LocusZoom.js
Interactive web-based visualization tool for genome and phenome wide association data

Interpreting association signals requires context.

LocusZoom.js is a JavaScript/D3 library for visualizing genetic association data from many data sets with abundant context and real-time interaction for insightful data exploration on the web.

- Runs natively on the web
- Streams data from any web API
- Displays data interactively
- Open source + comprehensive docs
- Embeddable in web apps to build dynamic portals to large data sets
- Exports images for use in publication

Real-Time Interactivity

Use mouse gestures to Pan and Zoom
Data can be automatically fetched to fill in the gaps
Get context with Tool Tips
Tool tips can also present interfaces to build a model, showing changes in real time

How to Make it Work

LocusZoom plots are created by populating a DOM element with Data Sources and a Layout

Data Sources are functions that establish where data comes from

```
<script type='text/javascript'>

var DATA_SOURCES = new LocusZoom.DataSources()
  .add("assoc", ["AssocLS", "http://dataA.api/"])
  .add("genes", ["GeneLS", "http://dataG.api/"]);

</script>
```

Layouts are JSON objects that describe a plot's structure

```
var LAYOUT = {
  width: 700, height: 600,
  panels: [
    { id: "assoc_panel", data_layers: []
      ( id: "pvalue_data", type: "scatter" ),
      ( id: "assoc_data", type: "line" )
    },
    { id: "genes_panel", data_layers: [
      ( id: "gene_tracks", type: "genes" )
    ]}
  ]
};

LocusZoom.loadData(LAYOUT);

</script>
```

Planned Features

- New data layers for representing annotation tracks, burden tests, credible sets, and more
- Services to generate interactive LocusZoom plots from uploaded data
- Tools to access/export a plot's underlying data
- More resources for developers integrating LocusZoom into their own apps (API methods, documentation, etc.)

Customize It

```
<script type='text/javascript'>

var CUSTOM_DATA_SOURCE = LocusZoom.DataSource.extend(
  function(json) {
    this.parse(json, { "CustomDataSource" });
  });

LocusZoom.Data.CustomDataSource.getData(function(data) {
  /* Request any data in any format */
};

</script>
```

Where to Play With It

- type2diabetesgenetics.org
  The AMP Type 2 Diabetes Knowledge Portal
  A project of the American Diabetes Association
- michigangenomics.org
  The Michigan Genomics Initiative
  A University of Michigan Genome-Wide Association Study (GWAS) that combines a repository of over 39,000 genotypes with ~1,500 phenotypes gleaned from electronic medical records (EMR) data
- locuszoom.org
  The LocusZoom Homepage at UMI CSG
  Main website for LocusZoom as a service of the University of Michigan Center for Statistical Genetics. Create static plots of published GWAS or uploaded data and interactive plots of published GWAS data

github.com/statgen/locuszoom