

**Life Sciences Sector**  
**Sector Strategy Update: June 2024**  
Prepared by Life Science Washington

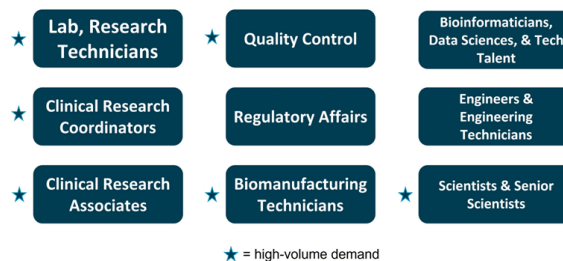
**Please describe the greatest workforce needs facing your sector, with a focus on needs that career connected learning strategies can help to address.**

As the sector lead for Life Sciences, Life Science Washington submitted its detailed strategy for the state of Washington on May 31, 2023. Washington’s life sciences industry, which includes majority jobs in the biotech industry, is anchored by its large and highly “specialized” research, testing, and medical labs subsector, which accounts for nearly half of industry jobs and much of the industry growth, particularly in pre-commercial biotech and other life sciences R&D operations. At the same time, the industry also has a large footprint in medical device manufacturing and sizable and rapidly growing pharmaceutical manufacturing employment.

Unlike other industries that might require large numbers of people in similar jobs, the life science industry faces a significant labor shortage, but the shortage is across a wide variety of jobs each with manageable demand. As you will see in the write-up below, the entry-level roles feed into talent for each of the high-demand, high-volume roles making it important to strategically build a large workforce pool. Our strategy focuses on building or scaling a limited number of targeted industry-higher education partnerships that target the highest demand jobs while expanding credentials and pathways to specific jobs along with an innovative proposal to leverage the state’s unique non-profit research infrastructure to help provide real-world laboratory experience to students. Since many life science companies are small or medium sized, research-focused organizations there’s also a significant need for someone (either the intermediary or educational institutions) to coordinate and aggregate industry involvement in programs, internships, and awareness activities.

We conducted detailed industry and occupational staffing patterns analyses for Washington’s life sciences industry to inform how the state is unique in its industrial composition and underlying occupational makeup. The detailed occupational employment analyses, considering size, recent growth, relative concentration/specialization, wages, and other factors, in combination with conversations with over 20 Washington-based life sciences companies, were used to identify **NINE** “high-demand, high-priority” occupations to inform strategic interventions and investments (Figure 1).

**Figure 1: High-Demand, High Priority Life Sciences Industry Occupations**



Based on the extensive interviews, we identified the demand for specific occupations and skills, as well as learned about strategic challenges and important workforce dynamics facing Washington life sciences companies, including:

- **A major emphasis by companies and biomedical research institutions is on the need for real-world experience developed by working in labs or on production lines along with knowledge of business operations.** Many companies require several years of experience, for example, for lab technicians, clinical research associates or scientists. This is a challenge and significant barrier for those seeking entry into the industry and important to address through initiatives put forth in the recommendations section.
- **A consistent theme emerged around a major need for career awareness of the industrial life sciences industry.** Students, teachers, and parents are unaware of the breadth of state companies and career opportunities and talent pipelines are suffering from this lack of awareness.
- **There is a lack of clear education and training pathways, credentials, and skills needed for the diversity of jobs in the industry.** The education and workforce system needs to establish a greater diversity of credentials, experiential learning, and recognized pathways (modular layering of on- and off-ramps training) to enable various career paths in response to demand across a wide swath of life sciences employers.
- **There is a need to significantly expand the limited higher education and workforce programs recognized by industry to meet demand.** There are a handful of programs at several community colleges and universities that focus on life science careers, but not enough volume for industry to consider them a primary channel to meet demand.
- **Several barriers to sourcing talent from outside the state have been emphasized by industry,** which are difficult to overcome in the short term, including high cost of living in Greater Seattle, perception of more limited opportunity within the state industry cluster, competition with higher-paying industries, and difficulty incorporating remote work models that are in high demand by top talent.

As a result of this study, we have identified **FIVE** key priorities:

1. **Strategic Priority 1: Fund targeted higher education institutions to scale and expand new programs in partnership with a consortium of companies with similar talent needs to meet the needs of high demand jobs and roles.**

**Recommendation 1.1:** Provide support for curriculum development/expansion and industry engagement at targeted institutions to scale existing programs by increasing capacity.

**Recommendation 1.2:** Fund initiatives to replicate programs and broaden geographical reach through expansion to additional educational institutions.

2. **Strategic Priority 2: Prioritize and proactively increase career awareness and career support functions (like navigators) to connect life science industry and students.**

**Recommendation 2.1:** For K-12 populations across the state, engage in career

awareness to help students understand the diversity and accessibility of career opportunities within the life science industry. Programs like “You can be a Scientist!” developed by Bristol Myers Squibb offers such exposure.

**Recommendation 2.2:** For 2-year and 4-year degree populations, fund career navigator positions at targeted higher education institutions to enhance career awareness and to help students understand and prepare for the diversity of career opportunities within the life science industry.

3. **Strategic Priority 3: Advance diversity equity and inclusion (DEI) efforts through internships across the industry that provide personnel, resources, and support to expand diversity within in-state workforces.**

**Recommendation 3.1:** Fund non-profit education partners to prepare students for the Life Science Washington Scholars Internship Program to advance DEI within the life sciences industry by supporting, preparing, and matching diverse talent to Washington companies.

4. **Strategic Priority 4: Develop a Technical Residency Program by leveraging state-of-the-art laboratory infrastructure at non-profit research institutes that can provide hands-on experiential learning and development of diverse market-ready life science skills.**

**Recommendation 4.1:** Partner our colleges with our world-class non-profit research institutes to create a multi-year Technical Residency program that combines a degree or credential program with real-world laboratory experiences.

