

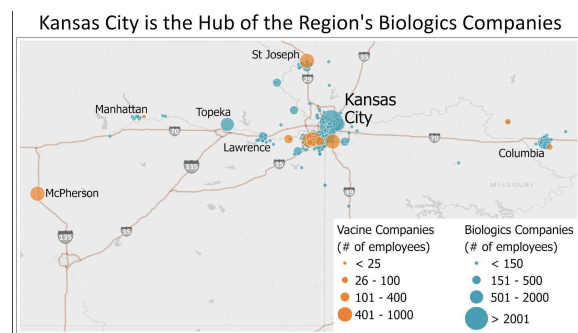
Section 1: Summary and Vision

Executive Summary: The KC BioHub is a consortium of more than 100 organizations based in the Kansas City (KC) region that are working together to build the world’s most equitable biologics and vaccine development & manufacturing innovation ecosystem. These include more than 40 firms, ranging from Pfizer and Ginkgo Bioworks to Likarda as well as four research universities, with 20 economic / community development and 35 workforce development entities.

COVID-19 demonstrated the need for a more robust domestic innovation and production infrastructure. Shortages in lab supplies and an inability to find domestic producers threatened the nation’s ability to develop and manufacture life-saving vaccines. Today, market concentration and supply chain challenges continue to impact the global vaccine supply for both humans and animals, leading to vulnerabilities that are a threat to U.S. national and economic security.

The global pharma market’s shift from small molecules to biologic drugs opens new avenues to build U.S. competitiveness in vaccine production as the industry undergoes change. With more deliberate interdisciplinary and cross-institution cluster-building efforts, the KC region has the assets to lead in this transition, leveraging strengths in animal and human vaccine development & manufacturing and expertise in biosecurity & biodefense.

The KC BioHub is anchored by the KC MO-KS CSA and stretches from McPherson, KS to Columbia, MO. The region includes the metropolitan areas of Manhattan, Topeka, Lawrence, KS; St. Joseph, Jefferson City, Columbia, MO; and the micropolitan areas of Atchison, McPherson, Ottawa, KS; Warrensburg, Sedalia, and Marshall, MO. Our region includes 28 rural counties and the focus of this hub will significantly benefit Justice40 communities in the KC Metro and rural areas.



Vision for Regional Economic Development - Over the next decade, the KC region will capture an outsized share of the 10% annual growth of the \$40.4B human vaccine market, with the region tripling its market share from 4.7% to 14.2% as the global market increases to over \$100B¹. This exponential growth can be achieved through strategies to “scale out” and “scale deep” creating a resilient phased manufacturing and component manufacturing capability, driven by small and mid-size firms. This localized supply chain and investments in innovation and workforce development will create a comparative advantage in clustering and will also help us attract the attention of site selectors for big pharma facilities, leading to the opportunity to build increasing momentum, landing more and bigger expansion deals in the future.

Section 2: Global Context and Industry Challenges

Vaccine Manufacturing in Global Context - While American innovation fueled a rapid response to the global pandemic, China and India are quickly securing leadership in global vaccine production capacity. Of the 94 companies producing vaccines globally, the world is highly reliant on the nine

¹Calculations based on market data reports and privately collected data, available for review at <http://bit.ly/KCBioHubMarket>.

largest among them, who together produce more than 64% of the world's vaccine supply. Only two (Pfizer and Janssen) are based in the U.S., while five are based in China or India. To preserve its position in this critical technology area, the U.S. must act quickly to make new investments that boost innovation in products and processes, manufacturing capacity, and diversification for resilience. Because this industry benefits tremendously from cluster effects, we will need place-based strategies to couple large-scale vaccine production with the required workforce and suppliers, and efforts to build up a generation of entrepreneurial CROs, CDMOs, component manufacturers, and biotool innovators. That is the KC BioHub approach.

Technological, Process, & Environmental Challenges - 4 technological challenges will define the next generation of large molecule innovation. The KC region is uniquely poised to rise to each one.

