Talent Pathways:

A Biosciences Workforce and Talent Strategy for GO Virginia Region 9 to Support Rapid Growth and Momentum of a Vibrant Industry

Performed For: CvilleBioHub
Performed By: TEConomy Partners, LLC
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TECONOMY PARTNERS LLC

CVILLE BIOHUB

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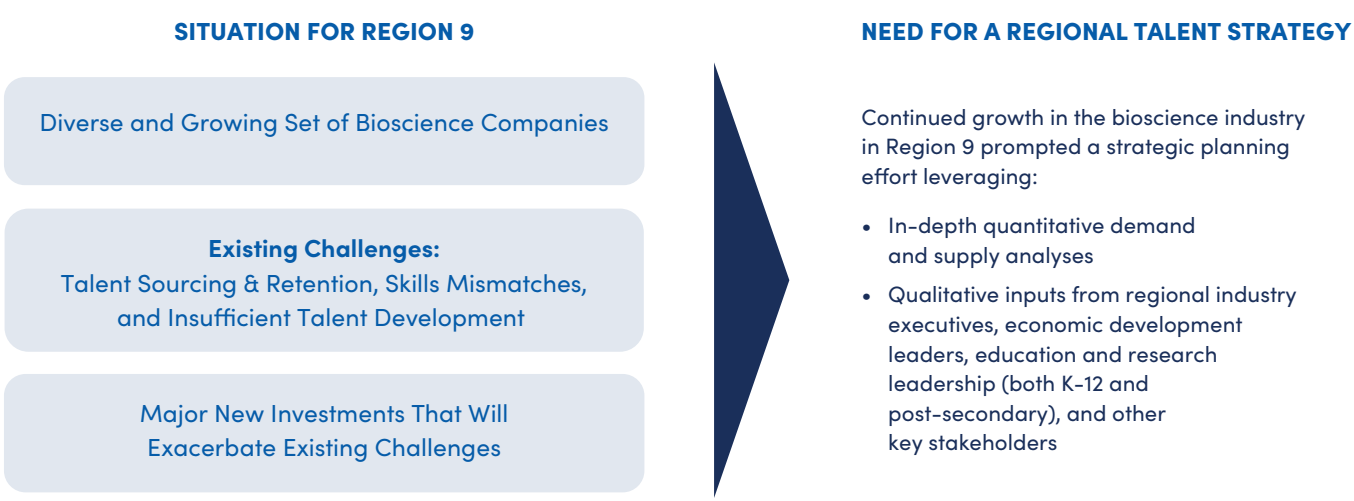
Executive Summary

Central Virginia is emerging as a dynamic biosciences hub, but long-term success hinges on preparing a skilled workforce ready to power and sustain growth across pharmaceutical manufacturing, MedTech, health IT, agricultural and industrial biosciences, and other industry subsectors.

In a geographic context aligned with GO Virginia Region 9, Central Virginia has experienced significant recent biosciences job and company growth, with company expansions underway, and exciting new investments expected to come online in the coming years both by the region's leading research institution—the University of Virginia (UVA) and its development of the new Manning Institute of Biotechnology—as well as major new manufacturing operations recently announced by AstraZeneca.

Amidst the backdrop of industry and ecosystem growth, CvilleBioHub—a non-profit organization working to advance, strengthen, and accelerate the growth of the biosciences industry cluster and supporting ecosystem in Greater Charlottesville and the surrounding Central Virginia region—has heard consistent themes from regional firms facing challenges with respect to workforce and talent sourcing and skills "mismatches", sufficient talent development at the local level, talent retention, and other issues, all while seeing growing demand for talent from its companies and from UVA. Fueled by both new investments and growth in the region's bioscience industry, it is a critical time and inflection point for the region to conduct a thorough biosciences cluster workforce assessment, strategy, and corresponding action plan to ensure this priority industry cluster is primed for current and future growth (Figure ES-1).

