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# CPSC 10: BIOPATH

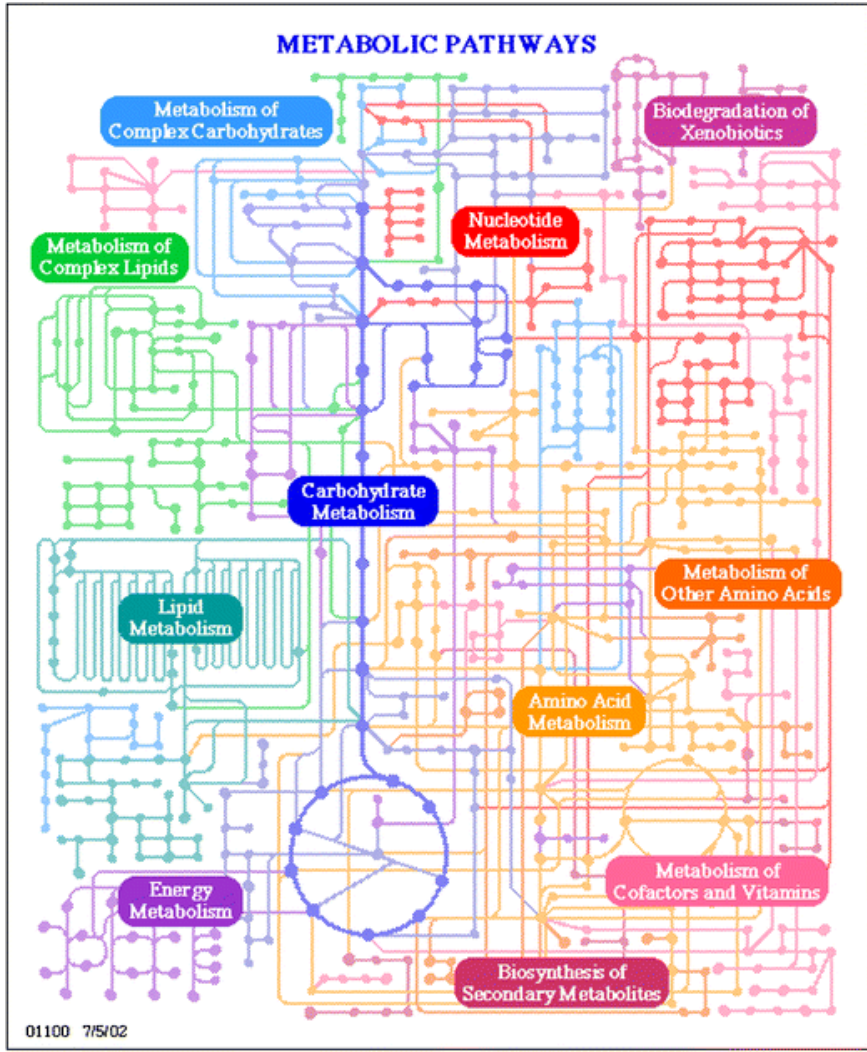
Interactive Web Application for Modeling Biochemical Pathways  
Sponsored by Dr. Jeff Watson and the Gonzaga Department of Chemistry & Biochemistry



