



An Environmental Scan of Life Science Cluster Organizations in Canada and Internationally

Prepared for
Synapse Life Science Consortium

In
September 2021

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Executive Summary

The Synapse Life Science Consortium is a not-for-profit organization that supports initiatives and projects that accelerate the commercialization of life science innovations in Hamilton and its surrounding areas. Synapse currently provides a number of services including partnership brokering, networking events, and programming to boost health sciences commercialization opportunities. As Synapse continues to secure funding for its mission, it is seeking to assess the potential to develop additional high-impact projects and programs. To support this endeavour, Synapse approached the McMaster Research Shop in Summer 2021 to conduct an environmental scan of life science cluster organizations in Canada and internationally in order to recognize the various types of projects and programs that these organizations provide.

The McMaster Research Shop team conducted an environmental scan of organizations from Canada, the United States, and Europe. We included the following organizations in our report: 1) BioAlberta; 2) BioNova; 3) BioNebraska; 4) Pennsylvania Biotechnology Centre; 5) BioScience LA; 6) Biopôle; and 7) Enventure. The research team collected information through data available online and interviews with representatives from these organizations. Through our analysis, we found that several organizations provide access to onsite amenities, such as co-working spaces. Another common feature among the organizations that we scanned was pitch competitions and intensive commercialization programs that range from 10 weeks to 6 months. Overall, the majority of organizations that we scanned charge membership fees. Among organizations that do not charge membership fees, we found that they do not provide special rates on the purchase of lab equipment or financial support for young companies seeking to commercialize their innovations.

This study has several limitations including the lack of publicly available information, such as details regarding revenue and budgeting, as well low response rate among organizations that we contacted for interviews. Additionally, since the research team only included 7 organizations in this report, the small sample size may have skewed the results of our analysis. Nonetheless, the results of this report are intended to support Synapse as they seek to develop additional high-impact programming for the life sciences ecosystem in Hamilton.

1.0. Introduction

The Synapse Life Science Consortium is the formal regional cluster organization for the life sciences ecosystem in the greater Hamilton region. Synapse focuses on supporting initiatives and projects that accelerate the commercialization of life science innovations. Synapse seeks to support all companies and institutions that make up the Hamilton life science cluster, celebrating the strengths and successes of industry leaders and new start-ups, as well as promoting the region as an attractive place to live, work and invest.

Synapse currently provides a number of services including partnership brokering, networking events, and programming to boost health sciences commercialization opportunities.

As Synapse continues to secure funding for its mission, it would like to scope opportunities to develop additional high-impact projects and programs. In order to facilitate this objective, Synapse approached the McMaster Research Shop in Summer 2021 to conduct an environmental scan of life science cluster organizations in order to recognize the various types of projects and programs that these organizations provide. For this project, the main research question is:

What are some examples of high-level programming that has been impactful for life science clusters in Canada, the United States, and Europe?

The goal of this project is to provide Synapse with examples of life science cluster organizations that have provided programming that has been impactful for their ecosystem. Synapse intends to use the results of this report to inform the development of high-level programming for life science innovators in the greater Hamilton region.

2.0. Methodology

For the environmental scan, the team worked with senior leadership at Synapse to define two types of cases to search for. The first kind of case were entities similar to Synapse in that they have less than 5-6 employees and are publicly funded. Within this group of clusters, we gave preference to those that do not charge membership, since Synapse similarly does not charge membership fees. The purpose of examining these cases was to provide Synapse with realistic examples of programming that they could plausibly seek to develop and administer at the organization's current operating capacity. The majority of case studies in this report fall into this category. We focused on case studies from Canada, the United States, and Europe, since these regions have similar political and social structures, therefore increasing the likelihood that the programming that they provide can be replicated in Hamilton, which is Synapse's geography of focus.

We also included a case study that is divergent from Synapse in that it has more than 5-6 employees. The purpose of this case study was to provide Synapse with realistic examples of programming that they could aspire to develop and administer when they have greater operating capacity..

For all of the case studies, we collected information from online sources, including the organizations' websites and internal reports. Specifically, we sought to collect the following information for each case included in our scan:

- Background information (eg. the location, the goals of the organization)
- Public vs. private organization
- Number of employees
- Use of membership fees, the cost of membership, and the benefits of membership
- Description of programming and services and the reported impact they have for their constituents
- Organizational budget and revenue drawn from membership fees

In addition to online sources, the team contacted a number of the organizations to collect missing information via a structured interview. We reached out to the organizations through a variety of means including email, phone, and LinkedIn. We also contacted the local Chambers of Commerce and Economic Development Agencies to see if they could provide us with additional information. The interview guide used for conversations with organizational representatives can be found in Appendix A.

3.0. Limitations

There were a number of notable limitations to our environmental scan, as described in this section.

3.1. Lack of Publicly Available Information

Although the research team was able to collect basic information on the organizations that we selected, detailed information on the types of programming that they provide, including the impact that they had on their local life science ecosystem, was limited. Additionally, there was a lack of information available online on the organizations' budgets and the amount of revenue they gain from various sources, such as membership fees.

3.2. Low Response Rate for Interviews

In order to address the above limitation, the team attempted to conduct interviews with representatives from the organizations included in our report. Despite our numerous attempts to contact the organizations, we received a very low response rate, with only two organizations agreeing to meet with us for an interview. We tried to further address this limitation by contacting the local Chambers of Commerce and Economic Development Agencies to see if they could provide us with additional information on the organizations we selected, since these groups often have a repository of information on businesses and organizations in their region. However, these agencies informed us that they were unable to provide us with the type of information that we were requesting.

3.3. Applicability to Hamilton

For the majority of clusters in this report, our inclusion criteria required that the organizations were publicly funded entities. In the United States, we found that the majority of publicly funded life science cluster organizations were state-wide, whereas the city-wide organizations were often private. In order to adhere to the inclusion criteria, as defined by Synapse leadership, we decided to include state-wide organizations in this report. As a result, it is possible that the programs provided by these state-wide organizations are out of scope or scale when it comes to developing high-impact programming for a municipal regional cluster.

3.4. Comprehensiveness of the Research

The research team was only able to examine organizations that were widely advertised or have a large online presence. It is possible that we missed a number of organizations in our environmental scan.

