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Medical Research Laboratory Space is Critical to the Success of the Las Vegas Medical District





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Executive Summary



According to the International Federation of Clinical Chemistry and Laboratory Medicine (IFCC), laboratory medical research influences a significant portion of all clinical decisions by physicians and medical care providers.¹

Laboratory research helps improve medical care by:



- Increasing knowledge and understanding of pathophysiology,
- Emphasizing the role of Laboratory Medicine in diagnostic and/or therapeutic algorithms,
- Facilitating the implementation of evidence based clinical guidelines, +
- Shortening the patient pathway with benefits to both clinical and cost effectiveness.²



Southern Nevada has a prime opportunity to put its name on the map of places conducting medical research with the creation of the University of Nevada, Las Vegas (UNLV) Medical School and the UNLV Academic Health Center, but the region is being held back by the lack of necessary medical research laboratory space to help facilitate this growth. We find this to be true not only in Southern Nevada, but for the entire state when we compare Nevada to similarly positioned western states such as Arizona, Colorado, Oregon, New Mexico, and Utah.

Further investment in the Las Vegas metropolitan area will help leverage public, private, and federal resources. The current economic recession, growth of medical sciences field, and the urgent need to improve medical infrastructure presents strong opportunities for economic diversification, job creation, and long-lasting growth for the region's medical industry, beyond the coronavirus pandemic.

When it comes to who should drive the development of and investment in research laboratory space, the answer is it varies, because it takes a partnership among many different stakeholders. In Temple, TX, the charge was led by the City in their redevelopment plan which included partnerships with the local hospital, the Veterans Affairs Medical Center, and Temple College. In Aurora, Colorado, it was the combination of the University of Colorado along with philanthropic and State funding who developed and built the Anschutz Medical Campus some 20 years ago. Later on, the City of Aurora led the charge with the creation of the Fitzsimmons Innovation Community, which provided work and lab space for bioscience and healthcare research. **In both case studies, adding laboratory space was a team effort and contributed to the success of the larger healthcare industry in the respective regions.**

