

Development of data science course and summer bootcamp for ADRD researchers

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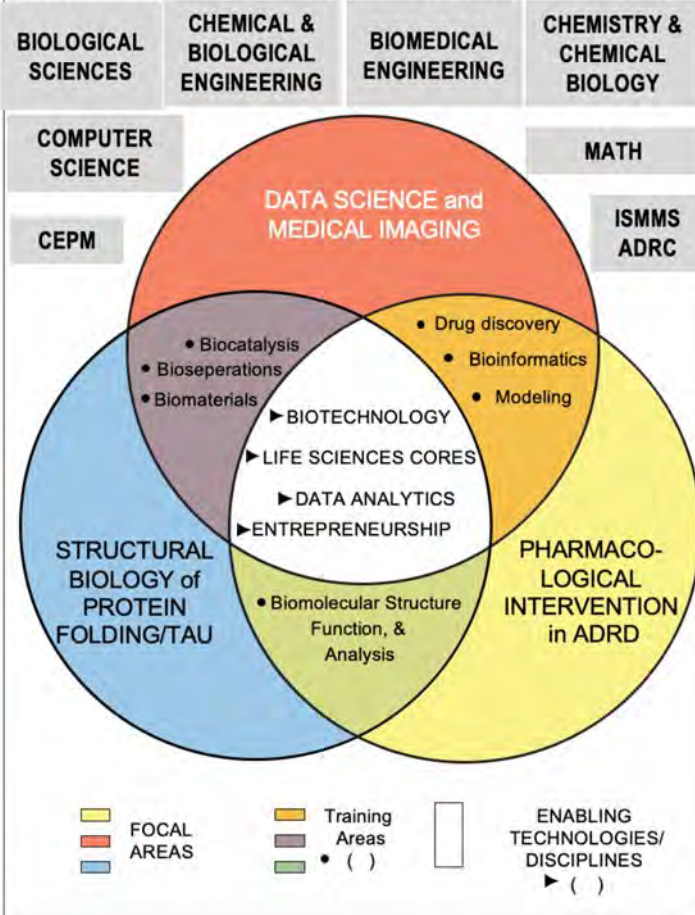
Rensselaer Polytechnic Institute

Project Summary



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Predocutorial training program for Alzheimer's disease at the interface of data science, engineering and biology



Goals:

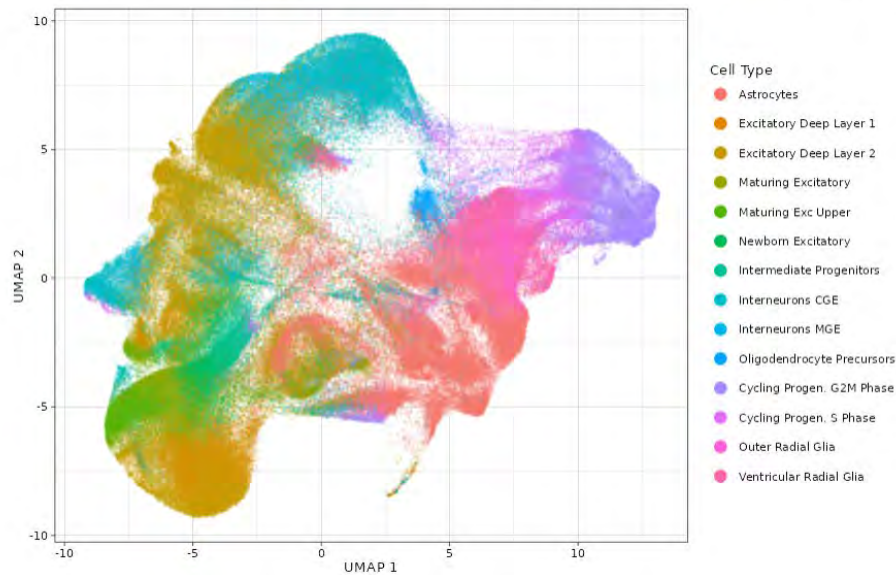
- Training on the applications of data analysis techniques from biological datasets
- Addition of new course to the life science curriculum. **Data Science: Principles and Applications to ADRD**
- **Data-driven Alzheimer's Research Challenge**