3.5. Small Sample Size

The research team included 7 organizations in this report. These organizations form the basis of our analysis. However, due to the small sample size, it is possible that the themes and trends that we highlight in this report are not representative of the entire industry.

4.0. Environmental Scan

4.1. Case Studies of Organizations Similar to Synapse

In this section, we provide portfolios of organizations that are similar to Synapse in that they have 5-6 employees and are public entities. We included a total of five organizations:

- BioAlberta (Canada)
- BioNova (Canada)
- BioNebraska (United States)
- Pennsylvania Biotechnology Center (United States)
- Biopôle (Europe)

4.1.1. BioAlberta Association for Life Sciences Industry – Alberta, Canada

Background Information

[BioAlberta Association for Life Sciences Industry](#) is a non-profit, life sciences organization operating in Alberta, Canada (“Life sciences Alberta”, n.d.). It is a membership-based organization that is focused on growing, advocating for, and promoting the life sciences industry and the bio-economy in Alberta (“Life sciences Alberta”, n.d.). The key activities of BioAlberta are rooted in advocating for the life sciences industry by providing policy options to the different levels of government, supporting industry development, promotion, marketing, and networking (“Life sciences Alberta”, n.d.). The organization is composed of member companies representing nine major sectors: health biopharma, industrial biotechnology, medical devices and technology, functional foods and natural health products, support services, environmental biotechnology, agricultural biotechnology, academic and research institutes, and government (“Life sciences Alberta”, n.d.).

Structure of Organization

Aside from the Board of Directors, BioAlberta has 3 employees (“BioAlberta team”, n.d.). The organization offers membership to a range of companies working in the health and life sciences sector (“BioAlberta member”, n.d.). BioAlberta has created an Advocacy and Policy Committee that is led by volunteer chairs. These volunteer chairs are employees of member companies (“BioAlberta member”, n.d.). This committee focuses on legislative and regulatory policy operating at the provincial level and

supports partner life sciences organizations across the country to discuss federal regulatory issues (“BioAlberta member”, n.d.). The activities of this committee include educating public officials, encouraging support for life sciences entrepreneurship, and simplifying the regulatory environment. The committee is divided into smaller subcommittees to address the needs of the different sectors within the life sciences (“BioAlberta member”, n.d.).

BioAlberta provides 6 types of memberships that are based on positioning in the industry. For each type of membership, the fees differ based on the number of employees in the company (“BioAlberta member”, n.d.).

1. Core Life Sciences Membership
2. Industry Supporter Membership
3. Education/Government Membership
4. Student Membership
5. Individual Membership
6. Partner Memberships

Core Life Membership

This is for organizations whose main focus of their business is on the life sciences industry.

Annual cost for:

- **1-5 Employees = \$375**
- **6-15 Employees = \$600**
- **16-50 Employees = \$1,300**
- **51-100 Employees = \$2,000**
- **101+ Employees = \$3,250**

Industry Supporter Membership

This is for organizations whose main focus of their business is outside the life sciences industry but who support the industry.

Annual cost for:

- **1-5 Employees = \$375**
- **6-15 Employees = \$600**
- **16-50 Employees = \$1,300**
- **51-100 Employees = \$2,000**
- **101+ Employees = \$3,250**

Education/Government Membership

This is for government agencies and educational institutions that are involved in the life sciences either through promotion or development.

Annual cost = \$1,500

Student Membership

This membership is for students who are attending a recognized educational institution and are interested in the life sciences industry.

Annual cost = \$65

Individual Membership

This membership is for individual persons who are not a part of/affiliated with a life sciences organization/industry but are interested in the industry.

Annual cost = \$185

Partner Membership

This membership is for organizations who are interested in partnering with BioAlberta to help support the life sciences industry in Alberta.

Annual cost for:

- **Silver Partner = \$6,000**
- **Gold Partner = \$ 15,000**
- **Platinum Partner = \$25,000**

Programming, Services, and Facilities

BioAlberta programming and services are designed to support both the development of member companies and the greater Alberta Life Sciences industry (“BioAlberta membership benefits”, n.d.). Alongside providing its members with important business-related support, BioAlberta is active in advocacy for industry development and provides key tools to support its members with regulatory and policy information (“BioAlberta membership benefits”, n.d.). The programming, services, and facilities offered by BioAlberta have been organized into 3 categories (Advocacy, Networking, and Business Development) to showcase the range of services offered by the organization:

Advocacy

- **Working Groups and Committees**
 - BioAlberta provides members with the opportunity to form committees and working groups, such as the Advocacy and Policy Committee, to discuss

and create agendas related to industry related issues ("BioAlberta membership benefits", n.d.).

- BioAlberta members are regularly able to share input with BioAlberta regarding industry related issues through these committees, working groups, and through surveys ("BioAlberta membership benefits", n.d.).
- **Regulatory and Policy Reports**
 - BioAlberta provides its members with resources and reports related to the Life Sciences Industry, regulatory and policy information
 - Members of BioAlberta have exclusive access to intelligence reports related to the life sciences industry ("BioAlberta membership benefits", n.d.).

Networking

- **Events**
 - BioAlberta members have access to networking events, workshops, and seminars. Members also receive 25% off of BioAlberta organized events ("BioAlberta membership benefits", n.d.).
 - BioAlberta and its partners organized the BIO2019 International Convention, which invited investors, entrepreneurs, and decision makers to learn more about the research and collaboration opportunities in Alberta's life sciences sectors. This event brought 150 attendees with representatives from the University of Calgary, Alberta Real World Evidence Consortium, Alberta Clinical Trials Networks, and Alberta Innovates (BioAlberta, 2020).
 - BioAlberta hosts an annual General Meeting and Awards Gala in which representatives from industry, government, investments, and innovation are able to engage in roundtable discussions, participate in investment pitches, network, and learn of updates in the industry. The 20th Gala, held in 2019, had more than 220 attendees (BioAlberta, 2020).

Business Development

- **Business Services**
 - Members can use BioAlberta's Staples Advantage Program. The benefits include 10% of retail prices and fast, speedy delivery for orders over \$50 ("BioAlberta membership benefits", n.d.).
 - BioAlberta, as a member of BIOTECANADA, is able to provide discounted rates for ShareVault services. ShareVault is a cloud-based document sharing platform that is secure ("BioAlberta membership benefits", n.d.).

