

# Baltic Biotech Action Plan

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**YOUR OPINION MATTERS** *this is a collaborative document at its core - your comments, suggestions, ideas, and critique will help shape the future of Baltic biotech. Please use this form to share your thoughts and initiate a conversation with the consortium: [contact form](#)*

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## Management Summary

The **Baltic Biotech Action Plan** is a strategic initiative under the [BIOCONNECT](#) project, aimed at creating an integrated and robust biotechnology ecosystem across Estonia, Latvia, and Lithuania building on Nordic experience. It identifies key ecosystem challenges and proposes actionable solutions for fostering regional collaboration, innovation, and economic growth in biotechnology.

### Key objectives and action areas:

- **Ecosystem integration** - enhance cross-border and local synergies among academic institutions, startups, investors, and policymakers.
- **Talent development** - expand and upskill the regional biotech talent pool, while attracting global expertise.
- **Applied research** - improve the focus on life sciences research with commercialization potential, as well as translational expertise
- **Infrastructure development** - increase availability and access to labs, pilot facilities, and scale-up resources for the region's ecosystem members.
- **Funding and investment** - improve access to local and international funding, establish specialized funding instruments including biotech-specific venture capital.
- **Public awareness and policy alignment** - position the Baltics as a leading biotech region while actively taking part in EU policy alignment.

### Intended outcomes:

- Strengthened **regional collaboration** and international **positioning** as a biotech hub.
- Increased **investment** into biotech innovation, leading to more business creation.
- Robust **talent pipeline**, raising labor market depth and addressing skill gaps.
- Infrastructure to support **all stages** of biotech innovation, from R&D to market entry.

### Key metrics for success:

- Number of startups, SMEs, scale-up projects, and collaborations initiated
- Increased funding secured for biotech research as well as businesses
- Improved accessibility to labs, equipment, and other infrastructure
- Higher foreign direct investment from international biotech players
- Enhanced public engagement and regional policy integration

This Action Plan is a **collaborative framework** to enable all stakeholders to contribute to and benefit from a unified biotech ecosystem - driving innovation, economic growth, and societal well-being across the Baltic region. By addressing the needs of each target group, the plan ensures an inclusive and sustainable approach to regional development in biotech.

# I. About the BIOCONNECT Project

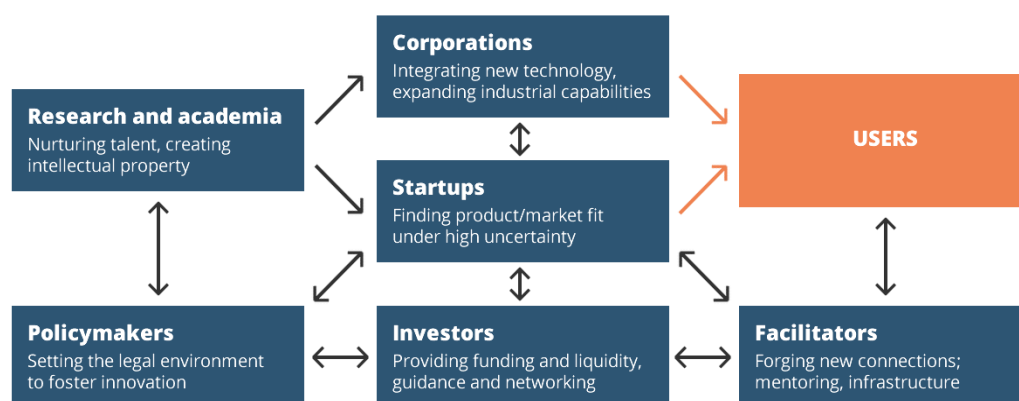
The purpose of the BIOCONNECT project is to create a development action plan for a more integrated, robust, and valuable Baltic biotechnology ecosystem.

This is to be achieved by strengthening local and cross-border links between all quadruple helix stakeholders across the region. The project's scope encompasses three major steps towards the Action Plan:

1. *Ecosystem mapping and analysis*: establishing a data-driven understanding of the **current state** of the Baltic biotech innovation ecosystem as well as **common goals** across stakeholders and countries
2. *Putting together the Action Plan*: creating a joint biotechnology innovation programme for the Baltic region, focusing on **cross-border cooperation**, regional synergies and deduplication, as well as inclusivity, ethics, and diversity
3. *Pre-implementation*: building the foundation for successful future **realization** of the Action Plan's components by engaging key stakeholders, outreach, and establishing the [Baltic Biotech Hub](#)

In order for the plan to be relevant, achievable, and measurable, the first phase of the project focused on thoroughly mapping the current state of the ecosystem and understanding the goals, challenges, and aspirations of all involved parties, using 1) *publicly available information* on all relevant biotech ecosystem stakeholders, 2) *questionnaires*, and 3) *personal interviews* (44) to obtain in-depth insights from key individual representatives.

As a result of the above efforts, we have collected 2500+ data points on 223 organisations in the Baltic biotechnology ecosystem, which constitutes, by our estimates, around >95% of all existing stakeholders. The data is freely available in our [Baltic Biotech Database](#).



In the second phase of BIOCONNECT the consortium has used these results to iteratively construct a framework for growing the Baltic regional bio-economy by facilitating new intra-regional links and collaborations through initiatives targeting all ecosystem members: students, researchers, startups, industry, capital, policymakers, and society at large. Our approach to the Action Plan is detailed [in the next section](#).

To foster a thriving biotech innovation environment and achieve positive societal outcomes, the Action Items have been designed in alignment with applied ethics principles, including beneficence, autonomy, non-maleficence, justice, as well as tailored to cultivate an inclusive, gender-equal innovation ecosystem.

The following organizations and individuals have been the primary contributors to the BIOCONNECT project and the current Action Plan:

Organization	Type	Country	Individuals
<a href="#">Biocatalyst Foundation</a>	Non-profit (ecosystem builder)	LV	<a href="#">Andrii Shekhirev</a> <a href="#">Dainius Tautvaišas</a> <a href="#">Igor Berkovics</a>
<a href="#">LithuaniaBIO</a>	Industry association	LT	<a href="#">Agne Vaitkeviciene</a> <a href="#">Donatas Staniulis</a> <a href="#">Agnė Šulčiūtė</a>
<a href="#">Latvian Institute of Organic Synthesis</a>	Research institute	LV	<a href="#">Elina Priede</a> <a href="#">Anna Stikāne</a>
<a href="#">TalTech Food and Biotechnology Division, Dept. of Chemistry and Biotechnology</a>	Research institute, university	EE	<a href="#">Petri-Jaan Lahtvee</a> <a href="#">Kaisa Orgusaar</a> <a href="#">Alina Reķēna</a>
<a href="#">Vilnius University Life Sciences Center</a>	Research institute, university	LT	<a href="#">Inga Matijošytė</a>
<a href="#">University of Tartu, Estonian Centre for Biosustainability</a>	Research institute, university	EE	<a href="#">Mart Loog</a> <a href="#">Ilona Faustova</a>
<a href="#">Synbio Powerlabs</a>	Industry, facilitator	FI	<a href="#">Melissa Hendrén</a>

## II. Why Biotechnology?

There is a [growing awareness](#) that we are on the brink of a profound economic and societal upgrade, catalyzed by exponential improvements in our ability to **engineer living systems**.

This paradigm shift is facilitated by a number of converging technologies (incl. genome reading and writing, metabolic engineering, machine learning, automation, etc) that are transforming biotech from an act of exploration into a precise, predictable, and repeatable process of **designing and building** complex - and increasingly useful - biological structures:



This *Bio Revolution* is likely to have a profound impact on every aspect of our lives - after all, on a fundamental level humans are also biological systems. But it's not just about improving human health and extending lifespan - biotechnology holds the potential to transform **every facet of the global economy**, from agriculture, food, and materials - to consumer goods, energy, and computing.

McKinsey Global Institute [estimates](#) that “as much as 60% of the physical inputs to the global economy could, in principle, be produced biologically”, resulting in an estimated €3.5 trillion per year of positive economic impact over the upcoming decades. Critically, biotech promises to make this growth happen in a sustainable way, helping reverse the climate crisis and build a truly circular economy.

Biotechnology is thus uniquely positioned to bring broad changes to the world in the 21st century, on the scale comparable to how chemistry and then information technology shaped the 20th. Its impact reaches from health and food to industrial chemicals, novel materials, fuels, consumer products - and beyond, to reshaping computing, stabilizing and restoring Earth's environments, and colonizing space.

In addition to healthcare benefits, such as vaccines, made particularly conspicuous during the recent COVID-19 pandemic, biotech is vital to the green transition via more localized,

more sustainable production by requiring substantially less resources, such as water or land, and reducing greenhouse gas emissions compared to traditional fossil fuel-based manufacturing practices.

It also enables unmatched circularity by precisely repurposing materials on a molecular level. Biotechnology is a crucial and growing part of the economy, unlocking wide societal benefits while enabling higher sustainability, resilience, and independence for any country and region that embraces its full potential.

*Case in point, the EU's top company by market capitalization is Novo Nordisk, acting as a vital driver for the entire Danish economy, and creating a massive spillover effect by bringing abundant wealth and talent into the region.*

The Baltics have made significant progress in terms of economic development and building a sovereign society since gaining independence in the 1990s. However, as we enter the second quarter of the 21st century, the region is facing multiple challenges, starting with a global pandemic and ensuing global economic uncertainty, only to be exacerbated by the Russian invasion of Ukraine, exposing key resource risks and threatening regional stability.

Against the backdrop of the unfolding climate crisis and EU's widening innovation gap vis-a-vis the US and China, these challenges underscore the need for smart, bold bets and decisive actions. As one of our time's key technological paradigms, biotech is indispensable for the Baltic region's continued prosperity and independence.

### III. Action Plan Summary

To realize its full potential, biotechnology requires *robust innovation ecosystems*: the right mix of talent, infrastructure, funding, and political support - all parts of an integrated network. In the **Baltic States** of Estonia, Latvia, and Lithuania, biotechnology is among the national **smart specialisation priorities**, yet disjoint initiatives, fragmented practices, and lack of local cooperation hinder the emergence of a thriving and integrated *regional* biotech innovation ecosystem that would achieve the “critical mass” unavailable locally.

The primary goal of the current Action Plan is to maximize the region’s **economic output and growth** from biotechnology, as well as resulting *societal benefits* (most importantly health, wellbeing, environment). To address this, all types of “growth engines” are to be considered, from local startups and SMEs (new/future industry), to the existing industry, to external actors (FDI). This implies **improving all inputs and resources** required by these economic players - talent, science, capital, infrastructure, policy, etc. Which, in turn, necessitates coordinated efforts by all ecosystem stakeholders (universities, institutes, investors, facilitators, governments, wider society), as “originators” of said inputs. Thus, the focus of the activities proposed in the Action Plan is on unlocking *regional synergies* across the Baltics - considering local ecosystems, capabilities, opportunities, and gaps.

The Action Plan is composed of *Action Items* - strategic directions addressing the key ecosystem needs: vital inputs into today’s and tomorrow’s engines of the Baltic bio-economy. The table below presents the framework behind the Action Plan, linking to individual Action Items in the following part of the document:

Ecosystem needs	Improvement areas	Strategic directions
Talent	Talent pool	<a href="#">Growing the regional talent pool</a>
		<a href="#">Attracting talent from outside the Baltics</a>
	Quality of talent	<a href="#">Upskilling and multidisciplinary</a>
		<a href="#">Engaging entrepreneurial talent</a>
Science	Research	<a href="#">Promoting applied research</a>
		<a href="#">Improving translational expertise</a>
	Validation	<a href="#">Startup-industry collaborations</a>
Infrastructure	Laboratory scale	<a href="#">Improving access to laboratory space</a>
	Scaleup	<a href="#">Building scaleup capacity</a>
Funding	Private funding	<a href="#">Improving access to smart money</a>
	Public funding	<a href="#">Enhancing access to existing grants</a>
		<a href="#">Creating new grants</a>
Intangibles	Perception	<a href="#">Positioning Baltics as biotech region</a>
		<a href="#">Public awareness and attitude</a>
	Policy	<a href="#">Aligning regional participation in EU policy</a>

## IV. Action Items

This section details all strategic directions (Action Items) under the BIOCONNECT Action Plan. Each Action Item is structured to provide the background (ecosystem needs, current status, best practices) as well as the objectives, outcomes, and implementation outlines.

It is worth noting that the Action Items are not meant to be exhaustive blueprints - rather, act as **starting points** in conversations between stakeholders across the region, catalyzing new projects and initiatives that strengthen the Baltic biotechnology innovation ecosystem.

The full reference of specific actions proposed across the entire Action Plan is available in the [first part](#) of the Appendix.

1. [Growing the Regional Talent Pool](#)
2. [Attracting Talent from Outside the Baltics](#)
3. [Upskilling and Multidisciplinarity](#)
4. [Engaging Entrepreneurial Talent](#)
5. [Promoting Applied Research](#)
6. [Improving Translational Expertise](#)
7. [Startup-Industry Collaborations](#)
8. [Improving Access to Lab Space](#)
9. [Building Scaleup Capacity](#)
10. [Improving Access to Smart Money](#)
11. [Enhancing Access to Existing Grants](#)
12. [Creating New Grants](#)
13. [Positioning Baltics as a Biotech Region](#)
14. [Improving Public Awareness and Attitude](#)
15. [Aligning Regional Participation in EU Policy](#)



# Growing the Regional Talent Pool

## Need(s) and Challenge(s):

- Limited educational options for biotechnology students, with few specialized programs tailored to future industry needs.
- Fragmentation in academic programs across the Baltic region, creating inefficiencies in meeting regional biotech demands.
- Insufficient collaboration between academia, industry, and governments to provide practical and interdisciplinary training.
- Low public and student awareness of biotechnology's potential as a career path.
- Lack of mobility and cross-border opportunities for students and researchers within the Baltics.

