PharmaPros
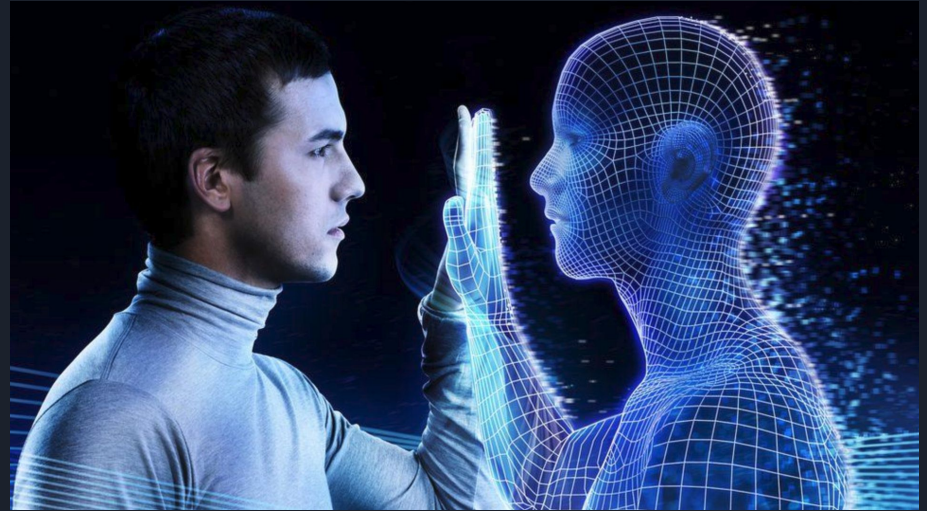

Team Members: Taha Abdullah, Triyaksh Mathur,Tanvi Dhamdhere, Michael Rizzo, Omnya Mohamed Izzeldin, Daniel Maier

Problem statement

- **Use of animal models**
  - Time-consuming
  - Expensive
  - Inaccurate
  - Raises Ethical Concerns

- Nine out of ten drug trials that work with animals fail in human clinical trials

- We aim to develop a drug-discovery pipeline that is able to predict drug efficacy and toxicity with a high degree of accuracy
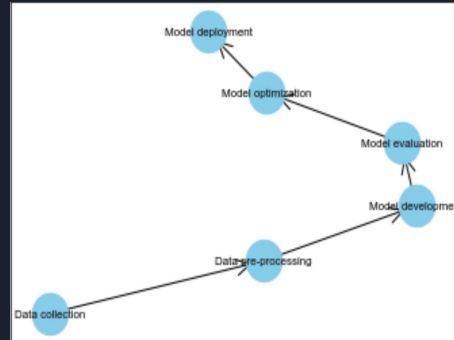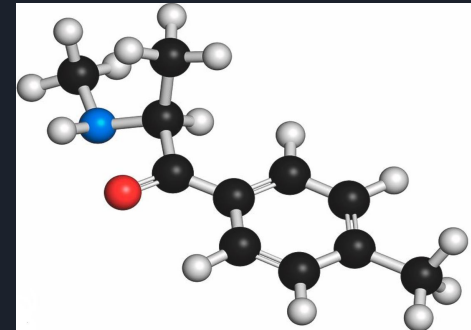
Animal trials

Human trials

Method

Expected Outcome

The Need for In Silico Models in Alzheimer's Disease Research

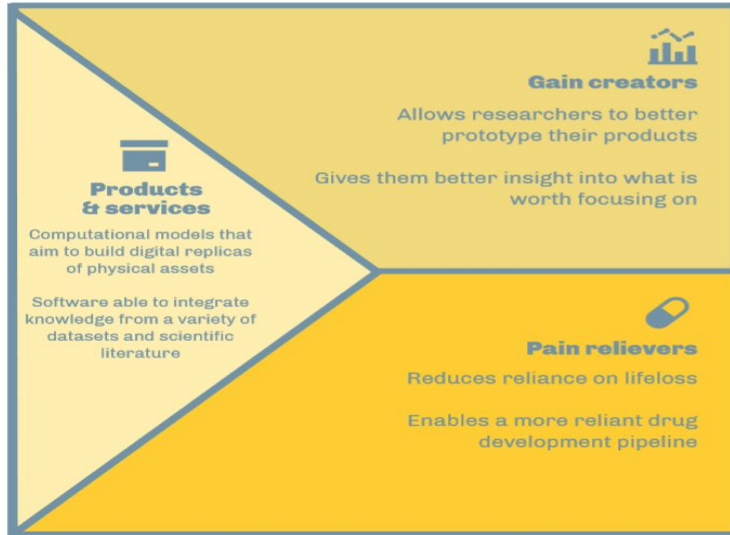| People affected by Alzheimer's worldwide (millions)	50
Costs of Alzheimer's (trillions)	1.1
Failure rate of clinical trials (%)	99.6