5. **Strategic Priority 5: Maintain Sector Intermediary to coordinate and scale industry involvement in awareness, education, and workforce initiatives.**

**Recommendation 5.1:** Since most life science companies are small to medium sized, research-focused companies, they lack the internal resources or scale to engage productively with education and workforce partners individually. A sector intermediary is needed to help companies participate in curriculum development, internship programs, career awareness activities, and coordinate new initiatives like the technical residency.

The Life Science industry offers individuals a diverse career path depending on the individual’s interest. The life science ecosystem Washington has a strong focus on Research and Development seeking individuals keen on bench work, a combination of mature companies and maturing companies provide opportunities for business development roles, quality control and regulatory roles. Roles that require pre-clinical and clinical trial talent to realize the impact of various diagnostics, therapeutics and medical devices innovation. The career pathways intertwine and, depending on specialization or generalist roles, offer individuals the flexibility to transition careers depending on passion, financial needs and career stability needs.

**Between now and June of 2025, what are your sector’s 3-6 occupations that are highest-priority for building supportive career connected learning pathways? Please focus on occupations that lead to economic self-sufficiency.**

The below mentioned roles are interconnected with each other and offer growth opportunities for individuals as they look to make transitions during their career journey in Life Sciences.

- Lab Research Technicians & Clinical Research Coordinators
- Biomanufacturing Technicians
- Quality Control Associate and Scientist

For each of the occupations identified above, please provide the information below to help inform pathway development efforts and investments.

<b>Occupation:</b> Technicians (Lab, Biomanufacturing)	<b>Sub-sector:</b> Research and Development
<b>Average wage: \$29.65/hour (Range: \$17 - \$51.48/hour)</b>	
<p><b>Which skills/competencies do employers use as a benchmark to hire someone in this occupation?</b></p> <p><b><u>Technical Skills:</u></b></p> <ul style="list-style-type: none"> <li>● Aseptic hygiene training</li> <li>● Analytical skills</li> <li>● Sample preparation and testing</li> <li>● Data Collection</li> <li>● Instrumentation management and experience</li> <li>● Understand basics of molecular biology, instrumentation techniques,</li> <li>● Develop sterile solutions and media prep</li> <li>● Dosage Formulations</li> <li>● Specific instrumentation experience e.g. High Performance Liquid Chromatography (HPLC), UV-Visible Spectroscopy</li> <li>● Familiarity with experimental design and selection of treatment versus control groups and positive/negative controls</li> <li>● Documentation preparation: Develop standard protocol development to ensure repeatability</li> <li>● Bioethics, basic statistics</li> <li>● Conduct literature review to support</li> </ul>	<p><b>Which credentials do employers cite as a valuable benchmark to hire someone in this occupation?</b></p> <p><b><u>Formal Certificate/degree-based Training:</u></b></p> <ul style="list-style-type: none"> <li>● Prerequisites in Biology, Chemistry and Math is expected along with           <ul style="list-style-type: none"> <li>○ 2-year Associates degree with hands-on laboratory experience.</li> <li>○ 4-year college degree in STEM with Biology or molecular biology focus with hands-on laboratory experience. Typically focusing on multiple years of course work in Chemistry, Biology, Statistics etc.</li> </ul> </li> <li>● Biotech Lab Specialist - 2-year Associates degree and/or 1 year certification offered at Shoreline Community College is recognized by most life science companies in Washington.</li> </ul> <p><b><u>On the job Hands-on Training:</u></b></p> <ul style="list-style-type: none"> <li>- 2-year or 4-year degree in STEM with hands-on lab experience in non-profit lab settings like University of Washington, Seattle Campus, Fred</li> </ul>

<p>experimental efforts</p> <p><b>Professional Skills:</b></p> <ul style="list-style-type: none"> <li>- Critical Thinking</li> <li>- Attention to detail and methodical approach to projects</li> <li>- Organization</li> <li>- Communication Skills</li> <li>- Time management skills:             <ul style="list-style-type: none"> <li>- Meeting project deadlines</li> <li>- Planning for time sensitive experiments</li> <li>- Managing experimental verification for instrumentation usage</li> </ul> </li> <li>- Ability to train others e.g. Technician level 1, undergraduate assistant etc.</li> <li>- Presentation Skills</li> <li>- Computer skills like familiarity with Microsoft suite for data entry, data processing, and maintaining and updating scientific methodology, write reports and writing skills for scientific publications</li> <li>- Ability to manage and juggle multiple projects</li> <li>- Willingness to learn</li> <li>- Applying knowledge from classroom to problem solving contexts within laboratory settings</li> <li>- Vendor relationships</li> <li>- Self-advocacy</li> </ul>	<p>Hutch, Institute of Systems Biology, Allen Institute etc.</p>
<p><b>Please describe possible career progression opportunities for this occupation:</b></p> <p>A Lab Technician can pursue multiple pathways and feed into the additional high demand high volume roles like Scientist, and Quality Control.</p> <ul style="list-style-type: none"> <li>- <u>Technical Pathway</u>: Quality Control Scientist, Scientist, Scientist 1,2,3; Senior Scientist.</li> <li>- <u>Higher Education Pathway</u>: Graduate with a PhD and transition into the workforce at a senior role as a team manager. Receive an MBA and transition into Business Development or Sales.</li> </ul>	
<p><b>Please share the data, employer feedback, and/or Regional Network feedback that helped you identify this as a high-priority occupation:</b></p> <p>Based on the cumulative data we collected from LightCast from 2020 - 2022, we learnt that there are over 1000 Lab Technicians roles available in various life science companies. Employers shared that this role is critical within companies that have a strong research and development as well as operation focus and requires individuals with skills as mentioned</p>	

above. Lab technicians support various lab needs and they are required to be technically sound in this supportive role.