FIGURE ES-1. PROJECT PURPOSE AND APPROACH



Source: TEConomy Partners, LLC.

FIGURE ES-2. REGION NINE'S BIOSCIENCE INDUSTRY—SIZE AND SUMMARY METRICS, 2024

Region 9's Bioscience Industry represents:

2,100	254	1.37	23%	$121,000
Jobs	Establishments	Virginia "LQ"	Job Growth Since 2019	Avg. Annual Wages*

Growth and momentum are expected to continue based on recent investments by:

Afton SCIENTIFIC, AstraZeneca, BIO-CAT, AgroSpheres, bonumose, University of Virginia

*Average wage figure is for the Industrial Biosciences component of the overall industry.
Source: TEConomy analysis of Lightcast (2025.3) QCEW data.

CvilleBioHub has partnered with Albermarle County Economic Development, City of Charlottesville Economic Development, UVA, Piedmont Virginia Community College (PVCC), and other regional stakeholders to secure grant funding from GO Virginia to advance this strategic planning effort through its Talent Pathways Initiative (TPI).

GO Virginia Region Nine's industry and innovation ecosystem has significant, diverse, and growing bioscience-related workforce and talent demands, as represented by its industry's size, outsized concentration within Virginia,[1] its growth, and ability to generate high-quality jobs with family-sustaining wages (Figure ES-2).

The nearly year-long strategic planning effort has leveraged both quantitative and qualitative approaches to identifying "high-demand, high-priority" occupations and roles in the region's unique blend of bioscience industry subsectors.

These assessments and information gathering span and include:

QUANTITATIVE ASSESSMENTS:

> Industry "staffing patterns"—the deployment of specific occupations across the region's bioscience industry—both in terms of relative concentrations and growth over time; projected occupational growth within the industry; indications of workforce demand culled from recent regional industry job postings; and insights gleaned from job requisitions data provided by UVA.

QUALITATIVE ASSESSMENTS:

> Outreach to Region 9 bioscience employers, both via an online talent demand survey as well as through one-on-one interviews with regional executives.

1 Regional location quotients (LQs) measure the degree of job concentration within a given industry locally relative to the national average. States or regions with an LQ greater than 1.0 are said to have a concentration in the sector. When the LQ is significantly above average, 1.20 or greater, the region is said to have a "specialization" in the industry. LQs can also be measured and provide important insights for a region relative to statewide averages, in this case for the Commonwealth of Virginia.

Utilizing the varied quantitative and qualitative inputs and assessments, a set of high-demand and high-priority occupations are summarized in Figure ES-3. Importantly, they are segmented by those with higher-volume demand for talent versus those with lower-volume demand in specialized areas of expertise. In Figure ES-3, occupations are assigned two check marks for the highest level of significance in the associated data or qualitative input, where there is a clear differentiation of importance based on employment levels or growth, projected growth, or indications of strong demand from job postings and/or from industry input. One check mark signals importance but to a somewhat lesser degree.

