

# GeLL - Quick Start

Daniel Money

January 2015

# Contents

|   |                                     |   |
|---|-------------------------------------|---|
| 1 | License . . . . .                   | 1 |
| 2 | Citation . . . . .                  | 2 |
| 3 | Overview . . . . .                  | 2 |
| 4 | What downloads do I want? . . . . . | 2 |
|   | 4.1 Quick summary . . . . .         | 2 |
|   | 4.2 Library packages . . . . .      | 3 |
|   | 4.3 Example packages . . . . .      | 3 |
| 5 | Installation . . . . .              | 3 |
| 6 | Running the examples . . . . .      | 4 |
| 7 | Documentation . . . . .             | 4 |
| 8 | Contact . . . . .                   | 4 |
| 9 | Java and Macs . . . . .             | 5 |

## 1 License

GeLL is licensed under GPL v3 (see gpl.txt for more information).

## 2 Citation

If you use GeLL please cite us. (This will be updated once the paper has been accepted for publication).

## 3 Overview

GeLL is a General Likelihood Library for use in phylogenetics. It is intended to provide classes that facilitate investigating new models and techniques. It is not intended for everyday use in phylogenetic studies as it is optimised for easy use of new models rather than speed.

GeLL achieves this versatility by allowing models to be defined using an array of Strings where each string represents an equation. This allows new models to be defined quickly and easily. The driver executable included allows many different models to be run simply by changing the text file defining the model.

## 4 What downloads do I want?

There are five downloads available for GeLL, three that contain the library itself and two examples packages.

### 4.1 Quick summary

- **I wish to run the driver** - Download the Basic Package and the Driver Examples
- **I wish to develop my own program** - Download either the Basic Package or the Source Package and the Code Examples Package
- **I wish to modify GeLL** - Download the Tests Package and the Code Examples Package

If you are fall into one of the last two categories then it is assumed you are a Java developed and so know what to do with the source files, jar files and the like. The rest of this quick start guide, after this section, is aimed at people wishing to use the driver although it may still be beneficial to read.

## 4.2 Library packages

- *Basic Package* - This contains the GeLL jar file and the documentation. If you simply wish to run the driver program this is the download for you. This could also be the download you need if you just want to use the library in your own code without looking at the source to see how it works.
- *Source Package* - This is intended for people who wish to use GeLL in their own java programs but without modifying GeLL itself. This includes the source code so may be of more benefit than the basic package as you can see how GeLL works and may be especially useful if you're trying to extend GeLL classes, e.g. to implement especially esoteric models.
- *Test Package* - This is intended for people who wish to modify GeLL. It is not necessary to download this package to test your installation as these tests do not test the installation instead these tests are intended to test that GeLL is still giving expected results after changes to it's code. The release versions always past all the tests.

## 4.3 Example packages

- *Driver Examples package* - This contains several sub directories, implementing several different models, using the Gell driver. The included readme.txt explains how to run the examples as well as providing an overview of the examples provided.
- *Code Examples package* - This contains the same examples as the driver examples download but now implemented directly in Java code. If you are developing your own programs this download is likely to be helpful.

## 5 Installation

To check java is installed on your system type `java -version` at the command prompt. This will display the version of java installed. If an error message is displayed, or the version listed is less than 1.7 (Java 7 is called 1.7 when using the version command) you can download and install java (version  $\geq 7$ ) from the Oracle website (<http://www.java.com/en/download/index.jsp>). If you are having trouble getting versions of Java  $\geq 7$  running on a Mac please see our suggestions at the end of this document.

Once java is installed simply download the Basic Package zip file, uncompress and untar it. To do this on a linux-style command line (including Mac) use the command `tar -xvzf GeLL-2.0.tar.gz` (the actual file name may differ if

you have downloaded a different version). Windows users will have to use an external program such as 7zip. Once uncompressed and untarred you can test that everything is working correctly by changing to the directory you untarred the files into and running `java -jar GeLL.jar`. If you see a usage statement you have it installed correctly. If it does not and you do not understand the error message please contact the author for advice.

## 6 Running the examples

To run the examples first download the Driver Examples package, uncompress and untar it. This should be done in the same way you unzipped and untarred the library package. Then navigate to the directory of the example you wish to run and run the command

```
java -jar [path to Gell.jar] settings.dat
```

where `[path to Gell.jar]` should be replaced by the path to where you installed the GeLL library. For example if you installed GeLL to the `C:\GeLL` directory on a Windows machine the full command to run is

```
java -jar C:\GeLL\GeLL.jar settings.dat
```

## 7 Documentation

The full GeLL documentation is here and can be also be accessed by opening the `GeLL.html` file that came with the library package.

Documentation specifically about the driver is here and can also be accessed by opening the `Driver.html` file that came with the library package.

## 8 Contact

GeLL is maintained by Daniel Money who can be contacted at `daniel.money@dal.ca`.

## 9 Java and Macs

Getting a version of java greater than 6 to run properly on a Mac is known to be problematic. We found that the easiest way to do so is to start by downloading and installing the JDK (not the JRE). Next you need to edit your `.profile` which should be in your home directory and which you should create if it doesn't exist. For example to edit the file in `vim` you could type:

```
vim ~/.profile
```

You should then add the following line to the file (replacing 1.8 with 1.7 depending on which version you have installed):

```
export JAVA_HOME="/usr/libexec/java_home -v 1.8"
```

Your `.profile` is processed automatically whenever you start a terminal session so this should allow you to run the new version of java whenever you start a new session. To run the correct version of Java in the current session without restarting it you need to process your `.profile` manually by typing:

```
source ~/.profile
```

This problem is with Java on Macs rather than GeLL itself. This means we will probably be unable to offer support for your specific setup if the above does not work for you. Instead we suggest that you browse the extensive discussion of this problem on the internet.