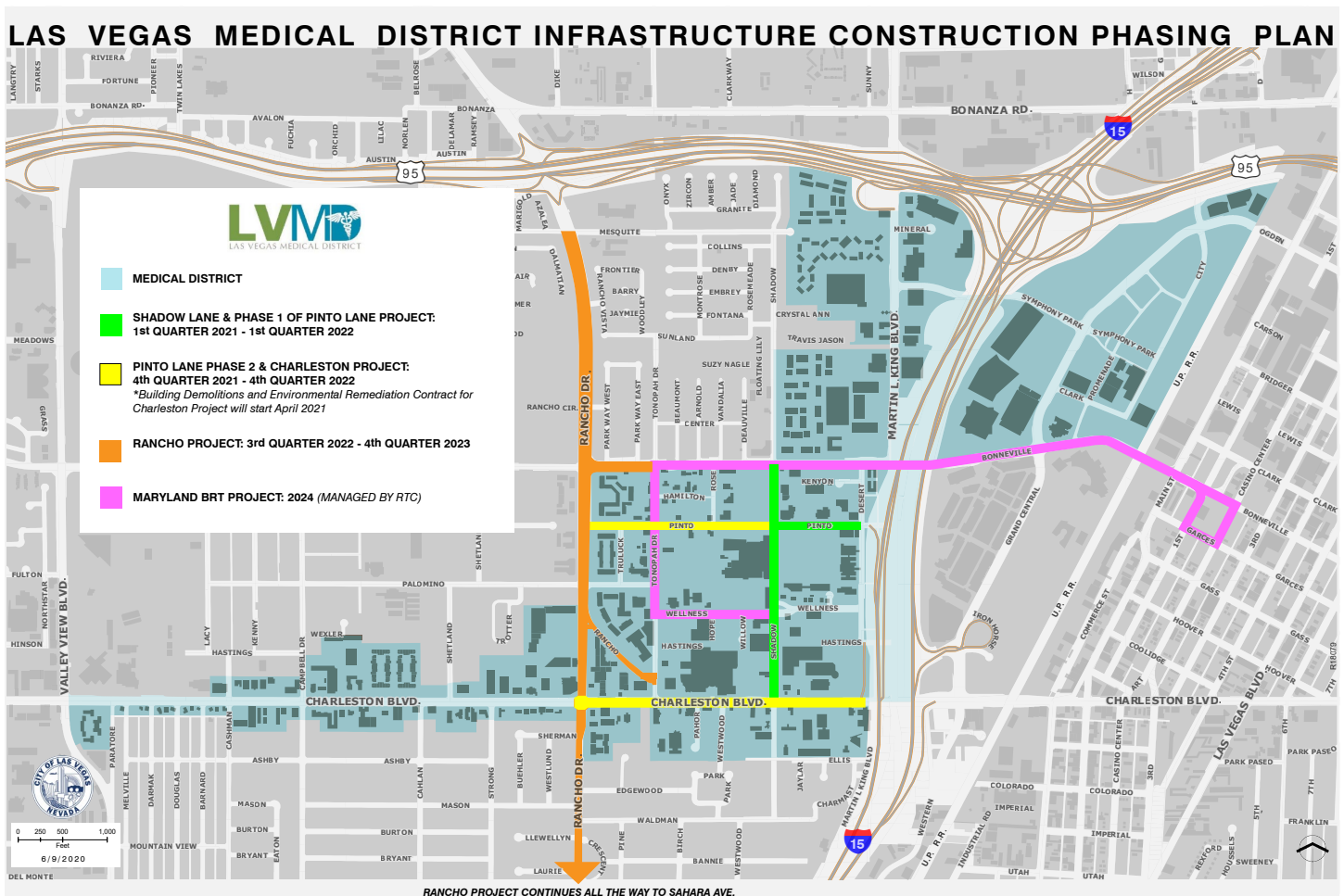
¹ (International Federation of Clinical Chemistry and Laboratory Medicine 2016); ² IBID

Background

In 1997, the City of Las Vegas established the Las Vegas Medical District (LVMD), which borders west of I-15 along Charleston and Martin L King Boulevards and encompasses the University Medical Center and Valley Hospital. Later on, the district was expanded to include parts of what is now known as Symphony Park where the Cleveland Clinic Lou Ruvo Center for Brain Health is located. **The City of Las Vegas has proposed rebranding and restructuring the medical district to highlight the exciting academic and research components with the creation of the UNLV Medical School and the Academic Health Center.**

The UNLV School of Medicine currently rents laboratory space from a private institution, Roseman University, because it has not been assigned space by UNLV.³ If a researcher or an academic from the medical school needs access to laboratory space, they either rent space from Roseman, Vitacus (which is near McCarran International Airport), or they have to find another medical science facility, such as a local hospital, which may not always have the room nor the ability to meet the specific needs of a third party.⁴ With the growing demand for bioscience research that is financially supported by the federal government and the private sector, including venture capitalists out of California, **Nevada has a prime opportunity to grow its bioscience industry and workforce.**

The section below covers how underdeveloped Nevada’s bioscience industry is. With investment in research laboratory space, Southern Nevada can transform its workforce and become a leader in bioscience and medicine.



Status in Nevada

Nevada is an outlier in bioscience research, which is driven by both public and private investment. Nevada falls in the bottom quintile ($\leq 20\%$) when it comes to bioscience research and development per capita at \$24 per person compared to the national average of \$130 per capita. Nevada also ranks in the bottom quintile of National Institute of Health (NIH) funding per capita ($\leq 20\%$) at \$11 per person compared to the national average of \$80.⁵

When we look at similarly positioned and sized western states such as Arizona (AZ), Colorado (CO), Oregon (OR), New Mexico (NM), and Utah (UT), Nevada ranks last in the number of bioscience industry establishments, NIH funding, venture capital funding, and jobs (see Table 1). Nevada does perform better than Utah in the average annual industry wage (\$67,654 > \$64,847), which is likely to be a reflection of high demand and scarcity of skills in the labor market.

