Nanomaterial data visualization with ambit.js and d3.js

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www.enanomapper.net
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ENM
eNanoMapper

Data visualization

Needs

1. Data

2. Access (Application Programming Interface)

3. Client library (ambit.js)

4. Visualization library (d3.js)
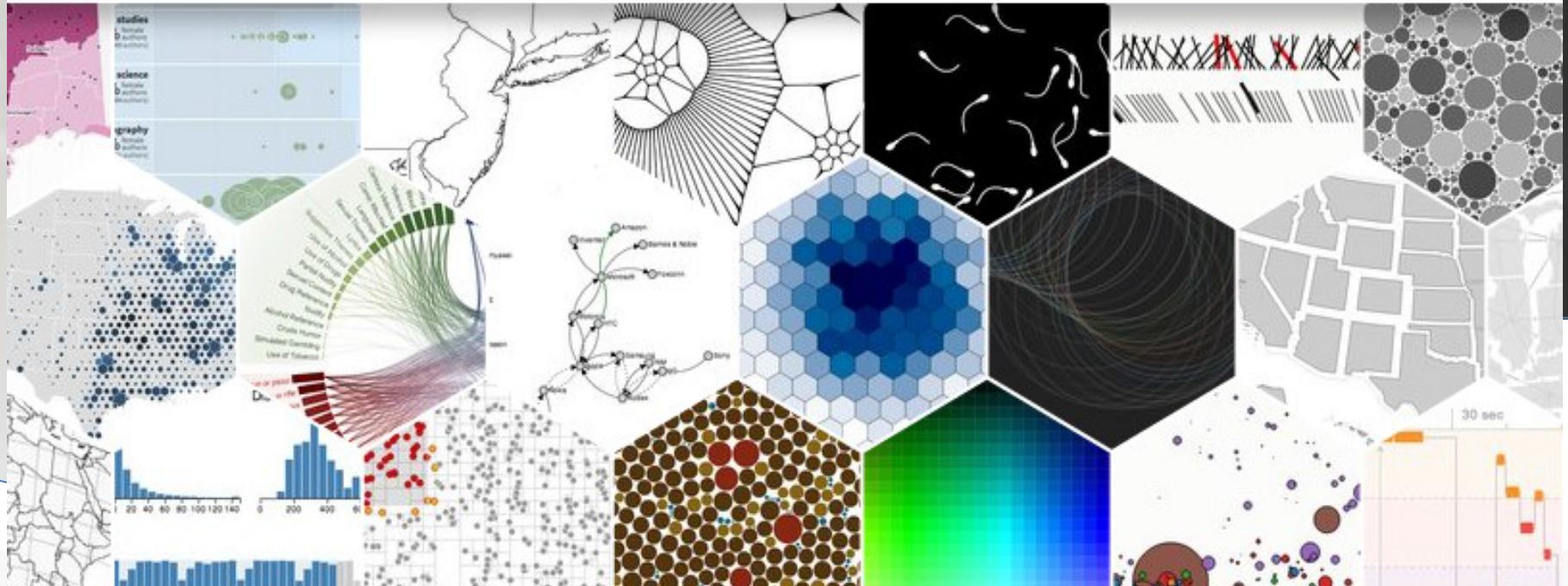
D3.js

Overview   Examples   Documentation   Source

Fork me on GitHub

D3 Data-Driven Documents

http://data.enanomapper.net/

Jeliazkova, N., et al. The first eNanoMapper prototype: A substance database to support safe-by-design. In: Bioinformatics and Biomedicine (BIBM), 2014 IEEE International Conference on. IEEE, pp. 1-9. URL http://dx.doi.org/10.1109/bibm.2014.6999367

Search ▼   Nanomaterials ▼   OpenTox ▼   Demo ▼   Help ▼

🏠 ⟩ Search substances by identifiers

Substance search ❶

External identifier ▼

[Search]