**Please describe the top barriers employers have identified to hiring for this occupation:**

- Lack of programs training individuals in this role.
- Difficulty in retaining talent due to high demand for this role. Individuals with a few years of experience are poached by other bigger companies, impacting the efforts of the smaller and mid-sized organizations.

**Please describe the type of programs or approaches employers have found helpful in hiring for this occupation:**

- Shoreline Community College’s Biotechnology program - The Lab Biotechnology Specialist
- Individuals who have been trained at non-profit research institutes like Fred Hutch, Institute of Systems Biology, Allen Institute, Benaroya Research Institute.

**Occupation:** Quality Control/Regulatory Affairs

**Sub-sector:** Clinical Trials, Biomanufacturing and Medical Devices.

- **Average wage: \$/hour 40.81 (Range: \$17 - \$51.48/hour)**

**Which skills/competencies do employers use as a benchmark to hire someone in this occupation?**

**Technical Skills:**

- Aseptic hygiene training
- Analytical skills
- Documentation preparation and management: Develop standard protocol development to ensure repeatability
- Sample preparation and testing
- Stability Testing
- Testing against specifications
- Testing packaging materials
- Data Collection
- Instrumentation management and experience
- Understand basics of molecular biology, instrumentation techniques,
- Develop sterile solutions and media prep
- Familiarity with experimental design and selection of treatment versus

**Which credentials do employers cite as a valuable benchmark to hire someone in this occupation?**

**Formal Certificate/degree-based Training:**

- Prerequisites in Biology, Chemistry and Math is expected along with
  - 2-year Associates degree with hands-on laboratory experience.
  - 4-year college degree in STEM with Biology or molecular biology focus with hands-on laboratory experience. Typically focusing on multiple years of course work in Chemistry, Biology, Statistics etc.
- Biotech Lab Specialist - 2-year Associates degree and/or 1 year certification offered at Shoreline Community College is recognized by most life science companies in Washington.
- 10 week - Biomanufacturing Certificate

<p>control groups and positive/negative controls</p> <ul style="list-style-type: none"> <li>• Bioethics, basic statistics</li> <li>• Conduct literature review to support experimental efforts</li> </ul> <p><b><u>Professional Skills:</u></b></p> <ul style="list-style-type: none"> <li>- Critical Thinking</li> <li>- Attention to detail and methodical approach to projects</li> <li>- Organization</li> <li>- Communication Skills</li> <li>- Time management skills:             <ul style="list-style-type: none"> <li>- Meeting project deadlines</li> <li>- Planning for time sensitive experiments</li> <li>- Managing experimental verification for instrumentation usage</li> </ul> </li> <li>- Ability to train others e.g. Technician level 1, undergraduate assistant etc.</li> <li>- Presentation Skills</li> <li>- Computer skills like familiarity with Microsoft suite for data entry, data processing, and maintaining and updating scientific methodology, write reports and writing skills for scientific publications</li> <li>- Ability to manage and juggle multiple projects</li> <li>- Willingness to learn</li> <li>- Applying knowledge from classroom to problem solving contexts within laboratory settings</li> <li>- Vendor relationships</li> <li>- Self-advocacy</li> </ul>	<p>at Shoreline Community College.</p>
<p><b>Please describe possible career progression opportunities for this occupation:</b></p> <p>A Quality Control can pursue multiple pathways</p> <ul style="list-style-type: none"> <li>- <u>Technical Pathway:</u> Quality Control Scientist, Senior Quality Control Scientist, Development Scientist, Quality Control Supervisor, Senior Quality Manager, Validation Specialist, Senior Development Scientist</li> </ul>	
<p><b>Please share the data, employer feedback, and/or Regional Network feedback that helped you identify this as a high-priority occupation:</b></p> <p>With every two lab/biomanufacturing technician roles there is a need for one Quality Control role. This need was expressed by multiple research and development and manufacturing based companies.</p>	



**Please describe the top barriers employers have identified to hiring for this occupation:**

The lack of Lab technician role impacts the feeding into this role as many individuals do not see this as an opportunity. The attention to detail and need for scientific rigor has been lacking and is training that companies must take upon themselves as an investment in the role and individual.

**Please describe the type of programs or approaches employers have found helpful in hiring for this occupation:**

- Shoreline Community College has been a viable program for these roles.
- Companies have internally trained individuals as they have looked to transition and grow within their careers.

**Occupation:** Scientist and Engineering

**Sub-sector:** Research and Development  
Clinical Trials, Biomanufacturing and Medical Devices.

- **Average wage: \$59.33/hour**

**Which skills/competencies do employers use as a benchmark to hire someone in this occupation?**

**Technical Skills:**

- Aseptic hygiene training
- Analytical skills
- Documentation preparation and management: Develop standard protocol development to ensure repeatability
- Sample preparation and testing
- Stability Testing
- Testing against specifications
- Testing packaging materials
- Data Collection
- Instrumentation management and experience
- Understand basics of molecular biology, instrumentation techniques,
- Develop sterile solutions and media prep
- Familiarity with experimental design and selection of treatment versus control groups and positive/negative controls
- Bioethics, basic statistics
- Conduct literature review to support experimental efforts

**Which credentials do employers cite as a valuable benchmark to hire someone in this occupation?**

**Formal Certificate/degree-based Training:**

- Prerequisites in Biology, Chemistry and Math is expected along with
  - 2-year Associates degree with hands-on laboratory experience.
  - 4-year college degree in STEM with Biology or molecular biology focus with hands-on laboratory experience. Typically focusing on multiple years of course work in Chemistry, Biology, Statistics etc.
- Biotech Lab Specialist - 2-year Associates degree and/or 1 year certification offered at Shoreline Community College is recognized by most life science companies in Washington.
- 10 week - Biomanufacturing Certificate at Shoreline Community College.
- Graduate programs nationally