Table 1: Economic Benefit from Bioscience Industry in Arizona, Colorado, Oregon, Nevada, New Mexico, Utah, and US (2016)^{6,7}

| State | Number of Bioscience Establishments (Quintile) | Bioscience Employment (Quintile) | Average Bioscience Wage |
|---------------|--|----------------------------------|-------------------------|
| Arizona | 1,310 (III) | 25,686 (III) | \$77,807 |
| Colorado | 2,352 (II) | 29,998 (II) | \$89,002 |
| Oregon | 938 (III) | 13,400 (III) | \$68,781 |
| Nevada | 579 (IV) | 6,705 (IV) | \$67,654 |
| New Mexico | 640 (IV) | 7,221 (IV) | \$72,406 |
| Utah | 1,139 (I) | 30,926 (II) | \$64,847 |
| United States | 85,702 | 1,743,639 | \$98,961 |

Nevada has seen a 60% increase in NIH awards over the past 5 years from \$25.5 in 2014, to \$31.5 in 2017, to \$40.7 in 2019 (all numbers are in the millions). This indicates a growing demand for bioscience research in Nevada (see Table 2). Even with the growth, Nevada still lags behind neighboring states such as AZ, CO, OR, NM, and UT.⁸

⁵ Et. al (Biotechnology Innovation Organization 2018);⁶ (Biotechnology Innovation Organization 2018); ⁷ Quintiles are ordered from best (I) to worst (V); ⁸ Et al. (National Institute of Health 2019);

Table 2: NIH and NSF Funding in Arizona, Colorado, Oregon, Nevada, New Mexico, and Utah (2019)^{9 10}

| State | NIH Funding (Millions) | NSF Funding (Millions) |
|------------|------------------------|------------------------|
| Arizona | \$262.96 | \$132.90 |
| Colorado | \$427.23 | \$360.77 |
| Oregon | \$399.35 | \$193.35 |
| Nevada | \$40.66 | \$25.95 |
| New Mexico | \$98.10 | \$45.76 |
| Utah | \$234.35 | \$54.21 |

Key to the Las Vegas metropolitan area’s success will be to grow bioscience and medical research through laboratory space that meets the needs of researchers. We find that states like Connecticut, counties like Milwaukee County, and municipalities like New Orleans, Aurora, and Temple are investing heavily in research by developing laboratory space to support their growing bioscience industries.¹¹

Table 3: Venture Capital Funding and Largest Capital Investment Segment in Arizona, Colorado, Oregon, Nevada, New Mexico, and Utah (2014-2017)¹²

| State | Venture Capital Funding in Millions (Quintile) | Largest Capital Investment Segment |
|------------|--|------------------------------------|
| Arizona | \$296.42 (III) | Healthcare Technology Systems |
| Colorado | \$1,180.21 (I) | Biotechnology |
| Oregon | \$76.53 (III) | Healthcare Technology Systems |
| Nevada | \$31.69 (IV) | Diagnostic Equipment |
| New Mexico | \$59.64 (IV) | Biotechnology |
| Utah | \$620.03 (II) | Healthcare Technology Systems |

9 (National Institute of Health 2019); 10 (National Science Foundation 2019); 11 (Pilon 2019) (Mascari 2017) (TEMPLE EDC 2018) (Bridges 2019);

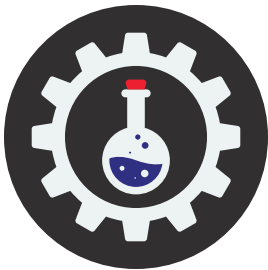
12 (National Institute of Health 2019); 12 (National Institute of Health 2019)