## Biochemical Pathways

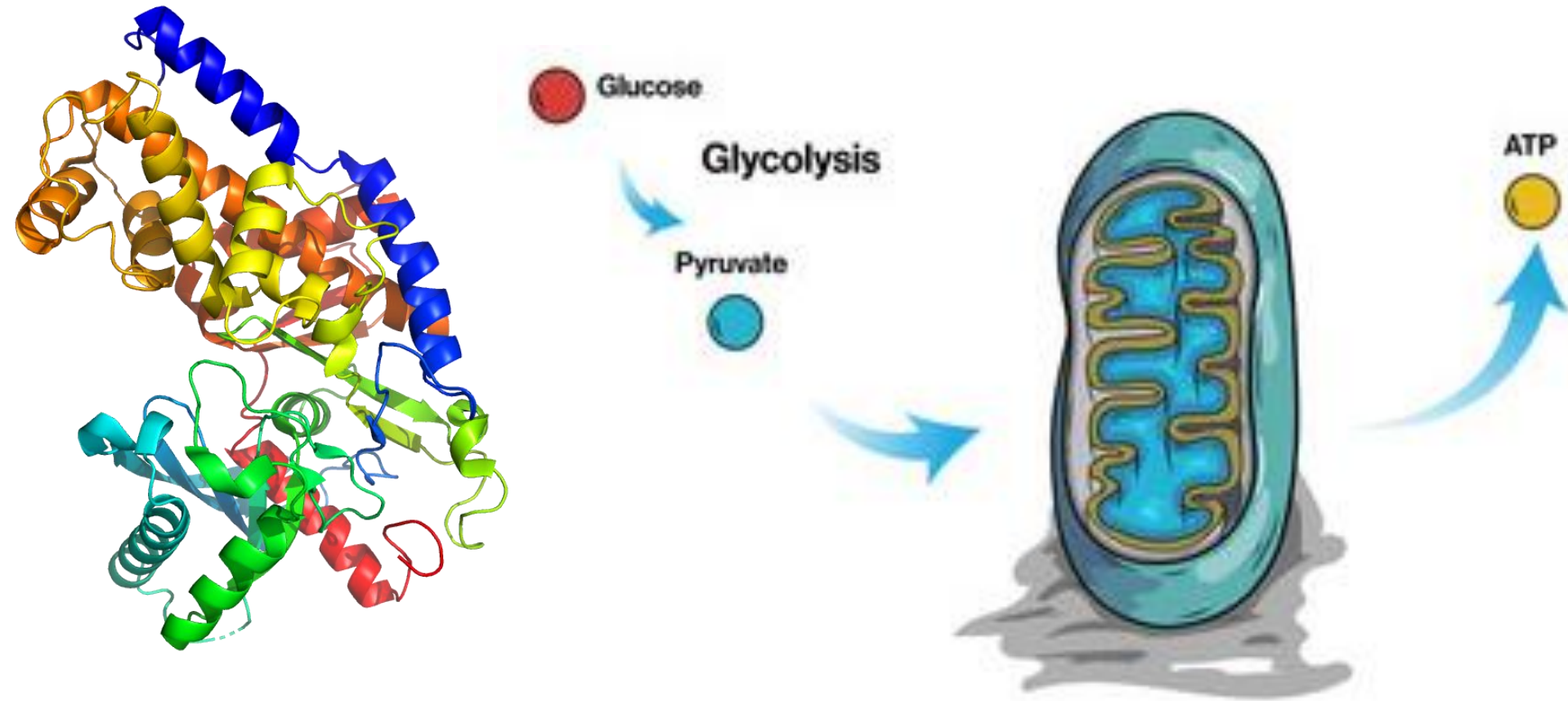
What are Biochemical pathways?

- Series of chemical reactions
- Generate energy and / or make new molecules
- Hundreds of pathways in humans
- Studied in Medicine, Cell Biology, Biotech, and much more

