October 2021

KC RISING

Talent-to-Industry Exchange

BIOLOGICS TIE INSIGHTS

Prepared by:

clear box insights
research refocused

BIOLOGICS BACKGROUND

WHAT IS BIOLOGICS?

- Biologics are products derived from natural sources (such as blood, skin, plants, etc.) that are used in healthcare, veterinary, and agricultural settings. 'Biologics' is a broad category of products which include vaccines, blood/blood components, gene therapies, recombinant proteins, and many more.

WHY BIOLOGICS?

- KC has a competitive advantage
- Not tied to traditional industry codes but likely cross-sector and following trendlines
- Not just something we're good at, but a rallying cry that positions KC for a strong economic recovery
- Helps KC Rising meet its Horizon Goals of attracting talent, high value productivity, creating self-sustaining households, and shared prosperity

RESEARCH BACKGROUND

OBJECTIVE

- To better understand the current and future talent needs of the biologics industry in the region
- Insights will aid in developing workforce strategies to grow the region's biologics talent pipeline and economic competitiveness

APPROACH

- Facilitated discussion groups
- Participants included biologics business leaders, entrepreneurs, and educators
- Facilitated & analyzed by Clear Box Insights in October 2021

SOURCES OF INPUT

- Benchmarking analysis
- R&D development analysis

- Facilitated discussion groups with business leaders and educators

- Analyzing innovation, equity, branding the initiative, governance assessment

- Together we create action from insights

RESEARCH PARTICIPANTS

Business Leaders

BLACK & VEATCH

RONAWK™

MERCK Animal Health

ELIAS ANIMAL HEALTH

KCAS Bioanalytical & Biomarker Services

Educators

UMKC School of Pharmacy

KANSAS STATE UNIVERSITY

JOHNSON COUNTY COMMUNITY COLLEGE

Kansas City Kansas Community College

DONNELLY COLLEGE

SKILLED KC

KC STEM Alliance

INDUSTRY LANDSCAPE

STRENGTHS OF BIOLOGICS IN KC

- Strength of the Animal Health Corridor and sector
  - Farming and agricultural background
- Availability and low cost of space keeps manufacturing costs down
- Strong on the development side of R&D
- Some unique innovators, like Stowers Institution
- Benefits of living/working in KC (i.e., lower cost of living, easy travel)

SECTOR CHALLENGES

- Lack of awareness/understanding outside the sector
- Perception challenges (i.e., too hard, tedious)
- Difficult to create and keep innovation in the region
    - Light on the research side of R&D, particularly applied research
    - Lack of tight connections between basic/foundational and applied research
    - Companies from other areas poach talent and buy up companies
    - There is high churn rate within the industry (i.e., switching companies, leaving the region)
- Lack of connectivity with Contract Research Organizations (CROs) to regional players, especially for the future

> *"Any companies that do parts of research get gobbled up by the coasts. Cities like Boston and San Diego tend to come along to poach anything from us that's innovative in a biologic space. We have to find a way to keep innovation here."*
>
> *–Business Leader*

TALENT POOL

A SPECTRUM OF SKILLSETS

Innovators

- Experience/understanding of the field
- Creative people who can solve problems
- Willing to try/trial and error
- Doesn't always translate well to project leaders

Manufacturing

- Previous experience/ exposure
- At least understand the "why" behind procedures
- Can follow directions/be meticulous
- Aseptic experience/ understanding

EXPERIENCE REQUIRED

- There isn't always a direct pathway from education to employment
- Even at the entry level, experience (or at least exposure to the field) can outweigh education
  - Hands-on experience provided at the university level isn't always representative of actual on-the-job experience
  - Need to better set expectations of what the job entails for those entering the field (i.e., working in a sterile environment, amount of paperwork involved)

> *"The ideal candidate would have seen multiple bio processes, but even if they've seen one, it's valuable. If somebody worked in a microbrewery for a summer, that would be great. It's a starting point. For an entry level position, even having minimal exposure would be awesome."*
>
> *–Business Leader*

REGULATORY UNDERSTANDING

- Regulatory experience is beneficial for employers hiring new talent at any level
  - Technology moves quickly but regulatory changes are slow
  - Don’t need to memorize all regulations, but rather understand the science behind why they are in place to provide context for comprehension
  - Significant value in “going through the motions” - science labs where they learn how to gown up, document in a notebook, etc.