Recommendations

Acquire, develop, and invest in space for both regular bioscience and micro labs in the Las Vegas Medical District (LVMD) that create “front doors” to laboratory space for medical, research, academic, and start up needs that facilitate opportunities for joint research across disciplines.¹³ Many leading bioscience districts, such as the Fitzsimmons Life Sciences District in Aurora and the BioDistrict in New Orleans, are located within or next to University Medical Districts because they allow the agglomeration of knowledge, talent, and facilities to promote research.¹⁴ According to Roger Humphrey of JLL, when it comes to real estate investment in the booming life sciences industry, “the right location will most likely include a mix of world-class academic institutions, leading-edge research facilities, and a close, tight-knit medical community.”¹⁵

LVMD has many similarities to these premier academic medical districts and is better positioned than other locations in Southern Nevada to foster bioscience research based on the availability of space, the proximity to several hospitals, an internationally known brain research facility, and the University of Nevada Las Vegas health and medical departments.

Steps for the Creation of Bioscience and Micro Labs Include:



A master plan for the laboratory space that incorporates both current and future needs, including possible expansion.



Securing an anchor tenant with a contract longer than 5 years, based on industry standards + recommendations of federal contracting in bioscience research.¹⁶



Contracting with private developers, bio science experts, healthcare partners, + prospective tenants to **ensure laboratory space meets all federal, state, + local regulatory, environmental, + industry standards.**



Set up the laboratory space to be run separately or parallel with the operations of the LVMD, while ensuring the laboratory space is accountable to the LVMD governing body. The formal business structure should replicate other public-private partnerships, where the long-term goal is for the laboratory space to eventually become self-sufficient.¹⁷



Work with the LVMD governing body to put together a strategic plan as well as oversee day-to-day management who will be responsible for:

- Managing contracts and the collection of rent from tenants.
- Entering into the agreements with private parties to rehabilitate space needed for a medical research laboratory based on the feedback from potential tenants.
- Servicing the research and academic laboratory space to continue to meet industry standards, including wet and dry environments.
- Contracting out custodial and security duties.



Strengthen relationships and collaboration between the university and hospitals by including them on the laboratory's governance board.



Create and execute a marketing plan of the co-working laboratory space, locally and regionally, that partners with the different economic development organizations. This includes:

- Partnering with private and public entities in the LVMD to promote laboratory space to potential partners.
- Working side by side with economic development organizations, who can help bring in new tenants.
- Contracting with a local marketing organization that specializes in the regional market and can help promote the LVMD laboratory space to tenants looking for space in the Southwest.



Outline clear opportunities to strengthen existing partnerships and expand grant opportunities with county, state and federal agencies such as UMC, Sunrise Hospital, DHHS, DOD, VA, DOE, HHS, and the NSF.



Work with the University of Nevada, Las Vegas to standardize the use of partnership contracts so that all research facilities and researchers (private or public) within LVMD can use the full range of services and activities within the District, including the laboratory space.¹⁸



Work with the Governor's Office of Economic Development on additional financial incentives as well as use of current financial tools like tax increment financing.



Provide assistance for medical and healthcare incubators through intellectual property support for topics such as sources of capital, technical agreements with the University, commercialization resources and support, customer sourcing, and intermediary organization assistance (e.g. marketing, accounting, etc.) in coordination with UNLV.¹⁹

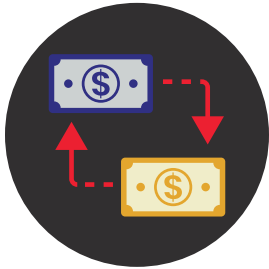


Collect, analyze, and establish rewards for metrics based on entrepreneurial and new business development, especially those that build partnerships with local academic institutions and existing businesses in the region.

Success Will Be Measured By:



The establishment of several (at least five) long term tenants that collectively create more than 75 direct and indirect jobs. ^{20 21}



The operating costs and fixed costs of the laboratory space are fiscally sustainable for both the near and long-term.



