Budget Justification

**A. PERSONNEL**

**Senior Personnel:**

**Professor X, Principal Investigator -** Professor X will provide overall project management, be responsible for Aims 1 and 2, and supervise/advise the Graduate Student Researchers and undergraduate assistants. He is not requesting any summer salary.

**Assistant Professor X, co-Principal Investigator -** Dr. Xwill be responsible for Aim 2 and will also supervise/advise the Graduate Student Researchers and undergraduate assistants. She is requesting one month of summer salary support at 100% for years 1 and 2, during which most of Aim 2 will occur. An annual merit increase is anticipated at 3%.

**Other Personnel:**

**Graduate Student Researchers, GSR** (TBD) - Nine months of salary support is requested for two resident Graduate Student Researcher at 49% time during years 1, 2, and 3. During year 4, when most research will have been completed, only one GSR is requested. The GSRs will be chosen from among Dr. Garland's students or from Dr. Holt's students. The GSRs will perform critical portions of the research, analyze data, write manuscripts, and engage in, in addition to some supervision of undergraduate assistants. They will also attend scientific meetings and make presentations. Annual salary increases are anticipated at 3%.

All salaries and wages were estimated using UC Riverside’s academic and staff salary scales.

**Undergraduate Assistants** (TBD) - Undergraduates at UCR typically want some combination of volunteer, pay, and class credit during their laboratory research experiences. Some of them are eligible for work-study support. We request $3,000 in each of the four years of the proposed research.

**B. BENEFITS**

**Fringe Benefits:**

Employee benefits are estimates, using the composite rates agreed upon by the University of California. During the summer months, academic personnel’s benefit rate is 7.14% of their salary. Graduate and undergraduate student fringe benefit rates are estimated at 0.90%.

In addition to fringe benefits for the GSR, University policy requires inclusion of partial fees and tuition remission and Graduate Student Health Insurance (GSHIP) for Graduate Student Researchers employed during each academic year with an appointment of 25% time or more. These are included in the budget as fringe benefits.

It is estimated that the GSRs will be California residents, and that their student services fees and tuition would escalate by 5% (fees) annually, 3% (tuition) per year beginning the 2020/2021 academic year, and 7% (GSHIP) annually. These escalation factors are also included in the budgeted costs.

**C. MATERIALS & SUPPLIES**

$6,000/year are requested for: purchase of high-fat diet (not included in vivarium per diem charges); drierite and soda lime for metabolic measurements; dry ice, liquid nitrogen, and cryogenic vials for tissue sampling; miscellaneous lab supplies; miscellaneous computer repairs; and purchases of minor computer peripherals as needed (e.g., mice, flash drives). Cost estimates are based on historical data under previous NSF awards.

**D. EQUIPMENT**

N/A

**E. TRAVEL**

**Domestic -**

$3,000 per year is requested for attendance of national meetings (e.g., American Physiological Society, Society for Integrative and Comparative Biology, and Society for the Study of Evolution) by the PI, co-PI, and graduate students. Undergraduates can generally obtain funding from UCR if they are in a position to present a talk or poster at a meeting, and sometimes just for attending. Cost estimates are based on previous experience (historical costs) for flights, ground transportation, hotel, registration fees, and per diem costs, and presuming that most of the meetings to be attended would be on the west coast.

**Foreign -**

N/A

**F. PARTICIPANTS COSTS**

N/A

**G. OTHER EXPENSES (DIRECT COSTS)**

**Software Costs:**

We request $200 per year for maintenance of software licenses (e.g., SAS, SPSS).

**Publication Costs/Documentation/Dissemination:**

Unfortunately, more and more journals are now imposing mandatory submission fees, open-access charges or page charges. Therefore, conservative amounts of $2,000-$3,000 per year are requested.

**Vivarium Charges:**

The budget is dominated by per diem charges for mouse care, which is unavoidable. Animals are charged a per diem rate per cage, not per mouse. The per diem rate is $0.78 through 30 June 2021. Based on current campus policy to reduce subsidies for vivaria and historical trends at UCR, after that we anticipate increases of ~5% per year, which would mean $0.82 as of 1 July 2021, $0.86 as of 1 July 2022, and $0.90 as of 1 July 2023. Anticipated costs include the production of 4 generations per year as part of the routine selective breeding protocol and also the shift to high-fat diet in Aim 3. Aim 1 requires 96 cages of mice, which will gradually reduce over time. Aim 2 requires mice housed individually as experiments proceed. Total estimated per diem charges in years 1-4 are $75,118, $70,884, $56,284, and $46,648, respectively.

**INDIRECT COSTS**

Indirect Costs (a.k.a. Facilities and Administrative costs) were estimated in accordance with UC Riverside’s approved indirect cost rate agreement with the Department of Health and Human Services (DHHS), dated March 14, 2018, the Federal Cognizant Agency for UC Riverside. As of July 1, 2018, the applicable indirect cost rate for the proposed period is 55.5% Modified Total Direct Costs (MTDC), which is the on-campus Organized Research rate appropriate for this project, and excludes the graduate student fees and tuition, the cost of any proposed equipment (N/A for this particular proposal) and subawards beyond the first $25,000 (also N/A) per the rate agreement.