**Senior Personnel**

CoPI MacManes is responsible for the genetic and bioinformatic components of this proposal. Specifically, he will oversee the design and execution of the genetic component AIM1 and AIM2, which involves extraction of RNA from tissue samples, generation of mRNA sequencing libraries, sequencing on the Illumina HiSeq 2500 platform, and all bioinformatic analysis. MacManes will train graduate students, and will interact with other project participants (undergraduate students). Two months of summer salary per year is requested for all three years of the project. Salary is increased annually by 3% to account for inflation.

**Other Personnel**

3 years of summer salary ($7000, increased by 3% annually) are requested for a graduate student, during which genetic analyses will be conducted. The graduate student will make sequencing libraries and perform bioinformatic analyses. The graduate student will be encouraged to travel to summertime scientific meetings, and will participate in other activities which include interacting with the public and the mentoring of underrepresented groups. Manuscripts related to the genetic component will be co-authored by the graduate student.

Funding is also requested for one undergraduate student per year. This student will be paid $4000 for full-time summer work.

**Tuition**

Tuition costs for the graduate student are calculated based on the standard rate for a pre-candidacy graduate student (year 1), while tuition for year 2 of funding is calculated at the post-candidacy rate.

**Fringe Benefits**

Fringe benefits for summer salaries are calculated at 7.7% per UNH’s federally negotiated rates.

**Travel**

$3000 per year is requested to support travel of project participants (CoPI and graduate student) to the Calisi lab, as well as to the annual meeting of the Society for the Study of Evolution, typically held in North America, where research findings will be presented.

**Equipment**

$5000 is requested for a Linux workstation, which will be purchased for primary use by the graduate student for conducting genomic analyses.

**Materials and Supplies**

Funds are being requested for RNA extraction and Illumina sequencing library generation for approximately 525 samples (Aims 1 and 3), using low-cost methods described in Wang 2011 ($20,000, split over first 2 years). In addition, funds are requested for sequencing RNAseq libraries to a depth of approximately 20M 100nt paired-end sequencing reads each. Sequencing will be done at the UNH Hubbard Center for Genome Studies, a core facility of which CoPI MacManes is an affiliate. Based on current machine throughput, this is approximately 65 lanes of sequence data. A moderate amount of sequencing will be done in year 1 ($40,000), with the bulk being done in year 2 ($50,000), and year 3 ($60,000). $2000 is being requested for the purchase of five enterprise-grade 4TB hard drives and hard drive enclosure, which will serve as secondary offsite backup of genomic data. $2000 per year is requested for maintenance of the large Linux workstation, owned by the MacManes lab on which all genetic analyses will be done. Though this computer resource supports other ongoing research in the MacManes lab, the proposed work is expected to occupy a large amount of this computer’s CPU time and storage capacity, which will allow multiple analyses to be done in parallel. The amount of money requested is proportional to it’s usage relative to other projects, and it far less expensive than purchasing a comparable, dedicated system. $5000 per year is requested for general research supplies.

**Publication Costs**

$1,800 is requested in years 2 and 3 for publishing in open access journals.

**REU Supplement**

The MacManes lab aims to recruit a Native American or Chicano student via the REU mechanism each summer. This student will be paired with a UNH student also funded via the REU mechanism. These students will work in close collaboration with the CoPI, graduate student, and other undergraduate students. For the 10-week summer program, I am requesting a $500 per week stipend, $3,147 for housing and meals and $1000 for travel to PI lab and conference. I am requesting an additional $500 for travel for the visiting REU student to and from her/his home institution. See REU supplementary document for additional details.

**Facilities and Administration**

Facilities and Administration is charged at 47.5% of MTDC based UNH’s federally negotiated rate.