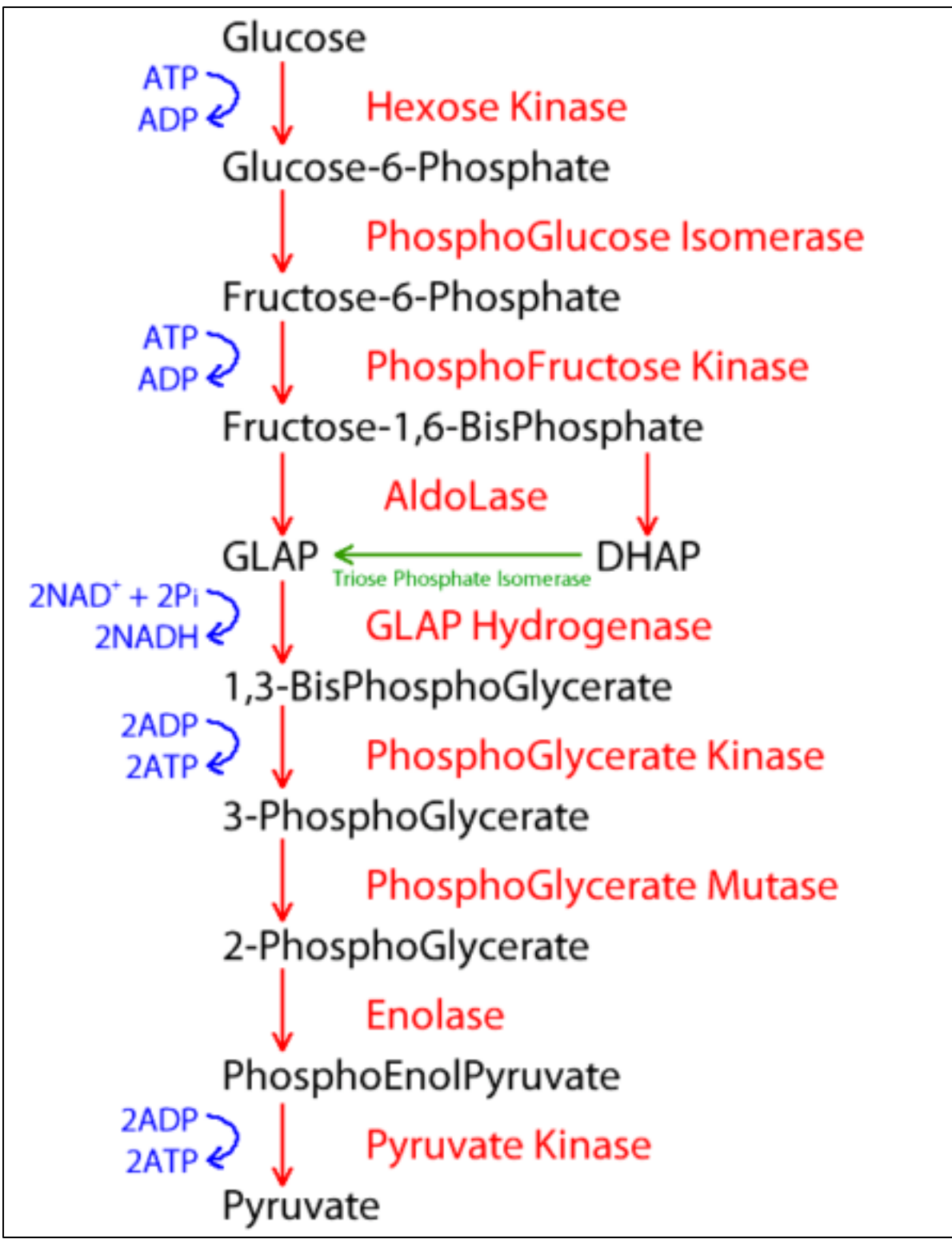


Enzyme: Hexokinase

Food to usable energy