Challenge 1: (Research) Emergence of new infectious zoonotic diseases - With 75% of emergent infectious diseases being zoonotic in origin,² KC is well-positioned as an interdisciplinary hub with globally-leading animal health assets, biosecurity/biodefense expertise, vaccine manufacturing capacity, and research hospitals. Particularly relevant are the National Bio-and Agro-Defense Facility (NBAF) and the Animal Health Corridor.³ The region boasts the largest concentration of animal health and nutrition companies in the world, including manufacturing facilities for 4 of the top 5 global companies holding 27% of the \$11B global animal vaccine market.¹ In total, 17 human and animal vaccine manufacturing firms with 5,500 employees are located in the region.⁴

Challenge 2: (Research) Vaccine formulation and delivery- India and China have already approved COVID-19 vaccines that are delivered intranasally and via inhaler⁵. These allow vaccines to be delivered more quickly and easily than ever before, driving faster adoption and therefore demand for new vaccines. The ease of delivery of these formulations also makes them a potentially valuable tool in fighting the next global pandemic, and is an area of innovation in which our region's startups excel. Currently, nine members of the KC BioHub consortium are in clinical trials for vaccine formulation and delivery innovations. While no one startup can move forward an entire ecosystem of delivery innovations, supporting this cohort of companies will double down on the most promising innovators and progress a technical problem.

Challenge 3: (Development) Vaccine component sustainability - A second core technological challenge for the biomanufacturing industry is the fact that it requires massive amounts of single-use aseptic tools and components, as well as massive amounts of power to keep components and vaccines properly chilled. These requirements are in direct tension with sustainability goals and environmental protection. In addition to vaccine formulation expertise, another core competency of KC's BioHub startups is in the field of biotools. Companies like Ronawk with their "BioBlock"

²Salyer, Stephanie J., et al. "Prioritizing Zoonoses for Global Health Capacity Building—Themes from One Health Zoonotic Disease Workshops in 7 Countries, 2014–2016." *Emerging Infectious Diseases*, vol. 23, no. 13, 2017, <https://doi.org/10.3201/eid2313.170418>.

³"About the Corridor." About, ThinkKC, kcanimalhealth.thinkkc.com/about.

⁴"Kansas City Regional Biologics R&D Landscape", Latham BioPharm Group, June 2022. www.bionexuskc.org/reportsforedatechubs/. This report was published prior to Scorpius' relocation to the region and does not include the Pfizer plant and its' 1,800 employees. With the addition of those two facilities, the region holds 17 biomanufacturing firms and 5,500 jobs.

⁵India and China first to authorize inhaled COVID vaccines. (2022, September 6). CBS News. <https://www.cbsnews.com/news/covid-vaccine-india-china-authorize-inhaled-coronavirus-vaccines/>

technology are creating R&D tools that have potential to cut the number of freezers that biologics labs use in half. Doubling down on biotool innovations to reduce energy usage, improve space usage, and reduce extreme cooling needs will help us balance our efforts to become a vaccine manufacturing Hub with energy, environmental, and sustainability considerations.

Challenge 4: (Scale) Resilient manufacturing processes -Today, it takes 120 days to manufacture a single batch of biologic vaccines, requiring on-time delivery of more than 100 component parts⁶- a long and complex process. To help “scale out” their operations, pharma companies are building partnerships with distributed networks of CROs and CDMOs to augment their development capabilities and supply chains. As home to one of the nation’s largest CRO and CDMO clusters (location quotient of 2.5 for biologic product manufacturing⁷), this is an area where KC has excelled. Regional firms provide the testing needed for clinical trials for pharmaceuticals nationwide, as well as the formulation and analysis that enable them to scale. The KC BioHub will speed the scaling process by developing a distributed, resilient vaccine manufacturing capacity with specialized, small and mid-size supply chain businesses working in tight coordination with industry. Connection between challenges and proposed projects - The KC BioHub’s component projects (described in Section 3) are designed to help overcome these industry challenges so that our region can benefit from the growth of the human biologic vaccine market.

Research and Translation: Regional universities excel at research that will drive the industry forward, but more of it must be developed from bench to bedside. Space, capital, commercialization, technology development, and workforce projects will help more entrepreneurs make it to clinical development. These projects were chosen based on interviews with more than 60 biologics entrepreneurs about the challenges they face in growing their companies. Top challenges included 1) access to affordable and flexible lab space, 2) access to capital, 3) difficult to navigate university commercialization systems, 4) access to regulatory and process expertise, and 5) well-trained and reliable employees. These five projects directly address those barriers.

