

EE / CprE / SE 491 – sdmay21-12

Biochemistry Virtual Lab

Report 6

03/25/2021 – 04/08/2021

Client: Professor Stone

Faculty Advisor: Professor Mitra

Team Members:

Steven Dirth

Brody Sunsten

Peter Bancks

Jacob Christopherson

Romain Obame

Enzo Ciccarelli-Asta

Past Accomplishments

- Click handler for 3d objects
- Refactoring
 - Part of Module 3 code has been refactored (fix eslint errors mostly)
- Fixed scene texture issues
- Completed Gel Filtration Curve & unknown protein.
 - Completed gel filtration curve for unknown protein to determine unknown molecular weight.
 - Completed validation table for unknown protein.
 - User can now calculate the unknown molecular weight and verify if it's correct or not. If it's correct, a dialog message is displayed to the user to congratulate the student for finishing the lab.

Pending Issues

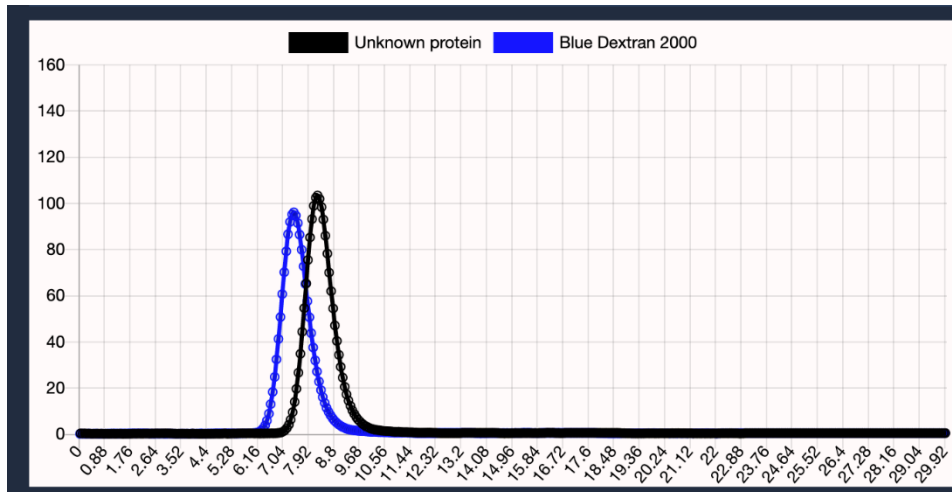
- Merge conflicts for click handler & refactoring
- Orbital controls do not allow for interaction with objects:
 - Since dragging objects around moves them in the XY graph respective to the camera, the object intersection checker is hard to use properly since there is no way to move objects into or away from the camera. This needs to be changed to move objects with respect to the lab table.
 - Since the left mouse button is used for both dragging the camera and dragging objects, there are timing issues surrounding the change from orbital to drag controls that are not allowing for items to be picked up while orbital controls are enabled.

Individual Contributions

Team Member	Contribution	Period Hours	Total Hours
Steven Dirth	Complete Click Handler, refactored to remove linting and dependency warnings	10	35
Brody Sunsten	Fixed scene texture issues, worked on improving camera smoothness.	4	21
Peter Bancks	Debugging issues with combined drag/orbital controls, scroll wheel issues	2	22
Jacob Christopherson	Saved Animation, PRIM 2 presentation slides, starting final report	3	20
Romain Obame	Completed Gel filtration curve and Unknown protein.	8	32
Enzo Ciccarelli-Asta	Investigated Three.js techniques pertaining to animation		11

Screenshots:

This screenshot shows the generated unknown protein.



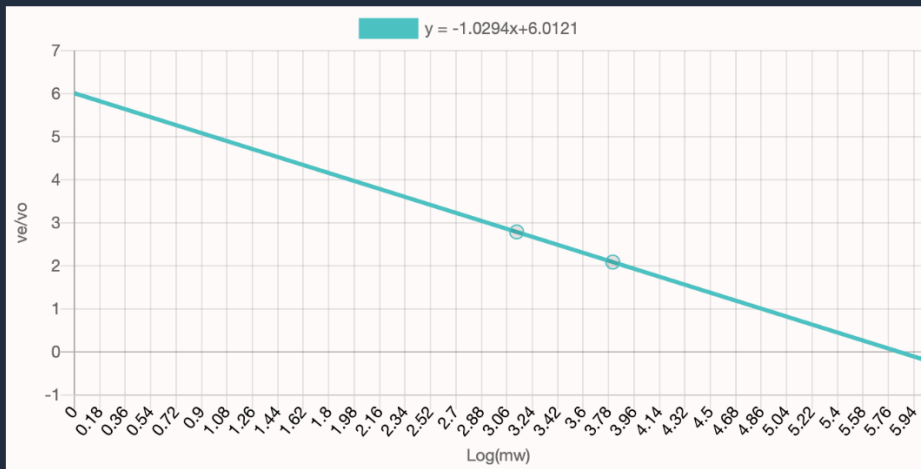
The screenshot below shows the validation table for the unknown protein. (Mw is unknown)

Complete the table below

	A	B	C	D	E
Id	Sample	Molecular Weight (Da)	Elution Volume (ml)	V_e/V_o	Log (Mw)
1	Unknown protein	?	13.05	1.74	
2	Blue Dextran 2000	2,000,000	7.5	1	

The screenshot below shows the gel filtration curve with each data points.

Gel Filtration Standard Curve



Next

Plans for Coming Weeks

- Complete end-to-end module 3 walkthrough
- Create transition document to hand project off to next team - Everyone.
 - Need to include how to set up and run the project.
 - Details how modules in the code communicates with each other.
- Complete Final Report/Presentation/Poster - Everyone
- Complete Code Refactoring for Notebook - Romain
 - Add comments explaining role of the function including a description of each parameter and the return value
 - Remove unused variables
 - Refactored ambiguous methods
- Fix defect causing the scroll wheel to affect lab zooming while the notebook is open – Pete
- Fix object dragging mechanics to allow for interaction with orbital controls enabled - Pete