- **Marketing**
 - Through a partnership with BusinessWire Canada, BioAlberta members are able to post 10 news releases per year (“BioAlberta membership benefits”, n.d.).
 - BioAlberta provides its members with visibility within BioZine, which is the official magazine of the Alberta Life Sciences Industry. The magazine features industry news, advertisements, and member lists.
- **Human Resources**
 - BioAlberta members and partners have access to post career opportunities directly onto BioAlberta’s website. Postings can be active for one month (“BioAlberta membership benefits”, n.d.).
 - Through a partnership with BioTalent Canada, BioAlberta members are able to receive one free job posting and receive a 25% discount on BioTalent Canada’s National Compensation Guide. This guide is a review of job functions within Canada’s bio-economy and provides an overview of salaries and benefits, skills and education, and job descriptions for occupations within the industry (“BioAlberta membership benefits”, n.d.).
- **Member Directory**
 - A directory of all BioAlberta member companies. BioAlberta provides brief profiles of member companies that are available to the public through their website (“BioAlberta membership benefits”, n.d.).
- **Discounts on Laboratory Equipment**
 - BioAlberta members can receive discounts of up to 75% off on lab equipment produced by VWR International Co. This corporation offers lab equipment, supplies, chemicals and products from more than 5000 manufacturers. VWR will also provide member companies a 3% rebate (“BioAlberta membership benefits”, n.d.).
 - In partnership with BIOTEC Canada, BioAlberta members can save between 7-15% on research instruments and microscopy digital imaging solutions (“BioAlberta membership benefits”, n.d.).
- **Insurance**
 - The BioAlberta Affinity Program provides special rates and rates for different types of insurance through partnerships with insurance companies. In partnership with Equitable Life of Canada, the BioAlberta Affinity Program is able to provide member companies with special rates on Group Health and Dental programs (“BioAlberta membership benefits”, n.d.).
- **Travel and Accommodation**
 - BioAlberta members are able to receive between 5-10% off on rental car and hotel accommodations (“BioAlberta membership benefits”, n.d.).

Budget Breakdown

Information not available.

4.1.2. BioNova – Nova Scotia, Canada

Background Information

[BioNova](#) is a life sciences cluster operating in Nova Scotia, Canada. As a non-profit organization, BioNova's mission is to accelerate the growth of the health and life sciences sectors in the province ("About BioNova", 2019). It does so by supporting the growth and innovation of its member companies through networking opportunities, educational events, and funding connections ("About BioNova", 2019). BioNova is also focused on advocating for the growth of the health and life sciences sector. The organization is composed of member companies representing 5 major areas in the health and life sciences: bioproducts, pharmaceuticals and vaccines, medical technologies, digital health, and natural health products ("About BioNova", 2019).

Structure of Organization

Aside from the Board of Directors, BioNova has 4 employees. The organization offers membership to a range of companies working in the health and life sciences sector ("About BioNova", 2019). BioNova is a membership-based organization, however information on membership fees is not available online. BioNova's membership benefits include mentorship, funding, networking, training and access to funders. Other membership benefits include growing company profiles through sponsorship opportunities and scaling-up companies.

Programming, Services, and Facilities

BioNova currently offers the following programs for its members:

Member Directory

- A list of all BioNova member companies. These companies range from government agencies, research institutes, students, and businesses. The directory also includes stakeholders who have contributed significantly to Nova Scotia's health and life sciences sector ("Members & Resources", 2019).

Funding Navigator

- BioNova provides a large, searchable database of funding programs that are available to Nova Scotia companies working in the health and life sciences sector. This database is open to non-members (“Members & Resources”, 2019).

Member Visibility in LINK

- LINK is the quarterly publication operated by BioNova. This magazine provides industry news and updates, highlights successes within the industry, and showcases emerging start-ups within the region.

Support Programs

- **Technical Assistance Program (TAP)**
 - TAP is a financial program designed to support small project funding for small-middle size enterprises. The financial support is intended for companies who are experiencing challenges with commercialization/product development. It is meant to support companies who are in need of technical expertise/subject matter expertise that is not available to them within their own company (“Members & Resources”, 2019).
 - Projects that are deemed to be in need of financial assistance are determined by BioNova. Some examples of project assistance that will be considered by BioNova include support with a science or engineering challenge, experiment design, prototype development, or other technical support but not for business, marketing or administrative challenges.
 - The TAP program is for member companies and BioNova has set out eligibility criteria; however, this criteria is not provided on the company website, rather the company must be directly contacted for more information (“Members & Resources”, 2019).
- **BioNova Boost**
 - A workshop series on business topics related to intellectual property, patents, marketing, communication, addressing emerging business needs, understanding regulatory changes within the FDA and Health Canada, and workforce enhancement (“Members & Resources”, 2019).
 - This workshop series is open to all BioNova members. The series is meant to help support the business of member companies. Speakers are recruited from industry, research, government, financial companies, and healthcare. Organizations are welcome to sponsor a workshop.
 - Non-members are able to attend these workshops by paying a fee, while attendance for member companies is free (“Members & Resources”, 2019).

- **International BioPartnering Program**
 - This program is designed to facilitate partnerships between international businesses and researchers with Atlantic Canada life science companies and research organizations. The program provides financial support to help support the development of these partnerships with Atlantic Canada companies (“Members & Resources”, 2019).
- **Networking Events**
 - BioNova organizes quarterly networking events for members and non-members within the industry to gather and discuss opportunities and challenges. Examples of past networking events include the Annual General Meeting, the BioNova Social, and the Annual Holiday Reception (“Members & Resources”, 2019).
 - There is no attendance fee to attend these networking events. The public is able to register for these events through the Events Calendar provided on the BioNova website (“Members & Resources”, 2019).
- **Mission and Conference Assistance**
 - BioNova provides assistance to member companies to attend conferences locally, nationally, and internationally. This assistance comes in the form of discounted registration fees, travel and accommodation assistance, and speaking engagements (“Members & Resources”, 2019).
 - Past international conferences to which BioNova has sent delegates include AdvaMed, BIO International Convention, Life Science Alley, and Medica (“Members & Resources”, 2019).
- **BioBusiness Accelerator Program**
 - This program is intended to help companies accelerate their path to commercialization. The program is a blend of already existing programs offered by BioNova including the Technical Assistance Program (“Members & Resources”, 2019). Other services included within this program include digital marketing asset development, investor relations, and business development assistance. It is important to note that the services offered within this program may change over time. This program is available to BioNova members only (“Members & Resources”, 2019).
- **BioPort Atlantic**
 - A forum/conference that invites attendees from health and life sciences companies, post-secondary institutes, industry, investors, and government agencies to further grow Nova Scotia’s bio-economy (“Members & Resources”, 2019). The conference is intended to support early stage companies raise capital through the BioInnovation Challenge and help to bring together emerging leaders/talent in the sector. BioNova members receive discounted rates to register and attend the conference.

