



LIFE SCIENCES: PART OF WASHINGTON'S DNA

Life sciences encompass a wide range of disciplines, from biology to botany, genetics to immunotherapy, parasitology to pharmacology. Finding cures for cancer, deciphering the human genome, growing better crops, designing medical devices: All — and many more disciplines — contribute to the life sciences sector. These myriad fields employ some of our brightest and most creative people. And they offer unlimited opportunities for innovation to promote fuller, healthier lives.



When Governor Gregoire took office in 2005, she saw a bright future for the life sciences sector in our state, and it turns out that vision was prescient. While overall employment dropped across Washington during the Great Recession, the life sciences sector continued to add jobs. In fact, from January 2007 through March 2011, the number of jobs grew more than 9 percent in this sector, despite the challenging economic climate. In 2010, three of the 21 drugs approved by the Federal Food and Drug Administration were discovered and developed in Seattle.

Today, nearly 70 Washington cities are home to nonprofit life sciences organizations and some of the nation's premier research institutions that collectively garner billions of dollars in research funding each year. More than 160 biopharma and 250 medical technology companies are also located here. With the central Puget Sound at the nexus, the life sciences sector reaches to the east with the work of the Pacific Northwest National Laboratory and Washington State University, and to companies in the Tri-Cities and Spokane. It extends, too, to the south into the greater Vancouver area. These entities conduct lifesaving research and develop groundbreaking products that are exported around the world as they create good jobs for our families. The life sciences sector has far-reaching implications:

- » Adding nearly \$10.5 billion to the state's economy, including \$6.6 billion in personal income
- » Employing more than 90,000 people directly or indirectly in the state, making life sciences one of Washington's largest employment sectors

LIFE SCIENCES DISCOVERY FUND — BUILDING ON OUR NATURAL STRENGTHS

Realizing the power, promise and potential of this industry, the Governor proposed the creation of the Life Sciences Discovery Fund. Its purpose is to support innovative research and development in Washington state to promote life sciences competitiveness, enhance economic vitality, and improve health and health care. To accomplish this, the fund invests bonus money from the Master Tobacco Settlement Agreement that Governor Gregoire helped win as attorney general in 1998. This infusion

helped Washington to accomplish what few other states have done: strategically build on our foundation of research and development to enhance the growth of this essential sector while improving the health and well-being of Washington citizens.

Since 2007, the fund has distributed more than \$59 million in grants that have leveraged nearly \$400 million in follow-on funding from federal, private and corporate sources. Fund grantees are collaborating with more than 40 Washington companies — 20 of them start-ups — to bolster product development and jobs. The vetting, or review of grant proposals has made a number of fund grantees more attractive in the eyes of investors. This is due to the perception by investors that the rigorous due diligence performed by the fund in making a grant is another form of external validation of the value of the new device, drug or diagnostic.

The fund is fulfilling its mission to support the life sciences sector, improve health outcomes and save lives, as illustrated by the following examples of grantees:

- » A \$2 million grant helped University of Washington scientist Debbie Nickerson secure a \$25 million federal grant to expand her research into **genetic links to disease**. In three years, Dr. Nickerson's genome center has attracted \$132 million in grant funds as it deploys its new, rapid and less expensive DNA sequencing strategy. This has allowed scientists to discover genetic alterations that account for a rare disorder that causes multiple birth defects and mental retardation, along with genetic variations associated with cystic fibrosis and autism.
- » An investment in the Fred Hutchinson Cancer Research Center made it possible for more than 280 patients to enroll in the Clinical Trials Center for 34 trials to **test new drugs**. The center also helps regional companies get their products to market.



- » The I-LABS MEG (magnetoencephalography) Brain Imaging Center at the University of Washington is one of just a few in the United States and the first focusing on children. It is used to study how young minds develop and to learn the causes of, and **develop treatments for autism, dyslexia and learning difficulties**.
- » Development of the Surgical Care and Outcomes Assessment Program is improving patient safety and saving at least \$67 million in health care costs in Washington. Use of the **surgical checklist** is cutting down on the number of unnecessary surgeries and complications, and saving an estimated 357 lives over five years.
- » A new **network of rural primary care medical providers** is treating opiate addiction in an area of the state with few resources to confront this leading cause of accidental death.
- » Omeros Corporation is conducting research to **discover, develop and commercialize new drugs** to treat a variety of diseases ranging from mental and metabolic disorders to cancer.
- » **“Smart technology,”** such as sensors to detect human movement, is being developed to keep the elderly in their homes longer and more safely.