<p><b><u>Professional Skills:</u></b></p> <ul style="list-style-type: none"> <li>- Critical Thinking</li> <li>- Attention to detail and methodical approach to projects</li> <li>- Organization</li> <li>- Communication Skills</li> <li>- Time management skills:             <ul style="list-style-type: none"> <li>- Meeting project deadlines</li> <li>- Planning for time sensitive experiments</li> <li>- Managing experimental verification for instrumentation usage</li> </ul> </li> <li>- Ability to train others e.g. Technician level 1, undergraduate assistant etc.</li> <li>- Presentation Skills</li> <li>- Computer skills like familiarity with Microsoft suite for data entry, data processing, and maintaining and updating scientific methodology, write reports and writing skills for scientific publications</li> <li>- Ability to manage and juggle multiple projects</li> <li>- Willingness to learn</li> <li>- Applying knowledge from classroom to problem solving contexts within laboratory settings</li> <li>- Vendor relationships</li> <li>- Self-advocacy</li> </ul>	
<p><b>Please describe possible career progression opportunities for this occupation:</b></p> <p>Scientists and Engineer can pursue multiple pathways</p> <ul style="list-style-type: none"> <li>- <u>Technical Pathway:</u> Scientist 1,2,3; Senior Scientist; Supervisor; Principal Investigator, Department head.</li> </ul>	
<p><b>Please share the data, employer feedback, and/or Regional Network feedback that helped you identify this as a high-priority occupation:</b></p> <p>Washington state’s focus is on the research and development space. The employers stated the need for research and testing as being critical in the initial phase of platform or product development during pre-clinical trial phases to support the advancement of products to become clinically relevant for FDA approval.</p>	
<p><b>Please describe the top barriers employers have identified to hiring for this occupation:</b></p> <p>Lack of talent has meant poaching talent from the smaller companies, which has impacted</p>	

their retention portfolio. The lack of higher ed presence besides the University of Washington system has meant fewer graduates interested in transitioning into the workforce.

**Please describe the type of programs or approaches employers have found helpful in hiring for this occupation:**

University of Washington, Seattle, Fred Hutch, Allen Institute, and Institute of Systems Biology have been typical resources for hiring talent.

**For each region below, which workforce education & training programs are *effectively* meeting employer needs, or could effectively meet their needs with adjustment or expanded capacity? Where relevant, please color code responses to reflect their relevance to specific occupations.**

**Please provide your color-coding key below:**

- High Industry Engagement
- Needs Industry Engagement
- Career Launch Endorsed
- Career Prep
- Career Explore
- Post-Secondary

<b>Capital</b>	
<b>East</b>	<ul style="list-style-type: none"> <li>● Spokane Community College <ul style="list-style-type: none"> <li>○ Needs funding for Launch</li> <li>○ Needs Industry Engagement</li> </ul> </li> <li>● Eastern Washington University, Biotechnology <ul style="list-style-type: none"> <li>○ Needs Career Prep funding</li> <li>○ Needs Industry Engagement</li> </ul> </li> </ul>
<b>King &amp; Pierce</b>	<ul style="list-style-type: none"> <li>● Shoreline Community College - Biotechnology Program <ul style="list-style-type: none"> <li>○ Has career launch endorsement</li> <li>○ High Industry Engagement - Advisory Board</li> <li>○ Needs additional Industry Engagement for Internship pathways</li> </ul> </li> <li>● UW Bothell <ul style="list-style-type: none"> <li>○ Needs funding for Career Prep</li> <li>○ High Industry Engagement - Advisory Board</li> </ul> </li> <li>● UW, Seattle <ul style="list-style-type: none"> <li>○ Needs additional Industry Engagement for Internship pathways</li> </ul> </li> </ul>
<b>Mid-Columbia</b>	<ul style="list-style-type: none"> <li>● Washington State University, Tri-Cities - Immunology and Biology <ul style="list-style-type: none"> <li>○ Needs Industry Engagement</li> </ul> </li> </ul>
<b>North Central</b>	
<b>Northwest</b>	<ul style="list-style-type: none"> <li>● Edmonds College - Needs funding</li> </ul>
<b>South Central</b>	
<b>Southwest</b>	<ul style="list-style-type: none"> <li>● Washington State University, Vancouver - Neuroscience <ul style="list-style-type: none"> <li>○ Needs Industry Engagement</li> </ul> </li> </ul>

**Between now and June of 2025, where is there regional momentum to support pathway development in this occupation?**

*For each region listed, please describe:*

1. Key **momentum factors** (e.g., interested employers, high-priority for Regional Network, opportunity to improve equitable access, opportunity to scale existing programs, portions of CCW pathway already built)
2. **High-potential opportunities** to support pathway development
3. Is supporting those high-potential opportunities a **shared priority** across SL and RN?

- **King & Pierce:**

- High-potential opportunities: Large presence of small, mid-size and large companies keen to participate in solutions to workforce needs. There is deep interest in being a resource for education development, curriculum and program advisory. The higher education partners and non-profit research partners are in this region and currently the source for talent and are key to creating pathways to scale the talent pool.
- Shared priority: The Industry partners are part of advisory boards and provide insights about curriculum needs as well as are thought partners in providing information on opportunities like internships and roles for qualified individuals. The missing piece to build this workforce pathway is support for curriculum development that will be needed to support faculty hours in addition to the teaching workload.