Development and Commercialization: Promising biotools startups have the potential to solve some of the industry's (and the world’s) biggest problems, but they need to find better and more reliable ways to engage with industry to bring their innovations to the highly concentrated pharma market. To support them, we need to engage global industry leaders and investors in the work being done in our region. This can be achieved through direct outreach to investors, attracting more industry activity through active recruitment and creation of a vibrant workforce training system, and by identifying opportunities to solve industry problems—elements of work proposed in capital, governance, workforce, and technology development projects.

Scale and Durability: The pharma market must diversify to become more resilient to supply shocks. Regional networks of small businesses stand ready to support the distributed vaccine manufacturing capabilities of the future. With programs proposed in wealth equity, space, and

⁶ “Landscape of Current COVID-19 Supply Chain and Manufacturing Capacity, Potential Challenges, Initial Responses, and Possible ‘Solution Space’ - a Discussion Document”.

https://cepi.net/wp-content/uploads/2021/03/Landscape_of_current_C19_supply_chain_manufacturing_capacity.pdf

⁷ *Report from Lightcast, 2023.*

technology development projects, we will build on a strong community of small business supports to develop networked and resilient supply chains that will fuel the next generation of growth.

Regional asset base - Our region is home to a number of assets that provide outsized value across all of these challenges—environmental, technological and process-oriented. For instance, the region has built world-class assets in biosecurity and biodefense. NBAF is the nation’s first line of biodefense against zoonotic disease and one of only seven Biosecurity Level 4 (BSL-4) facilities in the U.S.⁷ It is supported by Kansas State University (KSU)’s Biosecurity Research Institute, which received a 2023 \$1M NSF Engine Type 1 award focused on biosecurity, biodefense, and biomanufacturing. **MRIGlobal** develops and tests vaccines and therapeutics to safeguard public, occupational, and military health, and the University of Missouri – KC (UMKC) Midwest Institute for Defense & Energy unites researchers and the community in the development and prototyping of new technologies for national security and dual-use markets.

Area research institutions play significant roles in vaccine development. Collectively they have received \$122M of HHS and NIH funding over five years for vaccine research.⁸ The University of Missouri (MU), is home to the Roy Blunt Precision Health Institute and 10-megawatt Research Reactor (the most powerful University research reactor in the U.S.). At the University of Kansas (KU), the Vaccine Analytics and Formulation Center has developed new mRNA vaccines, and \$12 million in interdisciplinary projects are revolutionizing the use of big data for drug discovery and growing faculty strength in genomics. The region is also home to a 1,800-employee vaccine manufacturing facility in McPherson, KS, where Pfizer produces human injectable medicines, including the COVID-19 vaccine.⁸ This plant alone holds an estimated 4.7% of the \$40.2B global human vaccine market.¹ A cluster of new human vaccine companies is developing including Scorpius Biomanufacturing and university spinouts Hafion, Likarda, and Ronawk.

Section 3: Consortium Members, Projects, and Points of Connection

Consortium Members - The KC BioHub Consortium has grown since the Phase 1 submission, with commitments to participate in the consortium’s work from over 110 regional stakeholders, 55 of which are new members. A list of consortium members has been provided with the application letters. Together, this consortium will deliver tightly interconnected component projects to achieve translatable innovation and cluster development:

Project 1: Governance

Coalition is led by BNKC: an established, regional life science backbone organization. BNKC will house new Regional Innovation Office, sustainably funded through the commitments of the “big four” regional economic development institutions. Project establishes governance model; Regional Innovation Office responsibilities; approach to ensure distributed implementation and sustained alignment of many stakeholders, contingency planning, funding for projects supportive of the consortium’s efforts as a whole.

Policy commitments:

- KC’s “big four” regional civic institutions will establish and jointly recognize a Regional Innovation Office, accountable for contributing to regional planning efforts; leadership of special projects involving entrepreneurship, innovation, and commercialization; and brokering

⁸ “PGS McPherson, Kansas.” Pfizer, www.pfizer.com/products/pfizer-global-supply/us-manufacturing-sites/mcpherson.

engagement in the development strategy for regional innovation clusters.

- MIT REAP team will continue to offer pro-bono advice and consulting to Team KC
- Leads for substantially related federally-funded initiatives will align activities, including NSF Regional Innovation Engine Type 1 Award for Biosecurity and Biodefense secured by K-State, the NSF Advancing Research Translation Award received by Mizzou, and the EDA Build To Scale award for Digital Health KC received by BioNexus KC, UMKC, and Pipeline.