Call to action: Invest in in-silico models to improve the chances of developing effective drugs for Alzheimer's disease
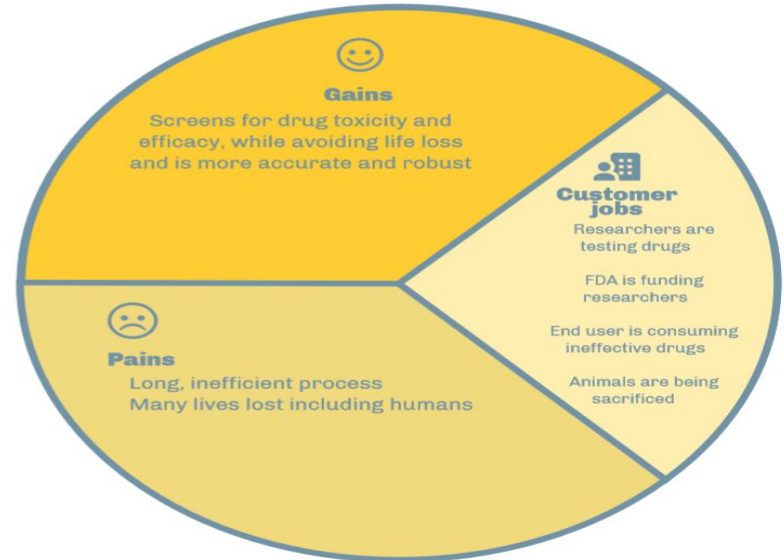
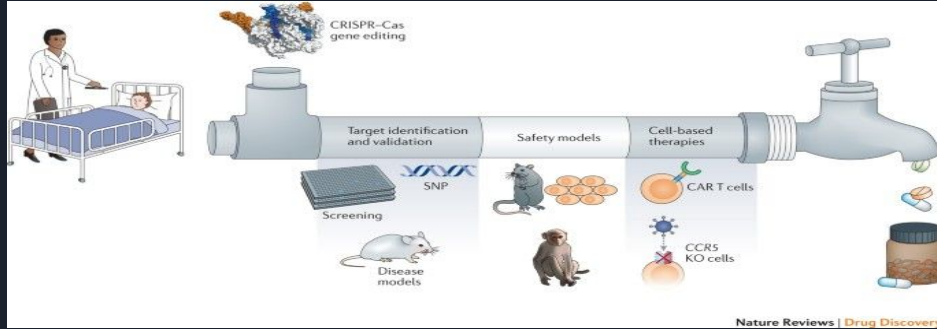# Value proposition and Longevity Challenge

Value proposition and Longevity Challenge

We aim at improving transferability of research results from animal to human trials and eventually replace parts of animal trials with in silico models.

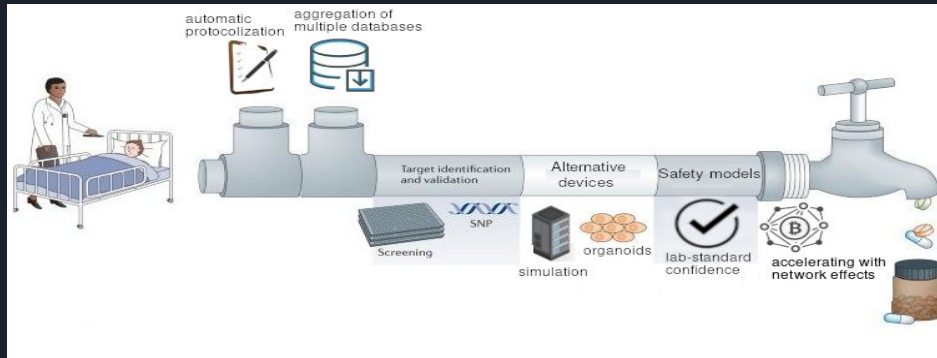Our current aim is to present a PoC around detecting toxicity of drugs for humans that are developed using animal trials (e.g. Alzheimer's).

