



Top Tier Research, Scholarship and Creative Activities 2015 – 2016 Updates

SUMMARY

UNLV Top Tier - Health for Nevada Initiative

Background

Raising the health standards in Nevada is critical to enhancing quality of life in the state and improving its economic vitality. Nevada consistently places near the bottom of rankings of U.S. states in many health-related measures, including the incidence of chronic illnesses, such as diabetes and respiratory disease; the availability of doctors; the delivery of preventive services, such as immunizations and prenatal care; the quality and quantity of mental health care; and the risk of suicide.¹ Further, the health care disparities in the Mountain West states are higher than the rest of the U.S. states and are manifested in higher rates of the 12 leading causes of death, including coronary heart disease, cancer, and chronic obstructive pulmonary disease.²

UNLV is helping to address these challenges with numerous academic and research programs. The creation of the School of Medicine, whose first class will enter in the fall of 2017, is a milestone for health care education, service, and research in Southern Nevada. A variety of other health care education and research initiatives are underway as well. For example, UNLV is leading the multi-year National Institute of Health-funded IDEA Clinical Translational Research project. UNLV researchers also recently joined with the Cleveland Clinic Lou Ruvo Center for Brain Health to obtain an \$11.1 million grant from the NIH for the advanced study of both Parkinson's and Alzheimer's Diseases. The state Knowledge Fund is supporting the establishment of the Nevada Institute for Personalized Medicine. Additionally, three startup companies that have tremendous commercial potential have been produced through UNLV research in biotechnology and bioengineering.³ UNLV researchers actively pursue the substantial grant funding available at the federal level,⁴ but additional key infrastructure, faculty members, and programs are needed for UNLV to become even more effective in acquiring this and other types of funding. By investing in Health for Nevada Initiative, the state will provide support that will facilitate acquisition of more federal funding and will enable faculty to address more of the state's pressing health issues.

The health care sector is also important for economic development in Nevada. In addition to attracting companies such as Switch and Zappos, Southern Nevada is also observing growth in the health-care industry with the addition of such organizations as the Cleveland Clinic Lou Ruvo Center for Brain Health, Varian Medical Systems, and Comprehensive Cancer Centers. All of these entities rely on UNLV for workforce development, basic and applied research, and additional innovation that can catalyze economic growth for the region. Thus, it is important to

build the workforce development capacity and research infrastructure at UNLV, as the university is located in the state's primary urban center with the largest population and most diverse demographics; it also has perhaps the most significant health disparities. An investment in the Health for Nevada Initiative would bring more health care jobs to Nevada and spur research with great potential to produce effective, new health-care related products, drugs, and services. It would also help save the state money in the long term by reducing health care costs. All of these developments will directly benefit the state's economy in a key sector identified in the Governor's Economic Development Plan: Health and Medical Services. By investing in the Health for Nevada Initiative, the state will help advance the Governor's strategic goal of "leveraging a strong medical/health sector to build other emerging industries." These types of investments have paid off in the past by advancing Nevada in the nation's health care rankings. For example, the UNLV School of Dental Medicine helped move the state from a national ranking of approximately 48th on number of dentists per capita to a current ranking of approximately 26th.

Connection to the Top Tier Plan

An investment in the Health for Nevada Initiative not only helps build faculty and student health expertise, but also complements the launch of the UNLV School of Medicine. The advancement of the medical school is a key component of one of five institutional goals identified in the Top Tier Strategic Plan. Launched in the past academic year, UNLV's Top Tier aspiration is to become a high-performing university in research, teaching, and community engagement. UNLV is hard at work achieving these goals, which include the following: expanding research, scholarship, and creative activity; increasing student achievement; launching a world-class medical school and successfully integrating it within the broader academic health center; building better community partnerships; and improving our infrastructure, business processes, and shared governance. Investment in human health capabilities would help to increase the number of new faculty and staff members, graduate students, and research space necessary to achieve these Top Tier goals. Such an investment would have a direct, positive impact on Nevada in terms of health care, jobs, and economic diversification that arrive with development of new health-related products, drugs, services, and start-ups. The Health for Nevada Initiative request is *in addition to* the School of Medicine's request for programmatic and infrastructure support, which is itself an institutional priority;⁵ added to the request for funding for the School of Medicine, the Health for Nevada Initiative would benefit medical school research and education tremendously through provision of additional faculty members, graduate students, and infrastructure.

Hiring of New Faculty Members (\$16.5 million two year request - \$11 million base increase)

To support growth in the field of human health, it is essential to hire senior and junior faculty in various fields that will work in teams to address this important issue for the state. **UNLV anticipates the need to hire senior and junior research-intensive faculty members over the next 10 years, whose state support will be provided as summarized below:**

- Senior Faculty: 3 years at 100%, then transition to 50% funding from state
- Junior Faculty: 6 years at 100%, then transition to 50% funding from state

Through a combination of initial hiring of faculty members with \$11 million in base funding and reinvestment in these funds as those faculty members transition to external funds, it is anticipated

that approximately **156 faculty members will be hired over a 10-year period**. UNLV's commitment will be to support the startup costs, which are estimated to be \$4 million per year over the 10-year period. These new professors will possess expertise in many areas: community health, pharmaceutical development, biomedical engineering, robotic surgery, dental medicine, health informatics, nursing, healthcare business and administration, health law and policy, healthcare hospitality, physical therapy, health education, and other societal aspects of healthcare and caregiving. Additional expertise will be sought in the public health areas, such as improving access to clean water, the built environment, and health strategies for developing countries.