Investment commitments (Funding from government and philanthropy):

- \$10,109,686.20 of matching funds to support operations. \$7.4 million of cash matching funds comes from 14 invested stakeholders spanning government, economic development and industry. Consortium members jointly committed \$990,000 worth of in-kind support. Consortium members dedicated an additional more than \$2.5 million in cost share.
- Industry members made \$847 million of commitments to new capital investments in the region.

Project 2: Space

Will make a portfolio of investments across the region to ensure that entrepreneurs spinning out of regional research universities have access to facilities and equipment they need to be successful. Will complete “pre-development” feasibility studies, community engagement, and business plan development for the proposed incubator and scale-up facility in the HSID in KC. (Note: Not requesting funding for construction.)

Policy commitments:

- The HSID board will complete “pre-development” studies and business planning exercises to prepare for development of a “scale-up” incubator facility in the district.

Investment commitments:

- Universities and ESOs across the region will expand or establish incubator facilities to create a networked capacity of “first-step” incubators and labs (furnished with grant-funded equipment).

Project 3: Capital

Will establish a revolving loan facility and suite of investor education and engagement programs. Revolving capital facility will provide leverage needed for entrepreneurs and small or high-growth businesses to secure private capital and provide credit enhancement for potential site selection and expansion investments. Will create three programs: a) angel investor training program; b) collaborative biotech diligence training program jointly developed with the St. Louis-based BioGenerator team, c) internal “diligence for contract” capability which will be made available to local investors, ESOs, and other entities to assess biotech startup readiness. Diligence capability is envisioned to be the “gold standard” for biotech startups, and to execute non-reliance agreements to share diligence with other investors.

Policy commitments:

- BioGenerator in St. Louis committed to collaborating with KC to build bio-specific investment capacity through the creation of a new mentoring and fellowship program.
- Biovate Ventures, a dedicated venture development organization led by senior KC industry and entrepreneurship support executives, has been established to manage the regional diligence hub and capital formation work.
- Venture funds KC Rise Fund, Cavallo Ventures, Flyover Capital, and BioNovus have agreed to participate in KC BioHub activities, such as the Angel Conference and Collaboratory Demo

Days.

Investment commitments:

- The Missouri Technology Corporation and Enterprise Growth Ventures, the MO and KS SSBCI affiliates, have agreed to give special consideration to funds capitalized through the project as they assess their “fund-of-funds” investments.

Project 4: Commercialization

Connects regional commercialization assets, creating a two-state rapid technology development system accessible by university researchers and industry. Partner universities are UMKC, University of Kansas (KU), Kansas State University (KSU) and University of Missouri Columbia (UM). Together, they form the KC Bio Collaboratory to increase commercialization, fast-track promising technologies and business concepts, create new fellowship opportunities for entrepreneurial researchers, and generate new connections between universities, private sector.

Policy commitments:

- All four research universities commit to jointly:
 - explore best practices in hiring, training, promotion, technology licensing and technology transfer office structures, and other topics to improve university commercialization.
 - develop a centralized listing of core lab facilities and equipment
 - create two new fellowship programs: Innovation Mining Fellowships, targeted at graduate students, and Postdoctoral Entrepreneurship Fellowships.

Investment commitments:

- Hovey Williams will provide in-kind/pro bono support valued at \$300,000 to facilitate universities in efforts to align tech transfer best practice processes and term sheets.

Project 5: Technology Development

Will create a new non-profit contract development and manufacturing organization (CDMO) and facility to serve early-stage startups to help university spinouts succeed. CDMO will guide area technologies through the TRL 5-9 “valley of death,” providing bench-to-clinic support, bridging the gap between discovery and investment readiness. Will work with KS and MO Manufacturing Extension Partnerships to help industry test and pilot new technologies like AI-ML. Will integrate with workforce, offering training and apprenticeships. Will identify new business opportunities the biomanufacturing supply chain to be served by local small businesses, refer them to wealth equity project ESOs. Will be located in or near HSID to build center of gravity.

Policy commitments:

- All four regional research universities agreed to work with CDMO to hand off care and support of spin-off companies as they grow out of university labs and tech transfer offices.
- All four regional research universities extend “in-network” pricing for the use of core lab facilities to companies participating in the CDMO’s programs and services.