> *“Universities can teach, ‘Here's the existing regulatory framework,’ which is what the federal government regulates. They can teach about CFR and all the acronyms. But underneath that is the science behind the regulations, and that's what would make that person more valuable to us; understanding why we need a refrigerator, or why the water needs to be boiled.”*
>
> *–Business Leader*

DE&I IN THE INDUSTRY

- Improvements in minimizing the gender gap, from education through industry
    - However, research suggests that there are challenges with retaining women in this field
- There are challenges with finding/nurturing/hiring people of color to this field:
    - Disparity among school systems and investment/resources
    - Potential in students is often overlooked/they have to be "superstars" to move forward
    - Fewer opportunities for exposure and hands-on education needed to break into the field
    - Few education/training opportunities for adult learners

> *"There are huge disparities between our school districts in Kansas City and among the resources that go into our educational systems. We can make policy decisions that have an impact. We, as an industry, have to be influential; we can't just hand it off."*
>
> *–Business Leader*

> *"When it comes to DE&I, we have a huge talent pool right here in our metro, and so many students are being missed. It's a national issue, but we need to be putting a lot more resources towards making sure that all students are getting opportunities to be a part of the STEM workforce of the future."*
>
> *-Educator*

EXPERIENTIAL LEARNING

EARLY INTERVENTION

- Early exposure – before children decide that they are or are not good at math - is key to building interest in STEM fields, including Biologics
  - Exposure needs to be consistent throughout the region, focusing on all students, not just where the most resources are, to provide opportunities and diversify the talent pipeline
- There are no "card carrying" Biologists, so career pathway isn't clear for this sector; create a better understanding and setting expectations of what the work and the career path looks like
  - Need to identify and define STEM careers, not just STEM degrees

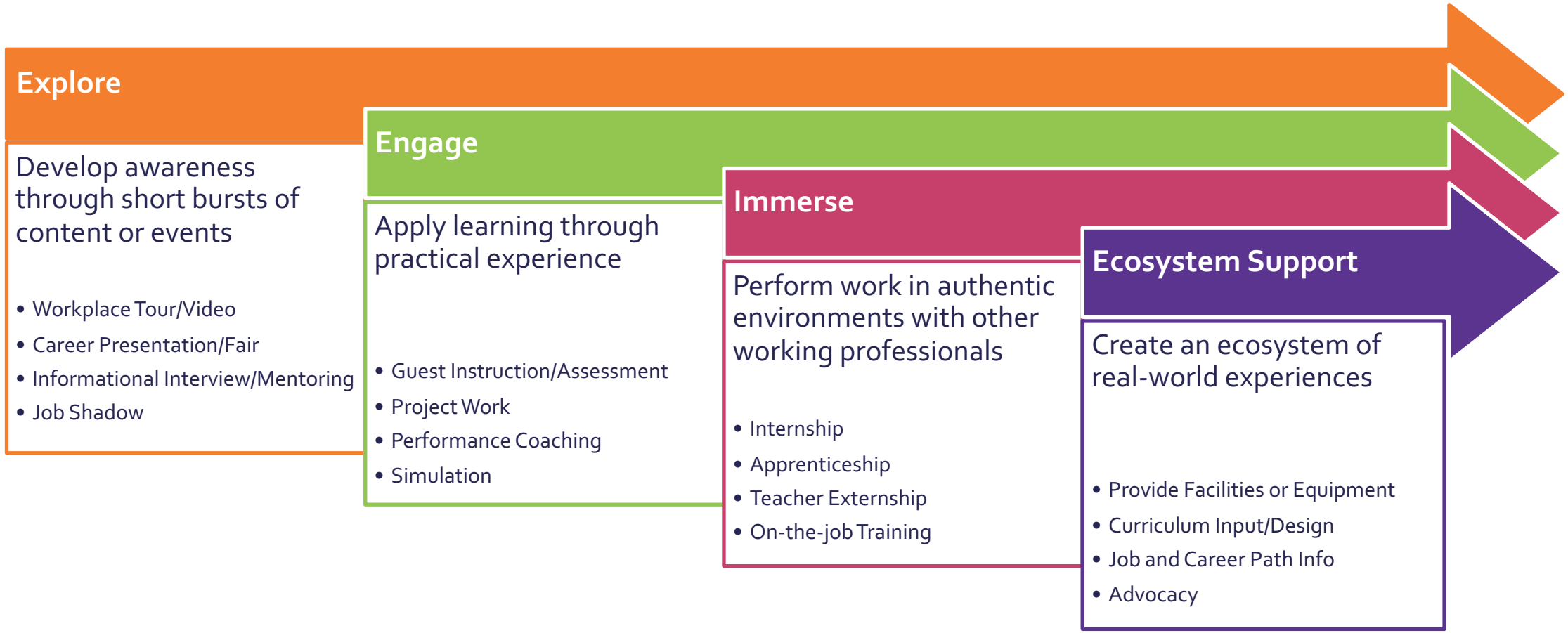
> *"It's in 4th or 5th grade that students opt out of science and math, and when they do, they won't have the foundation needed. There are entry level jobs in the biological science world that don't require the math and science background, but there is still a knowledge base that's needed. STEM for K-12 has got to become a focus for the US market and for our region."*
>
> *–Educator*