Support for Graduate Students (\$6.05 million two year request - \$3.025 million base increase)

Graduate students provide support in all the human health research areas, and in doing so, they become a skillfully trained workforce. These students will work with professors on health-related projects that are important for the state, region, and beyond. To be competitive, stipends for graduate assistants (GAs) must be at the appropriate level, and there must be a sufficient number of assistantships available. **For this, UNLV requests \$6 million to increase competitive, market-based assistantships and stipends for the Health for Nevada Initiative.** These funds will be used to provide research GAs to faculty on a competitive basis to support their research and grant-writing initiatives. As faculty members acquire external funding for research projects, they can request additional funds from the Health for Nevada program to further build out research teams with additional GAs. This program could include support for competitive summer GA support for doctoral students.

Research Support (staff, operating, equipment)

The proper research support is essential for faculty members and students to be successful in their activities. This support includes staff members for core facilities (e.g., computer, wet and dry labs), compliance-related functions (e.g., environmental health and safety, support of clinical trials, protection of human subjects), and administrative support for operations. Operating funds are requested covering service contracts, equipment repair, and upgrades. Major equipment funds would be used for core facilities and equipment such as high-throughput gene sequencer, cyclotron, and high-end confocal imager.

Infrastructure (Renovation Funds and Engineering (Biomedical) Building - (\$14.5 million)

Having the sufficient infrastructure—including space, laboratories, offices, and other facilities—is essential for UNLV to reach its Top Tier aspirations over the next 10 years, and for Nevada to reap the benefit of having UNLV (and, likely, UNR) become a stronger research university.

UNLV is committed to driving the efficient use of research space by repurposing existing facilities and ensuring that as many grant-funded activities as possible occur in current research facilities. Over the next 10 years, we are committed to increasing research productivity in space moving from \$190/asf to \$300/asf. As part of this increase, we will evaluate the need to renovate and repurpose research space that will accommodate faculty growth over the next 2-5 years. This includes spaces such as the old spaces (wet and dry) in the Harry Reid Center, White Hall, Chemistry Building, EPA facility and other research labs that are still useful but need upgrading. We also propose a new Engineering Building (approximately 50,000 net assignable ft²) at a cost of approximately \$35 million (a combination of state, UNLV, and external funding). The research space inside the Engineering Building will be prioritized for activities that are in

alignment with the Health for Nevada Initiative such as biomedical engineering and include areas such as medical devices, diagnostics, and prosthetics. The College of Engineering has experienced over a doubling in research expenditures (FY 2013 – \$4.9 million to FY 2015 - \$11.4 million) over the past three years and this along with a new emphasis in biomedical engineering will create a demand for new research space. **In this request, UNLV asks for renovation funds (\$10.0 million) and planning funding for the new engineering building (\$2.4 million).**

Metrics of Success and Conclusion

A university's collaboration on human health issues involves a multidisciplinary approach that can enhance the private sector's endeavors. Metrics of success will include improvements in human health rankings, interactions with industry, commercialization of research (new IP, patents, startups), jobs from new businesses, student/workforce training, and enhanced federal funding. On average, every \$5 million in research funding produces 1.7 invention disclosures and results in one patent application per year. Eventually, this commercialized research leads to license agreement with companies, revenue for the university, and/or startup companies. UNLV's development of the Health for Nevada Initiative establishes the strong infrastructure and expertise to help Nevada realize its economic development potential while transforming the standards for health care in the state and region.

Financial Summary

	Funding Request (millions)				FY 18-19 State Request
	FY 2018		FY 2019		
	State	UNLV Match	State	UNLV Match	
Faculty Hiring ⁶	\$5.5	\$4.0	\$11.0	\$4.0	\$16.5
Graduate Assistants ⁷	\$3.025	\$3.0	\$3.025	\$3.0	\$6.05
Support Staff	\$1.2		\$2.4		\$3.6
Operating	\$1.0		\$2.0		\$3.0
Equipment	\$1.5		\$3.0		\$4.5
Total	\$12.2	\$7.0	\$21.4	\$7.0	\$33.7
Infrastructure⁸ (Renovation & Planning)	\$10.0 Renovation		\$2.4 Planning		\$12.4

Notes:

1. NSHE Science and Technology Plan. "Health Care Access and Research." January 2015. Page 15.
2. As compiled from Center for Disease Control data and presented in Table 5 for the NIH supported and UNLV lead IDEA CTR proposal.
3. The three most recent UNLV startups were based on biotechnology/bioengineering. MoveMedics is based on the invention of a research team that created shoe insoles that helps prevent foot ulcerations that plague diabetics. Abel Therapeutics is researching, developing, and commercializing a novel compound designed to prevent *Clostridium difficile* infections. A third has developed a compound to prevent American Foulbrood Disease, which kills millions of honeybees each year and can impact up to a third of all agricultural crops.
4. For example, the NIH receives more than \$20 billion per year for research in the various programs.

5. The SOM is requesting \$17,101,776 for FY 18-19 above the state general fund base of \$19,567,702.
6. State funding will be used for hiring new faculty in health areas. UNLV match is based on startup for senior and junior faculty.
7. Requests for Health for Nevada GAs must be supported by faculty with external funding.
8. Building costs will be shared between state allocations, UNLV, and external sources.

Summary of Return on Investment (ROI)



