

# MrModeltest 2.3 README, May 22 2008

MrModeltest 2.3 by Johan A. A. Nylander, Dept. Systematic Zoology, EBC, Uppsala University, Sweden.  
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## Description

For performing hierarchical likelihood ratio tests and calculating approximate AIC and/or very approximate AICc values of the nucleotide substitution models currently implemented in *both* PAUP\*4 and MrBayes v3. Version 2.3 also does some model averaging of the parameter estimates obtained by PAUP.

MrModeltest 2.3 is a modified version of David Posada's Modeltest 3.6 (see Modeltest homepage). "Modified version" means that it was rewritten to compare 24 instead of 56 models of nucleotide substitution (basically a Modeltest version 1.0). On the other hand, all of the 24 models can be implemented in MrBayes version 3. Furthermore, MrModeltest uses (by default) four different hierarchies for the likelihood ratio tests. The hierarchies are described in detail in Posada, D. and K. A. Crandall. 2001. Selecting the best-fit model of nucleotide substitution. *Systematic Biology*, 50:580-601 (Fig. 4a-d). The hierarchies implemented in MrModeltest are also depicted in the files 'hLRT1.jpg', 'hLRT2.jpg', 'hLRT3.jpg', and 'hLRT4.jpg'.

## Suggested reference

Nylander, J. A. A. 2004. MrModeltest v2. Program distributed by the author. Evolutionary Biology Centre, Uppsala University.

## Quick instructions

### Installing the pre-build program on Windows or MacOSX

1. Unpack the distribution
  2. Find the appropriate binary file for your operating system and use directly (see *Running MrModeltest2* below) or, preferably, copy it to a location included in your PATH.
- Note: The windows version is compiled and tested on WinXP.

### Installing from source (on UNIX/MacOSX)

1. Unpack the distribution:  
`unzip MrModeltest2.3.zip`
2. cd into the distribution directory:  
`cd MrModeltest2.3/src`

Note for MacOSX users:

The tools for compiling C code are not installed by default on MacOSX (at least not for v.10.3.7).

Therefore, there should be a precompiled binary in the MrModeltest2 distribution for you to use. See step 4 below.

I do recommend, however, to install the necessary tools and compile the code on your own system. For OS v. 10.3.7, the tools can be installed from the Mac OS X Install Disc 1, directory Xcode Tools. Then proceed with step 3 below.

3. Compile by typing:

*make*

4. The binary file 'mrmodeltest2' can then be run in the same directory or be moved somewhere on your system where you have access to it (i.e., in your PATH).

## **Installing as deb package**

The deb package in MrModeltest2.3/deb was created using checkinstall on Ubuntu Linux 7.10 64bit Intel version. It can be installed (in /usr/local/bin) by using command:

*sudo dpkg -i mrmodeltest2\_2.3-1\_amd64.deb*

and uninstalled by using

*sudo dpkg -r mrmodeltest2*

## **Before using MrModeltest2**

1. Execute your data file in PAUP\*.
2. Execute the file 'MrModelblock' in PAUP\*. A file called 'mrmodel.scores' will appear in the current directory.
3. This file is the input for MrModeltest2.

## **Running MrModeltest2**

MrModeltest2 does not have a graphical user interface. Therefore, UNIX/Win/MacOSX users need to open a terminal ("Console", "DOS window") and type:

*mrmodeltest2 < mrmodel.scores > out*

The results are written in the 'out' file.

Note: If mrmodeltest2 is not in your PATH, you can try to run the program by first cd in to the same directory where the binary and the mrmodel.scores are located and then type:

*./mrmodeltest2 < mrmodel.scores > out*

MacOS Classic users:

*Note: as from version 2.3, I do not longer have access to a compiler for MacOS9. This distribution is now no longer distributed. The instructions below are for version 2.2.*

1. Double click on the 'MrModeltest2.2' application.
2. Click on the left-hand 'File' button. Choose the 'mrmodel.scores' file and click 'Ok' (or 'Open').
3. Click on the right-hand 'File' button. Click 'Ok' (or 'Save').
4. Click 'Ok' to run and choose 'Quit' and 'Don't save' to quit.

The results are written in the 'MrModeltest2.2.out' file.

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