ADVANCING SCIENCE AND OPPORTUNITY THROUGH PUBLIC-PRIVATE PARTNERSHIPS

Washington's life sciences sector is built on strong pillars: our educational institutions, private businesses and nonprofit organizations, working together to foster innovation and deliver results.

Medical ultrasound imaging was invented at the University of Washington, and spawned a major ultrasound device industry in the Puget Sound region. In 2007, Governor Gregoire supported legislation which enabled the establishment of the **Medical Devices Innovation Partnership Zone** in Bothell, where industry, government and academia have joined forces to foster innovation and employment. More than 2,800 life sciences jobs are located in the Bothell innovation partnership zone, generating an estimated \$2.5 billion in gross revenues for the life sciences-related companies located there.

Global health is a vital, emerging field that intersects with the life sciences sector. Washington already has developed a reputation as a dynamic center for global health innovation, thanks to organizations and companies such as the Bill & Melinda Gates Foundation; PATH, an international nonprofit organization that develops and delivers high-impact, low-cost solutions, from lifesaving vaccines and devices to collaborative programs with communities; and Seattle Biomedical Research Institute, which strives to eliminate the world's most devastating infectious diseases. In fact, PATH and Seattle BioMed started a groundswell more than 30 years ago by targeting research and development efforts on diseases afflicting people in developing nations. This effort has been augmented by the Gates Foundation.



Washington State University is conducting some of the world's leading research in veterinary medicine, animal health and bio-agriculture. The University of Washington's global health department is one of its fastest growing divisions.

REACHING AROUND THE GLOBE

Some of our state's leading **corporate foundations are partnering with global health organizations** on initiatives such as blindness prevention. PACCAR Foundation, the philanthropic arm of the Washington-based PACCAR Company, partnered with SightLife, a Washington-based organization dedicated to the elimination of corneal blindness. Sightlife partnered with the Prasad Institute, a global player in the prevention of blindness, to establish the SightLife Corneal Tissue-Cutting Center at the L.V. Prasad Eye Institute in India. With these three great organizations working as one, people across India will have their sight restored using new technology that increases the chances of better corneal transplants and faster healing times.

In 2009, the Governor signed into law the **Washington Global Health Fund** to accelerate the commercialization of global health technologies and expand the global health sector in Washington. Grantees include the following companies located in Washington:

- » Aseptica, Inc, which has developed an agent to disinfect catheters and other medical devices and will replace less effective products now on the market.
- » SIGN Fracture Care International, which designs and manufactures orthopedic implants for use after traffic accidents, a leading cause of mortality and disablement in the developing world.

- » Mirador Biomedical, which has developed an innovative low-cost, pressure-sensing device that makes health care procedures easier to perform and safer for the patient.
- » Cascade Designs, which has partnered with PATH to develop affordable, accessible and reliable water treatment products for low-income customers in India.

At the same time technologies are being deployed across the world, technologies developed for emerging countries to cut costs and enhance health care delivery are being piloted here in south King County. **Global to Local** is a partnership of the Washington Global Health Alliance, Swedish Medical Center, Public Health Seattle & King County and HealthPoint to improve outcomes using global health tactics.

EXPORTING TO THE WORLD

Despite the lingering effects of the economic slowdown, Washington's life sciences exports are expanding. Over the past decade, Washington's pharmaceutical exports increased by nearly 278 percent and our medical products exports increased 179 percent. China is by far our biggest market, with export value reaching \$170 million in 2010, ahead of Japan and Canada. Understanding the vital importance of these and potential markets, Governor Gregoire led trade missions to China, India, France, Germany and Korea to promote the life sciences sector.

Indeed, on numerous trade missions, the Governor has helped the Washington Biotechnology & Biomedical Association to partner with foreign counterparts for the purpose of collaborating to find cures for the world's most dreaded diseases. Counterparts include peer organizations in Korea, India, Germany and China. The Governor was also instrumental in facilitating an agreement in 2006 with universities in Queensland, Australia, to collaborate on research with the University of Washington.