

is.gd/0LRKp2

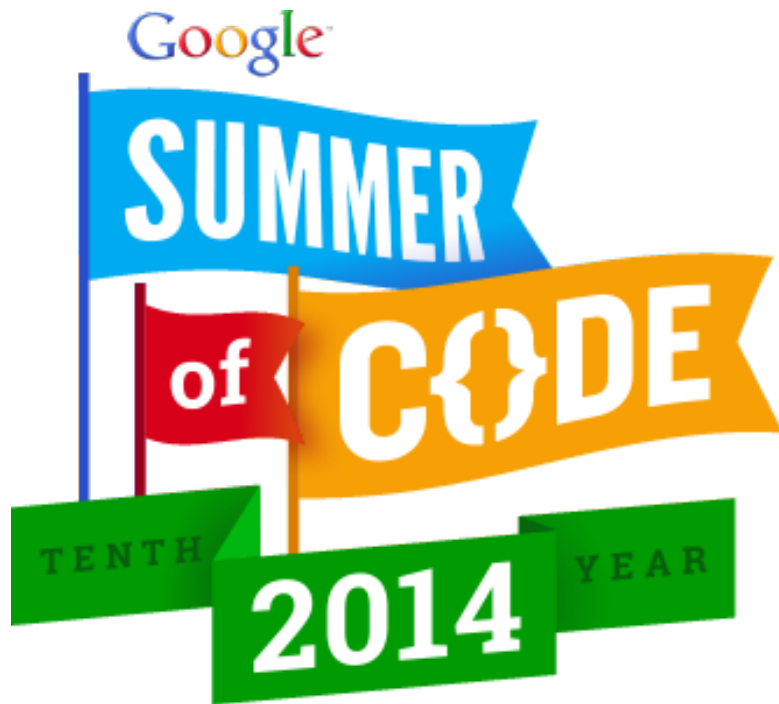


BioJS

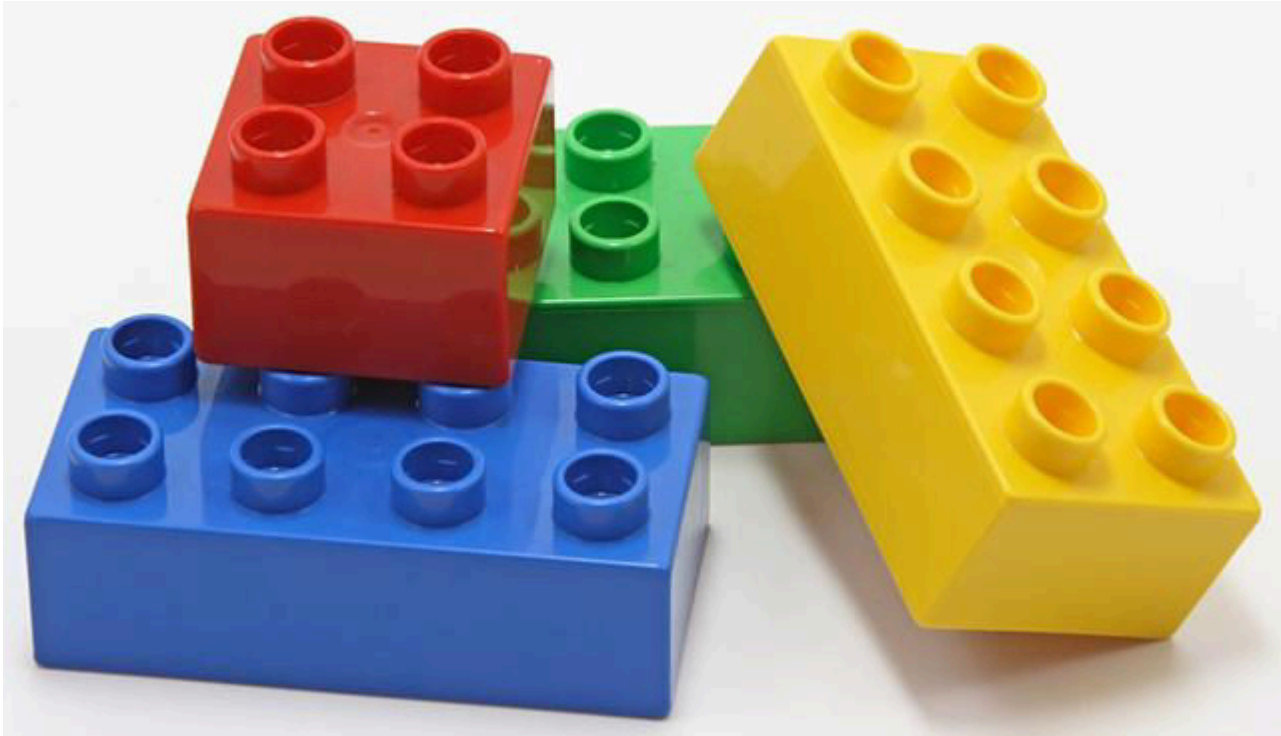
Reusable JavaScript for Life Sciences

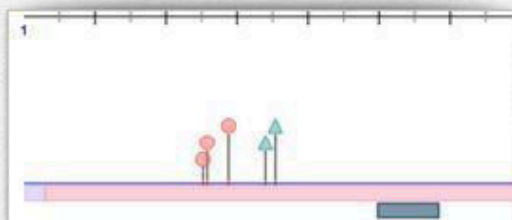
Sebastian Wilzbach seb@wilzba.ch

Why am I here?

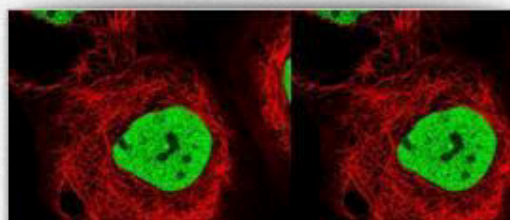


BioJS = reusable blocks





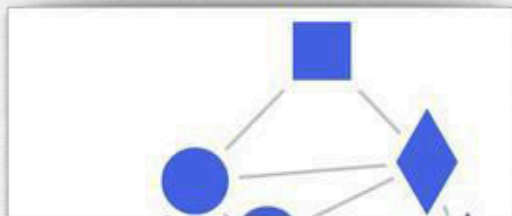
Das Protein Feature Viewer



Hpa Summary Features



