

Senior Personnel

PI 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, during which 100% effort will be committed to this project. Salary is increased annually by 3% to account for inflation.

Other Personnel

3 years of summer salary (\$7,000 - 12 weeks, 40 hours per week), increased by 3% annually) and 1 year of academic year salary (\$17,595 – 32 weeks, 40 hours per week) are requested for a graduate student. The graduate student will conduct animal experiments, 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 this project will be co-authored by the graduate student.

Funding is also requested for one undergraduate student per summer. This student, who will participate in research activities year-round, will be paid \$4,500 during the summer (10 weeks, 40 hours per week), and will receive University credit during the academic year.

Fringe Benefits

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

Travel

\$2,500 per year in years 2 and 3 is requested to cover travel to scientific conferences for the PI and graduate student. Both personnel will present findings related to this research project. While the location of conferences is variable and yet to be determined, they are typically held at a North American venue (previous locations include Raleigh, NC, Minneapolis MN, Portland, OR) during the month of June. An Internet search on Travelocity.com for flights during June 2015 to these destinations averages approximately \$400 per person round trip. Conference registration has historically been near \$350 per year per person, with hotel approximately \$100 per night per person for 5 nights.

Materials and Supplies

Funds are being requested for RNA/DNA extraction and Illumina sequencing library generation for approximately 240 samples (120 RNAseq, 120 Bisulfite seq - \$15,000, split over first 2 years). Funds are requested sequencing these libraries to a depth of approximately 30M 100nt paired-end sequencing reads each. Sequencing will be done at the UNH Hubbard Center for Genome Studies, a core facility of which PI MacManes is an affiliate. Based on current machine throughput, this is approximately 40 lanes of sequence data. The cost of sequencing will be: year 1 (\$35,000), year 2 (\$34,000), and year 3 (\$20,000). \$4000 is being requested for the purchase of five enterprise-grade 6TB hard drives and hard drive enclosure, which will serve as a secure storage backup of genomic data. \$2,000 per year is requested for maintenance of the large Linux workstation, located in 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 its usage relative to other projects, and it far less expensive than

purchasing a comparable, dedicated system. \$10,000 per year is requested for general research lab supplies. \$5,000 per year is requested to cover animal care costs.

Publication Charges

\$1800 per year in years 2 and 3 is requested to cover fees relating to the publication of research results in peer-reviewed journals.

Tuition

Tuition for the graduate student, \$5456

Facilities and Administration

Facilities and Administration is charged at 47.5% of MTDC based on UNH's federally negotiated rate. (DHHS agreement dated 3/14/2014.)