- **East:**

- High Potential Opportunities: Jubilant Hollister-Stier at Spokane recently built a third Biomanufacturing facility to meet the growing need for materials for Biomanufacturing. The new facility will require an additional 200 biomanufacturing talent over the next two years. This is an immediate need for – Career Prep and Career Launch support for Eastern Washington University and Spokane Community College to develop or replicate Shoreline Community College’s 10-week Biomanufacturing certification, as it aligns well with the career connected learning strategies to bring Industry and workforce partners to solve the supply issue of the talent pool.

**What is needed to increase participation of BIPOC students in your sector’s high priority occupations? To increase participation of students from rural areas? Which programs are doing this well?**

The industry has both a strategic and immediate talent need to advance diversity, equity, and inclusion or “DEI”, in part through student and early career connections. The life sciences industry in Washington is keen to diversify its workforce to encourage varied approaches to innovative problem solving. As complexities are increasing within research and innovation spaces, it is becoming evident that there is a need for increasing representation within the life sciences ecosystem. The lack of accessibility to industry, career awareness, wraparound support, mentorship, and expectation of fitting into the system has impacted representation of underserved and diverse communities. Additionally, the prevailing narrative that students need to pursue higher education as the sole path to career success in life sciences has deterred numerous individuals, resulting in systematic under representation for certain demographic groups and populations.

The persistence of interpersonal and structural inequities faced by underserved and underrepresented communities has impacted representation within the workforce. The life science industry has shown their understanding of the urgency of the issue and is involved at grassroots levels in improving representation. Increasing opportunities for individuals from underserved populations requires a dedicated program that offers accessibility to opportunities, financial and infrastructure support, multiple professional and programmatic mentors to navigate various stages of personal and professional development. To overcome these issues there needs to be sustainable long-term support for such programs that support underserved communities in mitigating inequities, connecting them to various career and internship opportunities, and tracking longitudinal growth of individuals.

Systemic changes occur when grassroots initiatives are in alignment with top-down initiatives, and identifying common ground becomes critical. Life Science Washington (LSW) facilitated a DEI Workgroup that over a span of 6 months developed best practices for Life Sciences internship programs and adapted learnings from Life Science Cares Internship program in Boston to develop the Life Science Washington Scholars Internship Program (LSWSIP). LSW has played a critical role in supporting and advocating for life science companies and providing connections to build a healthy life science ecosystem and has over 500 life science companies as members. In the State of Washington, the Washington State Opportunity Scholars (WSOS) provides scholarships and support services to eligible candidates from underserved and underrepresented communities to pursue education and provide career guidance. We recommend that WSOS receive support to build out the Life Science Washington Scholars Internship Program (LSWSIP) with Life Science Washington.

The life science industry has shown urgency and is involved at a grassroots level in improving representation as companies and industry leaders realize the value of diverse perspectives towards problem solving and innovation. The critical aspects to improving representation relies on (1) identifying a pool of candidates, (2) having operational capacity involving recruiting, providing career and professional development training, (3) matching individuals within the cohort with appropriate life science industries, and (4) tracking the career paths of individuals.

- WSOS will select a cohort of 15-20, 3<sup>rd</sup> year (juniors) learners pursuing a 4-year degree, provide them with career guidance support, and work with LSW to match them with industry mentors in partnership with LSW to prepare them for internship opportunities. This program is being proposed as a pilot, but it will be important to provide regular support for the coordinator(s) to be able to manage multiple cohorts, provide longitudinal study tracking individuals and eventually scale the program to over 100 scholars. DEI initiatives require long-term support at such grassroots level to mitigate inequities and following the career journey of individuals will provide evidence-based support to continually refine the program.
- Support for Industry to develop Career Exploration pathways in partnership with school districts/regions and higher ed partners. Bristol Myers Squibb in partnership with Seattle School districts has proposed a Career Exploration pathway “You can be a Scientist”, which is focused on tours, staff presentation and involvement.
- Need for wrap around support like housing stipend for internships will be critical for individuals interested and qualified from regions outside of Seattle. Most of the Life Sciences companies are based in the Seattle and Greater Seattle area, which means

the high cost of living and lack of affordable housing adds as a barrier for individuals from rural and underserved populations. While some roles might afford remote working, most of the lab-based research requires individuals to be physically present. While Industry is open to providing internships, additional wrap around support would reduce the barriers for qualified talent not based in Seattle.

**What overarching strategies do you recommend to support pathway development for the highest-priority occupations in your sector?**

As the Sector lead for Life Sciences, we put forward recommendations in our strategy (submitted on May 31, 2023) to focus on building higher ed capacity and have a coordinated career awareness approach between life science industry and school districts. While Industry support and demand exists, higher ed capacity needs to be supported and built. This will require funding support for workforce programs that are and have developed industry aligned curriculum. Industry partners have mentioned in various conversations specific programs that they support and the need to scale them to capacity. These programs will be a template for expansion of the program across the state to meet the growing needs for above mentioned high demand high volume roles.

- 1. Fund targeted higher education institutions to scale and expand new programs in partnership with a consortium of companies with similar talent needs to meet the needs of high demand jobs and roles.**
  - a. Recommendation 1.1:** Provide support for curriculum development/expansion and industry engagement at targeted institutions to scale existing programs by increasing capacity. Programs across the state which serve various parts of the life sciences ecosystem have differing needs which can be addressed through targeted investments to scale existing program activity. Some targets for significant state investment should include:
    - i.** The Shoreline programs are seen as highly effective and considered well resourced, but output needs to be scaled dramatically. Discussions with companies indicate a near-term need for hundreds of graduates from the combined AAAS and certificate programs—levels that far exceed those generated today. The biotechnology program at Shoreline Community College is a career launch endorsed program that offers (1) 2-year degree and a 1-year certification as Lab Biotechnology Specialist, (2) 10-week Biomanufacturing program typically suited for post baccalaureate learners, and (3) Pilot program with Fred Hutch that includes coursework at Shoreline Community College and hands-on lab experience at specific labs in Fred Hutch. Funding through Career Launch programs and Career Prep will help scale graduates from the program.
    - ii.** The new CBIT initiative at UW-Bothell needs multi-year support to expand curriculum, hire faculty and launch industry partnerships to alleviate the workload on existing faculty and staff who are stretched thin. CCW should invest to enable the full build-out of the Center, in particular supporting expansion of the leadership team which is expected to be the primary driver of industry partnerships as well as the physical place-based infrastructure for training and education. Funding

in the form of Career Prep will help develop the curriculum and will potentially become Career Launch Program within 12-18 months of curriculum development.