FIGURE ES-3. IDENTIFIED HIGH-DEMAND, HIGH-PRIORITY OCCUPATIONS AND ROLES FOR CENTRAL VIRGINIA'S BIOSCIENCE INDUSTRY

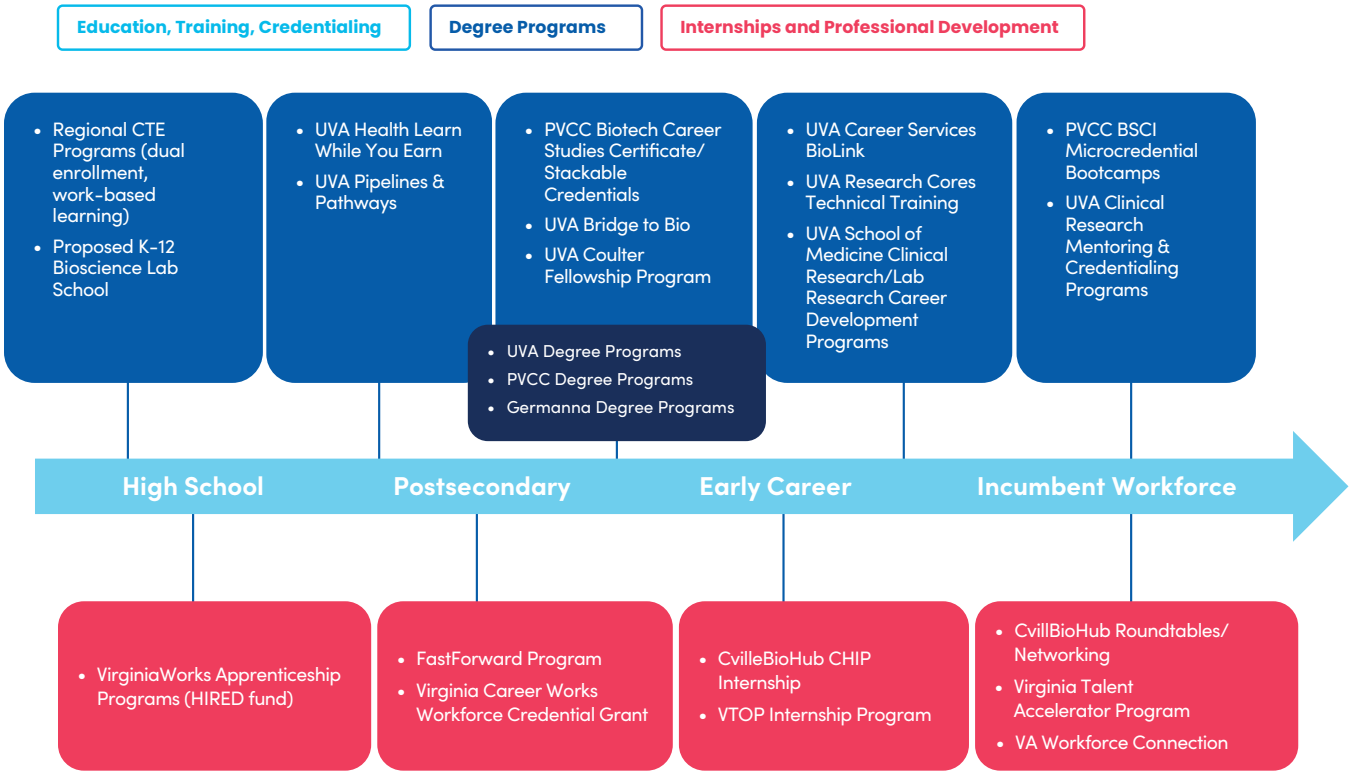
	Occupation/Group	Significant Deployment in Region's Bio Industry	Significant Recent Growth in Region	Significant Projected Growth in Bio Industry	Indication of Strong Demand from Regional Job Postings	Input from Co.'s via Survey, Interviews on Hiring Expectations	Notes
HIGHER-VOLUME DEMAND	Medical Scientists	✔✔	✔✔	✔✔	✔✔	✔	Includes significant demand from Univ, Hospitals Sectors
	Biological Technicians	✔✔	✔✔	✔✔	✔✔	✔	Includes significant demand from Univ, Hospitals Sectors
	Medical/Clinical Lab Technicians	✔✔		✔✔	✔✔	✔	Includes significant demand from Univ, Hospitals Sectors
	Other Scientists	✔✔	✔✔	✔✔	✔	✔✔	Includes Chemists, Materials Scientists, Epidemiologists, Microbiologists
	Skilled Production Roles	✔✔	✔✔	✔		✔✔	Includes Machinists, Assemblers, Inspectors, CNC Operators
SPECIALIZED, LOWER-VOLUME DEMAND	Biomedical Engineers	✔			✔✔	✔	Includes significant demand from Univ, Hospitals Sectors
	IT – Software Development	✔	✔✔	✔	✔✔		
	QA and QC Professionals	✔	✔✔		✔✔	✔✔	
	Other Engineers	✔		*	✔	✔✔	Includes Industrial, Mechanical, Field Svc Engs.
	Data Scientists & Bioinformatics			*	✔✔	✔	Limited but "Emerging" demand in region