## Current Status:

- **Fragmented Programs:** existing BSc, MSc, and PhD programs in Estonia, Latvia, and Lithuania are isolated, limiting regional integration.
- **Partial Industry Involvement:** limited examples of industry participation in education (e.g., Thermo Fisher factory visits and other academia support in Lithuania, Icosagen's engagement in Estonia, factory visits to Fibenol OÜ Imavere site).
- **School Outreach Efforts:** initiatives such as mobile lab programs (Lithuania) are effective but need expansion and regional coordination.

## Examples and best practices

- [Singapore's SkillsFuture Initiative](#): offers lifelong learning credits for students and professionals, ensuring continuous skill upgrades.
- [Karolinska Institutet \(Sweden\)](#): strong focus on integrating business skills into life sciences education.
- [Denmark's BioEntrepreneurship MSc Program](#): collaboration between academic and industrial stakeholders to foster entrepreneurial talent in biotech.
- [Baltic Research Programme](#): encourages cross-border collaborations among Baltic universities for research and education.
- [European Molecular Biology Laboratory \(EMBL\)](#): offers an integrated PhD program combining research and mentorship, tailored to global biotech trends.

## Objectives

1. Create regional synergy by harmonizing study programs across the Baltic States.
2. Offer specialized biotech programs (e.g., bioinformatics, synthetic biology, biomanufacturing) aligned with global and regional industry needs.

3. Establish a Baltic Biotech Education Hub to serve as a center of excellence for biotech training.
4. Launch public engagement initiatives targeting schools and the broader community to inspire interest in biotech careers.
5. Foster cross-sector collaboration, enabling students to gain hands-on experience in industry through internships and projects.

## Outcomes

1. Increased student enrollment in biotech programs by 30% over five years.
2. Established Baltic-level joint academic programs at all levels (BSc, MSc, PhD).
3. Fully functional Baltic “ERASMUS+” program for student exchanges and internships.
4. A dynamic ecosystem where industry experts regularly engage in curriculum development and student mentorship.
5. Heightened public awareness of biotechnology through coordinated outreach campaigns, summer schools, STEAM centers, events/festivals.

## Proposed Actions

- **Develop New Academic Programs:**
  - Joint Baltic MSc program focusing on advanced areas like gene editing, synthetic biology, and bioinformatics.
  - Industry-partnered short courses, e.g. GMP (Good Manufacturing Practices), process technologies, regulatory affairs.
- **Strengthen Academia-Industry Collaboration:**
  - Establish mentorship and internship programs in collaboration with leading companies like Thermo Fisher, Biosan, and Icosagen.
  - Create a Baltic Biotech Job Board to connect students with employment opportunities in the region.
- **Expand School Outreach:**
  - Mobile "BioLabs" for rural schools across the Baltics, modeled after Lithuania's Thermo Fisher Scientific program "Mobili klase".
  - Annual "Biotech Exploration Weeks" featuring open lab tours, hands-on workshops, and student competitions.
- **Promote Cross-Border Mobility:**
  - Launch a dedicated Baltic Biotech Fellowship Program for PhD and postdoctoral researchers.
  - Establish regional PhD programs with shared lab resources and access to top researchers in all three countries.
- **Enhance Funding and Accessibility:**
  - Introduce scholarships for low-income students to study biotechnology.
  - Advocate for consistent funding for PhD and postdoc positions through a Baltic-wide framework.

To support effective implementation of the proposed actions, it may be beneficial to incorporate considerations of gender equality and inclusiveness, along with corresponding measures, such as:

- how supportive is participation in the proposed activities for pregnant women, e.g.:
  - women should be able to stop the activities and continue after maternity leave without losing funding in case of PhD and postdoc programs and scholarships (e.g., possibility to continue receiving the scholarship until the nominal end or to get an extension of the program implementation period);
  - teaching/learning experience should be adjusted to avoid putting pregnant women in contact with chemicals potentially hazardous to the fetus);
- the courses within the developed academic programs may include training on inclusiveness and diversity, e.g., training on inclusive leadership and management;
- activities should be accessible for people with caring duties and people experiencing special circumstances (e.g., traumatic event, loss of a family member or a close loved one, physical or mental health conditions) – possibility to participate in the courses online, have online access to video records and other materials;
- are there measures (e.g., responsible person) to accommodate special needs (e.g., help for auditory, visual, movement impairments), if necessary.

**Key Performance Indicators and benchmarks**

KPI name
Enrollment (acceptance) in biotech programs
Joint academic programs
Industry-involved internships
School outreach initiatives
Cross-border student mobility

**Key stakeholders**

Organisation type	Potential role
<a href="#">Academic institutions</a> and <a href="#">research centers</a>	Develop and implement programs, integrate industry needs, provide training infrastructure.
<a href="#">Industry partners</a>	Offer mentorship, internships, funding, and co-develop industry-relevant courses.
<a href="#">Ecosystem builders</a>	Facilitate collaborations, organize events, advocate policy changes, manage talent platforms.

Government bodies (incl. Centers for Quality Assessment in Higher Education)	Provide policy and financial support, align regulations, and promote the region internationally.
International partners	Share expertise, fund cross-border programs, mentor and sponsor initiatives.

### Implementation estimates

- Roadmap:
  - **Phase 1 (Year 1):** Conduct needs assessments and map industry requirements.
  - **Phase 2 (Years 2-3):** Develop and launch new academic programs, integrate industry collaboration.
  - **Phase 3 (Years 4-5):** Expand school outreach and cross-border mobility initiatives.
- Timeframe: Five years with annual progress evaluations.
- Budget Estimation:
  - Program development and implementation: €2-3 million annually.
  - Outreach and mobility initiatives: €300,000 annually.
- Funding Sources:
  - EU programs (Horizon Europe, ERASMUS+), national grants, and private-sector sponsorships.
- Dissemination:
  - Digital campaigns, regional biotech fairs, academic conferences, and school partnerships.

# Attracting Talent from Outside the Baltics

## Need(s) and challenge(s):

- Economic growth and innovation rely on attracting specialised professionals with the expertise to drive advancements and boost productivity.
- To remain competitive globally, there is a need to attract foreign talents who can contribute to the talent pool and support long-term development.
- There is a critical need for highly skilled specialists at all levels—recent graduates, PhDs, Post-Docs, and senior executives—to ensure a diverse and capable workforce that can sustain innovation and economic growth.

## Current status

Lithuania's, Latvia's and Estonia's governments and their agencies are actively working to attract foreign talent through a mix of visa programs, relocation support, and innovation incentives. These initiatives, coupled with countries' growing (bio)tech sectors, relatively low cost of living, and favourable business environment, can make them attractive for skilled professionals, entrepreneurs, and researchers. As Lithuania, Latvia and Estonia continue to build on their success, streamlining immigration processes and improving long-term retention efforts will be crucial for sustaining talent inflows. More global recognition of Lithuanian, Latvian and Estonian potential and joint Baltic HUB needs to be made.

### Government initiatives and programmes

- [Work in Lithuania](#) (flagship program run by the public agency *Invest Lithuania*, aimed at attracting skilled professionals to Lithuania. The program focuses on bringing back Lithuanian-origin experts and attracting foreign talent by promoting the benefits of living and working in Lithuania).
- [The Startup Visa program in Lithuania](#) is designed to attract foreign entrepreneurs and startup founders to establish innovative companies in Lithuania. Launched in 2017, this visa simplifies the process for non-EU citizens to live and start businesses in LT.
- [The Startup Visa program in Latvia](#) Startup visa is offered to all non-EU startup founders who are willing to come and kick off their startup ideas in Latvia. One startup can have up to 5 founders with a startup visa. The application process takes one month. The visa is given for a maximum of 3 years, and it is spouse and children-friendly. The main criteria for getting a Startup visa is an innovative (most often technology-based) idea that is easily scalable and yields a high added value.
- A similar very successful initiative is also [e-Residency](#) programme in Estonia. Launched in 2014, e-Residency provides entrepreneurs worldwide secure digital access to Estonia's advanced e-services and transparent business environment. Today, the programme helps over 110,000 people and their businesses operate independently.
- After the initiative Global Lithuania Programma in 2012-2021, the continuation is the [Global Lithuanian Leaders](#) initiative, which seeks to engage the Lithuanian diaspora and encourage skilled professionals to return or contribute to the country. The

program aims to reverse the "brain drain" by attracting Lithuanian expats who have gained valuable experience abroad. In Latvia there are several initiatives on municipal levels.

- The Riga Investment and Tourism Agency (RITA) announces the business support program - [Support program for diaspora relocation | LiveRiga](#). The program is intended for professionals planning to return to Latvia within the last six months (180 days). The program offers a one-off support payment. **Academic Initiatives**
- Lithuania: The Life Sciences Center received a SMART grant [EMBL Partnership Institute](#). to attract six highly skilled researchers from abroad. On this basis, the VU LSC-EMBL Partnership Institute for Genome Editing Technologies was formed in 2020.
- In 2022, 15 universities in Latvia [signed an agreement](#) for 3 years on good practices in attracting foreign students and received Best Practice University certificates. These 15 universities are involved in initiative 'Study in Latvia', which provides support in promoting Latvia as a study destination for international students (e.g., in exhibitions, individual consultations) and support in administration of state scholarships for international students

#### **Business Initiatives**

- Lithuania: i) In 2019 Marius Jakulis Jason started the [foundation](#) to financially support talented business persons, academics, and students who want and can contribute to the economic growth of Lithuania; ii) [The Future Biomedicine Foundation](#) established by prof. Arvydas Janulaitis, promotes mentoring and international scientific collaboration and introduces the field of *personalised medicine* and the opportunities it offers to the general public.
- Latvia: The scholarship [was established](#) in support of outstanding University of Latvia (UL) 1st-year doctoral students in 2017 by the patron "Mikrotīkls". Its goal is to promote excellence at the UL and to advance the growth and research opportunities of the most talented young doctoral students. The scholarship is intended for doctoral students in exact and medical sciences from the UL Faculty of Biology, Physics, Mathematics and Optometry, Faculty of Computing, Faculty of Medicine and Chemistry. Upon successful fulfilment of all conditions, a scholarship is granted for three years to develop a doctoral thesis of superior quality.

### **Examples and best practices**

Singapore's Global Investor Programme and Tech. Pass initiatives for attracting high-skilled professionals and entrepreneurs, particularly in tech and innovation sectors. They offer streamlined specialised visa schemes for tech talent, tax benefits, a clear pathway to permanent residency, close collaboration with multinational companies and startups and high-quality infrastructure and livability.

Canada's Express Entry System targets skilled workers based on points allocated for qualifications, language proficiency, and job offers. Main features: fast-track processing (6 months or less); programs like *Global Talent Stream* enable companies to hire foreign professionals quickly; regional programs (e.g., Atlantic Immigration Pilot) ensure distributed talent attraction across provinces.

The EU Blue Card in Germany provides highly skilled workers access to employment across the EU, but Germany has implemented it most effectively. Main features of the initiative:

employer-led visa sponsorships; High salary thresholds but reduced for in-demand fields; simplified family reunification and work rights for spouses.

Australia's SkillSelect initiative ensures that only high-demand skills are prioritised. The main focus of the initiative is state- and territory-specific visa pathways, a strong emphasis on regional settlement and workforce distribution, and partnerships with universities for post-graduate talent retention.

Dutch Startup Visa and programs like the Holland Alumni Network focus on drawing entrepreneurial talent and retaining international students. The initiatives provide comprehensive support for startup founders, including mentors and incubators and a high degree of collaboration with academic institutions.

## Objectives

- Attract specialised professionals with the necessary skills.
- Increase the influx of highly motivated foreign students.
- Ensure a continuous integration of highly skilled specialists at all levels.
- Strengthen communication and cooperation with the diaspora.

## Outcomes

- The increased attractiveness of the Region for specialised professionals - **improved immigration policies**, offered competitive salaries and incentives, enhanced recruitment campaigns, and fostered industry partnerships.
- The increased number of motivated foreign students, **dedicated scholarships and grants**, promotion of Region Universities Internationally, and stable PhD and Post-Graduate opportunities.
- Stable and continuous supply of highly skilled specialists at all levels: developed talent retention programme, supported C-level talent acquisition, awareness of lifelong learning and upskilling possibilities and quality of life in Baltics, belonging to professional networks such as Baltic HUB. Close collaboration with HR companies in order to increase their awareness of industry needs.
- Development and integration of a model to Baltic HUB with a similar approach as the AIDA marketing model (awareness → attraction → relocation → retention).

## Proposed Actions

- **Talent Attraction Programs:**
  - Launch a "Baltic Biotech Fellowship" targeting PhD and postdoctoral researchers, offering competitive salaries, research grants, and lab access.
  - Establish relocation packages, including housing and childcare support, for professionals and their families.
- **Visa and Immigration Support:**
  - Expand and simplify the Startup Visa and e-Residency programs for entrepreneurs, with a focus on biotech.

- Introduce fast-track immigration pathways for in-demand biotech professionals and their families.
- **International Campaigns:**
  - Run global outreach campaigns showcasing success stories from the Baltic biotech ecosystem.
  - Collaborate with international organizations and universities to create exchange programs and visiting researcher roles.
- **Retention Strategies:**
  - Implement onboarding programs and mentorship networks for international professionals.
  - Provide ongoing career development and upskilling opportunities through workshops and training programs.
- **Engaging Diaspora:**
  - Foster partnerships with diaspora organizations to attract talent back to the Baltics.
  - Create a "Global Baltic Biotech Network" to maintain connections with expatriate professionals.