Traditional Diagram for Teaching Glycolysis



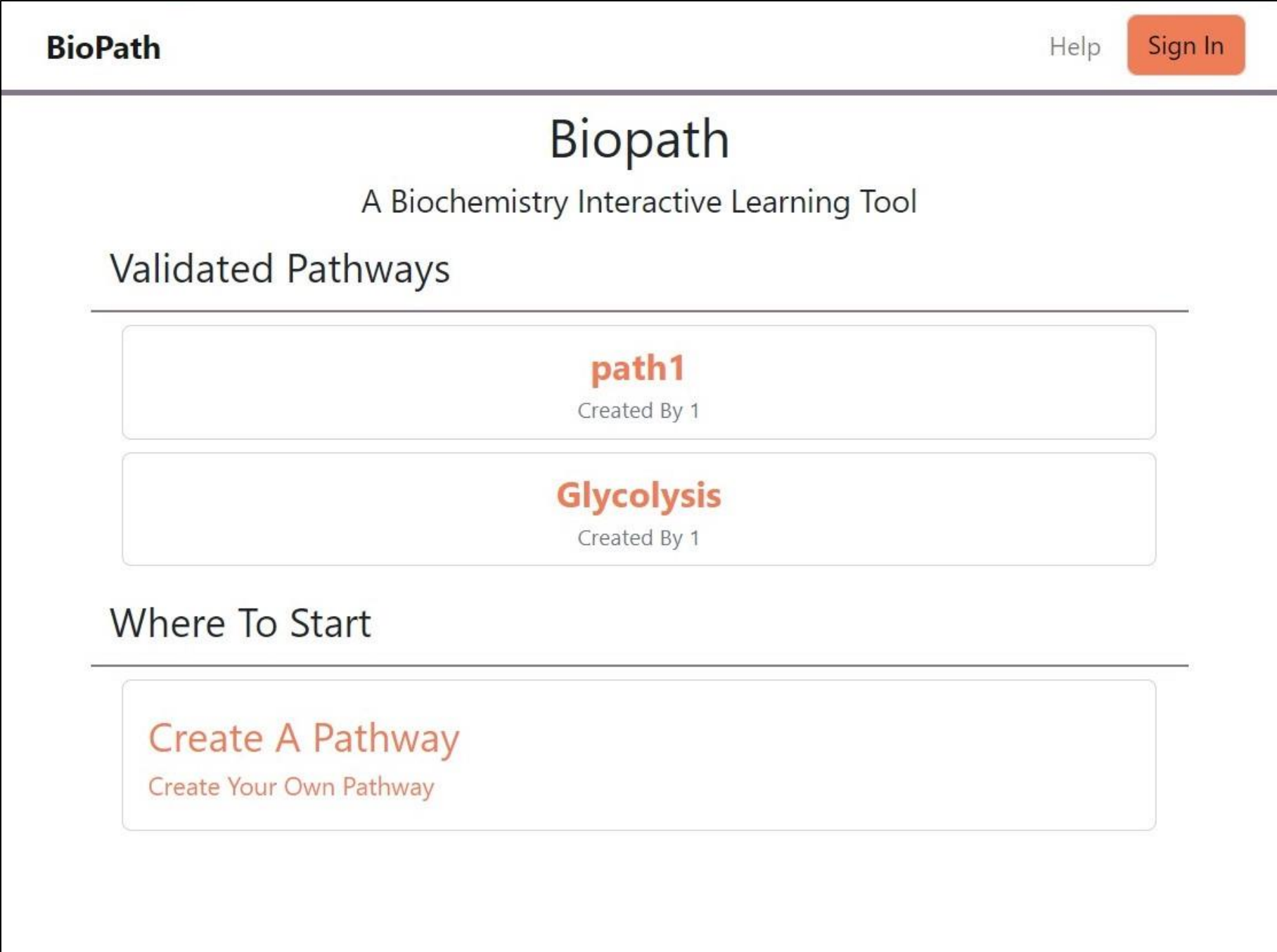
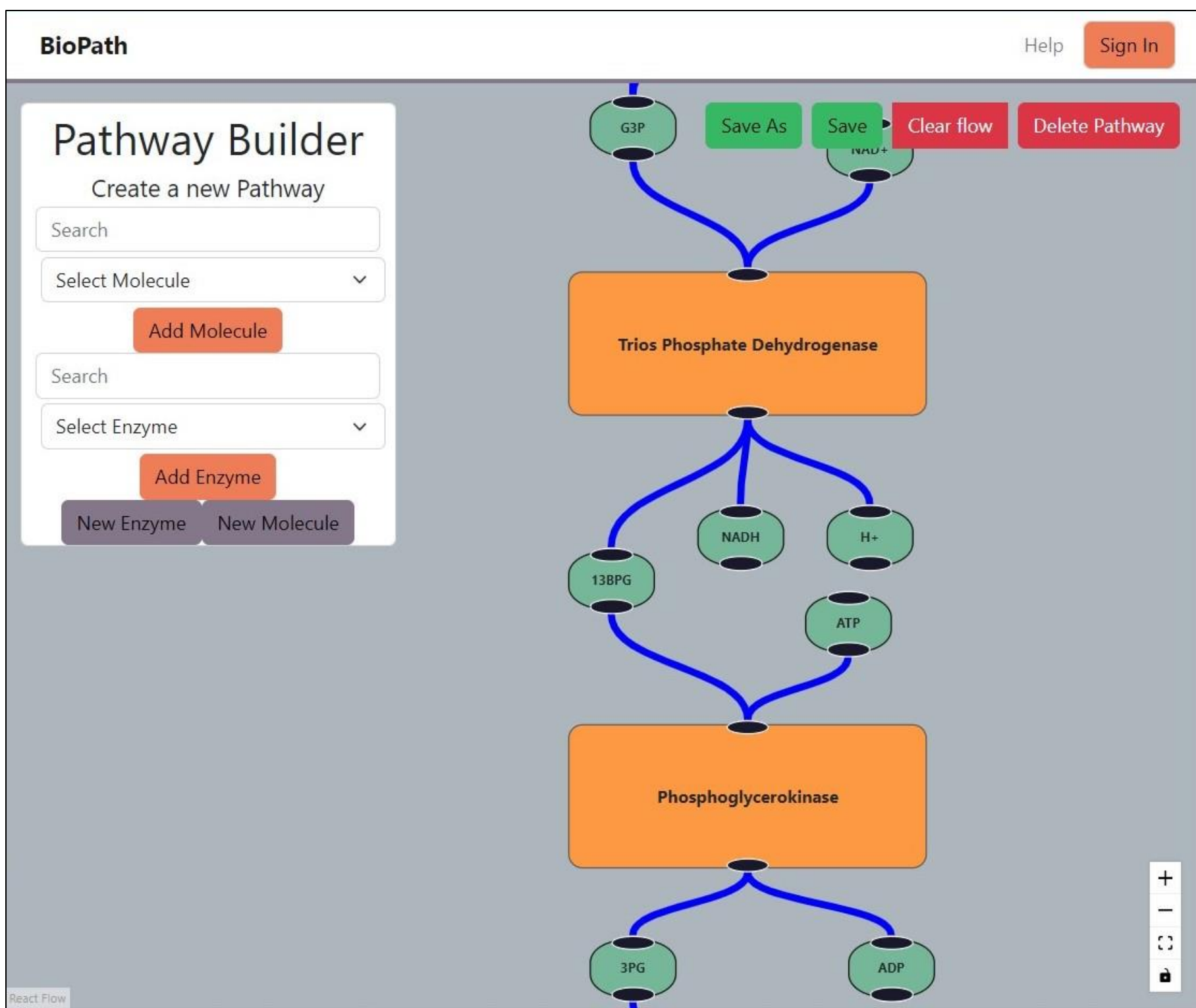