*Note: indicates moderate levels of broad-based projected demand not isolated to biosciences industry.
Source: TEConomy's analysis of: Lightcast (2025.3) Staffing Patterns data; Central Virginia Bioscience Interviews; Industry Hiring/Workforce Demand Survey; and UVA Job Requisitions Data.

Turning to the supply side of the region's capacity for workforce education and skills training, an in-depth inventory of academic and workforce related programs and initiatives finds that Central Virginia has a robust foundation for a multi-stage bioscience talent pipeline (Figure ES-4). Complementing formal degree pathways are a constellation of specialized educational and experiential programs ranging from Career and Technical Education (CTE) and apprenticeship initiatives at the secondary level to bridge programs, internships, micro-credentials, and clinical research mentoring at the postsecondary and early-career stages, each operated by dedicated institutional "champions" and often supported by industry partners and nonprofit intermediaries such as CvilleBioHub.

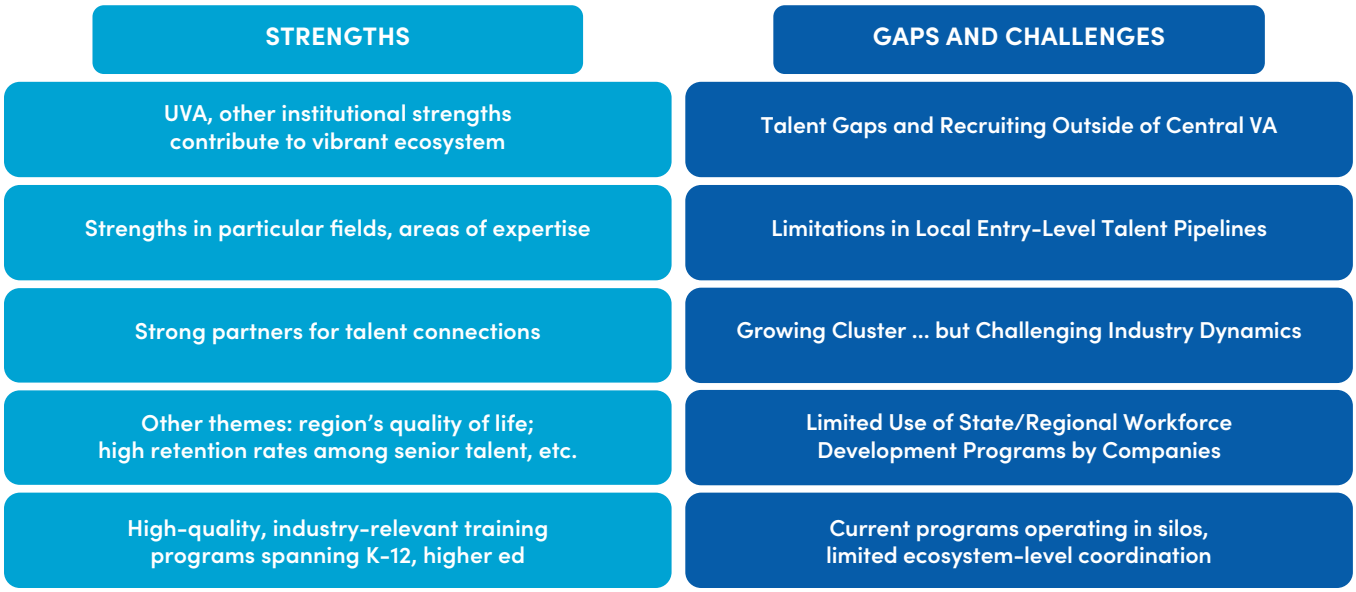
While this multilayered institutional ecosystem provides Central Virginia with a genuine competitive advantage in breadth and quality of talent development offerings, the region faces a critical operational challenge: these assets remain largely disconnected, with limited formal coordination and insufficient awareness of regional opportunities for life sciences graduates, a challenge now heightened by anticipated demand from major pharmaceutical manufacturing investments entering the region.