Interactions Bundle D3



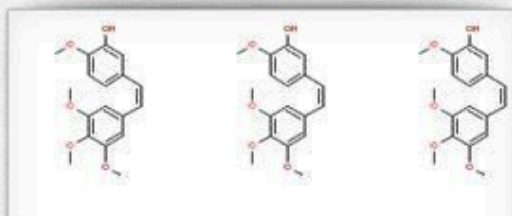
Interactions D3



KeggViewer



Protein Portfolio



ChEMBLCompound

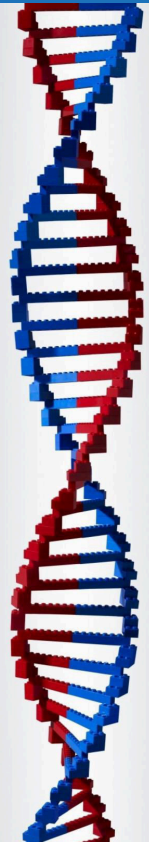
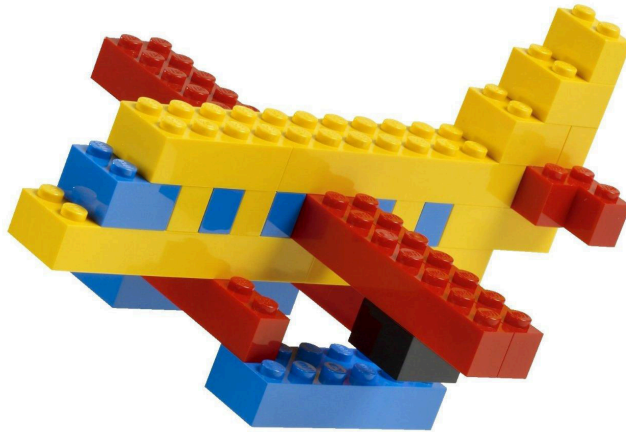


Rheaction



Expression Atlas Baseline Summary

Combine them



BioJS 2.0 overview

Easy to combine	
Easy to use	
Easy to test	
Easy to develop	
Easy to maintain	
Easy to discover	
Easy to understand	

