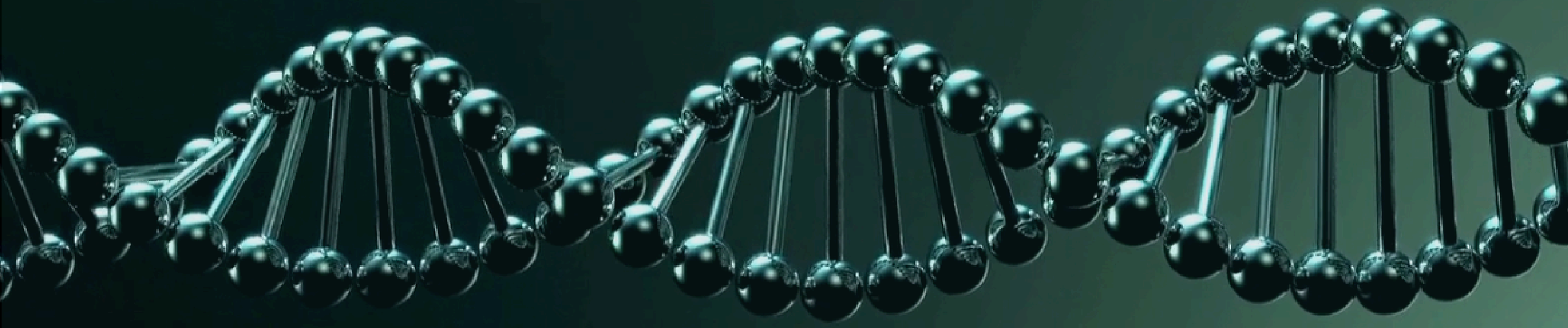
PharmGKB: free (limited access), premium (custom pricing)

DGIdb: free (open access)

KEGG: starts at $2,000/year

DrugBank: $1,000/year (institutions)

clue.io: $5,000/year (academia), $50,000+/year (industry)

Shift Happens

Q&A