- **BiInnovation Challenge**
 - A business pitching competition, held during the BioPort Atlantic Conference, for early-stage Atlantic Canada businesses and research organizations. Participants can win up to \$25,000 in funding to help fund their business ideas. Past winners include Covina Biomedical and Pfera (“Members & Resources”, 2019).
- **BiInnovation Challenge Junior**
 - A business pitching competition, similar to BiInnovation Challenge, open to high school students and first year post-secondary students in Nova Scotia. Students come prepared with health and life sciences business ideas and winners can be awarded a prize of \$2000 (“Members & Resources”, 2019).
- **BioAdvantage Program**
 - In partnership with Fisher Scientific, BioNova members receive discounted pricing and access to a large catalogue of lab equipment and customer support. As a part of this program, there are no shipping costs, special pricing, delivery within 24 to 48 hours, and annual purchasing incentives (“Members & Resources”, 2019).
- **HR Benefits Program**
 - In partnership with BioTalentCanada, members are able to access an HR Benefits Program. This program helps BioNova members get free access to job postings on BioTalent Canada (“Members & Resources”, 2019).
- **Business Wire Benefits**
 - In partnership with BusinessWire, members are able to share their news releases and media on the Business Wire platform (“Members & Resources”, 2019).

Budget Breakdown

Information not available.

4.1.3. BioNebraska – Nebraska, United States

Background Information

[BioNebraska](#) was founded in 2005. It is a non-profit, membership-based association that is focused on the growth and development of the bio-ecosystem both locally and globally (“About Bio Nebraska”, 2020). BioNebraska membership is large, the

organization represents over 80 “bio-related” organizations from sectors ranging from human health, to biotech, to animal health (“About Bio Nebraska ”, 2020). The organization’s mission is founded on four main pillars relating to (1) Networking, (2) Advocacy, (3) Resources and (4) Development and Education for BioNebraska members (“About Bio Nebraska”, 2020). With these pillars in mind, BioNebraska aims to support the greater good and create opportunities for economic development. Through their pillar of ‘Networking’, the organization works towards creating an environment of forums and events in which ideas and support can be shared between members. Their pillar on ‘Advocacy’ pertains to BioNebraska’s role in helping to share the voices of members to decision makers at the governmental level in order to support the growth of the bio-ecosystem in the state (“About Bio Nebraska ”, 2020). The organization’s third pillar on ‘Resources’ is focused on providing members with the tools necessary for success including regulatory resources and purchasing program resources (“About Bio Nebraska ”, 2020). The final pillar on ‘Development and Education’ is related to the organization’s role in supporting members with educational industry-focused workshops and seminars. These workshop topics can range from business operations to tax information (“About Bio Nebraska”, 2020).

Structure of Organization

BioNebraska is a membership-based organization with 17 individuals on the Board of Directors and 2 employees on the Executive Leadership Team (“About Bio Nebraska”, 2020). As an organization, it offers various types of membership opportunities for individuals or entities interested in joining BioNebraska (“About Bio Nebraska”, 2020). The organization offers the following types of membership based on an entity’s or individual’s positioning in the industry:

1. Corporate Membership
2. University Membership
3. Government Agency, Nonprofit Entity & Community College Membership
4. Professional Service Provider Membership
5. Student Membership

Portions of the membership fees may be tax deductible. Less than 5% of the membership fees are allocated to lobbying activities but this figure is reviewed annually (“Benefits of Membership”, 2020).

Corporate Membership

This type of membership is designated for for-profit organizations/entities/companies involved in research, development, manufacturing, and/or sales in the life sciences or biotechnology sectors (“Benefits of Membership”, 2020). Corporate membership can include healthcare providers and medical centres. Annual membership fees (\$ USD)

vary based on the number of employees within the organization/entity/company (“Benefits of Membership”, 2020).

Annual cost for:

- **1-9 employees** = \$200
- **10-49 employees** = \$400
- **50-299 employees** = \$1000
- **300-499 employees** = \$2500
- ***500+ employees** = \$5000
 - *If employers have more than 500 employees who work *globally* there is a minimum annual fee of \$1000 (“Benefits of Membership”, 2020).

University Membership

University membership is designated for public or private post-secondary academic institutions that are involved in research and/or development in the life sciences or in biotechnology (“Benefits of Membership”, 2020).

Annual cost = \$7000

Government Agency, Nonprofit Entity & Community College Membership

This type of membership is meant for any governmental agency, nonprofit organization, or community college that is dedicated to promoting biotechnology (“Benefits of Membership”, 2020).

Annual cost = \$1000

Professional Service Provider Membership

The Professional Service Provider Membership is designated for firms that provide professional services to professionals working in the life sciences industry (i.e. consultants, engineers, accountants) (“Benefits of Membership”, 2020).

Annual cost = \$500

Student Membership

The Student Membership is meant for individuals students from K-16 who are interested in the life sciences (“Benefits of Membership”, 2020).

Annual cost = \$25

Programming, Services, and Facilities

BioNebraska provides the following programs and services to members of its organization:

Women in Stem

- Various events and services to support Women in Stem including a one day luncheon, workshops, networking, sponsorship activities (“Benefits of Membership”, 2020).

Member Purchasing Program

- Through a partnership with Fisher-Scientific, BioNebraska members are able to receive discounts on lab and safety supplies, chemicals, and other services provided by Fisher Scientific (“Benefits of Membership”, 2020).
- BioNebraska is also a state affiliate of the Biotechnology Industry Organization (BIO). This affiliation provides BioNebraska members with discount plans and services through BIO’s Business Solutions Program and group purchasing program with companies such as UPS, Nikon, BioSpace, Arigas Healthcare, Office Depot, and more.

Government Relations

- BioNebraska advocates on governmental levels to bring up issues with decision makers to grow Nebraska’s bio industry (“Benefits of Membership”, 2020).