EXPERIENTIAL LEARNING OPPORTUNITIES

- To meet employers' needs, more hands-on experience opportunities are needed
- Internships and other on-the-job/in-the-lab hands-on opportunities
    - Northeastern University's Biopharmaceutical Analysis Training Lab
    - NC State University Biomanufacturing Training and Education Center
- Role of apprenticeships in this field: diversifies the pipeline, relevant experience and on-the-job growth
- Credential programs designed for placement

> *"The hallmark of an apprenticeship is that it is usually a longer-term paid experience. I would argue that the apprenticeship model could be a way to help with employment pipeline issues, as well as addressing the DE&I objectives we have. It could be fundamental to addressing these overarching problems."*
>
> *–Educator*

EXPERIENTIAL LEARNING MODEL



Source: Kauffman Foundation Real World Learning

INDUSTRY-EDUCATOR COMMUNICATIONS

COMMUNICATION GAPS

Business Leaders

- Perceptions that curriculum is outdated/too theoretical/not hands-on enough to meet business needs
- It takes a long time to change curriculum/programs
- Not aware/familiar with current programs/curriculum/training
- There aren't trusted/valuable certification programs in this field

Educators

- A lot of variety in types of businesses, talent and skillsets needed, etc. in this sector, but lacks a singular industry voice
- Need more input on experiential learning/types of hands-on experience needed
- Want to better understand the opportunities and career pathways to set expectations and help students market themselves