Investment commitments:

- 25 industry coalition members, including private CDMOs and regulatory and development experts Charles River Laboratories, Eurofins Viracor, KCAS, TriRx, Attentive Life Sciences, Latham BioPharma, and others have agreed to provide pro-bono support and advisory services to businesses accessing the new CDMO.

Project 6: Workforce

The workforce project will expand training and education opportunities in biotechnology and biomanufacturing to produce 10,000 new skilled workers over ten years. The KC BioHub Workforce Coalition (KC-BWC), led by Bioscience Core Skills Institute (BCSI) includes workforce boards, ed-tech companies, education nonprofits, schools, colleges, universities, charities, and certification organizations. Key initiatives include expanding career awareness, implementing biotech curriculum in high schools, offering new training programs, registered apprenticeships and on-the-job training, and establishing accessible virtual reality training hubs. Additionally, a new bachelor's degree at MSI Donnelly College will articulate with KCK Community College programming, ensuring comprehensive pathways for skill development and industry recognition.

Policy commitments:

- KC Stem Alliance will connect to 50+ regional school districts to offer “real world learning” opportunities to their middle- and high-school students.
- BioBuilder, a national training entity, will deploy its “Biotech Builder” curriculum at high schools across the metro area for the first time.
- Five new high school training programs, two new community college programs, two new certifications and a new Bachelor’s degree program at MSI Donnelly College will be created.

Investment commitments:

- Participants in the KC-BWC have provided more than \$2.5 million of cost share to support the consortium’s work.
- More than 40 private sector consortium members have made skills-based hiring commitments for more than 650 “good job” positions over the next three years.

Project 7: Wealth Equity

Will foster equitable growth by opening up pathways to ownership via real estate investment and small business. HSID incubator supported by “space” project will be held by novel commercial community trust, structured in partnership with community, distributing profits directly to low-income community members. Network of small business support organizations will develop two new programs to help small businesses prepare to be vendors to biotech industry and become part of the pharma “scaled out” supply chain. All programs run by ESOs with track records of reaching underserved entrepreneurs.

Policy commitments:

- The consortium commits to structuring a novel commercial community trust in partnership with community members, which will hold ownership of a future incubator in the HSID and distribute profits directly to residents in neighboring Justice40 communities.
- The Toolbox and HEDC commit to jointly integrating their construction/facility management and certification programs to create a new curriculum, and training four other regional ESOs to deliver the training in their own communities.
- Spark MHK with Black Entrepreneurs of the Flint Hills, Omni Circle Group, and REDI commit to replicating the successful Toolbox/HEDC training in respective communities.

Investment commitments:

- KC BioHub commits to pursuing construction of an incubator building in the HSID and placing that building in a commercial community trust as described above.

Complementary Investment Commitments - We continue efforts to assemble land in the HSID for

future construction of a community trust-owned incubator. Pre-development activities funded in Project 2 (Space), will accelerate financing and begin design and construction of a “scale-up” incubator facility, once we hold title on a lot (targeted for 2025).

Points of Connection Among Projects Each of seven working groups are interconnected, working together to create systemic solutions that will allow our community to uniquely rise to the challenges faced by the vaccine development and manufacturing industry.

Section 4: Climate, Equity, Housing, and Good Jobs

Embedding equity in the KC BioHub - Embedding equity is a foundational goal for KC BioHub; regional impact goals extend into every project. Governance committee engaged organizations representing the views of communities of color and has strong representation from disinvested communities throughout the Project Steering Committees. Capital strategy serves startups and small businesses, and a professionally managed diligence hub endorses bio startup deals, reducing reliance on network bias. Commercialization efforts target faculty members, postdocs and graduate students at regional research universities with educational training on commercialization options, and support with examples and fellowship opportunities. These proven interventions have a larger impact on the patenting and startup activity of women and people of color⁹. Workforce project focuses on training and placement for good jobs that don’t require a college degree—making opportunities attainable to those without systemic educational advantages. Additionally, they will create new degree and articulation programs with commuter schools, community colleges, and MSIs to open new pathways for advanced degrees for minority students. Proposed CDMO will be sited in a facility that is historically relevant, making a tangible point about who is meant to benefit most from this work. Integration with workforce group opportunities will underscore attempts to make the organization’s work as accessible as possible including small business support programs explicitly targeted at Black, brown, women and rural-owned businesses.

