

# WebGen (VIP 295) Log - Fall 2021

Amara Im | keoamara.im@stonybrook.edu  
B.S. in Computer Science | Stony Brook University, Class of 2024

## **Team Members:**

Richard Moffitt, PhD

Jonas Almeida, PhD

Erika Nemeth

Kevin Zhu

Adit Anand

Eric Ruan

Chowdhury An-Noor

Purva Shenoy

Will Li

Shiying Lin

Joshua Matthew

Jakub Kaczmarzyk

Spencer Krichevsky

## **Week 1 - 8/27**

- Team introductions
- VIP notebooks, project participation, peer evaluations
- look at observable notebooks
- Todo:
  - update readme.md on github

## **Week 2 - 9/3**

- Jakub asked about all the different stacks and js libs of the project
  - Going through project to do list in github
  - Set up sub team meetings
  - Availability for me: either on fridays or possible tuesdays afternoon
- When2meet
- Erika - define cohort 1, cohort 2, cohort 3
  - Issue #280
  - Discuss different options and possibilities for displaying more than 1 tumor type
- Adit - epiplotly for violin plots
- Discussing potentially adding Dimensional charting
  - Maybe a possibility but we're trying not to add new elements
  - Priority: fix existing bugs and other issues for the paper

## **Mid-Week**

- Working on removing genes that are in the selected pathways but are not in the master list of genes
  - To avoid undefined elements when querying firebrowse
  - \*no need\*
- Bug: takes a few seconds for the items in the tumor type dropdown to load
  - Can do the same thing that I did for the genes list dropdown with pagination
  - The issue is within fillCancerTypeSelectBox() being loaded upon onchange
- Clean up functions

## **Week 3 - 9/10**

- Josh is learning all the biology terms
  - Expression data, phenotypes
- Note: don't bother with genes that exist in msigdb but not the
- Opened issue #293: Optimizing retrieval of genes
- Purva - issues #268, #271, #279
  - Plotly don't have all customization functionalities
- Tumor types dropdown load time

- Maybe an issue on the querying firebrowse heroku side
  - It depends on the load time upon new browser load
- Eric - Local storage and data caching improvements
- Violin points - Custom html to help with partition selector
  - Instead of a select box
- **Profiling tool in performance**

### **Week 4 - 9/17**

- Subteam: discussed parallel programming
  - We are already doing `promise.all(calls)`
  - Josh and I went through all the code within firebrowse and different terms
  - More overview on webgen and running through each js files
- Adit is explaining violin plot
  - Richard talked about how its more important to compare different tumor type to the same gene
  - Setting gene on the x-axis is pointless
- Erika - Updating mutation features to both heatmap and violin plot
  - Using one partition checkbox to update both plots rather than separately
- Jakub - Deferring library scripts upon page load
  - Might have improved cancer type dropdown performance

### **Midweek**

- Organize and finish up functions for pathways selection
  - Note: github removed password authentication for pushing
  - Must use personal token instead

### **Week 5 - 9/24**

- Eric - data caching
- Adit - working to only have cohort on the x-axis as the default
  - Maybe remove toggle button
  - Unnecessary requering when click rebuild violin plot

### **Week 6 - 10/1**

- Adit - remove violin plot toggle
- Bug: the tabs to switch between heatmap and violin were highlighted after submit
- LAML error when asking for solid tumors
- Looked at network to track the performance of gene querying from firebrowse to build heatmap and violin plot
- Purva - pie charts legend cover the pie chart slices

- Shorten legends to not take up space

## Week 7 - 10/8

- Kevin Z came to talk about typescript
- Jsdocs - variable types
  - <https://episphere.github.io/plco/docs/>
  - <https://github.com/episphere/plco/blob/master/.github/workflows/main.yml>
- Non-wild-type mutation on pie chart per patient barcode
- Combining clinical data and mutation - concatenate
  - One slice of pie chart per patient
- Local forage
  - Redundant data
  - Array indexing

## Week 8 - 10/15

- Closed issue #291
- Erika asked if we should extend class time
- Purva - fixed legends taking over pie chart
  - If there are more than 9 labels then they get moved to the right
  - If the labels have more than 10 characters then the beginning get shorten
  - If there are 2 pie charts with legends to the right then there are 2 pie charts per row instead of 3
- Josh and Eric: loki - insert
  - Users is name of the table
  - Insert has attribute like a json file
  - Ex - "expressionData": expressionData
  - mongoDB no SQL backend
- Adit - mutations appear on partition box
  - Partition box moved to the bottom
- Jakub - jsdocs in fetchExpressionData
  - Throw error if fetch response is not ok
  - Console.log instead
- Erika - implement a horizontal scroll for >1 tumor types
- Reminder: peer evaluation due sunday

## Week 9 - 10/22

- Closed issue #327
  - Remove update heatmap and rebuild violin plot buttons
  - The plots will change upon onchange of checkboxes

- Getting an error in jsdocs after Adit merged my pull request
  - Eric had a PR related to this error
- Adit worked on combining clinical and mutation data checkboxes
  - Richard requested putting checkboxes on the side of the plots
- Jakub worked on chopping firebrowse query data
- Spencer and Erika were fixing the correct number of samples label
- Purva closed issue #271 - legends disappear after window width change
- Eric - plan on implementing a hashmap for different cancer types

### **Week 10 - 10/29**

- Absent this week
- Subteam:
  - Adit made progress on combining checkboxes for heatmap and violin plot
  - Showed the final product of moving the y-axis labels vertically by Josh
  - Jakub and Adit looked through the code and fixed overlapping texts.

### **Week 11 - 11/4**

- Will is working on jsdoc for fillselectboxes.js
  - Jakub changed var to const
  - Explained the difference between var, let, and const
- Shiyang worked on loki function to fetch from firebrowse
- Jsdoc: <https://jsdoc.app/tags-returns.html>
- Adit confirmed that violin plots are ready to go
  - Eric will make a pull request for caching
  - Grid spacing for heatmap
- Kevin Z. presented a tutorial for the webapp
  - Add a default selection options
- Purva made changes to the legends
- Spencer is tasked to organize the mutation based on hierarchy
  - Ref: <https://github.com/vanallenlab/comut>
- Loki.js is ready for PR
  - Fixing fetching functions for caching later

### **Week 12 - 11/11**

- Spencer gave a presentation for mutations hierarchy:
  - Wild type
  - silent
  - Missense
  - Inframe deletions
  - Inframe insertions

- Splice site
- Frameshift insertions
- frameshift deletions
- Nonsense - results in stop codon
- Everyone discussed goals for the end of semester
  - Will & I: jsdocs
  - Eric: finished changing localStorage to loki for larger storage capacity; work on caching and fetching to improve efficiency and speed
  - Getting ready for another release after loki fetch fix

### **Week 13 - 11/19**

- Finished createViolinPlot.js documentation
- createHeatmap.js and createPieCharts.js only have 1 major giant function
- Some functions were unused
- Point the website to the dev branch for now
- Waiting for mutation and clinical data in the checkboxes
- Also moving the checkboxes still haven't been merged
- If the user put the same data as before, then firebrowse is still re queried
- Talked about states of the website

### **Week 14 - 12/3**

- Possibly a new release
- Adit got some errors after loki fetch
  - Text overflow with heatmaps
- Kevin Z. talked about how to do a tutorial after the pie charts appear
- Purva made progress on issue #360
- Josh and Will - presentation on how states work and will discussed on the implementation
  - Develop a single source of truth that could stored data from api as well
  - Basic idea: the state can fill the select boxes for user
  - Issue: with selecting pie charts and rebuilding plots after selection