

## Budget Justification

### A. Senior Personnel

**PI: Dr. Michael Gilchrist** The PI will oversee the further development of the biological models underlying the research. The PI will also assume primary responsibility for supervising the training of the Post-Doc and graduate student and supervise the undergraduate student during the summer months. The PI is an Associate Professor (University of Tennessee, Dept. of Ecology & Evolutionary Biology) with a 9 month appointment. The PI will devote 2 summer months/year to the project and the total of one person/month during the academic year. Funds are requested for summer salary and adjusted by 3% per year.

**Co-PI: Dr. Russell Zaretzki** The Co-PI will help guide the choice and implementation of statistical algorithms for the Bayesian computation. The Co-PI will also assume secondary responsibility for supervising the training of the Post-Doc and graduate student. The Co-PI is an Associate Professor (University of Tennessee, Dept. of Statistics) with a 9 month appointment. The Co-PI will devote 3/4 of a summer month/year to the project and the total of one person/month during the academic year. Funds are requested for summer salary and adjusted by 3% per year.

### B. Other Personnel

**Post Doctoral Scholar (PDS)** The PDS primary goal will be to write, test, and implement the computer code utilized in this research. This work will be supervised by the PI and Co-PI and will involve various aspects of mathematical modeling and statistical inference employing both deterministic and stochastic techniques. In addition the PDS will be responsible for collecting and managing genome data and model output. As part of his/her training, the PDS will also participate in supervising graduate and undergraduate students, grant writing, participate in Departmental seminars, and present results at scientific meetings (see Supporting Materials for more details on the Mentoring Plan for the PDS). Funds are requested for three years of support and adjusted by 3% per year.

**Graduate Student (GS)** The GS's primary goal will be to expand the simulation model and assist in other code development and testing. The GS's dissertation topic is based on the underlying model, SEMPPR, and, as a result, he already has a strong understanding of the model's working. In addition the PI and Co-PI will supervise the GS in the mathematical analysis and expansion of the models underlying SEMPPR. Funds are requested for three years of support and adjusted by 3% per year.

**Undergraduate Student (US)** The US will actively participate in the execution of the project over each summer. The US's primary goal will be to assist the GS in expanding the simulation model and in other code development and testing. Funds are requested for three years of summer support.

### C. Fringe Benefits

Fringe benefits for the PI, Co-PI, and PDS are requested in accordance with the University of Tennessee policies and guidelines and are calculated at 28% of the salaries for Senior and Other Personnel. Funds to GS health insurance fees, currently \$924/year and projected to increase at 6%/year are also requested.

## D. Equipment

Funds are requested to purchase 64 Xeon 64 bit CPUs with 2GB RAM/CPU at \$380/CPU this includes all the hardware costs required (\$24,320 total). CPUs will be purchased, installed, and integrated into UTK's local computational cluster Newton. By purchasing these CPUs we will ensure priority for their usage. Because they are part of a cluster, these CPUs cannot and will not be used as a personal workstation.

## E. Travel

**Foreign** Funds are requested for international travel by either the PI or the PDS to the Society for Molecular Biology and Evolution's (SMBE) annual meeting. In 2012 this meeting will be held in Dublin, Ireland. Location of future meetings have yet to be announced but past locations have included Kyoto, Japan and Lyon, France. Upcoming conferences will likely be held in Europe or Asia. Funds are also requested for the GS to attend SMBE's annual meeting in the final year of the grant to present the results of this research.

**Domestic** Funds are requested for travel by the PI and PDS to two national meetings per year and by the GS for one meeting per year in order to present the results of this research.

## G. Other Direct Costs

- 1. Materials and Supplies** Funds are requested to cover publication costs. Articles will be published in an open access format whenever possible.
- 6. Other** Funds are requested to cover the tuition costs for the GS for three years, including summer terms. These costs are increased 6% each year.