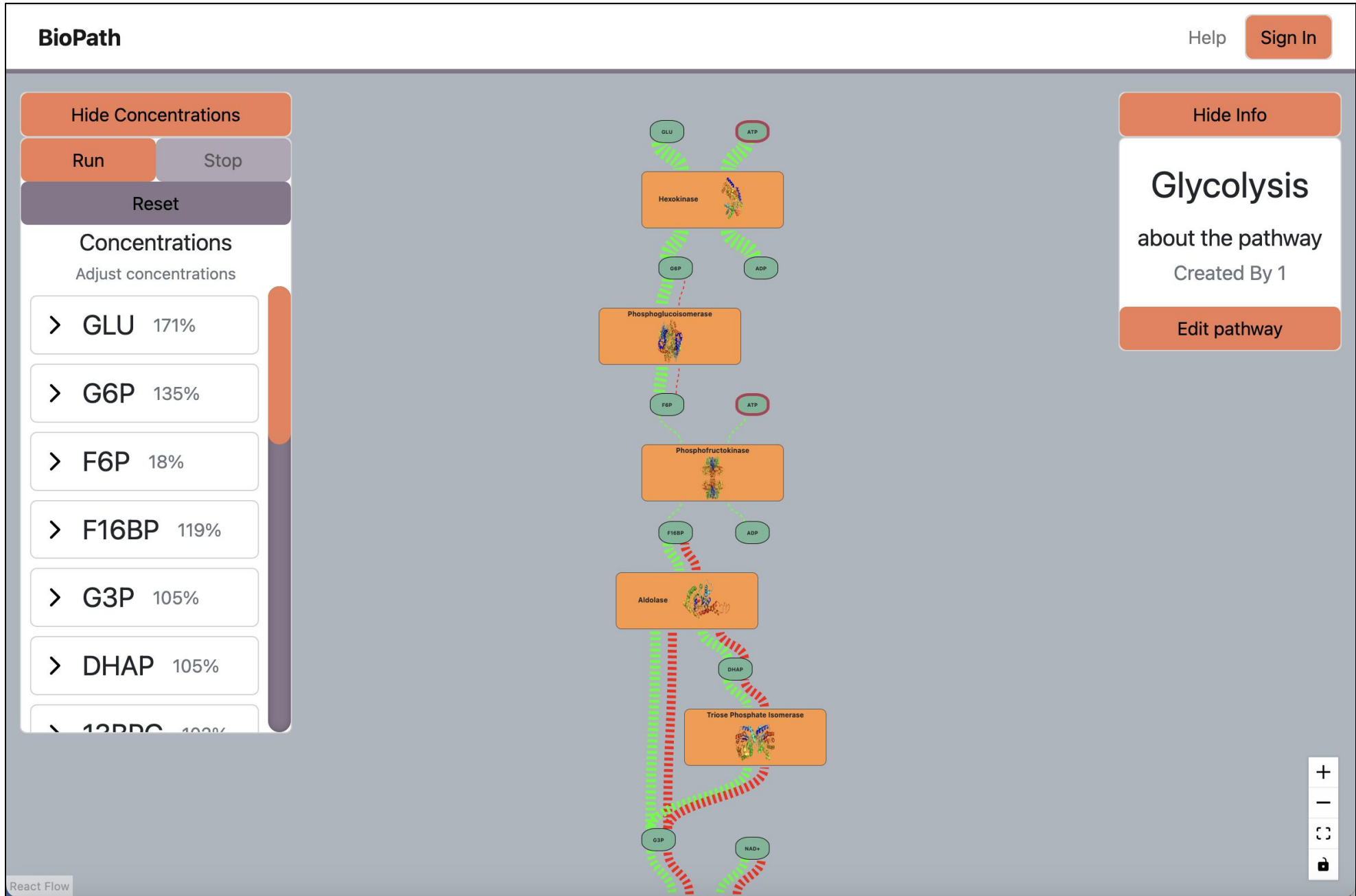
Problems with traditional Methods of instruction:

