Budget Justification

A. SENIOR PERSONNEL:
1. Principal Investigator: Dr. Nathan Schiele will be PI for this project, and is requesting salary for 1 month each summer for each year of the project. As PI, Dr. Schiele will oversee all aspects of the project. Dr. Schiele will contribute to experimental design, data collection, analysis, interpretation, and dissemination of results. Dr. Schiele will train, supervise and mentor a Ph.D. graduate student in Biological Engineering, and undergraduate student researchers who will participate in the project. Dr. Schiele will also be responsible for the educational activities (see Broader Impacts) associated with this project (advising the student-directed NSF GRFP proposals and experiments conducted in the course BE 423/523: Tissue Engineering and Regnerative Medicine). Dr. Schiele will actively mentor undergraduate student researchers, and further develop current outreach activities at the University of Idaho. Dr. Schiele will coordinate and oversee the submission of peer-reviewed manuscripts and conference proceedings. He will aid in presenting the work at scientific conferences. Salary for the PI will be $11,200 in year 1 (1 month of summer), and based on an expected 2% annual cost of living increase, will total $34,276 (all 3 years).

The University of Idaho has determined the salary year for senior personnel to be based on the calendar year.

B. OTHER PERSONNEL:
1. Graduate Research Assistant (GRA): *TBD*. A GRA will conduct the proposed experiments outlined in Objectives 1-2. These experiments will be this Ph.D. student's research project and they will dedicate approximatly 100% of their time and effort to the proposed experiments (12 Calendar Months effort each year). The GRA will work under the supervision of the PI, Dr. Schiele. The GRA will be responsible for isolating tendon and stem cells, conducting the proposed experiments and evaluations in tendon and stem cells, and data analysis. The GRA will aid in conducting the student-directed experiments proposed in BE 423/523: Tissue Engineering and Regnerative Medicine. The GRA will work with Dr. Schiele to present the work at scientific conferences and publish the work in peer-reviewed journals. Salary for the GRA will be $29,480 in year 1, and based on an expected 2% annual cost of living increase, will total $90,221 (all 3 years).

2. Undergraduate Research Assistant (UGRA): *TBD*. An UGRA will aid in conducting the proposed experiments outlined in Objectives 1-2. They will dedicate approximatly 10 hours/week during the academic year, and 40 hours/week during the summer. The UGRA will aid in conducting the student-directed experiments proposed in BE 423/523: Tissue Engineering and Regnerative Medicine, and in the proposed experiments. The UGRA will work under the supervision of the GRA and the PI, Dr. Schiele. The UGRA will work with the GRA and Dr. Schiele to present the work at scientific conferences and publish the work in peer-reviewed journals. Salary for the UGRA will be $11,600 in year 1, and based on an expected 2% annual cost of living increase, will total $35,501 (all 3 years).

C. FRINGE BENEFITS: Fringe benefit costs have been calculated using current and projected negotiated rates between University of Idaho and the federal government. Faculty fringe is calculated at 29.4% of direct salary. Graduate and Undergraduate Research Assistant fringe is calculated at 3.0% of direct salary. A combined total of $4,525 is requested for fringe in year 1 and will total $13,849 over all 3 years.

D. EQUIPMENT: [items = or > $5,000]: No equipment is being requested in this proposal.

E. TRAVEL:
1. Domestic Travel - Conferences: A total of $4,000 per year is being requested to assist the PI, GRA, and UGRA in presenting results at national meetings (e.g., Orthopaedic Research Society, Biomedical Engineering Society, and the Summer Biomechanics, Bioengineering, Biotransport Conference) and cover the costs of conference registration, airfare, accommodation, and meals. Appropriate meetings will be selected every year and therefore exact times and locations of meetings are not available at this time.

F. OTHER DIRECT COSTS:
1. Materials and Supplies:

a. Consumable Research Supplies: $15,000 per year for the purchase of consumable laboratory supplies and core facility fees is being requested. Consumable laboratory supplies for this project may include: cell culture reagents (Dulbecco's Modified Eagle Medium, fetal bovine serum, and penicillin-streptomycin), chemical inhibitors and siRNA constructs, primary and secondary antibodies, western blot buffers and developers, electrophoresis gels and membranes, gloves, ethanol, scalpel blades, pipettes, petri dishes, flasks, centrifuge tubes, filters, and phosphate buffered saline.
   Also included in consumables are:
   I. Fees for confocal microscope use at the University of Idaho Optical Imaging Core (OIC) Facility ($3,600 per year)
   II. Education/Research Supplies: Supplies needed to support conducting the student-directed experiments proposed in BE 423/523: Tissue Engineering and Regnerative Medicine ($1,000 per year). This budget item will be used to supplement the small course fee ($50/student) that is currently charged.
b. Animal Costs and Fees: $5,000 in year 1 is being requested for initial animal costs and per diem housing fees. Sprague Dawley rats will be purchased from breeders (e.g., Charles River). $2000 per year for animal costs and per diem housing fees is being requested for years 2-3.
c. Software and Computational Resources: $450 per year is requested to purchase secure data storage and management through the Northwest Knowledge Network.

2. Publication Costs: $1,000 per year is requested to aid in covering the cost of publication in professional peer-reviewed journals.

3. Consultant Services: N/A

4. Computer Services: N/A

5. Subawards/Consortium/Contractual Costs: N/A

6. Other - Student Tuition/Fees: For year 1, tuition and fees for the graduate research assistant is requested at an estimated annual rate for in-state graduate students of $11,778 including the annual cost of the Student Health Insurance Program. The tuition rate and the health benefit rate are estimated to increase in years 2-3 at a rate of 4% per year. Based on a 4% annual increase, the total (all 3 years) tuition and student fees are projected to be $36,766. Tuition and fees are not subject to indirect costs.

G. INDIRECT COSTS:
Total Indirect Costs: $121,379 for 3 years including; $40,408 in Year 1 (7 months at 48.5% ($23,271) and the rest at 50% ($17,137). The F&A rate remains at 50.0% for the remaining project years, $40,196 in Year 2, and $40,775 in Year 3.

Indirect costs are calculated based on the University of Idaho Federally Negotiated Indirect Cost Rate using a modified total direct cost base. Direct charges such as tuition and fees, and equipment purchases over $5,000 are excluded from the base cost when computing facilities and administrative costs.

H. TOTAL DIRECT AND INDIRECT COSTS: Year 1: $134,441; Year 2: $132,836; Year 3: $135,064.

I: AMOUNT OF THIS REQUEST:$402,341