To support effective implementation of the proposed actions, it may be beneficial to incorporate considerations of gender equality and inclusiveness, along with corresponding measures, such as:

- how supportive is participation in the proposed activities for pregnant women, e.g., women should be able to stop the activities and continue after maternity leave without losing funding in case of dedicated scholarships and grants (e.g., possibility to continue receiving the scholarship until the nominal end or to get an extension of the scholarship/grant period);
- activities should be accessible for people with caring duties;
- activities should be accessible for people experiencing special circumstances (e.g., traumatic event, loss of a family member or a close loved one, physical or mental health conditions) – possibility to get an extension of the scholarship/grant period;
- are there measures (e.g., responsible person) to accommodate special needs (e.g., help for auditory, visual, movement impairments), if necessary;
- are there measures to integrate international students/researchers into the local community, e.g., language courses.

**Key Performance Indicators and benchmarks**

KPI name
Improved immigration policies
Dedicated scholarships for international PhDs
Dedicated scholarships for international Post-Graduates
Developed model for national and regional integrations



**Key stakeholders** (Baltics, international)

Organisation type	Potential role
Government bodies (Research Councils; Ministries of Education; Innovation Agencies)	Support in visa reform and promotional efforts, provide funding and logistical support
<a href="#">Academic institutions</a> and <a href="#">research centers</a>	Create exchange programs and host visiting researchers
<a href="#">Industry partners</a> and <a href="#">startups</a>	Offer mentorship, internships, and employment opportunities

**Implementation estimates**

- Roadmap:
  - **Pilot Phase (Year 1):** Test the effectiveness of global outreach campaigns and a streamlined talent visa process in one Baltic country (e.g., Latvia).
  - **Scaling Phase (Years 2–3):** Roll out successful pilot initiatives regionally across the Baltics, focusing on harmonized policies and international promotion.
  - **Optimization Phase (Years 4–5):** Evaluate and refine programs based on feedback, focusing on long-term retention strategies.
- Timeframe:
  - **Preparation:** 6–12 months to develop partnerships, set up promotional materials, and streamline immigration processes.
  - **Execution:** Continuous and periodic, with campaigns and evaluations running annually over five years.
  - Pilot phase results will be evaluated after the first year to guide regional scaling.
- **Annual Budget** estimation: €1.5–2 million across the Baltics. Breakdown:
  - Outreach and promotion: €500,000/year (global campaigns, events, materials).
  - Fellowship and relocation support: €1–1.2 million/year.
  - Administrative costs: €300,000/year.
- **Funding Sources:** Horizon Europe, Erasmus+, national government grants, industry sponsorships, and private sector contributions.
- Dissemination:
  - Leverage **international biotech events** (e.g., Life Sciences Baltics, Nordic Life Science Days) to showcase the region.
  - Utilize **digital marketing campaigns** targeted at global biotech hubs (e.g., US, Singapore, EU biotech clusters).
  - Collaborate with **diaspora networks** and universities to amplify reach through alumni channels.

# Upskilling and Multidisciplinary

## Need(s) and challenge(s) addressed by the Action Item

- Lack of connections of students with the industry at all levels of studies
- Lack of skills reflecting the needs of the industry
- Lack of multidisciplinary talent, e.g. life sciences and business administration

## Current status

- The Biotech sector of the Baltics does not have joined programs, collaborations related to upskilling and multidisciplinary programs. Only fragmented initiatives can be found in separate countries.
- Not many master's students do their MSc thesis in the companies. In 2024, UT Bioengineering program had 2 MSc thesis done in companies, both outside Estonia (but there is a better situation on bachelor level studies).
- Lack of product development and commercialization courses in the universities related to biotechnology. UT has a bioenterprise course and intellectual property course, Taltech has courses Entrepreneurship and Business Planning for MSc program (in Estonian). In the University of Tartu Contemporary Economy MSc program does not have a course dedicated specifically to Biotech Industry. Klaipeda University has integrated classes for blue biotechnology product commercialization. Vilnius University in the bachelor and master programs has integrated classes for project management, IP and similar.
- In the UT Bioengineering MSc program there is a practical course sponsored by Icosagen. During this course students also have a guided tour in the factory and a lecture about the history of the company.
- Obtaining an industrial PhD is not very common, although there are [some examples](#). There was a program in Lithuania in 2017-2018 for an industrial PhD program (funded by Research Council), but it was discontinued due to insufficient engagement from the industry.

## Examples and best practices

The [Caltech](#) university office of technology transfer & corporate partnerships offers multiple ways for business-academia cooperation. Examples include sponsored research, licensing, strategic partnerships and other

In Harvard Business School there is a case study course where students discuss real life business cases, propose solutions, and sometimes in the presence of the person who was in that position and actually made the decision. The [discussion](#) is moderated by a professor. This technique from one of the best universities in the world could be beneficial in the Baltics environment as well, but should focus on the Baltic region, its challenges, and include

representatives of the Biotech industry who were responsible for making the decisions discussed in the class.

Erasmus Mundus Master's program International Master in Innovative Medicine (IMIM) is the joint program coordinated by Groningen, Heidelberg, Uppsala, and **from September 2024 also Tartu** universities. Apart from courses that are specific to each university, IMIM has the common learning module named Bench to Bedside and Beyond (BBB). BBB aims to prepare students for a future work environment that is international, inter- and multidisciplinary, and innovative. It is a student-centred learning experience, where teams from every partner university work on specific tasks during every semester. This module is divided into 4 courses:

- BBB1 Introduction to Translational Medicine
- BBB2: Patent Analysis and Innovation with ChatGPT
- BBB3: Innovation & Entrepreneurship Training
- BBB4: Creating a Translational Product

This module also includes Spring school in Heidelberg that provides a platform for networking and the exchange of research opportunities among the different partner universities, Summer School in Industrial Perspectives of Innovative Medicine in Uppsala, and VentureLab Weekend at Groningen University. Together, this module leads to the writing of the PhD proposal or creation of Startup business plan.

## Objectives

- Improve collaboration between academia and industry
- Enable a growing supply of multi-disciplinary talent to drive the development of the Baltic biotech sector
- Improve students' understanding of how biotechnology companies operate and which skills are in demand

## Outcomes

- Create separate at least one-semester long courses in the Universities, that are project based, with access to lab space and equipment, as well as mentorship from industry representatives. Courses begin with idea pitches and culminate with a final event where every team presents their project and results. It is somewhat like iGEM competition but to a lesser scale, and more focused on the topics relevant to the Baltic region. After the final event some projects are selected for the next stage (e.g. incubation) and all participants who are willing to proceed may join other teams.
  - Project-based courses may include multidisciplinary teams with representatives from business, finance, design, etc. This multidisciplinary environment should promote the emergence of interdisciplinarity in students.
  - Judging committee of that course should include representatives of Biotech companies and startups from the Baltic region, as well as investors.

- Another idea is to create a joint course among Baltic states universities, that would focus on discussion of real-life challenges previously faced by biotech companies in Baltic states (similar to Harvard Business school case study course)
  - Life-long education - Baltic-level collaborative online courses, micro-degrees to match the needs and requirements of the region's industry

To support effective implementation of the proposed actions, it may be beneficial to incorporate considerations of gender equality and inclusiveness, along with corresponding measures, such as:

- how supportive is participation in the proposed activities for pregnant women, e.g.:
  - women should be able to stop the activities and continue after maternity leave;
  - teaching/learning experience should be adjusted to avoid putting pregnant women in contact with chemicals potentially hazardous to the fetus);
- activities should be accessible for people with caring duties and people experiencing special circumstances (e.g., traumatic event, loss of a family member or a close loved one, physical or mental health conditions) – possibility to participate in the courses online, have online access to video records and other materials;
- are there measures (e.g., responsible person) to accommodate special needs (e.g., help for auditory, visual, movement impairments), if necessary;
- is the life-long learning program tailored to promote professional development regardless of age, educational level, and practical experience of the participants.

## Proposed Actions

- **Project-Based Courses:**
  - Develop semester-long, hands-on courses in universities.
  - Include lab access, equipment, and mentorship from industry experts.
  - Courses should start with idea pitches and conclude with final presentations evaluated by a panel of biotech professionals and investors.
- **Multidisciplinary Teams:**
  - Form teams comprising students from various disciplines (e.g., life sciences, business, design, finance).
  - Foster cross-functional collaboration to enhance interdisciplinarity and real-world problem-solving skills.
- **Joint Baltic Course:**
  - Introduce a shared course across Baltic universities to analyze real-life challenges faced by biotech companies in the region.
  - Adapt a case-study approach similar to Harvard Business School to focus on regional biotech industry issues.
- **Life-Long Learning Programs:**
  - Launch online collaborative courses and micro-degrees tailored to meet regional biotech industry needs.
  - Include flexible learning formats accessible to people with caregiving duties or special circumstances.
- **Support for Industrial PhDs:**

- Encourage partnerships between academia and industry to increase the availability and uptake of industrial PhD programs.

These actions aim to bridge the gap between academia and industry, create a pipeline of multidisciplinary talent, and enhance practical skills in the Baltic biotech sector.

### Key Performance Indicators and benchmarks

KPI name
Industry based master's thesis
Paid internships in Biotech companies
Industry-based practical courses
Raise Biotech awareness in students' community
MBA students participation in a project-based course

### Key stakeholders (Baltics, international)

Organisation type	Potential role
<a href="#">Academic institutions</a> and <a href="#">research centers</a>	Providing talent and instructions
<a href="#">Industry partners</a> and <a href="#">startups</a>	Providing case studies, funding and mentors
<a href="#">Ecosystem builders</a>	Providing network, dissemination
Government bodies	Facilitators, participation in roundtable discussions

### Implementation

- Roadmap:
  - **Phase 1 (Year 1):**
    - Conduct a needs assessment to identify gaps in biotech education and industry collaboration.
    - Pilot one project-based course in each Baltic country, partnering with leading biotech companies.
    - Develop a framework for joint Baltic university collaboration and course delivery.
  - **Phase 2 (Years 2–3):**

- Expand project-based courses to multiple universities and include multidisciplinary teams.
    - Launch the joint Baltic course focused on real-life biotech challenges.
    - Introduce online life-long learning programs and micro-degrees tailored to industry needs.
  - **Phase 3 (Years 4–5):**
    - Evaluate program outcomes and adapt based on industry and student feedback.
    - Scale up industrial PhD opportunities and establish long-term partnerships between academia and industry.
- **Timeframe estimation:**
  - **Preparation:** 6–12 months for course and program design, industry collaboration, and pilot planning.
  - **Execution:** Continuous over five years, with annual course offerings, evaluations, and program improvements.
  - **Pilot:** Year 1 to test project-based courses and refine the joint Baltic concept.
  - **Ongoing:** Life-long learning programs and micro-degrees will operate continuously with periodic updates.
- **Budget Estimation:** annual budget of €1.5–2.5 million across the region:
  - Course development and delivery: €1–1.5 million/year.
  - Industry collaboration and mentorship: €300,000–500,000/year.
  - Online program and micro-degree development: €200,000/year.
  - Administrative and coordination costs: €200,000–300,000/year.
- **Funding Sources:**
  - Horizon Europe, Erasmus+, and EIT funding for education and skills development.
  - National and regional government support.
  - Industry co-sponsorship and private sector funding.
- **Dissemination:**
  - **Promotional Strategies:**
    - Leverage university communication channels, industry networks, and social media to raise awareness.
    - Highlight success stories and outcomes in regional and international biotech events.
    - Publish annual impact reports showcasing program benefits for students, industry, and academia.
  - **Target Audiences:**
    - University students and faculty, biotech industry professionals, and government policymakers.
    - Potential participants of life-long learning programs, including professionals outside the biotech field.



# Engaging Entrepreneurial Talent

The aim of this action item is to ensure that talent who has prerequisites and motivation of taking up entrepreneurial career paths will execute the will.

## Need(s) and challenge(s):

- Raising a general understanding about biotech and its possibilities among other specialists (business, law etc.)
- The government lacks clear strategy how to become a biotech country
- Shifting mindset towards more entrepreneurial career path for biotech specialists
- Very few biotech startups created in the region
- Existing business programs are not focused enough to help biotech talent and startups in a meaningful way
- Lack of knowledge what it takes to run a biotech (deeptech) company

## Current status

Currently, the rate of new biotech companies created is very low in the Baltics. With a few exceptions, there is a lack of success stories in the region, with no spillover effect. On one hand, there is generally a low number of biotech graduates. On the other hand, the specialists who have biotech skills and entrepreneurial mindset do not always found companies. For this, there are a myriad of both personal and socio-economic reasons. For example, young specialists may not have the knowledge how to actually found and run a company or translate their science into a business (see [Translational expertise](#) action item). They may not have necessary contacts or are not able to find relevant co-founders. They may already work on a full-time job and simply lack the time and financial resources to develop a business idea into a valid company.

Of-course, there are also people who simply do not consider entrepreneurship as a career option for themselves. In this analysis, we are focusing on the fraction who do have the personality traits that allow successful business careers but who, however, decide not to realise this potential.

Biotech as a business direction is not widely disseminated, however, there has been some activity within the past years, e.g. Biotech coffee morning at Latitude59 and [sSTARTUP Day](#) in Tallinn and Tartu in 2024 and 2025 and biotech side events at Life Sciences Baltics event in Lithuania.

