

LSDF Report to the Legislature: Anticipated Return on Investment in Life Sciences Research

Engrossed Second Substitute Senate Bill 5581, passed by the Legislature and signed by the Governor during the 2005 Regular Session, created the Life Sciences Discovery Fund (LSDF) Authority. A provision in the Bill states: "By December 1, 2006, the executive director of the Life Sciences Discovery Fund shall provide a report to the Legislature on the anticipated return on investment to the State from the investment of public funds in the Life Sciences Discovery Fund, including potential job growth, royalty income, intellectual property rights, and other significant long-term benefits to the state." This report has been prepared to meet the requirements of the Bill's provision.

Executive Summary

The promise of the life sciences in Washington is ambitious: to provide better health for citizens, to create thousands of good jobs across the State, and to develop an economic engine to power future growth for our communities. The Legislature has authorized the Life Sciences Discovery Fund Authority to help achieve this promise.

This report details the anticipated returns on investment (ROI) to the State accruing from LSDF grants to Washington research institutions. LSDF will earn economic returns while fostering new scientific knowledge focused on healthcare improvement. To achieve these returns, LSDF will follow sound investment principles in making and managing its awards.

The LSDF expects to promote economic development within the State in three important, measurable ways: enabling new initiatives leading to the creation of jobs and additional economic activity, attracting follow-on funding, and assisting in the commercialization of scientific innovation and the creation of new companies.

The most productive avenues of return for healthcare-focused research are expected to be in the following areas: new approaches to diagnosis, treatment, prevention, and management of disease; translation of basic science discoveries to healthcare practice; scale-up of effective healthcare practices from individuals to populations; demonstrations of improved efficiencies and outcomes in healthcare delivery; and innovations in cost-effectiveness.

All LSDF funding programs will be designed to foster projects with the leveraging potential to garner additional research funding or commercialization investment. Such projects might include: major initiatives to establish new research collaboratives with increased competitiveness for non-state research dollars; projects to enable institutions to recruit eminent researchers or to acquire powerful new equipment, both of which

would have the potential to magnetize additional funding; high-risk/high-reward projects where conventional funding is unlikely, but where a successful outcome could lead to a major opportunity for future funding; and “gap funding” projects, providing a bridge between academic research discoveries and commercializable products, to perform proof-of-principle experimentation, or to develop a commercial prototype.

The life sciences in Washington offer a promising future for the citizens of the State. LSDF is working to make that promise a reality. Metrics to assess project returns are being developed and will be made an essential part of every LSDF grant program. Furthermore, the overall success of the Fund will be judged in part on these ROI criteria.

While there is every reason to be optimistic about the expected benefits of LSDF support for life sciences research, this report must also underline some notes of realistic caution. Outcomes that are contingent upon projected discovery are inherently uncertain. LSDF funding is designed to promote scientific innovation and health improvement and, through them, economic vitality; however, it cannot guarantee these results. Some of the most dramatic benefits of LSDF programs may resist quantification and may only be discernable in qualitative assessment or individual testimony. It is certain that life science research will have both economic and health benefits, but the magnitude and timeframe of those benefits are unpredictable.

The boldness of Washington’s life sciences ambition is inspiring: to provide better health for citizens, to create thousands of good jobs across the State, and to develop an economic engine to power future growth for our communities. In authorizing the LSDF, the Legislature has embraced these aspirations. In guiding its programs by an articulate ROI framework, the Life Sciences Discovery Fund Authority will make good on this promise.

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December 1, 2006

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The promise of the life sciences in Washington: to provide better health for citizens, to create thousands of good jobs across the State, and to develop an economic engine to power future growth for our communities.

I. Introduction: ROI—Returns on the Promise of Life Sciences Research

The promise of the life sciences in Washington is ambitious. The Legislature has authorized the Life Sciences Discovery Fund Authority to help achieve this promise.

This report details the anticipated returns on investment (ROI) to the State accruing from LSDF grants to Washington research institutions. The concept of ROI is fundamental to LSDF operations because a clearly articulated set of expectations is necessary to: (1) inform grant applicants about the goals of the program and the criteria they are to meet, (2) guide independent grant reviewers in the evaluation and ranking of proposals, (3) establish the metrics reportable by grantees to the LSDF and by the LSDF to the Legislature, and (4) define the parameters by which the effectiveness of the LSDF can be evaluated.