Highlight

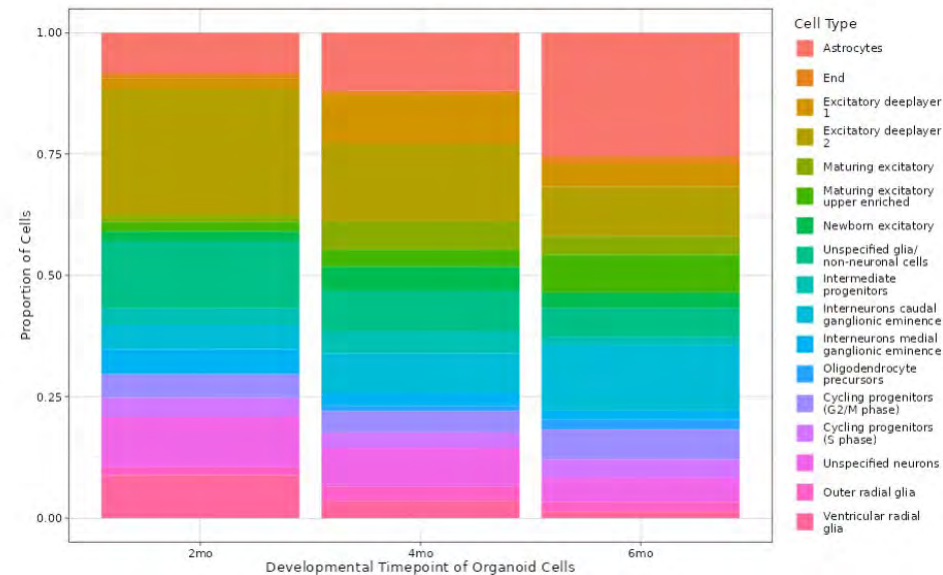
New App Developed: FTD MINDER

Tool for Exploring scRNAseq Data from Frontotemporal Dementia Organoids

Dimensional reduction plot of the full dataset of ~370,000 single cells, colored by neuronal cell type



Overall proportions of neuronal cell types represented at each sequencing timepoint



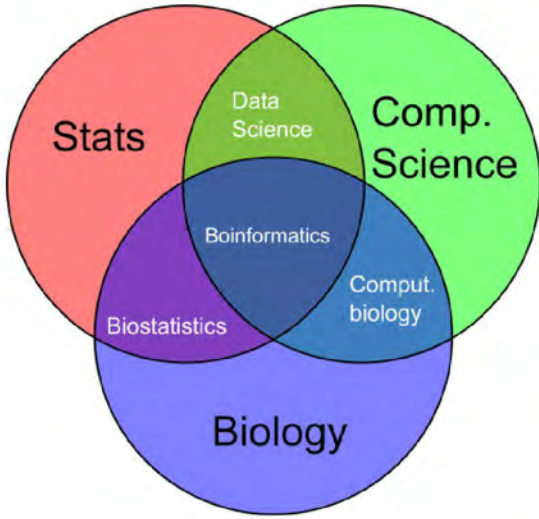
App leverages data from Bowles *et al*, Cell, Volume 184, Issue 17, 2021, Pages 4547-4563.e17

Key features of the app:

- Differential gene expression analysis
- Cell type explorer
- Cell-cell communication analysis

Link to the app: <https://inciteprojects.idea.rpi.edu/alzapp/app/alzapp/>

Challenges



Data silos & diverse data structures



Future work



Institutionalize Data Science course into the life science curriculum



Provide expanded opportunities for student engagement with ADRD data via bootcamps, hackathons, etc



Work to make the webapp more generalizable so users can bring their own data