The regulatory landscape is experiencing some hurdles for social security matters in general. For example, people who are board of directors of any company will not be eligible for unemployment security in Estonia. Moreover, obtaining a loan, for example for buying a home, is much more difficult for entrepreneurs as banks want extra reporting and often deny giving loans overall. This is a general aspect to consider when a person is making a career choice. Therefore, the local laws should be reconsidered.



- Biotech-related curricula have some extent of entrepreneurial programmes but at a minor level. Biotech specialists are not very knowledgeable about intellectual property protection. TalTech MSc programme has a course on startup entrepreneurship, UT has bioenterprise and IP course (see [Upskilling and Multidisciplinary action item](#)).
- Need to increase public awareness about biotechnology as a field in general (see [Improving Public Awareness and Attitude](#) action item).
- [SekMo](#) programme under the EAS in Estonia offers grants for companies to employ specialists from universities.
- Microdegree programmes where people outside of industry can obtain state-of-the-art knowledge exist in Estonia. However, these programmes are not currently designed for biotechnology.
- Active participation in iGEM student biotech competition in some universities, e.g. [University of Tartu](#).
- There are two recent developments in the Baltics regarding biotech-focused incubation programs. [Genesis program](#) by the Associate chapter of Nucleate in the [Baltics](#) (since 2024) and [INCUBATION.BIO program](#) by the [Biocatalyst Foundation](#) (since 2025). There are existing occasional general hackathons, incubators and accelerators aimed for food, wood, deeptech or clean tech which target biotech indirectly, such as [Beamline](#), [Garage 48 Food](#), [Health Founders](#), [Commercialization reactor](#), [European Synbio hackathon](#), [Tehnopol Startup Incubator](#) etc.

## Examples and best practices

In Denmark, there is a MSc in [Business Administration and Bioentrepreneurship](#) full-time two year programme. The programme offers Denmark's first university degree and academic courses bridging business and biotech. BIO is a cooperation between Copenhagen Business School (CBS), The Technical University of Denmark (DTU Systems Biology) and University of Copenhagen (KU) and leading life science firms in Denmark.

In Sweden Karolinska Institutet offers a [Master's Programme in Bioentrepreneurship](#). The aim of the programme is to bridge the knowledge gap between the scientific and business part of the life science sector. The programme is focused on drug development, biotechnology, diagnostics and medical technology, providing knowledge about scientific methods, global perspective, ethics and equal treatment.

In Japan, a biotech company [bitBiome](#) encourages employees to do PhD studies and create their own companies for a greater good.

DTU offers a lifelong [learning programme](#) with a wide selection of biotech related courses.

[Planetary Health](#) Venture Lab by Bioinnovation Institute, backed by Novo Nordisk Foundation scouts start-up ideas from Danish Technical University and invites them to a 12-month program. The start-ups will be provided with 5 000 000 DKK (670 000 €) in a convertible note form. They will come together after each month to wrap up homework and learn about new topics. The curriculum covers customer insights, competitor analysis, regulatory navigation, fundraising strategies, operational scaling, partnership dynamics and

exit planning. The incubator also provides them with laboratory and pilot plant use in the university's facilities. Programme ends with a demo day. The initial program can be followed up with Venture House, providing additional follow-on funding.

[YCombinator](#) in the US accepts companies at different stages, whether it be only an idea or a couple of years history. Each company receives 500 000 \$ with post-money valuation terms for 7% equity. The participants are divided into groups to get a more targeted and intimate approach. YCombinator has a highly acknowledged network of investors, partners, clients and alumni, which continues to support their startups even after the end of the three-month programme. The accelerator is not biotech related but it has an alumni of [121](#) biotech companies, among which Benchling being the most successful. They have a specific platform called Bookface which serves the functionality of Facebook, LinkedIn and Quora at the same time. The programme includes a retreat, alumni talks, weekly meetups and a demo day. The accelerator is also giving a hand whether the company is trying to reach public media or find clients. Each alumni gets access to hundreds of discounts. Since Ycombinator has a very high reputation, it helps attract the best talent, helping companies in their employment process.

[IndieBio](#) is the nr 1 biotech accelerator in the world happening in San Francisco and New York, US or virtually. The program offers a 2 million \$ laboratory and offers 525 000 \$ upfront. Instead of providing a mentor, each startup is assigned five partners who work closely, daily with them. The whole program coordination team is working in the same office with the startups, providing a personal approach. They offer the possibility to work with an idea long before they are ready for the intensive programme.

## Objectives

The region needs to have a good strategy, education, ease of doing business and cross-border collaborations:

- PhD students and young scientists from different curricula understand the economic value of their research and are motivated to translate science into business
- Biotech scientists have a support structure of relevant business people in terms of financial management, law et.
- MSc graduates have strong knowledge about what it takes to create a business, business plan development, financial planning, workplace culture and ethics
- Facilitating regional connections between talent, start-up founders, research institutions and industry
- Fostering commercialization of scientific achievements and innovative ideas into marketable products and services
- Creation of a pan-Baltic Biotech entrepreneurship MSc course
- Bioentrepreneur microdegree
- Biotech dissemination plan for wider public
- Accessible laboratory space for business idea validation and product development (see [Improving Access to Lab Space](#) Action item)

It is necessary to make sure that biotech specialists are equipped with skills about how to validate business ideas, conduct business models, have an understanding of financial planning and business as well as workplace ethics. They are able to find the necessary contacts.

To support effective implementation of the proposed actions, it may be beneficial to incorporate considerations of gender equality and inclusiveness, along with corresponding measures, such as:

- how supportive is participation in the proposed activities for pregnant women, e.g., women should be able to stop the activities and continue after maternity leave;
- the developed curricula may include training on inclusiveness and diversity, e.g., training on inclusive leadership and management;
- activities should be accessible for people with caring duties and people experiencing special circumstances (e.g., traumatic event, loss of a family member or a close loved one, physical or mental health conditions) – possibility to participate in the courses online, have online access to video records and other materials;
- are there measures (e.g., responsible person) to accommodate special needs (e.g., help for auditory, visual, movement impairments), if necessary.

## Outcomes

- As a result of updated curriculums and created programmes, biotechnology specialists are equipped with a general understanding of what it takes to run a company.
- A tailored Baltic biotech incubator is created, thanks to which scientific ideas will be developed into a marketable business idea
- Specialists who have prerequisites of becoming a founder have motivation to do so. As a result, more biotech companies are created and survive.
- Biotech specialists have a network and support structure of other relevant specialists, such as business, accounting and public relations.

## Proposed Actions

- **Educational Programs and Curricula Development:**
  - Develop and implement an MSc program in Bioentrepreneurship focused on bridging business and biotech.
  - Create microdegree programs and short courses targeting biotech professionals, covering key topics such as financial planning, business model development, intellectual property, and regulatory navigation.
  - Update existing university curricula to incorporate entrepreneurial elements and practical industry-relevant skills.
- **Incubation and Support Programs:**
  - Establish a tailored Baltic biotech incubator to support the commercialization of scientific ideas into market-ready products.
  - Partner with industry to provide mentorship, funding, and infrastructure for emerging startups.
- **Networking and Events:**

- Organize annual biotech-business events such as hackathons, matchmaking events, and startup demo days across the Baltic region.
- Facilitate connections between academia, industry, and potential investors through regional and international conferences.
- **Incentivize Industry Collaboration:**
  - Establish grants and incentives for companies to engage with academia and host students for industrial theses or internships.
  - Promote industry-backed scholarships for entrepreneurial talent in biotech

### Key Performance Indicators and benchmarks

KPI name
Nr of updated biotech curriculums
Biotech-business events organised within five years
Study courses updated
Workshops for laboratory leaders
Microdegree programmes created
White papers published
Baltic entrepreneurship MSc programme created
Baltic Biotech incubator programme created
Number of new startups created in the region
Share of startups that survive beyond five years
Matchmaking events
Active participation in iGEM or other similar events

### Key stakeholders (Baltics, international)

Organization type	Potential role
Government bodies (Innovation Agencies, Ministries of Economy)	Strategy creation, co-funding, support instruments
<a href="#">Ecosystem builders</a>	Dissemination, project management, bridging academia / industry, networking, dissemination
<a href="#">Academic institutions</a>	Talent sourcing, dissemination, infrastructure,

	co-funding
<a href="#">Research centers</a>	Technology and IP origination, talent, infrastructure
<a href="#">Industry partners</a>	Mentorship and advisory, B2B partnerships, funding support, international networking
<a href="#">Capital providers</a>	Funding, networking

## Implementation

- Roadmap:
  - **Phase 1 (Year 1–2):**
    - Develop and launch the MSc program in Bioentrepreneurship and micro-degree programs.
    - Pilot incubation programs in collaboration with industry and NGOs
    - Organize the first regional biotech-business events
    - Design and initiate the public awareness campaign
  - **Phase 2 (Years 3–5):**
    - Expand educational programs across multiple universities and integrate cross-border collaborations
    - Scale up the Baltic Biotech Incubator and establish partnerships with international accelerators.
    - Institutionalize annual biotech events and refine formats based on participant feedback.
    - Evaluate regulatory challenges and propose policy recommendations.
  - **Phase 3 (Year 6 and beyond):**
    - Assess outcomes and impact, focusing on the number of startups created and survival rates.
    - Establish a long-term funding and operational strategy for programs and events.
- Timeframe estimation:
  - **Educational Programs:** 2 years for creation and launch; continuous refinement based on feedback.
  - **Incubation Programs:** Initial setup in Year 1; continuous operation with periodic scaling and updates.
  - **Networking Events:** 1–2 years to establish; annual or biannual thereafter.
  - **Public Campaigns:** Ongoing from Year 1.
- Budget Estimation:
  - **Educational Initiatives:**
    - €30,000 per updated course (government grants or industry sponsorships).
    - €100,000 for the creation of the MSc program in Bioentrepreneurship.
  - **Incubation Program:**
    - Initial setup: €200,000–300,000.
    - Annual operational costs: €100,000–150,000.

- **Events and Networking:**
  - €20,000 per event annually (funding from grants and sponsorships).
- **Public Campaigns:**
  - €50,000 annually for media and NGO collaborations.
- **Potential Funding Sources:**
  - Horizon Europe, Erasmus+, EIT funding, national and regional government grants, and private sector sponsorships.
- **Dissemination:**
  - Develop a comprehensive biotech dissemination plan in collaboration with NGOs, universities, and media.
  - Leverage social media, biotech fairs, and international conferences to reach diverse audiences.
  - Publish annual reports highlighting program outcomes, success stories, and impact metrics.

# Promoting Applied Research

## Need(s) and challenge(s) addressed by the Action Item

- Need for higher share of applied research focusing on biotechnology/synthetic biology with commercialization potential
- Need for increasing skills and capacity of researchers to submit successful grant applications under competitive funding schemes
- Need for more targeted funding sources for applied research in biotechnology/synthetic biology

## Current status

- A number of funding schemes for applied research are available at national, regional, and EU level, however, many of them focus on research with TRL up to 4 and possibility to apply for continuous funding for further development is limited. For instance, very little EIC and ERC funding support goes to the Baltic region. Within the Horizon 2020 (2014–2020) and Horizon Europe (2021–2027) programmes, [2 EIC Pathfinder projects have been funded in Latvia](#), [7 - in Lithuania](#), and [6 - in Estonia](#). In the case of ERC frontier research main grants (Starting, Consolidator, Advanced, and Synergy), Latvia and Lithuania is significantly lagging behind Estonia (3 ERC grants have been funded in Latvia ([Consolidator](#), [Advanced](#), and [Synergy](#)), [5 – in Lithuania](#), and [16 – in Estonia](#)). Hence, the Baltic states encounter additional barriers to apply for the following EIC and ERC schemes ([EIC Transition](#) and [ERC Proof of Concept Grants](#)) that foresee building of the proposals on the results of previous eligible projects.
- Funding schemes for applied research **at national level** that are relevant to the field of biotechnology/synthetic biology:
  - **in Latvia:** [Fundamental and Applied Research Programme](#), [Postdoctoral Research Programme](#), and [State Research Programme](#);
  - **in Estonia:** [Proof-of-Concept Grant](#); [Applied Research Grant](#) (RUP) by EAS, [Personal Research Grants](#), [Product development grant](#) by EAS (e.g., Postdoctoral Research Grant);
  - **in Lithuania:** [R&D Implementation scheme \(SMART\)](#);
  - **in Finland:** [Proof of Concept Funding \(Research Council of Finland\)](#), [Business Finland funding programmes](#).
- Scientific cooperation programmes and initiatives for Baltic states:
  - [Latvia-Lithuania-Taiwan Scientific Cooperation Support Fund](#);
  - [Estonia-Latvia Interreg programme](#) (2nd priority);
  - [Baltic Bonus programme](#);
  - [Baltic Research Programme](#) (closed on April 30, 2024).
- Funding schemes and initiatives for R&I activities **at EU level** that are relevant to the field of biotechnology/synthetic biology: ERA-NET programmes (e.g., [JPIAMR-ACTION](#), [M-ERA.Net](#)), European partnerships (e.g., [ERA4Health](#), [Eurostars programme](#)), Horizon Europe Pillar I programmes ([ERC grants](#), [MSCA Actions](#)), Pillar II programmes (calls under [Cluster 'Health'](#) and [Cluster 'Food, Bioeconomy](#),

[Natural Resources, Agriculture, and Environment](#)'), Pillar III programmes (e.g., [EIC Pathfinder](#), [EIC Transition](#)).