More generally, a clear ROI framework will help demonstrate how LSDF and its health promotion and economic development achievements are impacting Washington State. Metrics to assess these returns are being developed and will be made an essential part of every LSDF grant program. The overall success of the Fund will be judged in part on these ROI criteria.

Sound investment principles will maximize returns.

II. LSDF Makes Sound Investments

LSDF is a public investment in life sciences research. It will earn economic returns while fostering new scientific knowledge focused on healthcare improvement. To achieve these returns, LSDF will follow sound investment principles in making and managing its awards. It will also develop a “portfolio” approach to its investments, with a mixture of projects ranging from high- to low-risk with varying timelines to achieve their full impact. Here are some of the approaches designed to maximize the State’s returns from its investment in LSDF:

- **Setting investment goals.** Using criteria approved by its Board of Trustees, the LSDF will ensure that grantee research programs are designed and evaluated to achieve specified ROI goals.
- **Seeking proposals from life sciences researchers.** Annual grant competitions will describe clearly and concisely the types of outcomes/ROI that are expected from funded proposals.
- **Selecting proposals most likely to meet the investment goals.** Panels of experts will review and rank proposals against the ROI criteria and make recommendations about which proposals should be funded.
- **Ensuring grantee accountability.** The Board of Trustees will review the evaluations and funding recommendations from the expert panels and make the final decisions about which proposals to invest in. Awards will be made to grantee institutions under the terms of a contract that specifies milestones for the research and timelines for their achievement.
- **Monitoring the progress of funded grants using pre-established metrics.** At regular intervals, awardees will be expected to report the progress of their research against the goals stated in their proposal and according to the ROI metrics defined by the LSDF.
- **Re-evaluating projects that are not meeting goals.** Projects that are not meeting progress and ROI goals under contract will be re-evaluated and funding possibly terminated.

Knowledge creation, economic development, improved health.

III. Achieving and Measuring LSDF Returns

The goal of the LSDF is to promote economic vitality in the State of Washington by fostering innovative scientific research designed to improve the health of the State's citizens. The returns on LSDF investments will include benefits in all of these areas. Financial returns will leverage the dollars expended. Knowledge gains will enhance the reputation of Washington as a global center of life sciences research. Scientific discovery will contribute to robust industry development and economic growth. Research will lead to innovations that will improve healthcare outcomes, efficiencies in delivery, and cost-effectiveness.

A. Creation of New Knowledge

LSDF-funded research will generate new scientific knowledge that will promote health and strengthen the State's reputation as a world center for life sciences innovation. LSDF investments will enable novel approaches to fundamental bioscience problems, new collaborations among public and private institutions, and more rapid translation of discoveries from lab to clinic. Such scientific energy will attract new students and investigators to the region's research community. At the same time, the new knowledge generated will serve as the foundation for improvements in healthcare and the promotion of economic development.

These knowledge returns are quantifiable—in numbers of publications, in new research collaborations created, in recruitment gains among students and investigators, and in the translation benefits of funded research. Applicants for LSDF grants will be expected to include these and other metrics to frame the benefits expected from their research.

B. Improvement of Healthcare

LSDF's enabling legislation places a priority on the promotion of health for the citizens of Washington State. Therefore grant programs will be designed to achieve a wide range of health benefits, including the following:

- new approaches or modalities to diagnose, treat, prevent or manage disease;
- translation of concepts derived from basic research to patient care and routine healthcare practice (“bench-to-bedside”);
- scale-up of new diagnostic, prophylactic and therapeutic regimes from individuals to populations;
- improved outcomes and efficiencies of evidence-based healthcare; and
- demonstration of cost-effectiveness in healthcare delivery.

Because the timeline required to realize health benefits will vary, the LSDF will seek to fund both near-term and long-term projects. It will give special attention to proposals

with the potential to have near-term impact on improving patient health and promoting cost-effective healthcare within the State.

The LSDF will employ metrics from the healthcare industry to measure health improvement, system benefits, efficiency, and cost-effectiveness. It will expect grantees to show project results that lead to such improvements.

Research projects funded by the LSDF to advance health will also be expected to demonstrate convincingly how they promote the economic vitality of the State.