Educational Opportunities

- Provides seminars and forums with industry-related information. Seminar topics are designed to meet the needs of members related to business operations or emerging topics within the industry (“Benefits of Membership”, 2020).
- Topics have included business operations, tax information, and employee benefits.

Networking opportunities

- Through BioNebraska’s ‘Well-Connected’ program, members are able to access a directory of contacts within the business, educational, and governmental spheres. This program is to help members connect with each other.
- The organization hosts and sponsors interdisciplinary forums and informal events where members are able to connect with each other (“Benefits of Membership”, 2020).

Regulatory and Legislative Resources

- BioNebraska provided members with resource tools to help find and cite regulatory and legislative documents. This resource also provides members with

summaries and guides in navigating government relations (“Benefits of Membership”, 2020).

Budget Breakdown

Information not available.

4.1.4. Pennsylvania Biotechnology Center – Pennsylvania, United States

Background Information

[Pennsylvania Biotechnology Center](#) (PABC), located in Doylestown Pennsylvania, is a non-profit life science cluster that educates future researchers and promotes regional economic development (“Mission”, 2021). The organization also contributes to advancements in biotechnology within Bucks County and the acceleration of new innovations and jobs (“Mission”, 2021). Their target member companies are new, non-profit, small to midsize life sciences start-ups that are still in their early stages of development (L. Kassa, personal communication, July 22, 2021). However, they also provide the opportunity for co-collaboration between small and large companies with senior members offering mentorship to the early-stage companies (L. Kassa, personal communication, July 22, 2021). Overall, PABC has a service-based approach that incubates and accelerates member companies by giving them the freedom and independence to choose which services they need and provides co-collaboration among non-profit science organizations and commercial colleagues.

Structure of Organization

Pennsylvania Biotechnology Centre is a public entity with 3 listed senior management employees (“Leadership”, 2021). It is co-managed by Baruch S. Blumberg Institute and further led by a board selected by the Hepatitis B Foundation. There are now over 75 member companies within PABC (“Mission”, 2021). The PABC facility itself was opened by the Hepatitis B Foundation with partial funding by a grant from the Commonwealth of Pennsylvania. PABC charges membership fees that vary depending on a company’s size and demands (“Amenities”, 2021). There are different membership fees for on-site use such as renting office or lab space compared to members not wishing to rent space but rather wish to use other services that PABC provides such as grant support (“Amenities”, 2021).

Programming, Services and Facilities

Pennsylvania Biotechnology Center provides the following services to its members:

Amenities

- State of the art equipment, lab space and office areas that are specifically designed and readily available for non-profit research organizations as well as commercial biotechnology start-up companies (“Amenities”, 2021).
- These amenities range from business and entrepreneurial services, common equipment, general amenities (eg. wet and dry ice, natural gas, vacuum, emergency power, lab coats, internet and phones), special permission equipment (more advanced lab equipment), other services (eg. online safety training, routine safety inspections, minor equipment repair, basic IT support).

Professional Services

- Community member companies offer their own professional business services, connected through PABC.
- These companies include Artemis Solutions, Brian Eves, EsqChannel Methods Partners LLC, Keystone Innovation Zone and Power 4 (“Amenities”, 2021).
- These companies provide services such as business support, attorneys specializing in: employee relations, contracts, immigration, company formation and general legal aid, consultants for scientific business development, research and development tax credits, and protective power equipment, respectively (“Amenities”, 2021).
- IP attorney services have one of the highest impacts on PABC members, especially companies that are onboarding and just starting out in the industry (L. Kassa, personal communication, July 22, 2021). Grant writing services have also proven to have a high impact on company members (L. Kassa, personal communication, July 22, 2021).

Resources for Young Companies

- For young companies just starting out, PABC provides additional support resources to help them develop (“Amenities”, 2021).
- This program offers consultations, both in business and science, networking and investment opportunities including BioAdvance, Ben Franklin Technologies, J.P. Morgan and Delaware Crossing, company pitch competitions that introduce start-up organizations to investors and the community.
- There is also recruitment of vendors to Center Strategic Sponsors that provide discounted prices, legal and banking aid, clinical trial experts and life sciences consultants. Finally, young life science companies are given space for business and community events (“Amenities”, 2021).

Education Programs

- Through this program, PABC focuses on enhancing academic experience through scholarship opportunities, academic programming and technical training.
- They have teamed up with Harrisburg University of Science and Technology and the Blumberg Institute to offer graduate biotechnology certificates that provide exemplary experience when working with professionals in the biotechnology industry (“Amenities”, 2021).
- They also provide support for Master of Biomedical Sciences degrees, Master of Chemical Sciences programs, summer college internships and after school and summer high school science education programs, all through associated institutes, universities and foundations.

Budget Breakdown

Pennsylvania Biotechnology Center believes that it is important to have a diverse source of revenue to ensure success. Therefore, their budget can be broken down into four different components: renting out lab space, State and Federal grants, sponsors, and membership fees. Approximately 75% of their budget comes from members that rent PABC’s lab and office space (L. Kassa, personal communication, July 22, 2021). Additionally, for organization events, the company allocates around 50% of costs to be covered by State and Federal grants. Other sources of revenue include sponsors, which make about \$250,000 and membership fees raise approximately \$100,000 (L. Kassa, personal communication, July 22, 2021).

4.1.5. BioScience LA – Los Angeles, United States

Background Information

[BioScienceLA](#) is a non-profit, independent life sciences innovation organization serving Los Angeles County (“BioLA: What We Do”, 2021). As an organization, BioScienceLA has had great impact in working with smaller organizations but a significant amount of time is also spent working with larger organizations in creating partnerships and addressing space needs or real estate concerns (D. Whelan, personal communication, August 4, 2021). BioScienceLA is focused on creating opportunities for collaboration, partnership, funding, career development, and innovation to help grow the bio and life sciences ecosystem in LA (“BioLA: What We Do”, 2021).

Structure of Organization

BioScienceLA has 3 full-time employees (D. Whelan, personal communication, August 4, 2021). The organization does not charge membership fees and is not membership-based (D. Whelan, personal communication, August 4, 2021). It is designed to provide support to all individuals working in the life sciences field, including individual researchers, start-ups, and industry leading companies. BioScienceLA works closely with their Board of Directors as well as consultants and advisors from outside of the organization (“BioLA: What We Do”, 2021).