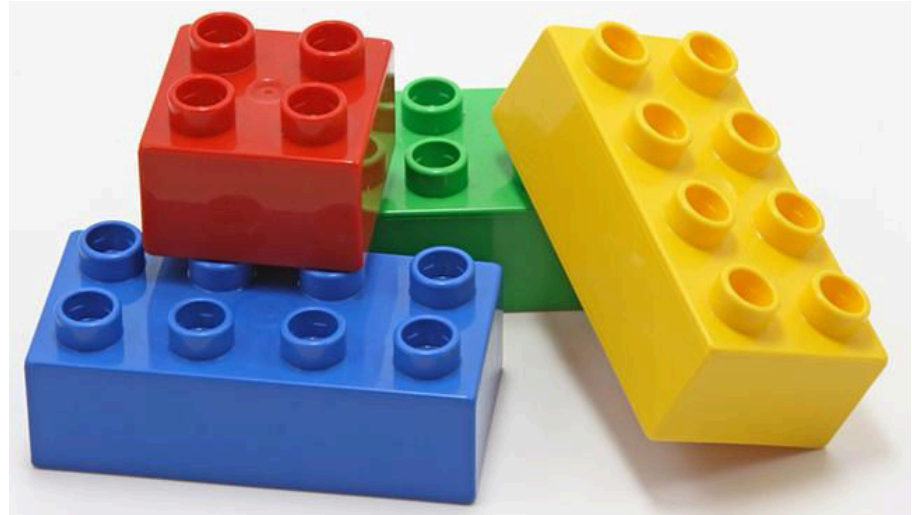


1) Reusable blocks / moduletopia

- tiny blocks
- *“do one thing and do it well”*

Example: MSA

- I/O: Clustal, FASTA
- Vis: Features, MSA



1) Dependency management

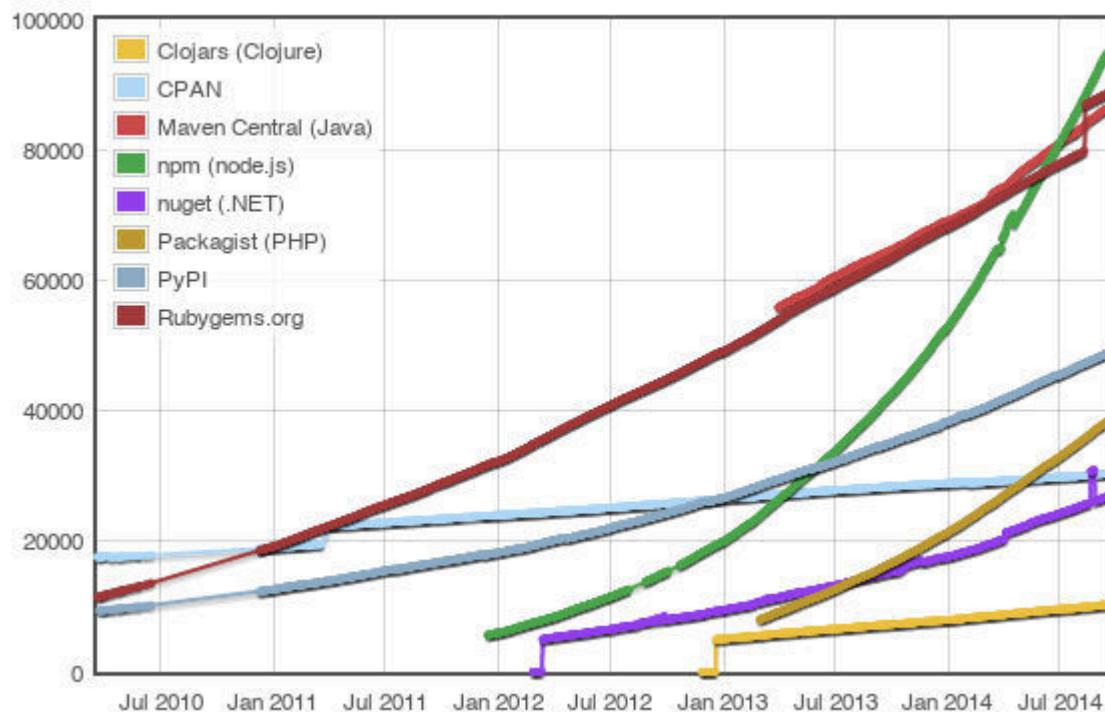
```
npm install biojs-io-clustal
```

```
npm install biojs-io-clustal@1.5
```

```
>your.js
```

```
var Clustal = require("biojs-io-clustal")
```