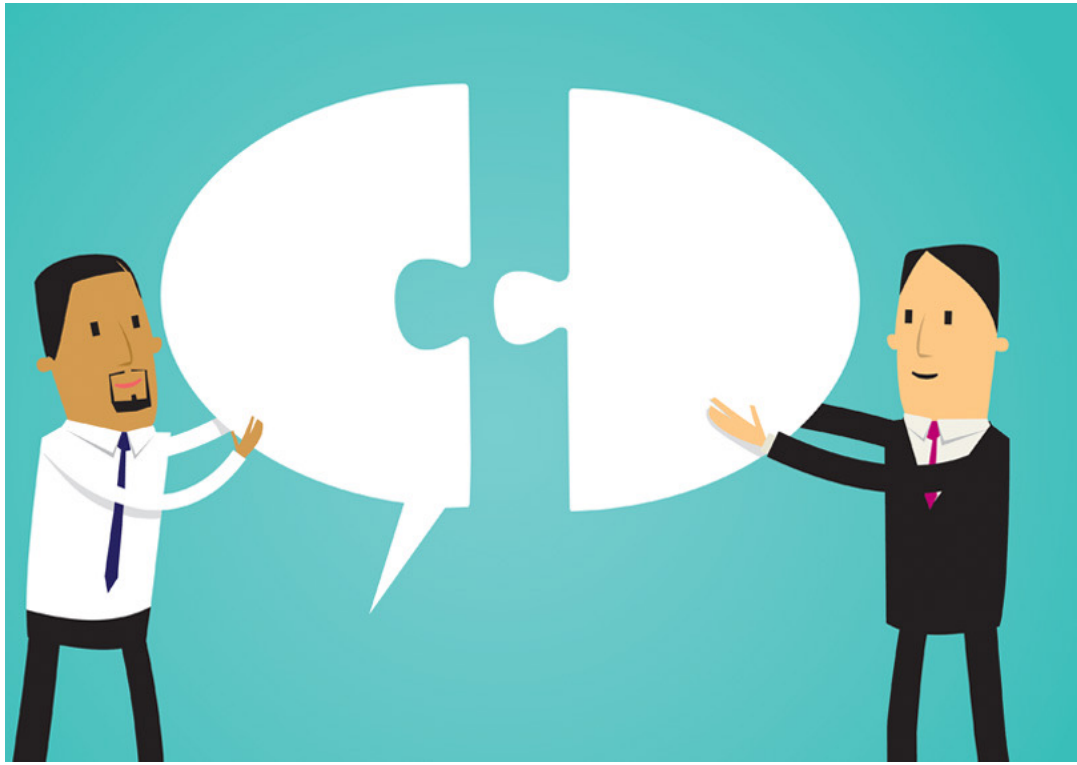
JOB DESCRIPTIONS

- Appears to be a disconnect between job descriptions and what business leaders actually want/need from potential talent
    - Need to better understand the actual job duties/expectations to better prepare students
- Discrepancies in job descriptions highlights policy disconnects as well
    - Gap between what employers are asking for and what's required at the regent's level
    - Companies with a national or global footprint are making universal openings but board of regents is focused on just one area

> *"We're wasting resources if all they need is somebody to follow directions. We need to align our expectations between industry and educators. If they need somebody with a 6-hour certificate, or they need someone to take Intro to Biology, just say that and we'll produce it for you. If they say, 'Your labs need to be designed in a certain way,' we can do that. If they can tell us what their needs will be for the next five to ten years, we can start producing those students."*
>
> *–Educator*

BENEFITS OF CLOSING THE GAP

- Knowledge sharing
- Better planning/preparation for current/future industry needs
- Updated content/program design
- Better/more placement upon program completion
- More competitive programs



NEXT STEPS

STRATEGIC CONSIDERATIONS

Awareness

- Change perceptions about the sector to engage/attract new talent
- Collect and communicate current programs/training in the sector to both business leaders and educators
- Identify gaps in current programs/ training

Exposure/Experience

- Define and map out career pathways beyond degrees/education pathways
- Explore experiential learning opportunities (including apprenticeships) and how to scale it
- Examine disparity between school systems and ways to redistribute resources to provide access to all

Education

- Better understand and develop a regulatory framework for education
- Determine education areas, both minor and major, to update or modify to better meet current and future industry needs
- Generate common language between business leaders and educators to better align needs

Collaboration

- Unify business leaders to create an industry voice
- Identify areas to bring educators and business leaders into the process
- Evaluate the KBOR policies and disconnect with job descriptions to help with this cycle

APPENDIX

SUMMARY OF INSIGHTS

Industry Landscape

Strengths of Biologics in KC

- Animal Health Corridor/ farming and ag background
- Availability/low cost of space
- Strong on the development side of R&D
- Some unique innovators, like Stowers Institution
- Benefits of living/working in KC

Sector Challenges

- Lack of awareness/understanding
- Perception challenges
- Difficult to create and keep innovation in the region
- Lack of/need more CROs

Talent Pool

A Spectrum of Skillsets

- Innovators require experienced, creative people willing to work by trial and error; doesn't always translate well into project leaders
- Manufacturing requires experience or at least exposure, an understanding the "why" behind procedures, and can follow directions

Experience Required

- There isn't always a direct pathway from education to employment
- Even at the entry level, experience and exposure can outweigh education
- Hands-on experience isn't always representative of on-the-job experience
- Need to better set expectations of what the job entails

Regulatory Understanding

- Regulatory experience is beneficial for employers hiring new talent at any level
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DE&I in the Industry

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  - Potential in students is often overlooked
  - Fewer opportunities for exposure and hands-on education

Experiential Learning

Early Intervention

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- Exposure needs to be consistent throughout the region, focusing on all students
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Experiential Learning Opps

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- Role of apprenticeships in this field: diversifies the pipeline, relevant experience and on-the-job growth
- Credential programs designed for placement

Industry-Educator Communications

Communication Gaps

- Business leaders have perceptions of outdated curriculum, that it takes a long time to make changes in education, and lack of awareness of current programs
- Educators feel that the industry lacks a singular voice, need more input on experiential learning, and want to better understand the opportunities and career pathways

Job Descriptions

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  - Need to better understand the actual job duties/expectations to better prepare students
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