Programming, Services and Facilities

BioScienceLA provides a number of services and programs that are accessible to the public. A breakdown of the programming offered by BioScience LA is as follows:

BioFutures Internship Program

- In the summer of 2021, the organization launched their BioFutures Internship Program which has had one of the biggest impacts for participants of this program (D. Whelan, personal communication, August 4, 2021).
- Postsecondary students from underrepresented backgrounds are connected with an LA Life Sciences company to complete a year-long internship (“BioFutures Internship”, 2021).
- Internships and career development programming are subsidized by BioScienceLA (“BioFutures Internship”, 2021).
- BioScienceLA is committed to having representation from community colleges and universities across the LA county region (D. Whelan, personal communication, August 4, 2021). In this way, the organization has worked closely with both postsecondary institutions and LA Life Sciences companies to organize this program and these relationships continue to grow.
- The program launched in the summer of 2021 with 28 interns, which is very close to their original goal of 30 interns (D. Whelan, personal communication, August 4, 2021). Thus far, the program has received positive feedback from the student interns, partnering schools, and partnering companies (D. Whelan, personal communication, August 4, 2021). There has been demand for the program to be larger and accommodate more students, as such BioScienceLA is working towards increasing capacity to grow the second cohort of the BioFutures Internship Program to 100 student interns (D. Whelan, personal communication, August 4, 2021).

Summer Internship Program

- The Summer Internship Program provided by BioScienceLA invites LA Life Science Companies to bring together their interns in an integrative program that will further expose interns to educational, networking, and social events (“Summer Internship Experience”, 2021). This pilot program is being held virtually and is intended to help students become more integrated into the LA Life Sciences Ecosystem (“Summer Internship Experience”, 2021).

Leadership Catalyst Program

- This program is designed to provide emerging leaders and executives with skills and opportunities to support their companies. Programming includes coaching sessions, mentoring, confidential advisory services, guest speakers, and related activities that are provided through BioScience LA and are customized to the needs of entrepreneurs and emerging leaders within the program (“Leadership Catalyst Program”, 2021).
- This program is set to launch in 2021. This program will require participants to pay either a monthly or annual fee, however this has not been finalized yet as the program is still under development (“Leadership Catalyst Program”, 2021).

Innovation Collaboration Space

- In the future, BioScience LA plans to open an innovation collaboration facility in Culver City, LA (D. Whelan, personal communication, August 4, 2021). This facility will provide a coworking space, community lab space, media content space, event space, and act as a resource for both small and large life sciences companies and individuals (D. Whelan, personal communication, August 4, 2021).
- While plans for this facility are still under development, BioScience LA has stated that some amenities in the space will be free while others will have a cost associated with them in order to be used (D. Whelan, personal communication, August 4, 2021). A ballpark number of what these fees may look like is still not known, however they are focused on creating value and being competitive without taking away from other life sciences catalysts in the region (D. Whelan, personal communication, August 4, 2021)

Budget Breakdown

BioScienceLA does not charge membership fees (D. Whelan, personal communication, August 4, 2021). Their budget comes from funding sponsors, including LA County, Amgen INC., PhRMA, Richard Lundquist, Richard Merkin, Cedars-Sinai, and City of

Hope (D. Whelan, personal communication, August 4, 2021). In the near future, parts of their budget will come from fees associated with the Leadership Catalyst Program and the Innovation Collaboration Space (D. Whelan, personal communication, August 4, 2021).

4.1.6. BioPôle – Switzerland, Europe

Background Information

[Biopôle](#) is a private non-profit life science organization located in Lausanne, Switzerland. It was founded in 2004 by the canton of Vaud public authorities and the two cities that host its life sciences campus (“About”, 2021). It targets innovation within the life sciences industry by promoting and supporting startup companies in areas such as biotechnology, digital health, medical technology, pharmacology, nutrition and more (“About”, 2021). Biopôle’s campus gives companies access to high quality facilities and diverse businesses. The campus currently has a total of 8 buildings, 2 metro stations and over 80 on- and off-site services (“About”, 2021).

Structure of Organization

Aside from the Board of Directors, Biopôle only has 6 listed employees. The organization supports both life science startups and major multinational companies, creating a diverse community on campus (“About”, 2021). Currently, they have approximately 2000 people on their campus with over 90 innovative life science companies and over 25 different research groups. The on- and off-site service providers have special offers for members of Biopôle only. However, membership fees or qualifications are not readily available on their website. Most programs however require an application.

Programming, Services, and Facilities

Biopôle provides the following services and programs:

Services and Amenities

- As a fully functioning life sciences campus, Biopôle provides access to research facilities, restaurants, hotels, conference rooms and classrooms (“Join”, 2021).
- Members of this community are given special offers for all amenities the campus has to offer including consultancy services and lab solutions (“Join”, 2021).

- Biopôle has numerous on-site life sciences consultancy companies to support organizations with human resources, communications, accounting, and IT services (“Join”, 2021).

Programs for Start-Ups

- **Biopôle Start-Up Fund** - Startup life sciences organizations have the opportunity to apply for up to three years of support with the costs of research and development, rentals and any other key services needed to kick-start an innovative company. This means up to CHF 40,000 per year for three years with no equity demands or loan repayments (“Join”, 2021).
- **StartLab** - New, modern, fully equipped laboratory infrastructure and lab equipment available to rent in renewable periods of three months, up to three years total. This allows research teams to pay as they need the space. Biopôle does not take equity from StartLab members (“Join”, 2021).
- **SuperLab Suisse SA** - Brand new as of June 2021, it provides early-stage start-ups access to a laboratory as they advance their company to a private location. This acts as a temporary space for growing companies in the process of finding their own space (“Join”, 2021).
- **Digital Health Hub** - Different companies within Biopôle can meet at the facility in the heart of the campus to network and learn from one another. Digital Health Hub provides meeting areas, private office spaces, and co-working areas catered to your company type, from start-up organizations to multinational to joint projects or privately owned (“Join”, 2021).
- **Vanguard Programme** - Free six-month program for young digital health start-ups to work with clinicians, IT specialists, nurses, pharmacists and investors and gain business advice and networking opportunities. Application required (“Join”, 2021).

