Table S2. Normal Mixture Approximations to -log(Ga(r, 1)) for r in [6, 170]. Normal mixture approximations to -log(Ga(r, 1)) for r in [6, 170]. A separate normal mixture distribution is used to approximate each negative log gamma distribution. The estimated parameters in the normal mixture distribution ensure that the Kullback-Leibler (KL) divergence between the two distributions is below $5\text{x}10^{-4}$. The parameters in the normal mixture distribution include the number of normal components (k), their weights (w), means (m) and variances (σ^2), all of which are functions of r. Means and variances are shown in their standardized version, where $\Psi(r)$ denotes the diagamma function and $\Psi'(r)$ denotes the trigamma function.

r		k = 1	k = 2	k = 3
6-15	w_{rk}	$\frac{-0.6583 + 0.07464r + 0.1884r^2}{-0.03083 - 0.2930r + 0.3067r^2}$	$\frac{1.586 - 0.7519r + 0.3535r^2}{0.2643 + 0.1614r + 0.9698r^2}$	$\frac{0.01348 + 0.001274r - 0.00003837r^2}{0.8799 + 0.04313r - 0.001552r^2}$
	$\frac{m_{rk} + \Psi(r)}{\sqrt{\Psi'(r)}}$	$\frac{-0.3696 - 0.006706r - 0.009308r^2}{1.034 + 0.003362r + 0.02403r^2}$	$\frac{-0.8303 + 0.3906r + 0.09007r^2}{0.1318 - 0.09864r + 0.1682r^2}$	$\frac{-1.183 + 0.03989r + 0.4559r^2}{1.262 - 0.7045r + 0.2549r^2}$
	$\sigma_r^2 / \Psi'(r)$	$\frac{0.06108 + 0.6634r + 0.08889r^2}{0.3702 + 1.319r + 0.1145r^2}$		
16-170	w_{rk}	$\frac{0.6928 + 0.03790r + 0.00007142r^2}{0.7754 + 0.04535r + 0.00008905r^2}$	$\frac{0.8263 + 0.1529r + 0.001124r^2}{8.827 + 0.9978r + 0.006043r^2}$	
	$\frac{m_{rk} + \Psi(r)}{\sqrt{\Psi'(r)}}$	$\frac{-0.8917 - 0.1855r - 0.0009084r^2}{4.192 + 0.9940r + 0.007033r^2}$	$\frac{1.076 + 0.07260r + 0.0002470r^2}{0.5983 + 0.07564r + 0.0004561r^2}$	
	$\sigma_r^2 / \Psi'(r)$	$\frac{0.5995 + 0.03782r + 0.00001488r^2}{0.8664 + 0.04284r + 0.00001132r^2}$		