Also recent research focuses a lot on not only longevity but also "Healthy Longevity" which includes knowing about long-time toxicity of a drug but also patient conditions and life-quality.
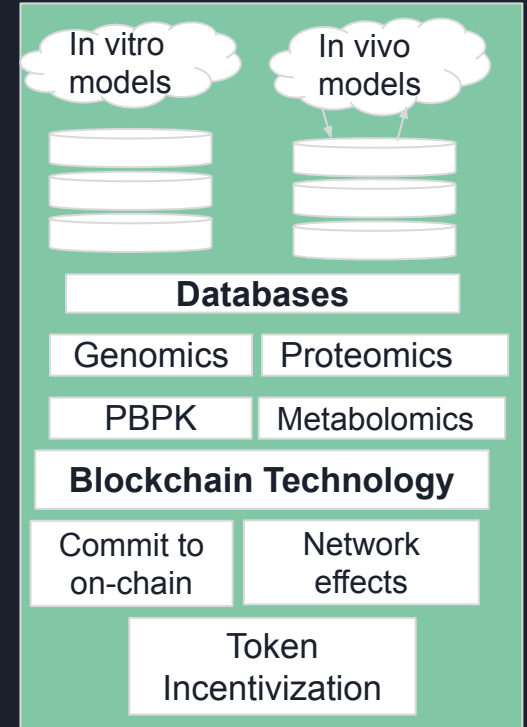
The Solution

Existing Approach

Our approach

Building a Computational Model MVP

Underlying Technology

BLOCKCHAIN
Use case categories in Healthcare

- Digital Identity Management
- Financial Insurance & Records
- Clinical Research & Data Access / Monetization
- Health Supply Chain Management

Web3 technologies, such as blockchain, can be used in healthcare to improve

- Supply Chain traceability
- Trial Oversight

And in our case we try to

- Generating a confidence factor
- Improving credibility by putting metadata on-chain for verification
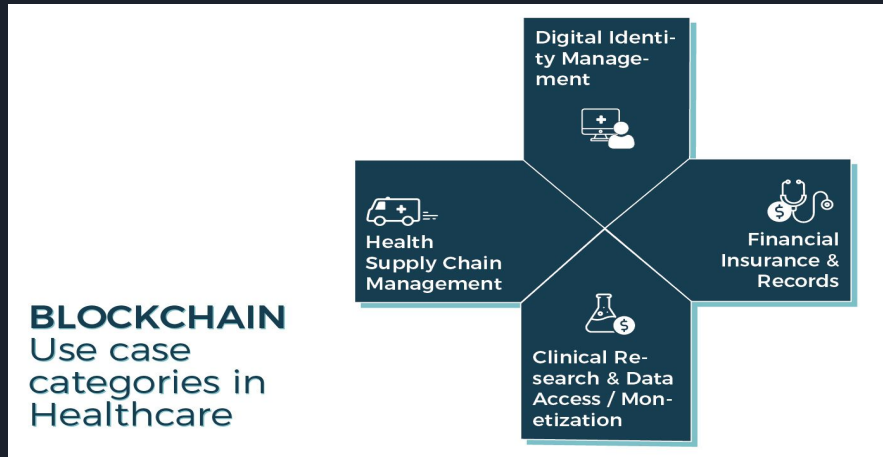
Techniques, Tools and Infrastructure

- PBPK Modeling and other such systems biology based analytic/algorithmic techniques
- Integrated with Molecular dynamics suites
- Modern ways to access scientific databases
- On-chain metadata for credibility
- Highly available network for our business partners
- HPC Clusters
- IT Support

Novelty

- Increasing the traction of alternative drug-discovery methods
- No-need for specific types of animal trials out of the box
- Use of advanced modeling techniques
- Integration with other in silico platforms
- Personalized predictions on how to modernise your workflow
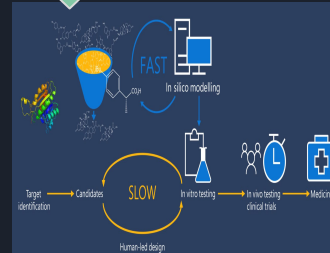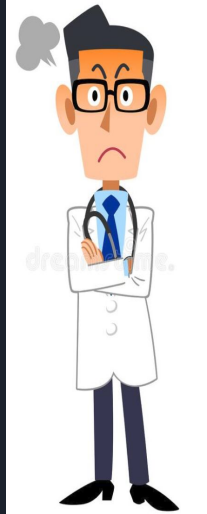- Interoperability with existing scientific tools

