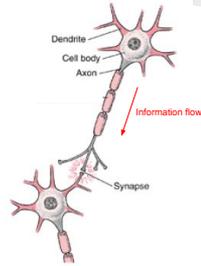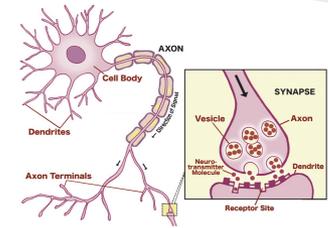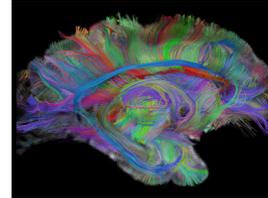## NeuroLines

A Subway Map Metaphor for Visualizing Nanoscale Neuronal Connectivity
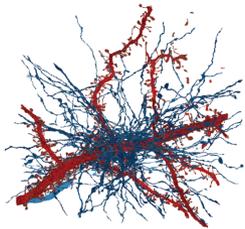
Written by: Al-Awami, A.K.; Beyer, J.; Strobelt, H.; Kasthuri, N.; Lichtman, J.W.; Pfister, H.; Hadwiger, M.

Neuroscience 101

High-level

- Most visualizations stay high-level

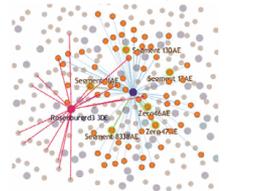## Neuroscience 101

The Problem

Low-level

- Low-level visualizations go abstract
  - Lose anatomical and topological information
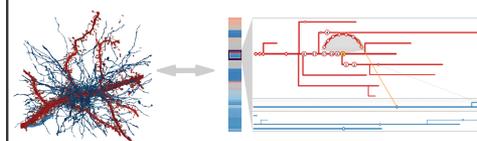

Vis Goals

- Allow neuroscientists to:
  - Explore and identify patterns in **synaptic connections**
  - Explore and identify patterns in **branching structures**
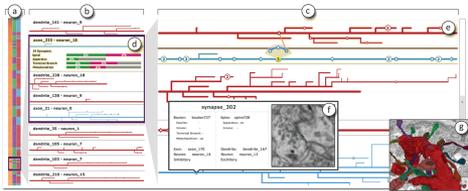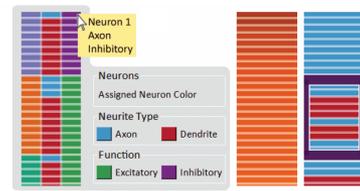 - Explore **synaptic pathways**

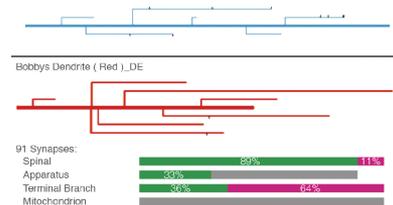## NeuroLines Solution

- Subway map of neurites

Interface

- Three main views

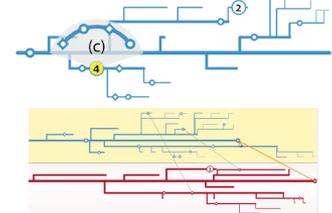---

Interface

- Overview

Interface

- Mid-scale view
  axon_83 - neuron_6
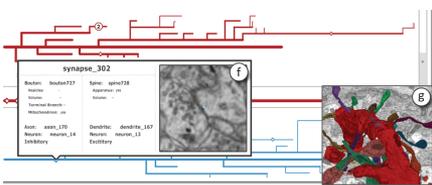

Interface

- Detailed view
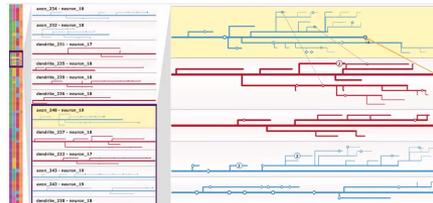

Interface

- Detailed view

Interface

- Linked highlighting

Validation

- Case studies
  - Error-checking
  - Still rely on original photographs
- No larger user study

Analysis

- Exploratory application
- Advantages
  - Easier to find patterns
  - Error-checking
  - Theoretically scalable
- Disadvantages
  - Minimal user testing
  - Various minor tweaks needed (colour, slider, branching)

Conclusion

- Some room for improvement
- Potentially very useful

Thank you!