- Additional support for women in science is available as the '[Baltic States Scholarship for Women in Research](#)' (offered by the Academies of Sciences of the Baltic States in cooperation with UNESCO).
- Latvia, Lithuania, and Estonia are involved in several life sciences related alliances, for example, [Alliance4Life](#) (involved partners from BIOCONNECT - Latvian Institute of Organic Synthesis, Vilnius University, and University of Tartu) and [ScanBalt Network](#), which support cross-border collaborative R&I activities. The Alliance4Life offers seed funds for collaboration projects involving partner institutions.
- Commercialization workshops and project preparation/management workshops for the development of soft skills of both researchers and research managers have been/are often integrated into projects under Horizon 2020 or Horizon Europe programmes, e.g., Twinning, Teaming, Pathways to Synergies, ERA Chair, etc.
- National Contact Points for Horizon Europe in Latvia, Lithuania, and Estonia regularly provide information about the upcoming Info Days on different project calls and workshops on project proposal preparation offered by the European Commission and local universities.
- Matchmaking and networking activities that often lead to finding collaboration partners for R&I projects are organized within different regional events, e.g., [Life Sciences Baltics](#), [Deep Tech Atelier](#), [Nordic Life Science Days](#), [Bioeconomy Forum Lithuania](#), Finnish Biotech Startup and Partnering Event (FinBio) organized by [the Finnish Bioindustries](#), events organized by the [ScanBalt network](#) or listed in [the Estonian Biotech Association Database](#).
- **Sporadic and inconsistent interactions** between academia and industry leading to communication mismatch between what academia can do and what are the industry needs and challenges that could be solved *via* collaborative research. These interactions are promoted by events such as Biotech stage at the [Deep Tech Atelier](#) in Latvia, Biotech breakfast at other events ([Life Sciences Baltics](#) event in Lithuania, [Latitude59](#) and [sTARTUp Day](#) in Estonia). **Sporadic funding calls** for collaborative grants (see Action Item [Enhancing Access to Existing Grants](#)). **Sporadic presence of hackathons** involving industry challenges and relatively high skill level required of participants to generate ideas based on synthetic biology/biotechnology.

### Examples and best practices

- Already implemented within the Baltic region - [Baltic Research Programme](#) (collaborative R&I projects).
- [SYNBEE project](#) (partners from France, Finland, Latvia, Ireland, Germany, United Kingdom, United States) - provides a [platform with information resources for learning communication and project management](#) in the field of synthetic biology.
- [A4L BRIDGE project](#) (partners from Czech Republic, Slovakia, Poland, Croatia, Estonia, Lithuania, Latvia, Slovenia, Bulgaria, Romania, and Ireland) - will develop an e-learning platform with online webinars, lecture materials, etc. on different topics relevant to life sciences, including commercialization and project preparation/management.



- [WIDEnzymes project](#) (partners from Latvia, Slovakia, Greece, Italy, and Spain) - will perform a comprehensive SWOT analysis of the project partners' biotech ecosystem covering scientific, technical, academic, industrial, regulatory, tech transfer, educational, legal, ethical, business, and dissemination domains and will implement both soft skills (project writing and management, IPR management, science communication, etc.) and hard skills (enzyme design, structural biology, etc.) workshops.
- Commercialization workshops are also offered by 50Y ([PhD to VC program](#)) and BioInnovation Institute ([BII Summer School](#)).

## Objectives

- To increase the share of biotechnology/synthetic biology-based project applications under the existing applied research funding schemes.
- To promote the development of more targeted funding sources for applied research in biotechnology/synthetic biology.

## Outcomes and actions

- Package of events: workshops, roundtable discussions on research translation promotion in the region (see Action Item [Creating New Grants](#))
- White paper (possible target audience: RIS3 management groups, for example, management group for RIS3 area 'Biomedicine, medical technologies and bio-pharmacy' in Latvia; Estonian Liaison Office for EU RTD and Lithuanian RDI Liaison Office LINO, the Counsellor for Research and Space at the Permanent Representation of the Republic of Latvia to the EU) with recommendations on how to promote applied research in biotechnology/synthetic biology with commercialization potential (see Action Item [Creating New Grants](#)).

To support effective implementation of the proposed actions, it may be beneficial to incorporate considerations of gender equality and inclusiveness, along with corresponding measures, such as:

- It should be ensured that the events are organized with accessibility in mind, e.g.:
  - accommodations for people with special needs or experiencing special circumstances (e.g., help for auditory, visual, movement impairments);
  - flexible schedules/possibility to participate online or use the records and other materials of the events to accommodate personal obligations like child care or unpredictable circumstances like sudden illness, traumatic event, loss of a family member or a close loved one;
- Within the developed workshops, training on inclusiveness and diversity may be included, e.g., training on gender equality aspects in project applications, work-life balance, and inclusive leadership and management with the aim of promoting female representation at higher academic levels, which often correlates with the grant application submission and coordination of project teams/research groups as well as authoring of publications and patents. It is also important to increase awareness about wage gap disparities, which can sometimes stem from self-undervaluation by

women coordinating grants, particularly when assessing their own monetary worth in professional roles;

- For diverse opinions, invitation of experts in gender equality, disability rights, and workplace inclusivity to the roundtable discussions would be beneficial to provide insights on designing funding programs that account for life disruptions (e.g., maternity/paternity leave, health crises) and to demonstrate examples of how funding schemes have effectively supported inclusion (e.g., flexible timelines for grants, providing stress management tools at workplace);
- As an integral part of the white paper, recommendations for funding bodies on how to implement diversity and inclusion measures may also be provided.

**Key Performance Indicators and benchmarks**

Activity	Target
Commercialization workshops	<b>2 workshops per year</b> , available online (50-70 researchers and students received training on how to turn local biotechnology/synthetic biology research into real products and services)
Project writing and management workshops	<b>3 workshops per year</b> , available online (70-100 researchers and students received training on writing of grant applications for EU funding schemes, e.g, EIC Pathfinder and EIC Transition, and management of the awarded projects)
Roundtable discussions	Roundtable discussions with national and EU policy makers and representatives from the European Commission and National Contact Points for Horizon Europe in Latvia, Estonia, and Lithuania on specific needs of biotechnology/synthetic biology sector for the development of upcoming national and EU funding schemes: <b>2 roundtable discussions organized</b> <b>3 roundtable discussions attended</b>
White paper	<b>1 white paper</b> (based on the outcomes of the roundtable discussions) with recommendations on how to promote applied research in biotechnology/synthetic biology with commercialization potential

**Key Performance Indicators and benchmarks**

KPI
Number of EU-funded biotechnology/synthetic biology research projects with the potential of commercialization

Increase in the attracted funding within biotechnology/synthetic biology research projects with the potential of commercialization

### Key stakeholders

Organisation type	Potential role
<a href="#">Academic institutions</a> , <a href="#">research centres</a>	Organization and/or participation in networking, workshops, discussions, and development of a white paper.
<a href="#">Industry partners</a>	Participation in networking and discussions.
<a href="#">Ecosystem builders</a>	Organization and/or participation in networking, workshops, discussions, and development of a white paper.
Governments (incl. Science and Economics Ministries, Innovation Agencies)	Facilitators of the discussions with national and/or EU policy makers, platforms for C&D, contributors to the discussions.
International partners	Sharing expertise within commercialization and grant writing/management workshops, sharing experience in attracting funding for applied research.

### Implementation

- Roadmap:
  - **Phase 1:** preparation for the events (workshops, roundtable discussions) - development of programmes, implementation schedule, promotional materials, etc.;
  - **Phase 2:** organization/attendance of the events;
  - **Phase 3:** collection of the feedback on the implemented events and improvement of the programmes;
  - **Phase 4:** based on the outcomes of the roundtable discussions, development of the white paper.
- Timeframe estimation:
  - preparation for [commercialization workshops](#) - 6 months, implementation - one-day workshop, 2 workshops per year;
  - preparation for [project preparation and management workshops](#) - 6 months, implementation - one-day workshop, 3 workshops per year;
  - preparation for [roundtable discussions](#) - 2 months, implementation - one-day event, 5 one-time events;
  - preparation of the [white paper](#) - 1 month.
- Budget estimation:

- development and implementation of workshops and roundtable discussions:  
~120 000 EUR annually.
- outreach activities: ~ 5 000 EUR annually.
- Possible funding sources:
  - EU programs (Horizon Europe);
  - national grants;
  - sponsorships;
  - funding for organization of events from the European Association of Research Managers and Administrators (EARMA) - [Invited Speaker Award, Virtual Event Grant](#) (the organizing institution should be a member of EARMA).
- Dissemination:
  - biotechnology/synthetic biology community organizations (e.g., Nucleate Baltics, LithuaniaBIO, Biocatalyst Foundation, universities, research institutes, etc.) to share the events to their members/network;
  - NCPs to share the information about workshops and roundtable discussions;
  - dedicated platform (e.g., action plan implementation project website), where recordings of the workshops, recommendations, news on the upcoming and past events, etc. would be published.

# Improving Translational Expertise

## Definitions:

- **Spin-off** (also a **spin-out**) - a company expressly established to develop or exploit IP created by a public research organisation (PRO) and with a formal contractual relationship. Include, but do not limit to, spin-offs established by PRO staff. Exclude companies that have no formal agreement for commercially developing IP or know-how created by the institution.
- **Startup** - A newly registered company that is founded by one or more entrepreneurs who want to develop a product or service for which they believe there is demand.
- **SME** - in the EU it is considered a small and medium-sized enterprise (SMEs) which employs fewer than 250 persons and which has an annual turnover not exceeding EUR 50 million, and/or an annual balance sheet total not exceeding EUR 43 million.

## Need(s) and challenge(s) addressed by the Action Item

- Need for increasing skills and capacity at academic technology transfer offices (TTO) for effective translation of research results.
- Need for TTOs with biotechnology sector-specific skills (e.g., knowledge of regulatory requirements, process for registration, (pre)clinical trials, if applicable).
- Need for more unified and coherent legal environments within the region to simplify the process of technology transfer (e.g., different processes for IP licensing).
- Need for enhanced collaboration between academia and industry in the field of biotechnology/synthetic biology.
- Need to increase understanding and research translation skills for academics working in the field of biotechnology/synthetic biology.
- Challenge: limited talent pool with sufficient expertise to cover all aspects of research translation.

## Current status

- Technology transfer (TT) support is present but **insufficient and inconsistent** within the region.
- Although most institutions have staff offering TTO functions, TT is a **very recent** profession within the region (i.e., some TTOs have been established in just the last 1-5 years). Existing TTOs often **lack resources** (staff, budget) to actively lead TT activities, and also experience high staff turn-over. Hence the technology transfer support often is insufficient and ineffective. However, without demonstrating financially successful TT results, there seems to be insufficient justification to further invest in developing TT capabilities. This creates a metaphorical chicken & egg situation, where there are not enough resources ('egg') to demonstrate TT results ('chicken'), but without TT results there are not enough incentives to provide resources for TT.

- There is a **limited** interest and thus **market demand from local industry** for adopting biotechnological innovations. Thus, most translation activities aim to target international industry members.
- Relatively low amounts of applied and collaborative research between academia and industry, which **limits the amount of industry relevant technologies that are developed enough for translation** (e.g., above TRL 5 and 6). See Action Item Promoting Applied Research for further details.
- Furthermore, most technologies are drained away from universities due to sporadic research and translational funding as researchers leave with their technology. This further complicates chances to develop commercially viable technology and demonstrate successful research translation.
- Due to limited resources many TTOs can offer **only general support** for a limited range of TT activities and often must provide support services for technologies from a very wide range of disciplines. Without specialisation TTOs are unable to provide support in biotechnology specific areas such as consultations on appropriate classification of product and regulatory pathway for the preclinical development.
- The region has a **fragmented legal environment** with different legal requirements for TT procedures (e.g., IP licensing requires an auction in Latvia; as well as limiting actions for start-up and spin-out support; in Lithuania the IP from student project belongs to the student, however in Latvia it belongs to the study institution or the place where the IP has been generated). Fragmented legal environment complicates research translation, as well as reduces the mobility and expertise sharing of TT professionals within the region. The legal regulations for technology transfer from Latvia have been reviewed at the end of 2024 and in the 2025 a new regulation regarding the procedure and agreements of technology transfer is expected to be developed by the Cabinet of Ministers in 2025. Till the end of 2024 the only method for setting a price and ensuring technology transfer to industry was via an auction. The new legislation should recognise and allow other common practices from Europe (for example, arms-length negotiations).
- There are several **programmes and networks** aimed to increase the TT and/or biotechnology sector specific skills, as well as promote harmonisation of TT processes within the region, such as [the Baltic TTO network](#), [TTO Network Mentoring Program for the Spin-offs in Baltic States](#) organised by WIPO, [Alliance4Life](#) project, [SYNBEE](#) project, [Riga BioHack](#), project [WIDEnzymes](#) which gathers info on technology transfer practice in CEE countries and Italy. Some countries have formal or informal TTO networks such as TTO Lithuania.
- Although the TTOs have received formal training in technology transfer skills over the last few years, the **challenge to translate this TTO training into successful TT results** remains. As TTOs operate in very complex innovation ecosystems, it would be necessary to have roundtable stakeholder meetings trying to identify what does not work.

## Examples and best practices

### Standardising and sharing best practices:

- The University Spin-out Investment Terms (USIT) guide developed by TenU - an international collaboration formed by members of leading technology transfer offices

and funded by Research England. The guide helps to standardise the investment terms and promotes best practices consolidated from experience sharing and discussions involving different stakeholders from universities, investors and supporting organisations. These guides are optimised for regions with established TTO practices (e.g., UK), similar guide could be developed for the Baltic region, taking into account the legislative frameworks and current situation within the region.