NPM is awesome



modulecounts.com

Avg Growth

<u>Bower (JS)</u>	40/day
<u>Clojars (Clojure)</u>	9/day
<u>CPAN</u>	6/day
<u>CPAN (search)</u>	7/day
<u>CRAN (R)</u>	3/day
<u>GoDoc (Go)</u>	60/day
<u>Hackage (Haskell)</u>	4/day
<u>Hex.pm (Elixir/Erlang)</u>	1/day
<u>Maven Central (Java)</u>	58/day
<u>MELPA (Emacs)</u>	1/day
<u>npm (node.js)</u>	129/day
<u>nuget (.NET)</u>	30/day
<u>Packagist (PHP)</u>	70/day
<u>Pear (PHP)</u>	0/day
<u>PyPI</u>	47/day
<u>Rubygems.org</u>	45/day

Check 1/6

Easy to combine	require
Easy to use	
Easy to test	
Easy to develop	
Easy to maintain	
Easy to discover	

2) Easy to use: browserify

- npm = Node Packaged Modules



2) browser-side require()



- analyses all `require()` calls
- builds a bundled js for your browser
- meta packages on cdn.biojs.net

`//cdn.biojs.net/parser/latest/parser.min.gz.js`

Check 2/6

Easy to combine	require
Easy to use	npm install + browserify cdn.biojs.net
Easy to test	
Easy to develop	
Easy to maintain	
Easy to discover	

3) Easy to test (npm test)

Sinon.JS



```
npm install mocha --save-dev
```

```
npm test
```



3) Continuous Integration



Check 3/6

Easy to combine	require
Easy to use	npm install + browserify cdn.biojs.net
Easy to test	npm test
Easy to develop	
Easy to maintain	
Easy to discover	

4) Easy to develop

- minimal set of guidelines
 - events
 - snippets
- gold standard
- npm is awesome



4) Easy to dev.: Automation (gulp)



YEOMAN



GRUNT

4) Easy to develop: Your language



elm

TypeScript



CoffeeScript



Dart



4) Easy to develop: Visualization

HTML



vis.js



Raphael.js

4) Easy to develop: Utils

UNDERSCORE.JS



Lo-Dash



BACKBONE.JS

4) Easy to develop: cool stuff



CSS



UglifyJS

Check 4/6

Easy to combine	require
Easy to use	npm install + browserify cdn.biojs.net
Easy to test	npm test
Easy to develop	no rules, favorite tools
Easy to maintain	
Easy to discover	

Start to develop



5) Easy to maintain

- no central, large repository anymore
- own github repos
 - pull requests
 - issues
 - forks



Check 5/6

Easy to combine	require
Easy to use	npm install + browserify cdn.biojs.net
Easy to test	npm test
Easy to develop	no rules, favorite tools
Easy to maintain	distributed github repos
Easy to discover	

6) BioJS 2.0: discover



BIOJS REGISTRY

[Home](#)

Name	Summary	Version	Avatar	Stars	Downloads	Modified	Readme	Demos	JsDocs	Build	Tests	
biojs-events	BioJS event system	0.0.4		0	443	17 days ago	X	X	X	X	X	events
biojs-io-clustal	Parses clustal files	0.0.7		0	543	15 days ago	X	X	X	build passing	X	client sequence recommended
biojs-io-fasta	Parses FASTA files	0.0.9		0	639	15 days ago	X	X	X	build passing	code climate 3.0	client sequence fasta recommended
biojs-io-graduates	Graduate parser for BioJS	0.0.3		102	88	a day ago	X	X	X	build passing	X	tutorial graduates parser
biojs-io-newick	Parses newick strings(nwk) and extended newick strings(nhx) into JSON	0.0.4			161	15 days ago	X	X	X	X	X	client newick io parser

registry.biojs.net

6) BioJS 2.0: discover details



biojs-io-clustal

Parses clustal files

client

sequence

recommended



View Code



Share

```
npm install biojs-io-clustal
```

Social



0 stars



543 downloads



12 watchers



11 commits



0 forks



1 contributors

Time & Stats



version: 0.0.7



modified 15 days ago



created a month ago



7 releases



0 open issues

BioJS Registry



BIOJS REGISTRY

registry.biojs.net

Check 6/6

Easy to combine	require
Easy to use	npm install + browserify cdn.biojs.net
Easy to test	npm test
Easy to develop	no rules, favorites tools
Easy to maintain	distributed github repos
Easy to discover	registry.biojs.net

7) Easy to understand



BIOJS

EDU

edu.biojs.net

BioJS 2.0 overview

Easy to combine	<code>require('awesomeness')</code>
Easy to use	<code>npm install + browserify</code> <code>cdn.biojs.net</code>
Easy to test	<code>npm test</code>
Easy to develop	no rules, favorite tools
Easy to maintain	distributed github repos
Easy to discover	<code>registry.biojs.net</code>
Easy to understand	<code>edu.biojs.net</code>

BioJS is open source



- published under Apache2
- github.com/biojs
- open community (social coding)

Join us on our party



Get involved



Feel free to write us.