- Drawings on Whiteboards don't show changing values
- Learning built around memorization
- Abstract, and Complex Processes

Addressing These Problem:

- Interactive and Updating pathway information
- Build Pathway Tool to reduce rote memorization
- Visualize connections, move components, and disconnect complex structures

## Biopath Web App



### Model View

Main Features:

- Manipulate Molecule Concentrations
- Move Enzymes / Molecules in viewport
- Lock molecule concentrations
- View pathway information
- View concentrations of all molecules in pathway
- Run and Stop the model

### Builder View

Main Features:

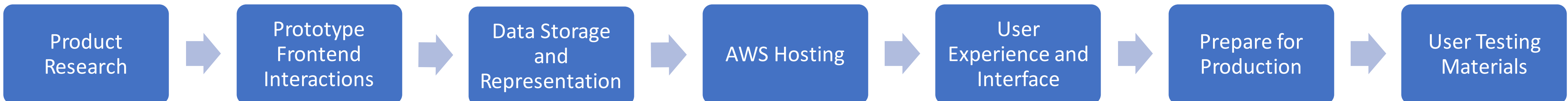
- Input new Molecules
- Input new Enzymes
- Build new Pathways
- Edit existing pathways
- Delete existing pathways

### Home View

Main Features:

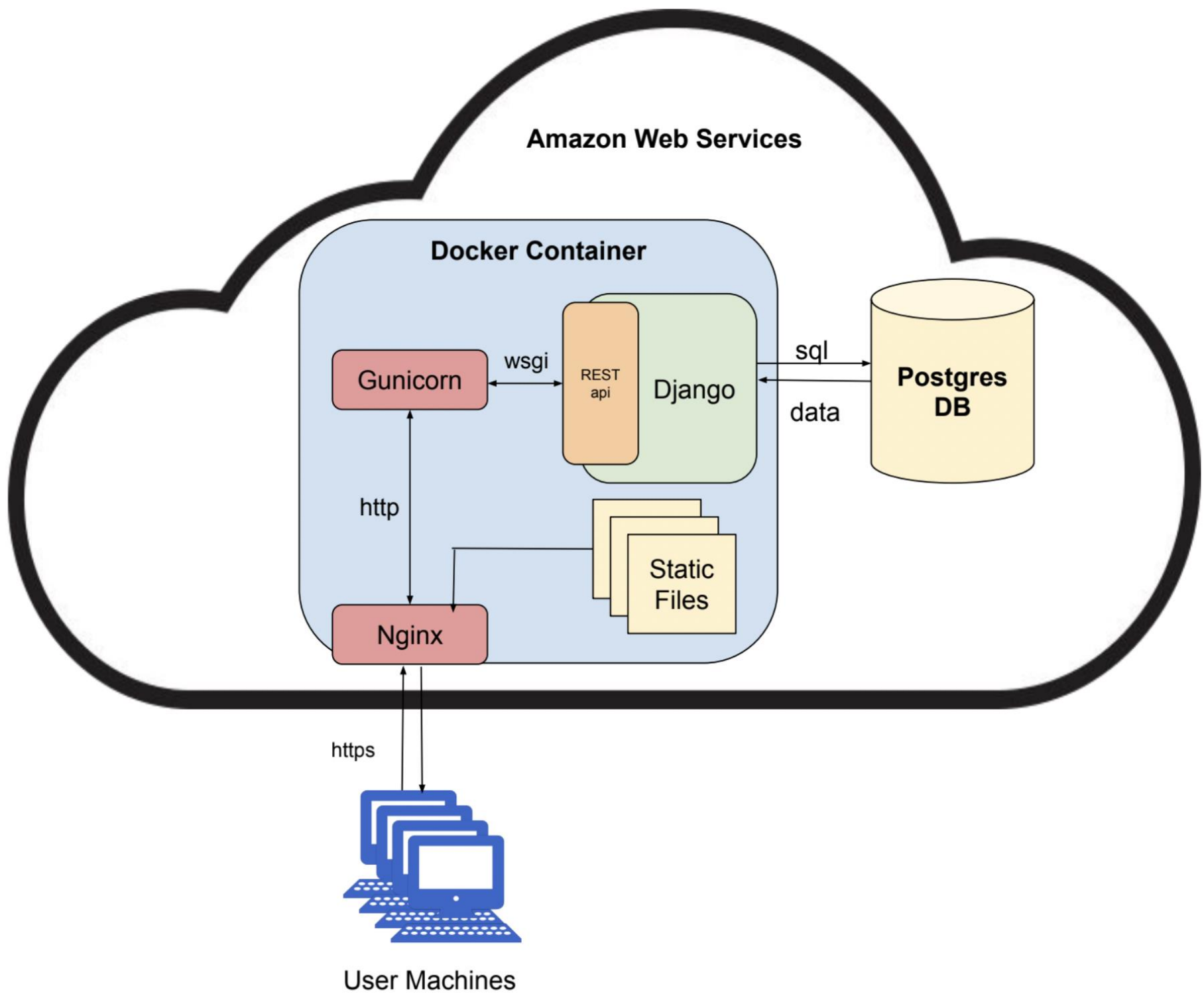
- Sign in
- Create an account
- Navigate to model View
- Navigate to model Build

