

libSBML

- quick introduction

Sarah Keating

libSBML

- API library for working with SBML

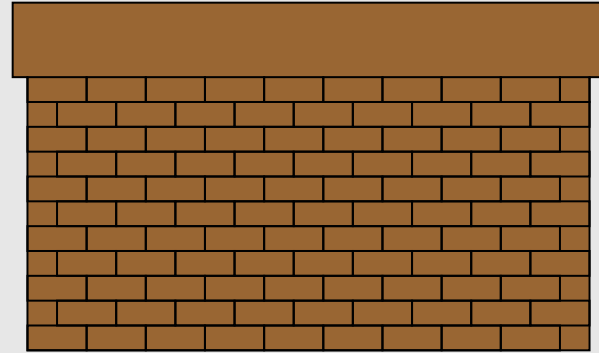
libSBML

- read



libSBML

- read
- create



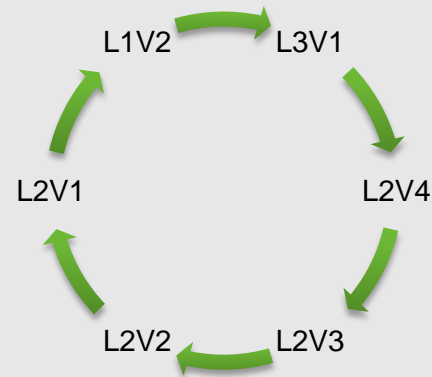
libSBML

- read
- create
- manipulate



libSBML

- read
- create
- manipulate
- convert between levels/versions



libSBML

- read
- create
- manipulate
- convert between levels/versions
- write



libSBML

- read
- create
- manipulate
- convert between levels/versions
- write
- validate



libSBML

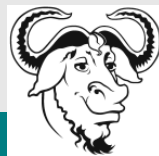
- API library for working with SBML



libSBML

- Standard ANSI C++

- C
- C#
- Python
- MATLAB
- Java
- Octave
- Perl
- Ruby



LGPL

libSBML

- provides user preferences
- different language bindings
- different XML parsers

libSBML

- SBML conformance
- closely mimic SBML structure
- supports all existing SBML Levels

libSBML

- advanced features
- unit checking
- check for over-determined systems

libSBML

- documentation
- online/downloadable
- compatibility with different languages

libSBML

- keep up to date
- develop in line with specification
- backwards compatibility

libSBML

- keep up with developing areas
- experimental code for L3 Packages



Systems Biology Markup Language (SBML) ajouraku, bbornstein, beshapiro, funa, luciansmith, mhucka, niko-rodrigue, sarahkeating

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 stable	2012-05-11		 	
 experimental	2012-05-11		 	
README.txt	2012-05-10	2.2 kB	 	
Totals: 3 Items			2.2 kB	

l i b S B M L 5.5.0

LibSBML is a free, open-source programming library to help you read, write, manipulate, translate, and validate SBML files and data streams. It is not an application itself (though it does come with example programs), but rather a library you can embed in your own applications.





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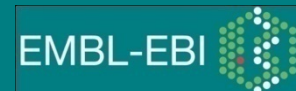
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↑ Parent folder			
binaries	2012-05-11		
src	2012-05-11		
README.txt	2012-05-10	2.0 kB	
Totals: 3 Items		2.0 kB	

l i b S B M L 5.5.0

This directory contains an experimental release of libSBML 5.5.0 containing SBML Level 3 package plug-ins. Here you will find the following:

```
src      -- source code for current versions of plug-ins for SBML packages
binaries -- binaries for libSBML prebuilt with all the packages
```



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↑ Parent folder			
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📁 src	2012-05-11		i ↑ 🗑
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Name ↕	Modified ↕	Size ↕		
↑ Parent folder				
README.txt	2012-05-10	2.5 kB	 	
libSBML-5.5.0-Source.tar.gz	2012-05-10	15.0 MB	 	
comp-5.5.0-beta-1.zip	2012-05-07	215.3 kB	 	
render-5.5.0-beta-1.zip	2012-05-07	435.7 kB	 	
spatial-5.5.0-beta-1.zip	2012-05-07	320.9 kB	 	
fbc-5.5.0-beta-1.zip	2012-05-07	142.8 kB	 	
groups-5.5.0-beta-1.zip	2012-05-07	60.3 kB	 	
req-5.5.0-beta-1.zip	2012-05-07	33.0 kB	 	
Totals: 8 Items		16.2 MB		

libSBML

sbml.org/Software/libSBML

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libSBML

Latest stable release: 5.5.0, released 11 May 2012 (see box at right →)



LibSBML is a free, open-source programming library to help you read, write, manipulate, translate, and validate SBML files and data streams. It is not an application itself (though it does come with example programs), but rather a library you can embed in your own applications.