Budget Breakdown

Biopôle has an annual budget of approximately CHF 500,000 to be put towards the establishment of innovative life science companies (“Biopôle unveils new startup fund”, 2021).

4.2. Case Study of a Divergent Organization

In this section, we provide an overview of Enventure, which has more than 5-6 employees and is therefore characterized as an organization that is dissimilar to

Synpase in terms of its operational capacity.

4.2.1. Enventure – Texas, United States

Background Information

Originally founded in 2012, [Enventure](#) is a non-profit life science organization based in Houston, Texas. They focus on the growth of Texas' medical innovation industry and their programming supports life science innovators, students, and young start-up companies ("Meet Enventure", n.d.). Enventure's core values include community, integrity, adaptability, professionalism, diversity, and ingenuity, with numerous programs specifically designed to grow a company's network, teach about the industry, and support one's career without the need to stop their academic studies or degree, providing degree candidates with real-world experience ("Meet Enventure", n.d.). Since the start of their company, they have helped over 3000 university students and 45 start-up life science companies.

Structure of Organization

Enventure is a relatively new, public, non-profit entity serving young individuals in Houston ("Meet Enventure", n.d.). Its team includes 14 leadership employees (7 'Enventure leadership' and 7 'insights leadership') who are highly educated entrepreneurs and students as well as over 34 other employees that are listed on LinkedIn ("Enventure", n.d.). Despite being a larger organization, there is no indication that this organization charges membership fees. Instead, the larger workshops require companies or participants to apply and go through a registration process ("Meet Enventure", n.d.).

Programming, Services and Facilities

Enventure provides the following programs that operate under 3 main pillars of Community, Education, and Experience ("Our Programs", n.d):

Community

- **Community** – start-up visits, happy hours, special topic meetups, and networking events.
- **Inspire** – career exploration seminars for life science degree candidates to learn more about future career options and how to succeed within the life sciences industry ("Our Programs", n.d).

- **SciCom: Blog & Podcast** – online blog and monthly podcast using the art of science communication to explain relevant scientific topics in an easily digestible way, while also inspiring students and entrepreneurs into medical innovation.

Education

- **Biodesign Workshops** – interactive, discussion-based lectures that follow standard Biodesign curriculum to educate students on the medical innovation process. The workshops are taught by Dr. Will Clifton who is a medical start-up educator and entrepreneur (“Our Programs”, n.d).
- **Career Prep Workshops** – career development program to prepare academic trainees with the skills needed for them to be successful in the job market.
- **Case Interview Workshops** – peer training and preparation for aspiring consultants to practice interviews that are essential for a company’s recruitment process. They work on personal development for individuals interested in a career in consulting (“Our Programs”, n.d).

Experience

- **Basecamp** – given the opportunity to participate in real-world projects within the life science and technology industry. The program is only a few hours in length and acts as a beginner program for the other more elaborate ‘Experience’ programs (“Our Programs”, n.d).
- **Bioventures** – 10 week, hands-on experience in the life sciences entrepreneur industry. The program takes participants' ideas and incubates them into innovative start-up companies. Teams work with business leaders, industry advisors and clinicians to change their idea into a marketable start-up (“Our Programs”, n.d).
- **Enventure Research and Innovation Consulting for Healthcare (ENRICH)** - Graduate and undergraduate students have the opportunity to apply and become an ENRICH fellow. ENRICH fellows work on 2-3 different projects relating to the scientific-business industry, and work with pre-existing life science companies to learn diverse technical skills and improve employment opportunities (“Our Programs”, n.d).
- **Venture Investment Competition by Enventure (VICE)** - In this unique competition students take on the role of investors for partnering start-ups and then are judged by real invited investors. The top 4 student teams win \$2000 prize (“Our Programs”, n.d).

Budget Breakdown

Information not available.

4.3. Organization Similarities and Differences

Overview

We identified the following themes through our environmental scan:

- 7/7 organizations provide networking events
- 4/7 organizations (BioAlberta, BioNova, BioNebraska, and Enventure) provide workshops, seminars and toolkits
 - BioNova provides workshops on intellectual property, patents, marketing, communication, addressing emerging business needs, understanding regulatory changes within the FDA and Health Canada, and workforce enhancement
 - BioNebraska provides guides on how to navigate government relations as well as toolkits on how to find and cite legislative documents

Additional themes are highlighted in Table 1.

Table 1: Types of Programs and Services Offered Through the Life Science Cluster Organizations

		Type of Program or Service							
		Special rates on lab equipment	Pitch competition	Access to onsite amenities	Support for students	Commercialization programs	Financial support	Professional business services	Special rates on select services
<i>Total</i>		3/7	3/7	3/7	3/7	3/7	2/7	2/7	2/7
Organization									
Membership Fees	BioAlberta	Through VWR International Co							Group health and dental, travel and accommodation, Staples and ShareVault
	<i>Total # of Programs: 2</i>								
	BioNova	Through Fisher-Scientific	Two separate competitions for early stage companies and students			Helps companies accelerate their path to commercialization	Small project funding for small-middle size enterprises for small-middle size		Attendance at conferences, travel and accommodation
	<i>Total # of Programs: 5</i>								

							enterprises experiencing challenges with commercial-ization		
	BioNebraska <i>Total # of Programs: 1</i>	Through Fisher-Scientific							
	Pennsylvania Biotechnology Center (PABC) <i>Total # of Programs: 4</i>		X	Common and special equipment included	Scholarship opportunities, academic programs, and technical training in Biotechnology			Grant writing, legal, and research through select partners	
	Biopôle <i>Total # of Programs: 4</i>			X		6-month program for young digital health start-ups	Start-ups can apply for 3-years of support (up to CHF 40K/year)	Human resources, communications, accounting, IT	
No Fees	BioScience LA <i>Total # of Programs: 2</i>			Intend to add this in the near future	Internships at life science companies for students from under-represented backgrounds				
	Enventure Divergent cluster <i>Total # of Programs: 3</i>		X		Career support and fellowships at life science companies	10-week program to turn an innovation into a start-up			

High-Impact Programming

We conducted two interviews through our environmental scan. Based on our conversations with these organizations, we found the following:

- When asked, “Which programs or services had the highest impact?”
 - o BioScience LA stated that the BioFutures program, which provides internships at life science companies for students from underrepresented backgrounds, had the highest impact
 - o PABC stated that services such as grant writing and intellectual property attorneys had the highest impact
- When asked, “Which programs or services would you like to offer that would be beneficial?”
 - o BioScience LA stated that they would like to add additional services for emerging leaders in the industry, such as mentoring and advisory
 - o PABC stated that they currently offer a “self-serve” model, through which members can select the services that they require. However, they would like to create a more uniform program that can be used for a variety of companies.
- While PABC stated that approximately \$100K is generated through membership fees, they did not provide details on how the percent breakdown of this figure in their overall revenue

Membership Fees

Overall, we found that 4/7 organizations charged membership fees. A breakdown of the various types of membership fees can be found in Table 2.