Planning for growth via affordable housing - The KC BioHub, through coalition member MARC, will participate in KC’s Regional Housing Partnership, a bi-state working group that is currently working to create an affordable housing plan for the region.

Engaging labor and creating good jobs - Our regional consortium established that a good job pays a living wage (\$24/hr or more), provides benefits and pathways to growth, and does not require a college degree. Our consortium now includes the KS and MO AFL-CIOs and MissouriWorks, their pre-apprenticeship program. Both state AFL-CIO leaders will serve on our Governance steering committee, and Missouri Works is now an integrated element of our workforce project proposal.

Section 5: Operations: Evaluation, Timeline, Progress, and Sustainability

Evaluation strategy KC BioHub will invest in collection and transparent communication of evaluative data, including hiring an evaluation leader, supplementing capacity with third-party evaluation, integrating with MEP-partners’ existing evaluation to survey biomanufacturing firms, and develop an accessible dashboard (modeled from: [SWPA New Economy Collaborative](#)). All data collected will be disaggregated by gender, race & ethnicity, and nativity.

Table 2

⁹ Delgado, M., & Murray, F. E. (2023). Faculty as catalysts for training new inventors: Differential outcomes for male and female PhD students. *Proceedings of the National Academy of Sciences*, 120(36), e2200684120. <https://doi.org/10.1073/pnas.2200684120>.

| Group | KPIs | Timeline | Outcome Goals |
|------------------------|---|----------------------|---|
| Overall | <ul style="list-style-type: none"> • New firms created • Good jobs created • Good jobs filled • Businesses engaged in KC BioHub programs • Regional GDP growth rate | 10 years, By 2034 | <ul style="list-style-type: none"> • 10,000 good jobs created and filled • 100 new biotech firms created • \$20B industry investment in region • 400 businesses engaged in KC BioHub • Regional GDP growth rate exceeds 6% for two quarters |
| Governance | <ul style="list-style-type: none"> • Stability of core consortium members • Establishment of regional innovation office • Follow-on investment in coalition • Community awareness • Private sector engagement | 5 years, By 2029 | <ul style="list-style-type: none"> • Sustain 90% of consortium members • RIO is established and stably funded • Add'l \$20m raised to support ongoing consortium work • 50,000 community members received direct outreach • 400 businesses engaged in the KC BioHub |
| Space | <ul style="list-style-type: none"> • Sqft filled by regional biotech startups • New development activity in HSID • Completion of plan to build incubator | 3 years, By 2027 | <ul style="list-style-type: none"> • 1,000,000 new sqft filled with biotech startups • Additional 500,000 sq ft in development in HSID • Complete plan to build an incubator in KC |
| Capital | <ul style="list-style-type: none"> • Increased local activity from external bio investors • Increased bio activity from local investors • Expanded capital pools dedicated to biotech and the supply chain • Increasing percentage of local bio deals meeting diligence standards • Surveys to validate continuity and sustainability of efforts | 5 years, By 2029 | <ul style="list-style-type: none"> • \$20M in new regional equity capital pools specific to bio • \$4M in new regional debt funds- bio supply chain and support small businesses • Network of 100 institutional investors, \$40M investment • Network of 100 angel investors, \$5M in investment • 30 companies trained and assessed as investor-ready; 10 of which gain investment funding |
| Commercialization | <ul style="list-style-type: none"> • Number of faculty, postdocs, and grad students trained • Number of fellows supported • Businesses created by trained faculty, postdocs, or grads • Follow-on funding raised by trainee businesses • Engagements/projects with industry partners • Projects with IND filing at KC BioHub CDMO | 3 years, By 2027 | <ul style="list-style-type: none"> • 400 faculty, postdocs, and grad students trained • 16 fellows supported • 32 projects completed w/ 200 engaged industry partners • 2 businesses created by trainees • 40 new industry agreements • Raising \$20m in follow-on funding • 2 projects leading to IND filing and moving into the KC BioHub CDMO for first in-human clinical trials. |
| Workforce | <ul style="list-style-type: none"> • Increased career awareness • Expanded talent pipeline • Enhanced education-to-employment connection • Development of new degree and certificate programs | 3 years, By 2027 | <ul style="list-style-type: none"> • 25% Increase student awareness of biotech careers • 10% Increase # of graduates from regional biotech and engineering grad programs • 20 new employer partnership • 80% program graduates placed in good job within 6 mos • 1 new undergraduate degree program, 2 new credentials |
| Technology Development | <ul style="list-style-type: none"> • Number estbl'd partnerships w/ startups • Number of FDA applications prepared, submitted, and approved • Impact on student careers in biotechnology • Enhancement of area Universities, regional technologies, and increase in venture investment, corporate partnership, or acquisition based validation. • Progress to self-sufficiency based on revenue. | 3 years, By 2027 | <ul style="list-style-type: none"> • Full operating strength of 12 partnerships per year, goal of at least 30 total. • At least 10 FDA approvals prepared, 8 submitted, and 3 approved. • Increase startup valuation of University spin-out startups utilizing services by at least 3x. • Able to sustain operations based on revenue by the end of year 3. |
| Wealth Equity | <ul style="list-style-type: none"> • Trust creation • Land acquired by trust • Number of community members engaged in trust planning • Number of entrepreneurs served by ESO network • Percentage of businesses served who identify as Black, brown, women, or rural-owned. • Number of businesses completing new certifications | 3 years, By 2027 | <ul style="list-style-type: none"> • Create and structure community trust, integrating input of 50 community members. • Community trust will acquire a plot of land for future incubator construction and will complete a plan to build a facility. • Programs by ESO network to serve 200 small businesses, 75% of whom identify as Black, brown, women, or rural-owned. |