FIGURE ES-4. EXAMPLES OF REGIONAL PROGRAMS SUPPORTING WORKFORCE SUPPLY IN THE BIOSCIENCES



Source: TEConomy Partners' inventory of regional programs.

FIGURE ES-5. KEY THEMES RAISED BY REGIONAL LEADERS, STAKEHOLDERS INFORMING STRATEGIC PRIORITIES FOR CENTRAL VIRGINIA



Source: TEConomy Partners, LLC.

Among the most critical challenges with respect to biosciences talent supply dynamics for Central Virginia is retention. Data on long-term career outcomes support this conclusion, showing that a large share of the region's life sciences graduates leave the area (and often the state) as their careers progress. Addressing retention will require not only growing the number of local opportunities, but also improving awareness of those opportunities and strengthening the ties between students and regional employers earlier in their educational careers. Notably, many Central Virginia bioscience firms report very high retention for those employees who do join them, with several employers highlighting that their experienced staff tend to stay 10 to 20 or more years, drawn by the mission-driven work and quality of life in the region.

The current landscape for biosciences talent in Central Virginia reflects a clear duality, but opportunity for near-term transformation: a foundation of high-quality, anchor-led assets operating within an ecosystem that has yet to fully integrate its education and training programs with evolving industry demands. In light of recent momentum and anticipation of rapid expansion of the pharmaceutical manufacturing industry presence in the region, it is essential to clearly identify and articulate the strategic priorities necessary to position the region as a competitive hub for biosciences growth and innovation, a strategy fundamentally driven by ongoing talent strengths and workforce development.

The combined themes related to both regional ecosystem strengths as well as gaps and challenges elevated out of interviews with industry executives, hiring survey input, and feedback provided by the project Advisory Coalition are summarized in Figure ES-5.

Strategic Priorities to Enhance and Align the Regional Biosciences Workforce Ecosystem

The situational assessment reveals a region with substantial educational and institutional assets but critical gaps in coordination, alignment, and ecosystem integration. The presence of high-quality programs operating independently rather than as a unified system has created inefficiencies in talent flow, employer engagement, and career opportunity awareness. Compounding this challenge is the structural mismatch between the region's talent production and employer demand: while educational institutions generate many bachelor's and higher life science graduates annually, less than one-third of bachelor's-level life sciences graduates remain in the region a decade after graduation and entry-level technical talent pipelines are constrained. Simultaneously, unprecedented industry growth driven by signature public-private investments and anticipated facility construction and expansions by major pharmaceutical manufacturers is creating an urgent demand for scaled, coordinated talent development across all skill levels.

Given this landscape, and the findings from the demand analyses on high-priority occupations, three strategic priorities emerge directly from this assessment and form the basis for subsequent regional strategy to meet demand from industry and build out a lasting talent generation ecosystem:

> **Priority 1:** Develop and Strengthen Regional Talent Pipelines for Both Biosciences Technician and Laboratory Support Workforce and Specialized, High-Skilled Science and Engineering Roles.

> **Priority 2:** Address a Disconnected Ecosystem for Workforce and Talent Development and Enhance Both Career and Company Awareness by Formalizing a Regional Framework for Coordinating Life Sciences Workforce Development Pathways.

> **Priority 3:** Develop and Better Tell the Story of Central Virginia's Bioscience Industry and Innovation Strengths for Branding and Specialized Talent Recruitment.