- Fifty Years - a pre-seed and seed focused VC firm investing in technology aiming to solve the world's biggest problems - has developed [The Spinout Playbook](#) - serves as a comprehensive guide for researchers aiming to translate their academic innovations into successful startups. Similar guides have been developed in various other established technology transfer offices.
- [Startup Lithuania](#), [Startup Latvia](#) and [Startup Estonia](#) have provided model agreements for startup creation. These include: Agreement of Incorporation, Articles of Association, Employment contract, IP Assignment and License Agreement, Shareholders' Agreement and others.

#### Funding for TT activities:

- In Lithuania there have been specific programmes [InnoPatent](#) providing funding for international patenting of inventions and to register design. However, currently this approach is incorporated into each of the calls of either joint science-business projects or applied research grants as simply one of the eligible activities and costs.

#### Training on research translation:

- Vilnius University offers dedicated [Entrepreneurship workshops](#) to its PhD students, thus promoting early development of skills in research translation.
- Nucleate Baltics organise an online entrepreneurship training events to students and also include sessions on IP protection and technology transfer.
- ASTP - an EU-based non-profit organisation dedicated to enhancing knowledge transfer between universities and industry - offers training courses to develop technology transfer skills, professional accreditation, and networking events to support the development of knowledge transfer professionals. It also advocates for the profession on an international stage and unites European national associations under the National Associations Advisory Committee (NAAC). Technology transfer professionals can take an active role in ASTP activities as well as developing further national and Baltic networks of Technology Transfer professionals.

#### Market Incentives and Demand Creation:

- Promotion of academia-industry research collaborations and public-private partnerships. Funding schemes involving industry participation, such as knowledge transfer partnerships in UK, which involves a local company, an academic institution and a shared PostDoc to perform collaborative and industrially relevant research. To introduce this in Baltic region, it should be a region-wide scheme pooling companies and academic resources to participate together. See Action Item [Promoting Applied Research](#) for further details.
- Professional Internships for PhD students (PIPS) - a scheme in UK providing PhD students funding to spend 3 months of their PhD in an institution (e.g., Industry) not necessarily related to the topic of their PhD thesis. See Action Item [Growing the regional talent pool](#) and [Upskilling and Multidisciplinarity](#) for details on how to engage members from industry gaining mutual benefits for students, academia and industry.

## Objectives and desired outcomes

- To increase the number of TT professionals with expertise in biotechnology/synthetic biology sector specific aspects of technology transfer (such as understanding of regulatory pathways for biomedical innovations, understanding what types of partners are required to engage for subsequent technology development outside of academia).
- To promote knowledge and experience sharing and development between TT professionals within the region.
- To identify differences in policy and regulatory frameworks within the region and to provide policy makers and TT practitioners with guidelines for harmonised processes of TT.
- To increase the number of researchers in synthetic biology/biotechnology with increased understanding and skills on research translation process and requirements (such as IP awareness, translation routes, technology readiness, technology benchmarking).
- To promote networking and knowledge and experience sharing between academic researchers and industry members within the region.

## Outcomes and proposed actions

This action plan enhances technology translation of biotechnology and synthetic biology by building regional expertise and knowledge transfer, and addressing policy and funding gaps. Key initiatives include:

- **Package of events** (training and networking events for TT professionals, researchers and ECRs, hackathons, roundtable discussions) to build-up commercialization skills, promote knowledge exchange and academia-industry collaboration.
- **Guidelines for harmonizing TT policies** across the Baltic region and annual roundtable discussions with policymakers and stakeholders to address regulatory roadblocks, ensuring smoother innovation pathways, and promoting use of harmonised KPIs and their monitoring.
- **Dedicated funding**, such as grants and innovation vouchers, to support technology translation activities like IP registration, maintenance and market strategy development.

The action item proposes events, policy guidelines and dedicated funding schemes for research translation. To support effective implementation of the proposed actions, it may be beneficial to incorporate considerations of gender equality and inclusiveness, along with corresponding measures, such as:

- It should be ensured that the events are organized with accessibility in mind, e.g.:
  - accommodations for people with special needs or experiencing special circumstances (e.g., help for auditory, visual, movement impairments);
  - flexible schedules/possibility to participate online or use the records and other materials of the events to accommodate personal obligations like child care or unpredictable circumstances like sudden illness, traumatic event, loss of a family member or a close loved one;



- Within the developed workshops, training on inclusiveness and diversity may be included, e.g., work–life balance and inclusive leadership and management;
- To ensure diverse perspectives, inviting experts in gender equality, disability rights, and workplace inclusivity to the roundtable discussions would be highly beneficial – their insights can help develop strategies to support research translation while accounting for various life circumstances, such as maternity or paternity leave and health-related challenges.

Activity	Target
Workshops for TT professionals in biotechnology / synthetic biology	<b>10 - 20 TT professionals</b> across the region attending a ‘train the trainer’ type training event on translating biotechnology/synthetic biology research results into products and services; training might be repeated every 3 years depending on TT practitioner turn-over time
Courses on TT for PhDs and other researchers in biotechnology / synthetic biology	<b>20 - 30 researchers/ students every year</b> receive training on translating biotechnology/synthetic biology research results into products and services (see also Action Item <a href="#">Promoting Applied Research</a> ); These courses could be organised across the region and in collaboration with regional partners.
Hackathons	Organising 1-2 biohackthons / year involving participation of industry representatives
Meetings of TT practitioners; Experience exchange programs with global leaders in the TTO field	<b>Annual regional meetings of technology translation professionals</b> promoting knowledge and experience sharing within the region. Development of experience exchange programs for TTO professionals in collaboration with leading TTO organizations worldwide, such as Oxford University Innovation or TenU. This would help gain valuable insights and adapt best practices to the needs of the Baltic region.
Roundtable discussions identifying roadblocks for technology transfer in the region	<b>Roundtable discussions</b> with national and EU policy makers, representatives from the TTOs in Latvia, Estonia, and Lithuania on specific needs of TT regulations, and other stakeholders of the biotechnology/synthetic biology sector: annual roundtable discussions involving key stakeholders
Unified Baltic IP and TT guidelines to support research translation	<b>Report outlining</b> the differences and recommendations allowing effective and harmonised TT processes in the Baltics.
Dedicated funding for technology transfer activities outside of major research projects	Grants or innovation vouchers offered to promising technology projects (either as SMEs or in academia) for technology transfer (e.g., IP registration or patent maintenance; technology transfer strategy consultations for

	regulatory requirements, specific biotechnology markets.)
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### Key Performance Indicators and benchmarks

KPI
Number of new agreements for academia-industry collaboration (incl. contract research, consulting)
Number of patent applications filed per year
Technology transfer agreements (options, assignments, licenses) executed per research expenditure (EUR)
Number of startups or spin offs formed per research expenditure
Investments raised by spinoffs
Jobs created by spinoffs

### Key stakeholders

Organisation type	Potential role
<a href="#">Research centers</a>	Research owners for TT activities, organization of workshops, policy discussions, experience sharing
<a href="#">Industry partners</a> and <a href="#">capital</a>	Co-funding and co-creation, mentorship.
<a href="#">Ecosystem builders</a>	Connections between biotechnology sector members, organization of workshops, discussions
Government bodies (incl. National Patent Offices)	Facilitator of the discussion with national and EU policy makers, contributor to the TT policy report
International partners	TT knowledge and experience sharing, training events

### Implementation

- Roadmap:
  - **stage 1** - preparation for the events (workshops, roundtable discussions) - development of programmes, implementation schedule, promotional materials, etc.;
  - **stage 2** - organization/attendance of the events;

- **stage 3** - collection of the feedback on the implemented events and improvement of the programmes;
- **stage 4** - based on the outcomes of the roundtable discussions, development of the white paper.
- Timeframe estimation:
  - preparation for commercialization workshops - 6 months, implementation - one-day workshop, 2 workshops per year;
  - preparation for project preparation and management workshops - 6 months, implementation - one-day workshop, 3 workshops per year;
  - preparation for roundtable discussions - 2 months, implementation - one-day event, 5 one-time events;
  - preparation of the white paper - 1 month.
- Budget estimation:
  - commercialization workshops - **~50 000 EUR**
  - project preparation and management workshops - **~60 000 EUR**
  - roundtable discussions - **~15 000 EUR**
  - white paper - **~5000 EUR**
  - **TOTAL** estimated budget for action item: **~130 000 EUR**
- Funding sources:
  - EU funding schemes aimed at training and networking activities, promotion of innovation actions (e.g., calls under European Innovation Ecosystems sub-programme - [HORIZON-EIE-2024-CONNECT-02-02](#) (for national or regional innovation agencies or similar organisations), [HORIZON-EIE-2024-CONNECT-02-01](#));
  - Industry (both established companies and larger startups) and capital providers as sponsors, co-creators, and joint venture builders
  - For project writing and management workshops, it is possible to get funding for the organization of the event from the European Association of Research Managers and Administrators (EARMA) - [Invited Speaker Award, Virtual Event Grant](#) (the organizing institution should be a member of EARMA).
- Dissemination
  - biotechnology/synthetic biology community organizations (e.g., Nucleate Baltics, LithuaniaBIO, Biocatalyst Foundation, universities, research institutes, etc.) to share the events to their members/network;
  - NCPs to share the information about workshops and roundtable discussions;
  - dedicated platform (action plan implementation project website?), where recordings of the workshops, recommendations, news on the upcoming and past events, etc. could be published.

# Startup-Industry Collaborations

## Need(s) and challenge(s) addressed by the Action Item

- Lack of R&D sources for companies, especially startups
- Limited connections between startups and mature companies
- Challenges in IP ownership during collaborations

## Current status

- Few collaborations between mature companies and startups
- Emerging innovation hubs, but need for cross-border collaboration
- IP ownership issues in startup-mature company collaborations

## Examples and best practices

### Business Finland Partnership Model

- Aims to create new export-oriented business ecosystems
- Involves at least one large company, 1-3 SMEs, and 1-3 research organizations
- Funding schemes:
  - Co-Innovation funding: For joint projects between companies or between companies and research organizations.
  - Co-Research funding: For research organizations or joint projects of research organizations.
- Funding: Up to 50% for large companies, 50-65% for SMEs, 70% for research organizations
- Motivation for Participation
  - Access to significant funding: Business Finland can provide up to €50 million for ecosystems assembled by leading companies and up to €20 million for ecosystems led by challenger companies.
  - Opportunity to solve major future challenges and increase RDI investments in Finland.
  - Potential for additional investments: Successful projects could lead to billions of euros in additional investments in Finland.
  - Boost in RDI cooperation between research centers, SMEs, large companies.

## Objectives

- Establish R&D collaboration platforms connecting mature companies and startups
- Foster innovation across borders
- Facilitate IP sharing and management

## Outcomes

Collaboration type description	Funding sources	IP ownership	Incentive for startups
<b>Co-innovation R&amp;D:</b> a larger company or research organization leads the project, with 3-10 smaller companies/startups contributing their expertise and resources.	EAS, LIAA, Innovation Agency Lithuania, Business Finland	IP with main partner; startups get first rights to access and use IP	First access to new technology, ability to scale R&D faster, shared resources and network
<b>Corporate Accelerators:</b> established companies mentor and support startups. This platform could be initiated by the acceleration platform -> action item.	EAS, LIAA, Innovation Agency Lithuania, Baltic Innovation Fund, EU EIC Accelerator	Startups retain IP but offer licensing agreements with the large company	
<b>Joint R&amp;D Hubs:</b> physical spaces for co-working and collaboration. Coordination with the open-access lab spaces, where startups can easily collaborate with each other.	Horizon Europe, Baltic Innovation Fund, Business Finland		Shared infrastructure and resources, faster access to market and reduced R&D costs
<b>Innovation Challenges:</b> mature companies or public sector institutions create R&D challenges or competitions where startups propose solutions. The winning startup receives funding, mentorship, and a contract for further development with the company.	National startup programs, public sector funding, participating companies	IP remains with the startup or shared depending on agreements	Immediate access to contracts with large companies, funding, and validation from established brands

To support effective implementation of the proposed actions, it may be beneficial to incorporate considerations of gender equality and inclusiveness, along with corresponding measures, such as:

- how supportive is participation in the proposed activities for pregnant women:
  - women should be able to stop the activities and continue after maternity leave;
  - activities in laboratory should be adjusted to avoid putting pregnant women in contact with chemicals potentially hazardous to the fetus;
- it should be ensured that the events are organized with accessibility in mind, e.g.:
  - accommodations for people with special needs or experiencing special circumstances (e.g., help for auditory, visual, movement impairments);

- different options for engaging in the challenges or mentoring activities, e.g., possibility to participate in virtual or hybrid pitch or mentoring sessions to accommodate personal obligations like child care;
- for the participants with limited travel budgets, reimbursement may be offered.
- as part of the startup–industry R&D collaboration platforms, diversity and inclusiveness outcomes may be tracked, e.g., number of projects targeting health issues of underserved populations (low-income groups with limited access to healthy food and/or medical assistance, aging population, children).