Customer Journey Map

Awareness

Research
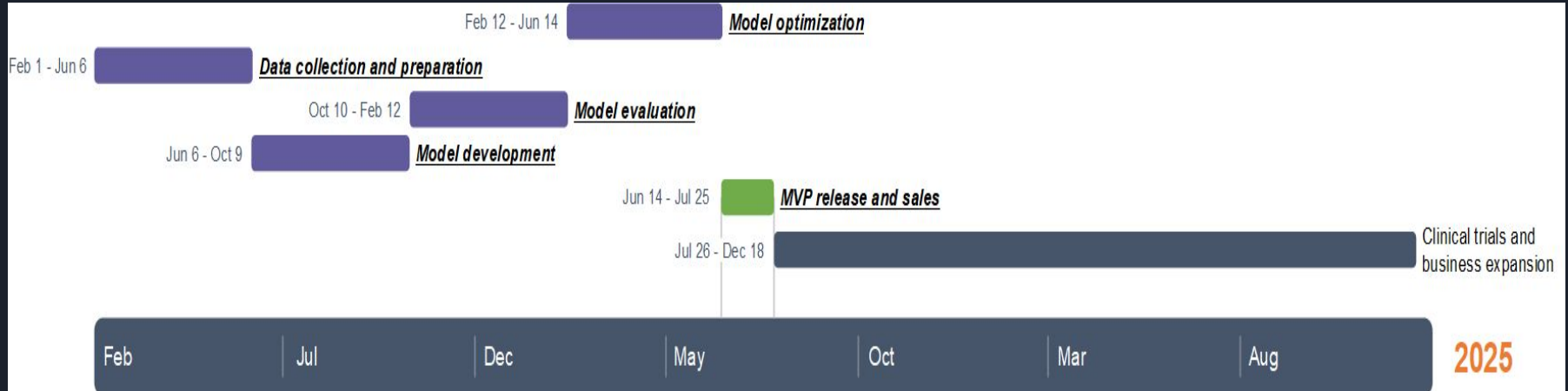
Evaluation

Purchase

Post-Purchase

Business model

Ways we could make money

- Charging a medium fee for scientists to use our plugin for a popular software suite
- One time fees for utilization of tool

Gantt Chart for Development Timeline

Feb 12 - Jun 14 — *Model optimization*

Feb 1 - Jun 6 — *Data collection and preparation*

Oct 10 - Feb 12 — *Model evaluation*

Jun 6 - Oct 9 — *Model development*

Jun 14 - Jul 25 — *MVP release and sales*

Jul 26 - Dec 18 — Clinical trials and business expansion

Feb | Jul | Dec | May | Oct | Mar | Aug | 2025

Conclusion

PharmaPros

- Develop an accurate and reliable method for predicting drug efficacy and toxicity in Alzheimer's disease (reduces the reliance on animal models)

- Blockchain technology to improve confidentiality and open access

- Plan to continue to test and validate our MVP, seek funding and partnerships

- Develop a plugin and web interface

In-Silico Drug Discovery App

Upload Data | Run Model | View Results

Welcome to the In-Silico Drug Discovery App
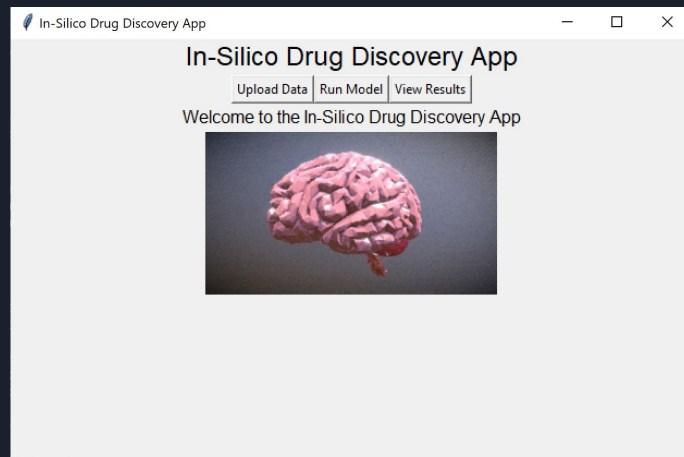
PharmaPros: *Unlocking the secrets of Alzheimer's one in-silico model at a time*

PharmaPros Team

Goals: Develop a drug-discovery pipeline for Alzheimer's disease that uses computational modeling to predict drug efficacy and toxicity while reducing reliance of animal models

Values: A commitment to ethical research practices, transparency and decentralization

Purpose: Improve the safety and effectiveness of drugs for Alzheimer's disease

Strengths: Use of advanced computational techniques, integration of diverse data sources, blockchain for data sharing

Weaknesses: Technology may not be fully accepted by pharmaceutical companies, still early stage and organizational structuring needs work

Michael Rizzo
Engineer (ECE)
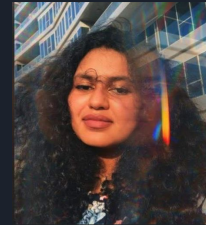
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