These three priorities are mutually reinforcing. Strengthening talent pipelines requires ecosystem coordination, particularly amidst rapid expansion of employer-driven demand; ecosystem coordination enhances the visibility and credibility necessary for effective development of competitive identity; and effective branding and differentiation of regional competitive advantages accelerates the talent development imperative by making the region's opportunity more tangible and attractive to prospective recruits. Together, they constitute the basis for a comprehensive strategy for transforming Central Virginia's talent ecosystem from a collection of excellent individual programs into a high-performance, regionally coordinated ecosystem capable of meeting the workforce demands of an accelerating life sciences industry.

Four distinct strategies are elevated in the report and designed to address the three strategic priorities. Each strategy includes a set of detailed associated actions and recommendations for consideration (Figure ES-6).

FIGURE ES-6. STRATEGIC RECOMMENDATIONS TO ADDRESS CENTRAL VIRGINIA'S WORKFORCE AND TALENT NEEDS AND PRIORITIES TO ENSURE BIOSCIENCE INDUSTRY COMPETITIVENESS INTO THE FUTURE

Strategy #1: Grow the Pipeline for the Regional Biosciences Technician and Laboratory Support Workforce	*Action 1.1: Scale and Support Targeted Technical Training Programs in Partnership with Community Colleges and Regional Workforce Boards*
	Action 1.2: Expand Collaboration and Coordination with UVA Workforce and Training Programs to Complement Regional Training
	Action 1.3: Expand Experiential Learning and Lab Exposure Programs for Bachelor's Level Students to Better Position Entry-Level Graduates for Industry and Research Settings
	Action 1.4: Anchor Talent in the Region by Providing Ongoing Professional Development for Entry-Level and Early-Career Workers
Strategy #2: Address Specialized Talent and Skills Demand in High-Skilled Roles	*Action 2.1: Strengthen Structured Talent Pipelines by Expanding Experiential Learning and Skills-Based Development Programs for Science and Engineering Students*
	Action 2.2: Fully Reinstate and Fund the CvilleBioHub Internship Program (CHIP) at More Significant Scale and Connect to Other Regional Intern Programs
	Action 2.3: Leverage Proximity to UVA Health and Clinical Research Infrastructure to Create Translational Research Fellowships and Joint Industry-Clinician Training Programs
	Action 2.4: Build Programs for Interdisciplinary Skill Development that Bridge Research and Commercialization
	Action 2.5: Encourage Return Migration of Talent by Targeting Former UVA and Other Regional Graduates Now Working in Larger Biotech Hubs
Strategy #3: Better and More Seamlessly Connect the Workforce and Talent Ecosystem and Resources by Formalizing a Regional Framework for Coordinating Biosciences Workforce Development Pathways and Enhancing Career and Company Awareness	*Action 3.1: Establish and Fund a "Regional Biosciences Career Navigator" Function at CvilleBioHub*
	Action 3.2: Increase Cross-Company Awareness and Collaboration Through Signature Events and Industry-Wide Networking
	Action 3.3: Expand Networking Opportunities Like Those Offered by CvilleBioHub's CEO Roundtables to Enable Broader Participation and Access
	Action 3.4: Establish a Curated Venue for Emerging Leader Development and Advising to Seed Next Generation of Life Sciences Talent
	Action 3.5: Develop a Coordination Framework and Working Group Among Regional Workforce Development Stakeholders Which Can Seek to Better Integrate Programming, Avoid Duplicative Functions, and Improve Responsiveness
Strategy #4: Develop, Tell, and Promote Central Virginia's Bioscience Industry "Story" and Associated Brand Identity for Specialized Talent Recruitment	*Action 4.1: Leverage Ongoing Identification of Regional Strengths and Growth Opportunities in the Bioscience Industry and Innovation Thrusts Identified in Concurrent Work with CVPED and UVA for the "Innovation Corridor" Effort*
	Action 4.2: Coordinate with CvilleBioHub, CVPED, and UVA's New Manning Institute to Amplify the Regional Research Brand Around Focus on Early-Stage Biologics Development

Source: TEConomy Partners, LLC.