- iii. The University of Washington has numerous critical programs for the life sciences industry, serving as the state's primary developer of talent in 4-year and graduate degrees aligned with traditional life sciences skill sets. Because its graduates are seen as high quality, there is often intense competition for a limited supply both with other STEM-intensive industries as well as amongst companies within the life sciences industry. CCW should invest to ensure UW-Seattle and UW-Bothell have the resources required to scale up in the near term, in particular significant investments to allow for cluster hires of faculty and consistent faculty salary resources in key life sciences-related areas such as bioengineering and bio- and healthcare informatics to improve degree production. Conversations with UW stakeholders noted that there are significant supply constraints facing the ability of the university to produce graduates, with potential talent sometimes flowing to universities in neighboring states due to lack of capacity. Stakeholders also noted the potential for investment to provide funding for internal competitive awards designed to expand multidisciplinary areas critical to the future of life sciences such as large-scale healthcare and bioinformatics data management, medical imaging, and other digital health-related applications. Funding through Career Prep.
  - iv. Washington State University (WSU) is an untapped source for talent. As mentioned previously, the university offers several 4-year degree programs aligned with industry roles. As mentioned in the table above, the multiple WSU campuses provide opportunities through Career Awareness programs to build and increase industry engagement and increase hiring pool. To expand the talent pool, it would be vital to create a statewide recruitment strategy that increases the visibility and awareness of talent graduating from WSU.
  - v. Additionally, as early-stage start-ups start to grow and transition into clinical trials and manufacturing phases of therapeutics and device development, there will be a growing need for new programs to sustain the talent supply needs.
- b. Recommendation 1.2:** Fund initiatives to replicate programs and broaden geographical reach through expansion to additional educational institutions.
- i. Fund Eastern Washington University, Spokane Community College to scale and expand programs in partnership with a consortium of companies to develop industry focused curriculum. Jubilant Hollister-Stier at Spokane recently built a third Biomanufacturing facility to meet the growing need for materials for Biomanufacturing. The new facility will require an additional 200 biomanufacturing talent over the next two years. This is an immediate need for Career Prep and Career Launch support, as it aligns well with the career connected learning strategies to bring Industry and workforce partners to solve the supply issue of the talent pool. Life Science Washington is committed to working with Shoreline Community College's Biotechnology Program in an advisory capacity to develop industry aligned curriculum. However, such career connected learning needs to be replicated and expanded to train entry-



- level talent as well as additional hands-on training across diverse regions in the state of Washington.
- ii. UW Bothell's CBIT program also provides a unique opportunity for Industry partners and faculty to work closely, and devise project based and Capstone programs that will provide learners with opportunities to get industry related experience within the classroom set up as well as expose Industry impact on individuals and faculty. This requires awareness of the program to Industry partners. The Industry-Education partnership will provide a solid foundation for increasing awareness within the K-12 space for teachers, counselors and students to align with skills needed to transition into Life Sciences.

**2. Prioritize and proactively increase career awareness and career support functions (like navigators) to connect life science industry and students.**

**Recommendation 2.1:** For K-12 populations across the state, engage in career awareness to help students understand the diversity and accessibility of career opportunities within the life science industry. It is becoming increasingly evident that career awareness at the K-12 phase is essential. Programs like "You can be a Scientist!" developed by Bristol Myers Squibb offers such exposure. Since the submission of our strategy, we have been connecting our Industry members with K-12 and Higher Education programs. As a member organization, LSW is partnering with WABS to increase awareness of companies in the form of Company tours with clusters of schools from School districts. These tours are being extended to education programs that support Biotechnology degrees and certifications in extending the awareness of education programs that support training of talent in Life Sciences. We are seeking more centralized regional support to connect and increase awareness of Life Sciences.

**Recommendation 2.2:** For 2-year and 4-year degree populations, fund *career navigator* positions at targeted higher education institutions to enhance career awareness and to help students understand and prepare for the diversity of career opportunities within the life science industry. As detailed above in the sections of high demand-high volume jobs entry-level roles open vast diverse career transitions within Life Sciences. Due to the interconnectedness and non-linear pathways in Life Sciences there is a need for *career navigators* to educate and guide talent and their support structures i.e. parents, teachers and counselors about careers in Life Sciences rather than specific role-filling jobs. These *career navigators* act as recruitment agents for the ecosystem as well as resources to attract individuals from underserved communities.

**3. Strategic Priority 3: Advance diversity equity and inclusion (DEI) efforts through internships across the industry that provide personnel, resources, and support to expand diversity within in-state workforces.**

**Recommendation 3.1:** Fund non-profit education partners to prepare students for the Life Science Washington Scholars Internship Program to advance DEI within the life sciences industry by supporting, preparing, and matching diverse talent to Washington companies.