**Key Performance Indicators and benchmarks**

KPI name
Number of cross-border collaborations initiated
Patents filed from joint research
Commercial products/services launched
Cross-border collaborations
Funding attracted in total

**Key stakeholders (Baltics, international)**

Organisation name	Potential role
<a href="#">Industry partners</a>	Joint projects, funding, networks, demand
<a href="#">Startups</a>	Joint projects, talent, technology and IP
<a href="#">Capital providers</a>	Funding, networking
<a href="#">Research centers</a>	Technology and IP origination, talent, infrastructure
Government bodies (Innovation Agencies, Ministries of Economy)	Framework development and implementation, funding, infrastructure
<a href="#">Capital providers</a>	Co-funding
International partners and programs	Co-funding

**Implementation**

Roadmap:

- **Phase 1 (Year 1):**

- Establish pilot collaboration platforms for joint R&D projects involving startups, mature companies, and research institutions. Focus on a single cross-border initiative as a proof of concept.
- Organize an initial "Innovation Challenge" with funding, mentorship, and access to infrastructure for participating startups.
- Address IP sharing challenges by developing standardized agreements tailored for startup-industry partnerships.
- **Phase 2 (Years 2–3):**
  - Expand collaboration platforms across all three Baltic countries and promote cross-border initiatives.
  - Launch corporate accelerator programs led by mature companies to mentor startups, providing funding and shared infrastructure.
  - Set up joint R&D hubs in each Baltic country, integrating open-access lab spaces.
- **Phase 3 (Years 4–5):**
  - Scale up operations to include multiple cross-border projects and partnerships.
  - Refine collaboration processes based on feedback, including diversity and inclusiveness measures.
  - Evaluate impact through KPIs and publish annual reports on outcomes.

#### Timeframe Estimation:

- **Preparation Phase:** 6–12 months to build partnerships, secure funding, and design collaboration models.
- **Execution Phase:** Continuous over five years, with major scaling in Phases 2 and 3.
- **Annual Activities:**
  - Organize 1–2 innovation challenges per year.
  - Host 5–10 industry-startup matchmaking events annually.
  - Develop new collaboration projects continuously.

#### Budget Estimation:

- **Annual Budget:** €5–10 million across the Baltics.
  - Joint R&D platform setup: €2–4 million.
  - Corporate accelerators: €1–2 million.
  - Innovation Challenges: €500,000–1 million.
  - R&D hubs and shared infrastructure: €2–3 million.
- **Funding Sources:**
  - Horizon Europe, Baltic Innovation Fund, Business Finland.
  - National government grants and innovation agency funding.
  - Industry contributions and EU EIC Accelerator funding.

#### Dissemination:

- **Outreach Strategies**
  - Promote programs via innovation hubs, startup events (e.g., Life Sciences Baltics, Latitude59, sSTARTUp Day), and international biotech forums.
  - Use digital marketing and targeted campaigns to attract startups and industry participants.
  - Highlight success stories, patents, and commercialized products through annual reports and media.
- **Engagement Channels:**

- Collaborate with regional innovation agencies and research institutions to reach startups.
- Leverage startup networks and associations to drive awareness.



# Improving Access to Laboratory Space

## Need(s) and challenge(s) addressed by the Action Item

- Lack of affordable pre-existing lab space for early-stage biotech startups and pre-startup teams, especially ones not associated with a particular research institution
- High costs and associated with setting up a custom lab as an early-stage startup or a pre-startup team
- Fragmented access to lab facilities across the Baltic States, with significant disparities in availability and quality depending on one's affiliation with a specific research institution and/or industry enterprise.
- Absence of standardised framework for laboratory sharing and resource allocation across borders

## Current status

- Insufficient/absent: very few examples across the Baltics:
  - [Open Access Center](#) at Vilnius University Life Sciences Center is the single notable example in the Baltic States; however, it is not exclusively focused on startups and SMEs, with emphasis on service provision.
  - In Tallinn, the [Applied Research Center](#) by Metroserf offers infrastructure in several key fields, including biorefining, to businesses and universities with an option to involve PhD candidates as well as students in applied projects and industrial internship programmes
- Certain EU-funded projects (e.g., projects [ISIDORe](#), [R-NMR](#)) occasionally support lab access, but these are often short-term and project-specific

## Examples and best practices

- [CPH Labs](#), an independent community lab facility, is the most significant project in the Nordic region, providing lab and office space as well as networking opportunities for early-stage teams. Another notable example is [Sharelab](#) at the Oslo Science Park, offering lab space and management services, as well as networking and coaching.
- TUM Venture Lab [Food / Agro / Biotech](#) (Munich, Germany) is one of Europe's leading incubators supporting agri-, food-, and biotech startup teams. They provide resources such as office and lab spaces, knowledge through educational programs, and a community of entrepreneurs at various stages of their journey. Facilities include general labs, S1 labs, a machine hall, maker space, and a food area, all designed to foster innovation in the life sciences.
- [OpenCell](#) (London, UK) provides fully serviced BSL2+ laboratories with access to specialized equipment and flexible rental agreements, catering to biotech startups of all sizes. Their facilities are designed to be customizable, allowing businesses to

scale and adapt their lab spaces as needed. Additionally, OpenCell offers a suite of biotech services, including waste management, lab coat laundry, and sequencing services, enabling startups to focus on their research.

- In Paris, [BioLabs Hôtel-Dieu](#) runs a commercial coworking space for biotech startups in cooperation with the University of Paris, connected to 39 hospitals across the city. Member startups obtain access to the full BioLabs network of innovation communities across the United States.

### Objectives and desired outcomes

- Establish a Baltic and Nordic network of Open Labs that are accessible to biotech startups across the region, facilitating resource sharing and collaborative R&D
- Create standardised protocols and agreements for cross-border lab usage, ensuring seamless access for startups regardless of their home country within the region and across Europe
- Foster innovation through enhanced collaboration between research centers, academia, industry, and startups by building biotech community hubs around the Open Labs

To support effective implementation of the proposed actions, it may be beneficial to incorporate considerations of gender equality and inclusiveness, along with corresponding measures, for example, to collect data on open lab users to enable iterative improvements that reduce potential barriers for users from diverse backgrounds or with specific needs (e.g., access for users with children or other caregiving responsibilities, access for users from different cultural or linguistic backgrounds).

### Key Performance Indicators and benchmarks

KPI name
Number of Open Labs established
Number of cross-border collaborations facilitated through Open Labs
Number of startups and teams using Open Lab facilities
Number of non-startup projects (e.g. education) using Open Labs
Utilisation rate of Open Lab facilities
Reduction in startup infrastructure costs

### Key stakeholders

Organisation type	Potential role
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<a href="#">Academic institutions, research centres</a>	Facilitation, networking, infrastructure sharing, talent and technology sourcing
<a href="#">Industry partners</a>	Equipment and consumables, co-funding, mentorship, networking
<a href="#">Ecosystem builders</a>	Concept testing and transfer, networking, co-funding
Governments (incl. municipalities, Innovation Agencies)	Open Lab facilitation and support, incl. co-funding
International partners	Experience transfer

## Implementation

- Roadmap:
  - **Phase 1 (Year 1):**
    - Conduct a **regional needs assessment** to identify existing lab infrastructure, gaps, and high-priority regions for new Open Labs.
    - Develop **pilot Open Labs** in one Baltic country, focusing on a centralized urban area with active biotech activity.
    - Create **standardized cross-border protocols** for lab usage, including pricing models, access requirements, and IP/resource-sharing agreements.
  - **Phase 2 (Years 2–3):**
    - Establish **two additional Open Labs** in the Baltics, ensuring equitable geographic distribution.
    - Launch a **Baltic-Nordic Open Lab Network**, fostering collaboration and shared resource access across regions.
    - Develop an **online platform** for Open Lab reservations, cross-border collaboration, and networking.
  - **Phase 3 (Years 4–5):**
    - Scale the network to include **five Open Labs** across the Baltics and **five across the Nordics**.
    - Introduce additional features such as dedicated spaces for education and workshops, expanding usage beyond startups.
    - Evaluate performance, utilization rates, and cross-border collaborations; adjust protocols and expand facilities as necessary.
- Timeframe Estimation:
  - **Preparation Phase:** 6–12 months for assessments, partnerships, and securing initial funding.
  - **Execution Phase:**
    - **Pilot Setup:** Year 1 for the first Open Lab.
    - **Expansion:** Years 2–5 for scaling to additional locations and cross-border integration.
  - **Ongoing Operations:** Continuous post-establishment, with periodic evaluations and upgrades.

- **Budget Estimation:**
  - **Pilot Open Lab:** €500K-800K for setup, equipment, initial operations.
  - **Subsequent Labs:** €400K-500K per lab for setup.
  - **Annual Operational Costs:** €200K–400K per lab (staff, maintenance, utilities, and consumables) depending on size, equipment, scope (e.g. BSL rating)
  - **Cross-Border Network Development:** €200,000 annually for digital infrastructure, coordination, and promotion.
  - **Total Estimated Budget:** €3-4 million over five years for the Baltic region.
- **Funding Sources:**
  - Horizon Europe, Interreg, and Nordic-Baltic funding programs.
  - National innovation agencies and regional governments.
  - Private sector contributions (equipment manufacturers, biotech companies).
  - EU Structural Funds and EIC Accelerator for capacity-building initiatives.
- **Dissemination:**
  - **Outreach to Startups and Industry:**
    - Promote Open Labs through existing biotech networks, innovation hubs, and international biotech events (e.g., Life Sciences Baltics, Nordic Life Science Days).
    - Develop targeted campaigns highlighting cost reductions, infrastructure benefits, and collaboration opportunities.
  - **Digital Platform:**
    - Establish an online booking and collaboration portal to manage Open Lab access and promote cross-border projects.
    - Integrate case studies, user testimonials, and KPIs to demonstrate impact.
  - **Public Engagement:**
    - Organize Open Lab tours, workshops, and networking events to involve academia, industry, and aspiring entrepreneurs.
    - Publish annual reports showcasing success metrics, such as reduced infrastructure costs and cross-border collaboration outcomes.
- **Inclusiveness Measures:**
  - Ensure labs are physically accessible and provide accommodations for individuals with disabilities.
  - Offer flexible booking options for users with caregiving responsibilities or other constraints.
  - Collect data on user demographics to iteratively improve inclusivity.
  - Conduct training for lab managers on diversity, equity, and inclusion to foster a welcoming environment for all users.

# Building Scaleup Capacity

## Need(s) and challenge(s) addressed by the Action Item

- Insufficient availability of open-access specialized equipment for start-up scale-up
- Limited capacity for pilot services
- Difficulty for startups in identifying suitable scale-up and piloting providers
- Geographical constraints forcing startups to relocate outside the region for piloting

## Current status and best practices

- High demand and extended waiting times for existing scale-up providers
- Databases of European scale-up and pilot facilities are available or in development (e.g. [BioPilots4U](#) and [Alliance4Life](#))
- SynBio PowerLabs (Helsinki/Lappeenranta, FI) offers a full set of solutions from R&D to scale-up and piloting, as well as ecosystem access through the [Synbio.fi](#) network.
- [Bio Base Europe Pilot Plant](#) (Gent, BE) is a prime example of an independent facility that offers lab to tonnes-scale bioproduction capabilities
- Maximum piloting capacity limited to 10-15k liters, inadequate for certain technologies/processes
- Prohibitive costs for early-stage startups to engage in piloting
- "Open access" scale-up facilities often price out mature startups, making in-house pilot facility construction more viable in some cases

## Objectives and desired outcomes

- Expand open-access specialized equipment availability for piloting
  - E.g.: increase capacity in pre-treatment or downstream processing equipment
  - Integrate with [open-access lab-scale spaces](#) for new feedstock testing
- Streamline the process for startups to identify and engage with piloting providers:
  - Develop a comprehensive platform coordinating lab- to pilot-scale transitions
  - Collaborate with open-access lab facilities to facilitate seamless scaling
- Foster collaboration among existing pilot facilities in the Nordic and Baltic regions
  - Focus on complementary equipment and services rather than duplicating resources
- Better yields to be achieved by optimising the media composition with the help of statistical design of experiments (DOE).
- Improve consistency and yield by using machine learning and AI algorithms to maintain and optimise scale up parameters.

To support effective implementation of the proposed actions, it may be beneficial to incorporate considerations of gender equality and inclusiveness, along with corresponding measures, for example, to collect the information on how scale-up facilities interact with startup teams to enable iterative improvements that reduce potential barriers for users with

children or other caregiving responsibilities (e.g., access for users with children or other caregiving responsibilities, including requirements to travel if the facilities are located in another country, access for users from different cultural or linguistic backgrounds).

### Key Performance Indicators and benchmarks

KPI name
Number of new open-access scale-up facilities established
Number of startups successfully transitioning from lab-scale to pilot-scale
Cross-border collaborations facilitated through scale-up facilities
Utilization rate of scale-up facilities

### Key stakeholders

Organisation type	Potential role
<a href="#">Ecosystem builders</a>	Concept testing and transfer, networking, co-funding
<a href="#">Academic institutions</a> , <a href="#">research centres</a>	Facilitation, networking, talent and technology sourcing
<a href="#">Industry partners</a> and <a href="#">startups</a>	Service buyers, equipment and consumables
Governments (incl. Innovation Agencies)	Co-funding and legislative support
International partners	Experience transfer, networking

### Implementation

- Roadmap:
  - **Phase 1 (Year 1)**: Assess regional needs, establish a pilot scale-up facility, and form partnerships with Nordic and European networks for resource sharing.
  - **Phase 2 (Years 2–3)**: Expand to three facilities across the Baltics, launch a digital platform for lab-to-pilot transitions, and integrate AI/ML tools for process optimization.
  - **Phase 3 (Years 4–5)**: Scale to five facilities across the Baltics, evaluate impact through KPIs, and refine services based on feedback.
- Timeframe Estimation:
  - **Preparation**: 6–12 months for facility design, partnerships, and funding.