Join #biojs @ freenode



Follow us on Twitter



Follow us on Google+



Contribute on github



Open Gitter chat



Organize a meeting



Public folder



Join an upcoming event



See our roadmap



Start learning



Donate

biojs.net/get_involved.html

Galaxy - BioJS

#71

Galaxy - #71

- galaxy.xml: config + params
- galaxy.mako: visualization snippet

github.com/biojs/biojs/issues/71

galaxy.xml

```
<visualization name="InCHlib">
  <data_sources>
    <data_source>
      <model_class>HistoryDatasetAssociation</model_class>
      <test type="isinstance" test_attr="datatype" result_type="datatype">data.Text</test>
      <to_param param_attr="id">dataset_id</to_param>
    </data_source>
  </data_sources>
  <params>
    <param type="dataset" var_name_in_template="hda" required="true">dataset_id</param>
  </params>
  <template>inchlib.mako</template>
</visualization>
```

param type=dataset
might be redundant

galaxy.mako

```
header: js,css
```

```
[...]
```

```
<script>
```

```
var json = ${h.to_json_string(hda)};
```

```
[...]
```

```
init code
```

```
[...]
```

```
</script>
```

omitted: trans.security.*

Visualization plugin

```
config/plugins/visualizations/  
└─ myvis/  
    ├── config/  
    │   └─ myvis.xml  
    ├── templates/  
    │   └─ myvis.mako  
    └─ static/  
        ├── myscript.js  
        ├── js2.js  
        └─ vis-style.css
```

wiki.galaxyproject.org/VisualizationsRegistry

Open questions

- testing .xml & .mako
 - without galaxy?
 - tests?
- generated folders → cron-job → tool-shed?
- versioning?
- events (of a component)?
- restart of Galaxy?
- more?

Disclaimer

These slides are meant for **educational** purposes only.

Feel free to adapt, reuse or create your own version of these slides to broadcast the goals of BioJS.

Lego images

car accident: <http://lego-minifigures.tumblr.com/post/77723252312/bicycle-accident-by-clement127>

lego fight: https://secure.flickr.com/photos/thrashq4g/12189650304/in/pool-greco-roman_lego

lego DNA: <https://www.behance.net/gallery/2802657/Lego-DNA>

lego plane: <http://www.amazon.co.uk/LEGO-6177-Basic-Bricks-Deluxe/dp/B000T6XNS6>

lego jungle guy: <http://lego.wikia.com/wiki/Jungle?file=Adv010.jpg>

lego wheel: <http://www.technicopedia.com/history/24x43wheel.JPG>

lego rocket: <http://nattyknitter.wordpress.com/2012/06/26/lego-inspiration/>

broken lego: <http://lamotif.com/2010/01/06/making-lego-crayons-what-to-do-with-a-sick-kid/>

lego building blocks: <https://schoolbox.wordpress.com/tag/lego-duplo/>

lego disco dude: <http://minifigures.lego.com/en-us/Bios/disco%20dude.aspx>

lego skater: <http://minifigures.lego.com/en-us/Bios/skater.aspx>

lego linux: <https://secure.flickr.com/photos/66636161@N00/14026936699>

lego sad clown: <http://minifigures.lego.com/en-us/Bios/Sad%20Clown.aspx>

lego computer programmer <http://minifigures.lego.com/en-us/Bios/Computer%20Programmer.aspx>

lego larry (coffee) <http://minifigures.lego.com/en-us/Bios/Larry%20the%20Barista.aspx>

lego paintball <http://minifigures.lego.com/en-us/Bios/Paintball%20Player.aspx>

lego store: <http://thedayshallcome.weebly.com/1/post/2010/6/lego-mythbusters.html>

lego mazda <http://www.seankenney.com/portfolio/mazda2/>

gold standard: <http://wingatefp.com/as-good-as-gold-twice/>