**4. Strategic Priority 4: Develop a Technical Residency Program by leveraging state-of-the-art laboratory infrastructure at non-profit research institutes that can provide hands-on experiential learning and development of diverse market-ready life science skills.**

**Recommendation 4.1:** Partner our colleges with our world-class non-profit research institutes and interested companies to create a 2-year Technical Residency program that combines a degree or credential program with real-world laboratory experiences. Shoreline Community College in partnership with Fred Hutch ran a pilot program with running start high school students and have identified a curriculum that might support hands-on training. This can be opened to 2-year degree pursuing individuals to create a hands-on training pathway with the appropriate funding model. One funding model that might help support this program is the **Enrollment Funding** whereby the Shoreline Community College would receive the enrollment funding for two years which would involve the student FTEs to receive the education at Shoreline Community College and gain hands-on experience at participating non-profit research organizations. This support would help alleviate the self-funding model that the non-profit research institutes are currently relying on to increase the scale and provide sustainability to the program.

**5. Strategic Priority 5: Maintain Sector Intermediary to coordinate and scale industry involvement in awareness, education, and workforce initiatives.**

**Recommendation 5.1:** Since most life science companies are small to medium sized, research-focused companies, they lack the internal resources or scale to engage productively with education and workforce partners individually. A sector intermediary is needed to help companies participate in curriculum development, internship programs, career awareness activities, and coordinate new initiatives like the technical residency. Life Science Washington is coordinating an annual career awareness portfolio that would connect above mentioned higher education programs with industry partners in the form of Industry Career Panels, in-class Guest speakers, Career Fair, Career and Professional Development workshops. We have identified the needs of our 2-year and 4-year higher education partners and will identify interested partners for each of the above-mentioned programs.

**Between now and June of 2025, how will you prioritize your time, attention, and resources as a sector leader to support regional pathway development and advance the recommendations above? What specific actions will you take?**

Life Science Washington is dedicated to leveraging its Industry members to intentionally build partnerships, collaborations, internships and opportunities with higher education and K-12 programs. Our unique position helps us connect with key partners as well as advocate for explore, prep, and launch programs that will increase awareness of life science careers and build workforce talent to meet the high needs of the industry. LSW is positioned well as a sector leader, with deep engagement and partnerships connecting various stakeholders. Most of the Life Science presence is on the west side in the Seattle and Greater Seattle area, with additional Biomanufacturing industry in Spokane. We host the Life Science Innovation NorthWest (LSINW) annually, which is a northwest focused conference for Life Science companies to interact with each other as well as share their challenges and interests in terms

of deepening their presence in Washington state. In addition to LSINW, we also host the East-West Summit that connects Life Science Companies in the Spokane area with interested companies on the west side of Washington state.

To ensure the implementation of our strategies, we require a broader approach in state funding opportunities where Career Exploration, Career Prep and Career Launch are supported each career builder round. The various workforce programs mentioned in the table above require funding support in the form of curriculum development, statewide and regional infrastructural support to connect industry partners with K-12 school districts and Higher Education partners.

LSW will be carrying Industry-student Career Awareness and DEI Internship by self-supporting these two strategies. The scale and expansion of targeted higher education programs will require immediate state funding to develop a diverse workforce talent pool.

**Strategic Priority 1: Fund targeted higher education institutions to scale and expand new programs in partnership with a consortium of companies with similar talent needs to meet the needs of high demand jobs and roles.**

**Recommendation 1.1:** Provide support for curriculum development/expansion and industry engagement at targeted institutions to scale existing programs by increasing capacity.

**Action:**

At UW Bothell, CBIT's Career Prep proposal was not considered during the Career Builder Round 12 RFP opportunity. CBIT needs funding support for curriculum development that will mature to "launch" status within 12-18 months. This is one of the targeted higher education programs that is career connected with well formed partnerships with Life Science companies. CBIT will be submitting its proposal for the next round of Career Builder, which we will support. CBIT has been seeking federal and private funding over the past 6 months to accelerate support for curriculum development to ensure industry engagement and involvement.

**Recommendation 1.2:** Fund initiatives to replicate programs and broaden geographical reach through expansion to additional educational institutions.

**Action:**

Jubilant HollisterStier (JHS) with its newly built biomanufacturing line (supported by BARDA) is anticipating the need of close to 200 workers to meet their growing needs. A convening of 2-year community colleges (e.g. Spokane Community College) and 4-year programs (e.g., Eastern Washington University) with JHS' hiring staff was held to understand ways to replicate the 10-week Biomanufacturing program run by Shoreline Community College's Biotechnology Program. Dr. Rachel Rawle, the Director of the Biotechnology Program, has been invited at the East-West Summit as a panelist on bridging education and hiring needs in Life Sciences to facilitate the replication of the program. This partnership between JHS and Spokane-based education programs will be an ideal for supporting a Career Launch program on the eastside of Washington state.

We are looking to forge a partnership between Shoreline Community College and Industry and education programs in the Spokane area to replicate and expand the 10-

week Biomanufacturing program based on the needs of the area.

**Strategic Priority 2: Prioritize and proactively increase career awareness and career support functions (like navigators) to connect life science industry and students.**

**Recommendation 2.1:** For K-12 populations across the state, engage in career awareness to help students understand the diversity and accessibility of career opportunities within the life science industry. Programs like “You can be a Scientist!” developed by Bristol Myers Squibb offers such exposure.

**Action:**

LSW is leading the industry-student engagement by working closely with Washington Alliance for Better Schools (WABs) by connecting school districts within King and Pierce county by facilitating company tours as well as career panel discussions exploring the career journeys and opportunities in Life Sciences as a 2-year, 4-year graduate in addition to PhD routes. We have had interest from Bristol Meyer Squibb, Sana Biotechnology, AGC Biologics, Shoreline Community College and UW Bothell’s CBIT.

