Plot Yang's Gamma

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TODO: Fix `ylim` in the code!

Description

Generate a png plot of the Gamma distribution with different alpha values (similar to Fig. 1 in Yang, Z. TREE, 11:367–372, 1996).

Background

One of the more signiciant contributions to the field of computational phylogenetics is arguably the introduction of using a Gamma distribution to model rate variation across sites (alignment columns).

This was proposed by Ziheng Yang in the beginning of the 1990's, and we have all seen examples of the Gamma distribution when changing the parameters of the distribution.

From Hillis et al., 1996, p. 443:

> "The Gamma distribution has two parameters, a shape parameter alpha, and a scale parameter beta. By setting beta to 1/alpha, a distribution with mean 1 is obtained."

Unfortunately, we many times had to watch (or even use ourselves!) the original Fig. 1 from Yang's 1996 paper, scanned and pasted in to some MS Power Point presentation...
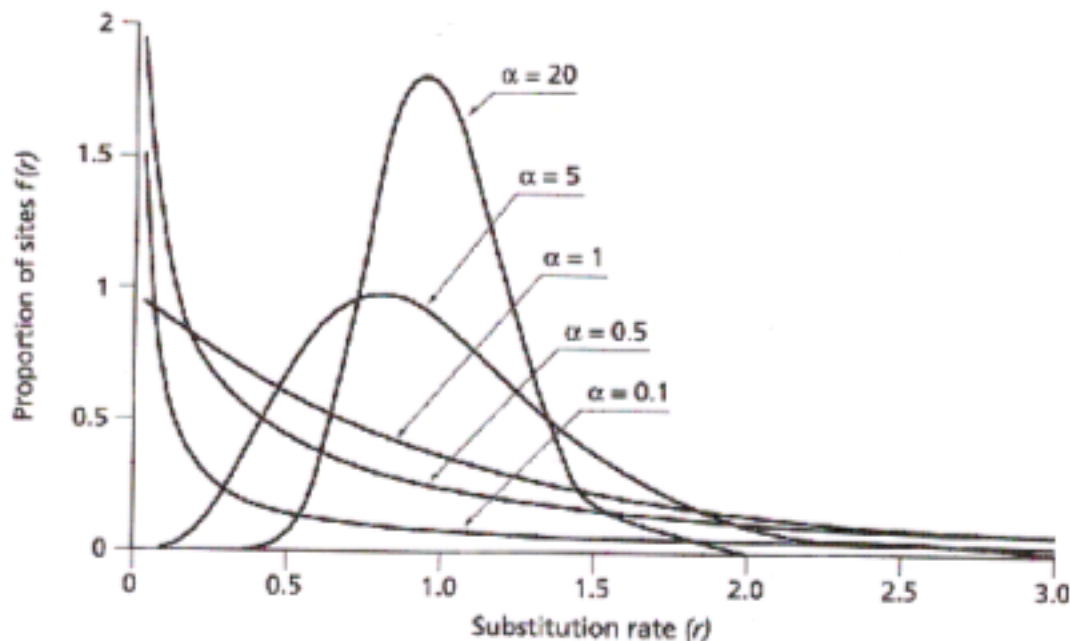

Figure 1: Fig.1, Yang 1996, scanned and pasted in a presentation
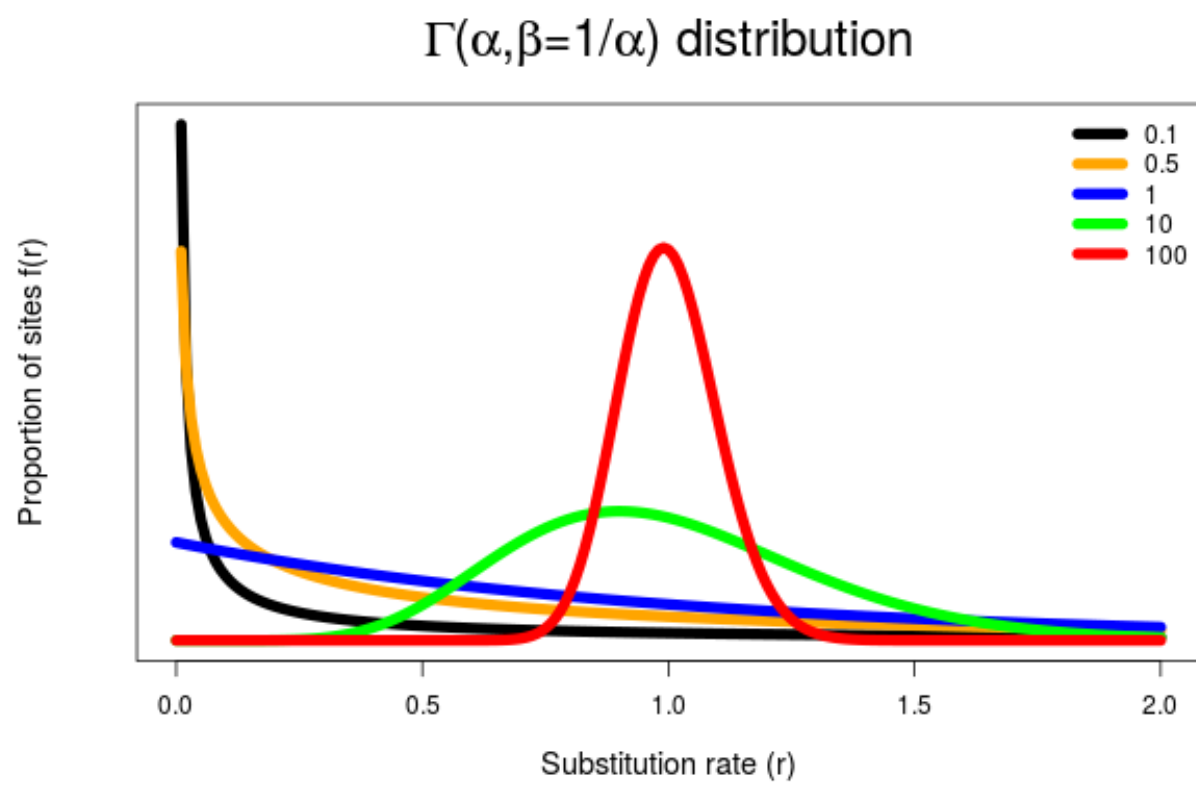
But then came R, and fortunately, things were made simple!

Figure 2: Plot in R using plotYangGamma()

Usage:

Start R, and then

```
> source("plotYangGamma.R")
> plotYangGamma()
```

or perhaps

```
> alphas <- c(0.1, 0.5, 1.0)
> cols <- c("black", "blue", "red")
> plotYangGamma(alphas, lwd = 6, col = cols)
```

or why not

```
> plotYangGamma(lwd = 4, col = cols,
                xlim = c(0, 3.0), ylim = c(0, 2.0),
                file = "Yangs_Gamma.png")
```

References:

- Hillis, D., et al.. 1996. Molecular Systematics, 2nd Ed. Sinauer Associates.
- Yang, Z. 1996. Among-site rate variation and its impact on phylogenetic analyses. TREE, 11:367-372.