C. Promotion of Economic Development

By enabling the creation of new knowledge and fostering improved health, the LSDF expects to promote economic development within Washington State. It will do so in four important, measurable ways:

- **Direct economic activity.** LSDF dollars will directly fund jobs and economic activity in Washington, paying researcher salaries, supporting scientific staff, and promoting the purchase of goods and services within the region.
- **Leveraging additional funds.** One of the most important returns on the State's investment in the LSDF will be its enabling role in helping institutions leverage additional research funding from non-state sources. Follow-on funding may also be in the form of private equity investment in companies whose commercialization activities have been assisted by LSDF support.
- **Commercialization.** LSDF funding will assist in the commercialization of research discoveries; converting ideas into innovative goods and services for the marketplace; accelerating the development of drugs, devices, and technologies for improved healthcare practice; and fostering the creation of new companies. This commercialization process may produce, among other returns, invention disclosures, patent filings, intellectual property licensing, gap-funding grants, new company formation, and equity investments. Licensing of intellectual property will garner royalty income to grantee institutions. As reported to the Legislature on December 1, 2005, the LSDF does not currently contemplate that it will share in royalty income.
- **Cost-effective care.** The Fund will support projects designed to provide healthcare in a more cost-effective manner. As such projects succeed and are replicated statewide, there will be economic benefits to the State, to employers and to citizens.

Importantly, LSDF grants and the external funding they leverage will be "high impact" monies because they will be used primarily to pay for activity in Washington, resulting in a "multiplier" effect throughout the economy.

These potential benefits are all measurable and will be formulated as metrics to use in selecting LSDF grantees and in evaluating the progress and success of LSDF programs.

Special priority for financial promise.

IV. Financial Returns for Different Types of LSDF Grant Proposals

LSDF has been commissioned by the Legislature to foster benefits in healthcare, science, and the economy. The Fund is committed to achieving these successes in these areas.

Among LSDF's goals, however, special priority will be given to supporting life sciences proposals with the best chance of garnering additional research funding or commercialization investment. Examples of initiatives with the promise of such financial returns would include the following:

- **Major initiatives.** LSDF funding might enable a grantee institution to launch a new program or center of excellence, staffed by collaborating scientists that would have a competitive advantage for follow-on funding from other granting sources.
- **Strategic opportunities.** LSDF grants might help recipients seize imminent opportunities to move research competitiveness forward, for example by recruiting an eminent ("star") researcher or by acquiring a major piece of critical research equipment, otherwise unavailable.
- **Catalytic projects.** The LSDF might fund high-risk/high-reward projects where a successful outcome could lead to a major opportunity for future funding, for commercialization, or for healthcare.

Cautious optimism: better health, better jobs, a more prosperous future.

V. Conclusion

The life sciences in Washington offer a promising future for the citizens of the State. The LSDF is working to make that promise a reality.

With the support of the Governor and the Legislature, the LSDF will help leverage increased funding for scientists at the State's research universities and other public and private institutions dedicated to the common goal of providing better health to Washington's citizens. The LSDF will also help researchers convert laboratory discoveries into new medicines, new medical devices, new treatments for disease and more effective utilization of existing healthcare resources. By improving health and healthcare cost-effectiveness, LSDF grantees will be addressing what are both a business issue and a community need.

Metrics to assess these returns are being developed and will be an essential part of every LSDF grant program. The overall success of the Fund will be judged in part on these ROI criteria.

While there is every reason to be optimistic about the expected benefits of LSDF support for life science research, it is also important to underline some notes of realistic caution.

- Outcomes that are contingent upon projected discovery are inherently uncertain.
- LSDF funding is designed to promote scientific innovation and health improvement and, through them, economic vitality; however, it cannot guarantee these results.
- Some of the most dramatic benefits of LSDF programs may resist quantification and may only be discernable in qualitative assessment or individual testimony.
- It is certain that life science research will have both economic and health benefits, but the magnitude and timeframe of those benefits are unpredictable.

Notwithstanding this caution, the boldness of Washington's life sciences ambition is inspiring: to provide better health for citizens, to create thousands of good jobs across the State, and to develop an economic engine to power future growth in Washington communities. In authorizing the LSDF, the Legislature has embraced these aspirations. In guiding its programs by an articulate ROI framework, the Life Sciences Discovery Fund Authority will make good on this promise.