Additionally, we have learned through conversations with organizations like Fred Hutch, who have been leading efforts to support teachers from school districts within Seattle and the Greater Seattle area. There is a need to provide financial support for educational kits (like Shoreline Biotechnology kits) that offer opportunities for teachers to improve curriculum across various districts, increases engagement for students, and provides insights into opportunities within Life Sciences.

**Recommendation 2.2:** For 2-year and 4-year degree populations, fund career navigator positions at targeted higher education institutions to enhance career awareness and to help students understand and prepare for the diversity of career opportunities within the life science industry.

**Action:**

LSW consistently meets with education partners and workforce programs mentioned above and, as one of the outcomes, we have identified a need for streamlining industry-student engagement. At LSW we have developed a year-long panelist, in-class guest speaker, career fairs and career and professional development needs at the above programs. Our Industry partners have shared their interest and desire to have such in-person interactions with students from various programs. We will be connecting Industry representatives with above mentioned education programs to increase the awareness of the Life Science industry as well as expose industry representatives to the various in-state programs that potentially graduate 10-50 graduates each year. This has been a huge undertaking by LSW as a Sector Leader for the state to ensure connectivity within the workforce ecosystem as well as alleviate the burden on Industry and education programs to find specific interests and alignment to build a sustained relationship.

We recently got introduced to [Bioscience Core Skills Institute](#), who specialize in offering microcredentials. This offers specific practical skills for upskilling and making learner job ready for specific roles. We need to further explore this avenue to understand appropriate partnerships that will benefit from this avenue.

**Strategic Priority 3: Advance diversity equity and inclusion (DEI) efforts through internships across the industry that provide personnel, resources, and support to expand diversity within in-state workforces.**

**Recommendation 3.1:** Fund non-profit education partners to prepare students for the Life Science Washington Scholars Internship Program to advance DEI within the life sciences industry by supporting, preparing, and matching diverse talent to Washington companies.

**Action:**

As mentioned in the section on increasing representation of BIPOC community, we are developing a programmatic structure of identifying 8-10 organizations who will be setting aside internship opportunities for WSOS scholars to ensure development of diverse talent. In conversations with various interested organizations, we have learnt that this cohort-based Internship model in partnership with WSOS will benefit the smaller companies who do not have the personnel to manage interns. The internship will be devised by having frequent meet and greet opportunities for the scholars to build a peer-peer community as well as have a “village” of mentors for each scholar to ensure vertical mentorship and minimize overburdening of mentorship on the mentors. We will be working on developing an on-boarding process for the mentors and the scholars to maintain the expectations of the program as well as ensure retention of talent.

**Strategic Priority 4: Develop a Technical Residency Program by leveraging state-of-the-art laboratory infrastructure at non-profit research institutes that can provide hands-on experiential learning and development of diverse market-ready life science skills.**

**Recommendation 4.1:** Partner our colleges with our world-class non-profit research institutes to create a multi-year Technical Residency program that combines a degree or credential program with real-world laboratory experiences.

**Action:**

Following the submission of our strategy, the Fred Hutch team partnered with Shoreline Community College to pilot a program that leveraged the running start high students. The pilot program had a classroom component leveraging modules from Shoreline’s Lab Biotechnology Specialist program with Fred Hutch serving the hands-on lab experience for the high school students. The structure of the program provides a template for the Technical Residency program. Fred Hutch developed and financially supported this program with ~ 15 high school students participating in it. After running it for nine months the program saw about 70% attrition. The hands-on component was the first exposure given to the students, but their lack of theoretical understanding made it not ideal for the host labs at Fred Hutch. Shoreline’s modular curriculum gave more insight to the cohort, but with additional high school commitments and interest of wanting to pursue 4-year college meant the cohort size diminished. The running start program alleviates financial costs for the partnerships, but this population doesn’t seem to be the target talent that would be job ready for the Lab Technician roles that are in high demand. The lessons learned from the self-funded program are extremely valuable and have the appropriate components in place to launch the Technical Residency in partnership with a consortium of non-profit research institutes. LSW has been working in close partnership with Shoreline Community College and Fred Hutch

to bring additional non-profit research institutes like Benaroya Research Institute, Institute of Systems Biology, and Allen Institute. We are still working on identifying an appropriate financial model that will incentivize the non-profit research institutes to attract other labs to scale this residency program and build a large talent pool of Lab Technicians to manage the loss of talent to Industry. The Enrollment funding received by a CTC would be the higher ed equivalent for supporting the Technical Residency and provide a way to scale and sustain the program.

**Strategic Priority 5: Maintain Sector Intermediary to coordinate and scale industry involvement in awareness, education, and workforce initiatives.**

**Recommendation 5.1:** Since most life science companies are small to medium sized, research-focused companies, they lack the internal resources or scale to engage productively with education and workforce partners individually. A sector intermediary is needed to help companies participate in curriculum development, internship programs, career awareness activities, and coordinate new initiatives like the technical residency.

**Action:**

LSW is dedicated to working closely with employers to minimize the barriers faced in hiring, recruiting and retention of local talent. We ensure constant contact through yearly conferences and events with our members. Additionally, we have undertaken the role of connecting our industry partners with various Higher Education programs and K-12 districts to increase industry and career awareness within the state of Washington. We have identified a year's worth of needs that education partners are seeking in terms of having industry panelists, in-class guest lectures, career fairs and internship opportunities to develop a robust and consistent industry-student engagement plan.

We are looking to forge a partnership between Shoreline Community College and Industry and education programs in the Spokane area to replicate and expand the 10-week Biomanufacturing program based on the needs of the area.

We are also working to build a consortium of non-profit research institutes and identify a financial model that incentivizes the organizations to participate in the Technical Residency program and scale the lab technician talent pool.

LSW will be partnering with WSOS to build a cohort of Life Science Interns and connect them with participating industry partners to build a diverse talent pool and increase representation within the industry.