The laboratory space brings in additional NIH funding to the area. A goal the governing body should consider is for the laboratory to bring in an additional half-a-million dollars (minimum) in NIH awards over the next two years, eventually getting over a million additional dollars within five years. ²²



The laboratory space increases access to job training programs while creating new technical programs in a variety of disciplines in the LVMD. E.g. Lab technologist, etc. ²³



Ultimately, the laboratory space enhances the reputation the region's emerging bioscience industry.

A Case Study: Temple, TX

Temple, TX – City Lead

The Temple Health and Bioscience District (THBD) in Temple, Texas was created out of the Temple Medical & Education District (TMED) in the mid 2010s to help spur private investment and collaboration with the medical school, the Baylor Scott & White Medical Center, and the Olin E. Teague Veterans Medical Center. Stakeholders realized early on the need for medical and research laboratory space. With help from the city, THBD was born to help grow TMED and energize economic revitalization in downtown Temple.

The City of Temple invested approximately \$945,832 in the creation of the THBD in 2010, 93.5% of which came from property taxes in the district.²⁴ In 2018, THBD income had increased 20% to \$1,133,389, 92.8% of which came from property taxes.²⁵ In addition, the City funds through its general fund the Temple Economic Development Corporation (TEDC) which helps bring in new business and healthcare partners to THBD and TMED.²⁶

THBD consists of 5,000 sq. ft. of office and laboratory space, including three tenant labs, 700 sq. ft of common lab space, and several other amenities for tenants, partners, and even visitors in town for medical conferences. Since its opening, six startup tenants have taken residence in the THBD laboratory and office space, and the THBD built partnerships with the medical school, the regional hospital, and the surrounding bioscience industry.

The City of Temple has roughly one-eighth the population of Las Vegas, yet the City and the surrounding region have roughly the same amount of laboratory space, economic impact on the local economy, and employees in the clinical laboratory field as the City of Las Vegas.²⁷ **Just in the last 10 years, with help from the Temple Economic Development Corporation, the City has been able to lure in more than \$2.8 billion in new investment and 1,500 new jobs.**²⁸ Much is centered around medical hubs in a region like TMED, a model that the City of Las Vegas and UNLV should replicate.

Steps taken by TMED and THBD to develop laboratory space:

Recruited and subsidized space for private entrepreneurs with clinical lab space within the THBD.

Strengthened regional planning and coordination between the healthcare community, private investors, and the local college, Temple College, so that there is an agglomeration of regional knowledge in healthcare, bioscience, and research and a pipeline of workers into new industries.

Recruitment of new industries with the use of tax credits, cash grants, land, and access to skilled labor which has helped TMED recruit investment for a new hospital, a nationwide data center, and a new regional supply chain service center which brings a total of \$30 million in new business to the region.²⁹

Coordinated research and development grants and partnerships with federal agencies in the city, such as the Olin E. Teague Veterans Medical Center.

Funding of the Temple Economic Development Corporation to the tune of over \$3 million dollars annually to help coordinate and market new investment within THBD and TMED.³⁰

A Case Study: Aurora, CO

Aurora, CO – City Lead

The Fitzsimons Innovation District, a bioscience hub within the Anschutz Medical Campus, has provided lab space and services for bioscience companies since its opening in 2000. The facility has more than 70 companies with 750 employees and \$800 million in grants. The entire Anschutz Medical Campus is a significant economic generator, bringing \$7 billion into the local economy and employing about 23,000 people..

The Fitzsimons Innovation District allows researchers and professors to build businesses while continuing to work on teaching and research. The idea was spearheaded by Paul Tauer, then Aurora mayor, who worked together with the CU Health Sciences Center chancellor, CU Hospital president, and Defense Department to discuss how to convert the existing decommissioned Army post into a medical and research complex. Local government collaboration has been essential to the success of the research park. For example, a metropolitan taxing district was established in order to help finance development.³¹

Steps taken by Fitzsimons to develop laboratory space:

The City of Aurora and the University of Colorado teamed up to create the Fitzsimons Redevelopment Authority to oversee the transformation of a decommissioned army base.