The main authors are [Sarah Keating](#), [Akiya Jouraku](#), [Frank Bergmann](#), [Ben Bornstein](#) and [Michael Hucka](#), with contributions from [many other people](#).

LibSBML understands all Levels and Versions of SBML, and supports **plug-in extensions for SBML Level 3 packages**, as well as the [SBML Layout proposal](#) by Gauges, Rost, Sahle and Wegner. LibSBML is written in ISO C and C++ but can be used from all the languages listed in the right-hand box.

It's available for free under LGPL terms in both source-code form and precompiled binaries for Windows, Mac OS X, and Linux.

[edit] Why use libSBML?

Why not simply use an off-the-shelf XML parser? In some cases this approach may be appropriate. However, there are many reasons to prefer libSBML. Here are just a few:

- **Object model.** LibSBML's object model and API are designed around SBML and the operations that are commonly needed when working with SBML.



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[How to install libSBML](#)



Language API docs:

- [C++](#)
- [C#](#)
- [Java](#)
- [Matlab](#)
- [Octave](#)
- [Python](#)
- [C \(docs unfinished\)](#)
- [Perl \(docs unfinished\)](#)
- [Ruby \(docs unfinished\)](#)



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Building and installing libSBML

1. Quick start: avoid work by using ready-to-install binaries
2. Procedures for Linux, Mac OS X, FreeBSD, Solaris and Cygwin
 - 2.1 Configuring using CMake
 - 2.2 Configuring using GNU make
 - 2.2.a Basic configuration for Linux, Mac OS X, Solaris, and Cygwin
 - 2.2.b Enabling language interfaces for C#, Java, Perl, Python, MATLAB, Octave and Ruby
 - 2.2.c Creating 32- and/or 64-bit binaries
 - 2.2.d Creating universal binaries on Mac OS X
 - 2.2.e Configuring for SWIG
 - 2.2.f Configuring support for compression
 - 2.2.g Configuring for generating documentation
 - 2.2.h Configuring for software unit testing
 - 2.3 Compiling and installing
3. Procedures for Windows
 - 3.1 Configuring using CMake
 - 3.2 Compiling and installing using MSVC
4. Files installed by libSBML, and their locations
5. What to do if problems arise

1. Quick start: avoid work by using ready-to-install binaries

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	Topic	Author	Started On
	Survey for L3 Parser	Lucian Smith	29 Mar '12 09:24
	Re: [sbml-interoperability] Survey for L3 Parser	Lucian Smith	04 Apr '12 13:39
	Re: [libsbml-development] Survey for L3 Parser	Mike Hucka	05 Apr '12 10:16
	Re: [sbml-interoperability] Survey for L3 Parser	Mike Hucka	05 Apr '12 10:16
	Re: [sbml-interoperability] Survey for L3 Parser	pax	06 Apr '12 08:37
	Re: [sbml-interoperability] Survey for L3 Parser	Mike Hucka	08 Apr '12 20:10
	Re: [libsbml-development] Survey for L3 Parser	Mike Hucka	08 Apr '12 20:10
	Re: Survey for L3 Parser	Lucian Smith	04 Apr '12 13:39
	Re: Survey for L3 Parser	Lucian Smith	11 May '12 17:07
	Re: Survey for L3 Parser	myers	13 May '12 23:01
	Re: Survey for L3 Parser	Lucian Smith	11 May '12 17:07
	Release of libSBML-5.5.0	Sarah Keating	11 May '12 05:06
	Standardising #if and #if defined	Sarah Keating	17 Apr '12 04:04
	[python-libsbml]how to get reactant/product from a...	tlytiger	16 Apr '12 02:03
	Re: [python-libsbml]how to get reactant/product fr...	Sarah Keating	16 Apr '12 02:55

sbml.org/Software/libSBML/Tutorials

Tutorials

The functionality of libSBML is difficult to capture in a single session.

Here we provide access to a number of presentations that deal with particular aspects of using libSBML together with same sample coding exercises (with answers). These are adapted versions of tutorials given in the past.

[\[edit\]](#) Presentations

Building and installing

This tutorial shows how to build and install libSBML.

Getting started with programming

This tutorial gives a very basic introduction to the libSBML API. It focusses on how the API relates to SBML components and attributes.

Using MIRIAM annotations

This tutorial provides information on the custom API included within libSBML that facilitates the use of MIRIAM compliant annotations.

Using MATLAB/Octave

This tutorial gives a brief introduction to building, installing and using the libSBML interface to either MATLAB and Octave.

L3 Package extensions

This tutorial deals with how to develop the plugin code that allows an SBML Level 3 package to be included with libSBML-5. It deals purely with the libSBML extension classes that register an extension and shows how to include an additional element and also an additional attribute with a core element.

Acknowledgements

- Bill Denny
- Christoph Flamm
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Mike Hucka
Caltech, USA



HARMONY 2012

Sarah Keating
Frank Bergmann
Lucian Smith

HERE ALL WEEK