Table 2: Breakdown of Membership Fees

Type of Membership Fee by Organization				
BioAlberta	BioNova	BioNebraska	Pennsylvania Biotechnology Center (PABC)	Biopôle
6 types of members, Based on position in the industry and the number of employees	Information not available	5 types of members, Based on position in the industry and the number of employees	2 types of members, Based on use of onsite equipment as well as services or just services	Information not available

We found the following themes based on our research. Overall, organizations without membership fees (BioScience LA and Enventure):

- Do not offer business and clinical services
- Do not provide financial support for commercialization
- Do not provide special rates on the purchase or rent of lab equipment
- Do not provide special rates on business services (eg. health and dental insurance, travel services, Staples and ShareVault services)

Additionally, the size of the organization did not seem dependent on the presence of membership fees. For example, while BioScience LA has less than 5 employees, Enventure has 14 leadership employees, and 34 additional employees listed on LinkedIn.

Due to the small number of organizations that we analyzed for this report, it is possible that the trends identified above do not represent the entire industry.

5.0. Conclusion and Next Steps

This report presents the results of a McMaster Research Shop project for Synapse Life Science Consortium. Through this project, we conducted an environmental scan of life science organizations in Canada, the United States and Europe in order to recognize the various types of high-impact programming that these organizations provide. Our research suggests the most common types of programming includes special rates on the purchase of lab equipment, pitch competitions, access to onsite amenities such as co-working spaces and lab equipment, and intensive programs that support commercialization. Additionally, we found that the majority of organizations charge membership fees, which resulted in small differences in the type of programming. For example, organizations that do not charge membership fees did not provide special rates on the purchase of lab equipment or financial support for organizations within the ecosystem.

Through this project, the research team analyzed 7 life science cluster organizations. As a result, it is possible that the conclusions of our research do not accurately represent the entire industry. In order to combat this limitation, we recommend that Synapse continue to conduct research on additional life science organizations. In particular, we suggest that Synapse focuses on analyzing the effects that membership fees have on the types of programming that organizations can provide. Additionally, an evaluation of the various partnerships that an organization has, for example with local hospitals and universities, may also provide valuable insight.

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Appendix A: Interview Guide for Environmental Scan

Meeting with [Organization Name]

Date and Time:

Attendees:

Section 1: Organization-specific questions

Based on the data that the team collected, ask questions to gain clarity on the the organization and its programming:

-
-
-

Section 2: Organization-specific questions

1. Your organization provides a number of services and programs for its members. Which programs or services seem to have the highest impact for your members?
Prompt: How have these services and programs had an impact?
2. What kind of positive or negative feedback have you received regarding the services that you provide?
3. Do you have ideas for other programs or services you'd like to offer that would be beneficial to your members?
4. Does your organization charge membership fees?
5. Through our project, we are trying to understand the impact that membership fees have on the kind programming that life science cluster organizations can provide. Are you able to provide ballpark figures on how your organization is funded (eg. 25% of the budget comes from membership fees, 75% from grants?)
6. What kind of affiliations/partnerships does your organization have (eg. do you work closely with universities, hospitals, etc)?

Appendix B: Directory of Life Science Cluster Organizations

Table B1: Directory of Canadian Life Science Cluster Organizations

Name	Location	Website
BioNB	New Brunswick	https://bionb.org/
BioQuebec	Quebec	https://www.bioquebec.com/
BioScience Association of Manitoba	Manitoba	https://www.biomb.ca/
BIOTECCanada	Ottawa, Ontario	http://www.biotech.ca/
Life Sciences British Columbia	British Columbia	https://lifesciencesbc.ca/
Life Sciences Ontario	Ontario	https://lifesciencesontario.ca/
Montreal INVIVO	Montreal, Quebec	https://www.montreal-invivo.com/en/
Ontario BioScience Innovation	Toronto, Ontario	https://www.obio.ca/

Table B2: Directory of American Life Science Cluster Organizations

Name	Location	Website
BioCom	California	https://www.biocom.org/
BioEnterprise	Northeast Ohio	https://www.bioenterprise.com/bioscience/
BioForward Inc	Wisconsin	https://www.bioforward.org/
Chicago Biomedical Consortium	Chicago	https://chicagobiomedicalconsortium.org/
IndieBio Incubator	San Francisco	https://indiebio.co/
Institute for Life Science Entrepreneurship (ILSE)	New Jersey	https://ilsebio.com/
LaunchBio	All across North America	https://launchbio.org/
LouisianaBio	Louisiana	https://www.louisianabio.org
MassBio	Massachusetts	https://www.massbio.org/
MBC BioLabs	San Francisco	https://mbcbiolabs.com/
North Carolina Biotechnology Center	North Carolina	https://www.ncbiotech.org/about
Pittsburgh Life Sciences Greenhouse	Pittsburgh	https://www.plsg.com/
Portland State University Business Accelerator	Portland, Oregon	https://www.pdx.edu/accelerator/
QB3	University of California	https://qb3.org/about
Sid Martin Biotechnology Incubator	University of Florida	https://innovate.research.ufl.edu/sid-martin-biotech/

UCSF Rosenman Institute	San Francisco Bay area	https://rosenmaninstitute.org/about-us/
VirginiaBio	Virginia	https://www.vabio.org/

Table B3: Directory of European Life Science Cluster Organizations

Name	Location	Website
Aleap	Norway	https://www.aleap.no/
Babraham Research Campus	United Kingdom	https://www.babraham.com/
Bioville	Belgium	https://bioville.be/en/
Genopole	France	https://www.genopole.com
London BioScience Innovation Centre	United Kingdom	https://www.lbic.com/about
Start Codon	United Kingdom	https://startcodon.co/