| | |
|---|--|
| <ul style="list-style-type: none"> Number of businesses securing new biotech-related accounts or lines of business | <ul style="list-style-type: none"> Program completion to result in 50% of businesses securing a new license. 25% of program businesses to secure new biotech or biomanufacturing account |
|---|--|

Stretch goals - The KC BioHub will pursue additional goals within the 5-year governance grant period, including:

- Secure two new major biomanufacturing site selections or expansion
- Plan and construct an incubator facility in the HSID (No construction funding requested at this time).
- Secure stable appropriations to support work of the KC BioHub from KS and MO state govt's.
- Grow commercial community trust to cover UMKC tuition costs for recipients.

High-Level Timeline: Additional timeline detail is provided in component project proposals

| Project | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|----------------------|---------------------------------|--|-------------------------------|--|---------------------------------|
| Governance | Hiring, procurement, planning | Operational capabilities developed) | Third-party evaluation report | Seeking state funding, expanding capital pools | Final reports, , sustainability |
| Space | Complete pre-development | Complete partner procurement | Impact reporting | | |
| Capital | Structure and program set up | Host 1st Angel conference | End of BioSTL mentors | Seek SBIC status | Final reporting |
| Commerc. | Launch Collaboratory | Launch fellowships | Support startups | Final reporting | |
| Tech. Dev. | Procurement and launch | Complete procurement | Sustained by revenue | | |
| Workforce | New programs launch | Certifications accelerate | Final reporting | | |
| Wealth Equity | Design programs, structure fund | Deliver programs, acquire first fund asset | Final reporting | | |

Relevant activities between Phase 1 and Phase 2 Based on Phase 1 feedback, KC BioHub consortium added 55 new partners, strengthened consortium commitments, secured support of globally-relevant vaccine development and manufacturing companies, and raised more than \$7.4 million in cash matching funds plus in-kind. We secured actionable hiring commitments to hire more than 650 good jobs and make more than \$800 million in regional capital investments. We engaged leading vaccine companies such as Pfizer, Merck, Charles River Labs, Ginkgo Bioworks, etc. in KC regional planning activities. BioKansas secured approval to deliver a new biotechnician registered apprenticeship program.

Sustainability - Some investments proposed through the KC BioHub are catalytic and will not require additional government funding to sustain, including investments in space, capital pools, technology development, and some elements of wealth equity (the formation of the fund). The programmatic elements, in commercialization, workforce, and some elements of capital and wealth equity, will require recurring funding to maintain. Industry funding will support workforce development in the future. The RIO will raise funds from state and local government and philanthropy to ensure ongoing commercialization, capital, and wealth equity can continue if proven successful. The RIO itself is already well on its way to reaching sustainability—it has already secured sustaining commitments from civic organizations to contribute to staffing costs.