Study ❶: P-Chem ENV ECO TOX

Reliability ❶ : 1 2 3 4 5 6

Study purpose ❶: K S WoE D N/A

Robust study ❶: Yes No

Showing from 1 to 10 in pages of 10 ▼ substances ◀ Previous Next ▶
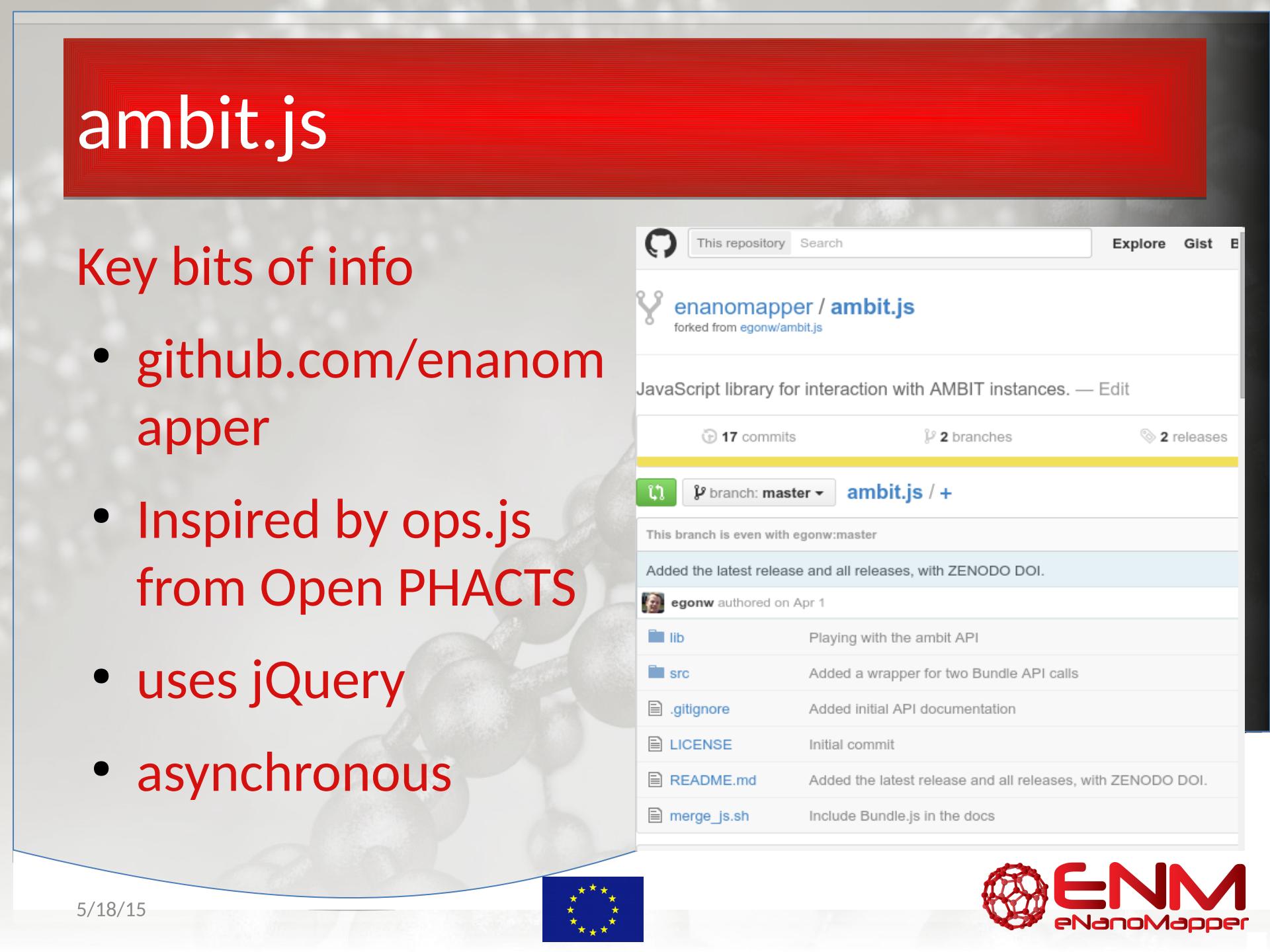
Filter...

	Substance Name	Substance UUID	Substance Type	Public name	Reference substance UUID	Owner
☐ - 1 - 📁	G15.AC	FCSV-bc77c03d-4… 🗐	nanoparticle	G15.AC	FCSV-bc77c03d-4… 🗐	Protein Corona Fingerprinting Predicts the Cellular Interaction of Gold and Silver Nanoparticles.csv
☐ - 2 - 📁	G15.AHT	FCSV-8f5cd32a-3… 🗐	nanoparticle	G15.AHT	FCSV-8f5cd32a-3… 🗐	Protein Corona Fingerprinting Predicts the Cellular Interaction of Gold and Silver

ambit.js

Key bits of info

- github.com/enanom
  apper

- Inspired by ops.js
  from Open PHACTS

- uses jQuery

- asynchronous

5/18/15

HTML glue

Step 1: include the libraries

```html
<script src="lib/jquery-1.9.1.min.js"></script>
<script type="text/javascript" src="lib/purl.js"></script>
<script type="text/javascript" src="src/ambit.js"></script>
<script type="text/javascript" src="src/Substance.js"></script>
```

Step 2: define the server (JavaScript code)

```javascript
var searcher = new Ambit.Substance("https://apps.ideaconsult.net/enanomapper");
```

Step 3: define a callback function (yes, we're making asynchronouos calls)

```javascript
var callback = function(success, status, response) {
  document.getElementById("json").innerHTML =
    "<pre>" + JSON.stringify(response, null, '  ') + "</pre>";
};
searcher.list(callback);
```

JSON answers

**JSON reply**

```
{
  "study": [
    {
      "uuid": "NWKI-1c6cb585-4833-428c-b3ed-c22fe3ba9494",
      "owner": {
        "substance": {
          "uuid": "NWKI-3db8eb74-b206-31ad-8c1b-3569703c47cb"
        },
        "company": {
          "uuid": "NWKI-9f4e86d0-c85d-3e83-8249-a856659087da",
          "name": "NanoWiki"
        }
      },
      "citation": {
        "title": "http://dx.doi.org/10.3762/bjnano.5.151",
        "year": "2014",
        "owner": "Beilstein J Nanotechnology"
      },
      "protocol": {
        "topcategory": "TOX",
        "category": {
          "code": "BAO_0003009_SECTION",
          "title": "BAO_0003009 Cell Viability Assay"
        },
        "endpoint": "Percentage Viable Cells",
        "guideline": [
          ""
        ]
      },
      "parameters": {
        "Cell line": "Caco-2 cell"
```

ENM eNanoMapper

Examples

This page contains a few examples of HTML+JavaScript pages using the eNanoMapper API, using the ambit.j

- example 1: show JSON response

- example 2: pie chart of substance by data sources

- example 3: pie chart of substance types

- example 4: report the particle size of a specific substance

- example 5: histogram of material sizes of all substances

- example 6: histogram of zeta potentials of all substances (at any pH)

- example 7: list all substances in the database from the Beilstein Journal of Nanotechnology

- example 8: list all substances in the database from the ACS journals

- example 9: list data bundles

- example 10: scatter plot showing zeta potential versus material size (no correlation)

ENM zeta potentials versus particle size

ENM zeta potentials