## Project Timeline

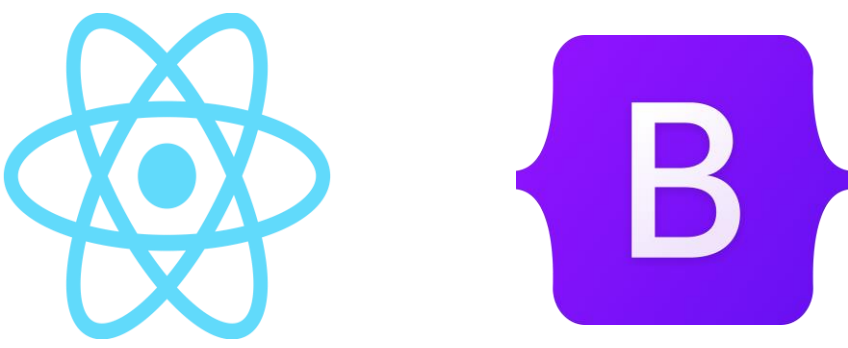


## Technical

### System Architecture



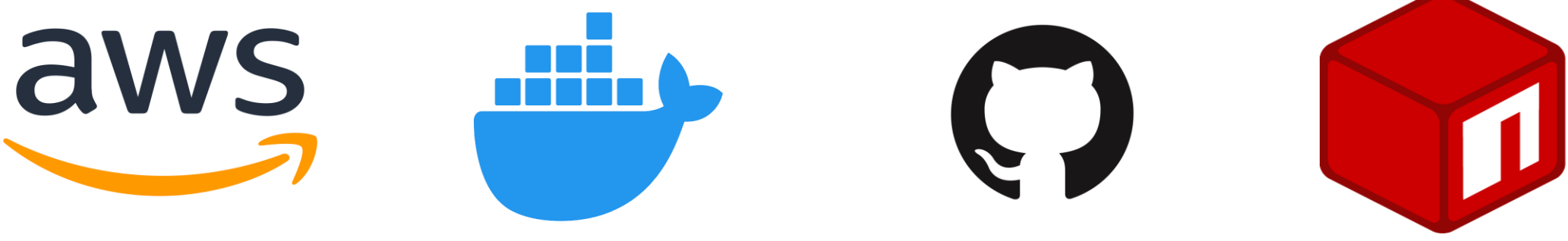
### Frontend Tools



### Backend Tools



### Other Tools



Team Member Responsibilities	Core Work
Josh Schmitz	System Design Django API
Ben Higley	Frontend Development User Testing
Zach Burnaby	Frontend Development System Design
Cole Stainsby	DevOps Engineering Frontend Development