A metropolitan taxing district was established in order to help finance development.

The hub attracts both local companies – for example, researchers and faculty members wishing to commercialize their technologies – as well as companies moving in from out of state. The partnership and proximity to the Anschutz campus attracts companies to Fitzsimons.³²

Operations for the Fitzsimons Innovation Community, including the laboratory space, are overseen by an Executive Director and a day-to-day team hired by the board. The Board is composed of members from the Aurora City Council, the University of Colorado Hospital, executives in the bioscience industry, real estate professionals, and science and healthcare foundations.

Fast Facts

6,705

JOB

According to the Bioscience Research Organization, the bioscience industry in Nevada provides 6,705 jobs from 579 establishments with the average wage being \$67,654 (2017).³³ This was at the bottom quintile both in our region and nationally.

\$41.5

MILLION

Awards from the NIH to Nevada in 2019 totaled ~\$41.5 million in 2019, the majority for the biological and biomedical sciences. Nevada did slightly better with Bioscience Venture Capital, coming in the second to last quintile (≤ 40%) for venture capital investment at \$31.7 million, which was largely driven by diagnostic equipment and pharmaceuticals.³⁴

Increased
Medicaid +
Medicare

DOLLARS

Research laboratories bring in additional Medicare and Medicaid matching dollars if space is used for medical research projects to help underserved communities. The City of Las Vegas has stated that one of the intentions of the expansion of the LVMD is to increase the local capacity to serve underserved communities. According to the Guinn Center, Nevada ranks near the bottom of federal outlays per capita when compared to our Western neighbors.³⁵

84% 

RESEARCH

84 percent of federal research and development allocations come from the Department of Defense, Department of Health and Human Services, Department of Energy, and the National Science Foundation. All four departments have a presence in Nevada which creates opportunities for further federal collaboration and dollars.³⁶

\$182

BILLION

Total medical health research and development spending in 2017 was \$182.3 billion, 67% of which came from the private sector and 22% from the Federal Government. The rest comes from local government, academic, and foundations.³⁷

16% 

ACADEMICS

16% of American academics start a business, 1/3 of which is based on intellectual property through a university's technological licensing office. Roughly 66% comes from nonpatent research and development done outside of the university, which requires laboratory space separate from higher education institutions.³⁸

6.3%

GROWTH

The market size for clinical laboratory services in the United States is expected to grow by 6.3% over the next five to six years, from its estimated size of \$28.5 billion in 2020 to \$41.1 billion in 2026 according to Global Market Insights.³⁹

Increased
COVID
Testing

CAPACITY

Laboratory space constraints are one of the bottlenecks for COVID testing capacity. According to Steve Miller, a professor at the University of California, San Francisco, "Doing any testing requires four things: space, staff, instrumentation, reagents. We found that all four of those have had to be dealt with and expanded [due to COVID]."⁴⁰ With COVID-19 potentially becoming endemic (a reoccurring disease), there will be a long run need for testing infrastructure.

About WS Nevada



WS Nevada is a Nevada based firm focused on policy, elections, and business analysis. Woods Strategies started its work in public policy advising elected officials during the 2016 Election and 2019 Legislative Session.

Last year our team worked with the Las Vegas City Council on an economic development report regarding the Las Vegas Medical District. Recently our firm testified before the City of Henderson on a proposal to help raise \$2 million dollars in additional funding without raising taxes. We are current working with state and local transportation officials on a report looking at long term solutions to funding transportation and infrastructure.

Our CEO is Andrew Woods, who recently finished his Master of Arts degree in Public Policy at the University of Chicago while living and working in Nevada.

Emily Zhang is a second year in the Computational Analysis and Public Policy master's program at the University of Chicago's Harris School of Public Policy.

Our firm is dedicated to sound research and optimizing decision making for elected officials and stakeholders. **More information can be found online at: www.WSNevada.com.**



**Andrew Woods,
CEO**



**Emily Zhang,
Researcher**

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