- **Execution:** Staged rollout over five years.
  - **Operations:** Continuous, with periodic updates to infrastructure and services.
- **Budget Estimation:**
  - **Setup Costs:**
    - Pilot facility: €2–3 million.
    - Additional facilities: €1.5–2 million each.
  - **Operational Costs:** €500,000–750,000 annually per facility.
- **Funding Sources:**
  - EU programs (e.g., Horizon Europe, EIC Accelerator), national agencies, and private sector sponsorships.
- **Dissemination:**
  - Promote services via regional and international biotech networks and events (e.g., [Life Sciences Baltics](#), [BioPilots4U](#) and [Alliance4Life](#)).
  - Showcase success stories and facilitate cross-border collaboration using social media (LinkedIn) and other digital channels.
  - Organize annual workshops and (side-)events to engage startups and industry stakeholders.

# Improving Access to Smart Money

## Need(s) and challenge(s) addressed by the Action Item

- Biotechnology is inherently capital-intensive, with development cycles exceeding five years, making early-stage financing particularly challenging.
- Medical biotechnology necessitates costly and high-risk clinical validation, often deterring traditional investors.
- Specialized VC funds that understand unique challenges of biotech innovation process as well as that could provide added value through their network and experience are not present in the Baltics as each individual ecosystem is too small to warrant their interest

## Current status

- Current status - there are deep tech focused VC funds like [BSV Ventures](#) and [Commercialization Reactor](#), with a deep tech focus, not specialising in biotech
- There are public funding schemes ([ALTUM](#), [ILTE](#), [EIS](#)) that provide public funds to invest in early stage startups via fund managers. The conditions for fund managers favor generalist funds and require previous VC experience making it even more difficult for a specialized biotech fund project to win.

## Objectives

- Create a specialised biotech focused funding instrument by combining private and public money.
- Support applied clinical research with long-horizon, risk-tolerant smart funding
- Provide added value not only through funding but additional expertise and network that only specialised VC fund managers can do.

## Outcomes

- Cooperation in the Baltics for a joint IPO fund, with [recent ALTUM/INVEGA collaboration](#), could be used as a template to establish a biotech focused (also funding clinical research) VC fund.
- Cooperation between Baltic States + Finland could create enough scale for such a project and become interesting for experienced biotech VC fund managers.
- Bioinnovation Institute in Copenhagen is an alternative approach (to create a joint Baltic Initiative similar to BII that would also include a funding arm).

To support effective implementation of the proposed actions, it may be beneficial to track and report on diversity and inclusiveness outcomes as part of the VC fund's performance metrics, e.g., percentage of funding directed to startups with diverse leadership teams,



number of projects targeting health issues of underserved populations, e.g., low-income groups with limited access to healthy food and/or medical assistance, aging population, children.

### Key Performance Indicators and benchmarks

KPI name
Dedicated Biotechnology/clinical trial fund is established in the Baltics
Number of Baltic early stage biotech startups financed through specialized regional fund
Funding allocated to biotech startups through specialized regional VC

### Key stakeholders

Organisation type	Potential role
Governments (incl. Ministries of Economy, Innovation Agencies)	Funding, legislative support
<a href="#">Private investors</a>	Co-funding, investment sourcing and management, networking
<a href="#">Research centres</a>	Technology and IP origination, research translation into fundable spin-offs
<a href="#">Ecosystem builders</a>	Facilitation, networking, infrastructure

### Implementation

- **Feasibility Assessment:**
  - Conduct a regional market study to evaluate the size and potential of the biotech innovation pipeline in the Baltics.
  - Identify gaps in existing funding mechanisms and potential overlaps with public funding programs.
- **Public-Private Collaboration Framework:**
  - Engage with Baltic and Finnish governments to secure initial public funding commitments.
  - Convene private investors and experienced biotech VC managers to co-design the fund structure, with a clear value proposition for participants.
- **Operational Strategy:**
  - Design a governance model that balances public and private interests while prioritizing long-term funding horizons.

- Partner with leading Baltic research centers and ecosystem builders to source high-potential projects.
- Develop specialized advisory panels for scientific, regulatory, and commercial evaluation of funded projects.
- **Launch and Scale-Up:**
  - Initiate with a pilot fund of €5-10 million to demonstrate proof of concept and attract additional investors.
  - Leverage regional networks and programs (e.g., the BioInnovation Institute) to build visibility and attract high-quality deal flow.
  - Scale up to a €20 million fund by year five, expanding the scope to include clinical research funding.
- **Monitoring and Reporting:**
  - Establish metrics for fund performance, including financial returns, diversity, and societal impact.
  - Regularly publish impact reports to build transparency and attract further investment.

# Enhancing Access to Existing Grants

## Needs and challenges

- Need for higher share of funding attracted in form of research translation projects focusing on biotechnology/synthetic biology

## Current status

- There is a lack of awareness among researchers about the funding opportunities for research translation.
- Funding schemes **at national level** for research translation in the field of biotechnology/synthetic biology:
  - **in Latvia:** [State Research Programme Innovation Fund - Long Term Research Program](#) - submission of the applications for development of research platforms in progress; within the established platforms, calls for projects in RIS3 areas 'Biomedicine, medical technologies and bio-pharmacy' and 'Smart materials, technologies and engineering systems' will be announced);
  - **in Estonia:** [Proof-of-Concept Grant](#); [Applied Research Grant](#) (RUP) by EIS, [Product development grant](#) by EIS (e.g., Postdoctoral Research Grant);
  - **in Lithuania:** [R&D Implementation scheme \(SMART\)](#);
  - **in Finland:** [Proof of Concept Funding \(Research Council of Finland\)](#), [Business Finland funding programmes](#).
- Funding schemes and initiatives for research translation activities **at EU level** that are relevant to the field of biotechnology/synthetic biology: European partnerships (e.g., [Eurostars programme](#)), Horizon Europe [ERC Proof of Concept Grants](#) and Pillar III programmes (e.g., [EIC Pathfinder](#), [EIC Transition](#)).
- Funding offered by VC initiatives, e.g., [Manifest Grants by 50Y](#).
- National Contact Points (NCPs) for Horizon Europe in Latvia, Lithuania, and Estonia regularly provide information about the upcoming Info Days on different project calls and workshops on project proposal preparation offered by the European Commission and local universities.
- NCP in Latvia provides financial support for attending matchmaking events (project [NCP WIDERA.NET](#)).
- NCP in Lithuania: <https://europoshorizontas.lt/en/about-us/>
- Matchmaking and networking activities that often lead to finding collaboration partners are actively organized within different regional events, e.g., [Life Sciences Baltics](#), [Deep Tech Atelier](#), [Nordic Life Science Days](#), [Bioeconomy Forum Lithuania](#), Finnish Biotech Startup and Partnering Event (FinBio) organized by [the Finnish Bioindustries](#), DeepTech Pub (EE), events organized by the [ScanBalt network](#) or listed in [the Estonian Biotech Association Database](#), and EU-level life sciences and biotechnology conferences (e.g., [BIO-Europe](#), [BIO-Europe Spring](#), [Swiss Biotech Day](#)). However, most of them are not dedicated to specific project calls, for which consortia need to be established.

- It is possible to subscribe for newsletters on the upcoming project calls (including research area specific ones), however, this is usually a paid service offered by advisory companies, e.g., [Civitta](#), [Science Business](#), [ERINN Innovation](#), etc. Free databases, e.g., [Funding&Tenders Portal](#), websites of national funding agencies, are available.

## Examples and best practices

- Good example on how to promote cross-border collaborations - [Vanguard Initiative](#) (VI), which aims to foster industry-led interregional cooperation, co-creation, and co-investment on the basis of smart specialisations. It supports synergies between national, regional, and European funding instruments to promote interregional collaboration. In 2016, the VI started the [Bioeconomy Pilot](#), a collaboration initiative connecting more than 50 industry partners, universities, and research performing institutions. The Bioeconomy Pilot focuses on encouraging less mature projects at the demonstration stage to upgrade and fully exploit their business potential. Through matchmaking events and engagement with potential users and technology providers (which could be applied for the matchmaking events organized in the Baltic region), the initiative fosters collaboration across chemistry, agro-food, bioenergy, and biofuels sectors and therefore promotes innovation in the bioeconomy. This could also serve as a good practice for the establishment and performance of Baltic Biotech Hub (see Action Item [Positioning Baltics as a Biotech Region](#)).
- [CrowdHelix](#) - a collaboration platform that connects researchers, innovators, and organizations seeking to participate in Horizon Europe and other EU-funded programs. Members of the CrowdHelix can post collaboration requests, find consortium partners, and join ongoing projects that align with their expertise.
- [Good Food Institute](#) (GFI) is a nonprofit organization at the forefront of the alternative protein revolution. GFI's approach is grounded in science, collaboration, and advocacy, making it a cornerstone institution for the field of food biotechnology. One of GFI's most impactful contributions to the biotech field is its grant program, which funds cutting-edge research and development. GFI's grants are open to academic researchers, startups, and other entities worldwide. Proposals are evaluated based on scientific merit, potential impact, and alignment with GFI's mission. The application process is rigorous, ensuring that funded projects are both innovative and feasible. GFI's grant program not only provides direct financial support but also fosters collaboration among researchers, institutions, and industries. By connecting grant recipients with GFI's extensive network of partners, the institute amplifies the reach and impact of each project.

## Objectives

- To promote the attraction of funding in the form of biotechnology/synthetic biology-based research translation projects by raising the awareness of the existing funding schemes and facilitating cross-border collaboration/formation of consortia.

## Outcomes

- Series of newsletters informing about national/regional and EU R&I grant funding schemes applicable to the field of biotechnology/synthetic biology.
- Series of events - B2B meetings/matchmaking events to pitch innovative ideas, search for collaboration partners (academic and industrial) for specific project calls, and meet with the potential users and technology providers.

To support effective implementation of the proposed actions, it may be beneficial to incorporate considerations of gender equality and inclusiveness, along with corresponding measures, such as:

- B2B meetings/matchmaking events are organized with accessibility in mind, e.g.:
  - accommodations for people with special needs or experiencing special circumstances (e.g., help for auditory, visual, movement impairments);
  - flexible schedules/possibility to participate online in the events to accommodate personal obligations like child care or unpredictable circumstances like sudden illness;
- in the newsletters, links to guidelines and tools for integrating diversity and inclusion measures into project proposals, which also explain how these diversity and inclusion measures can be a criterion for grant evaluation, could be provided.

Activity
Newsletters developed
B2B meetings/matchmaking events organized

## Key Performance Indicators and benchmarks

KPI	Target value / year
Number of cross-border collaborations initiated by the B2B meetings/matchmaking events	2 cross-border projects initiated per year
Increase in the attracted funding in form of biotechnology/synthetic biology research translation projects	At least 10% increase per year

## Key stakeholders

Organisation type	Potential role
<a href="#">Academic institutions</a> , <a href="#">research centres</a>	Development of newsletters, organization of matchmaking events.

<a href="#">Industry</a> and <a href="#">startups</a>	Facilitators of the matchmaking activities.
<a href="#">Ecosystem builders</a>	Development of newsletters, organization of matchmaking events, networking.
Governments (incl. Economics Ministries, Innovation Agencies)	Development of newsletters, organization of matchmaking events.

## Implementation

- Roadmap:
  - **Phase 1:** preparation for the matchmaking events - development of programmes, implementation schedule, promotional materials, etc.;
  - **Phase 2:** organization/attendance of the events;
  - **Phase 3:** collection of the feedback on the implemented events and improvement of the programmes.
- Timeframe estimation:
  - preparation for matchmaking events - 1 month, implementation - one-day event, 2 events per year;
  - preparation of the newsletter - 1 week, 3 newsletters per year.
- Budget estimation:
  - matchmaking events: ~20 000 EUR (rent of premises, catering, and materials for 2 events per year).
- Possible funding sources:
  - EU programs (Horizon Europe);
  - national grants;
  - sponsorships;
  - collaboration with already existing projects, e.g., project [NCP WIDERA.NET](#) (or similar), which promotes matchmaking activities organized by the NCPs of the Widening countries.
- Dissemination
  - biotechnology/synthetic biology community organizations (e.g., Nucleate Baltics, LithuaniaBIO, Biocatalyst Foundation, universities, research institutes, etc.) to share the events to their members/network;
  - NCPs to share the information about matchmaking events;
  - dedicated platform (e.g., action plan implementation project website), where subscription to the newsletter and information about the matchmaking events would be available.

# Creating New Grants

## Needs and challenges

- Need for more targeted funding sources for biotech projects with TRL 4–7

## Current status

- The existing research grants often are not tailored for creating a proof of concept in biotechnology, because deep tech requires more money and time compared to other technologies. There is a gap for financing between the initial and scale-up level.
- A number of funding schemes for applied research are available at national, regional, and EU level, however, many of them focus on research with TRL up to 4 and possibility to apply for continuous funding for further development is limited. For instance, very little EIC and ERC funding support goes to the Baltic region. Within the Horizon 2020 (2014–2020) and Horizon Europe (2021–2027) programmes, [2 EIC Pathfinder projects have been funded in Latvia, 7 - in Lithuania](#), and [6 - in Estonia](#). In the case of ERC frontier research main grants (Starting, Consolidator, Advanced, and Synergy), Latvia and Lithuania is significantly lagging behind Estonia (3 ERC grants have been funded in Latvia ([Consolidator](#), [Advanced](#), and [Synergy](#)), [5 – in Lithuania](#), and [16 – in Estonia](#)). Hence, the Baltic states encounter additional barriers to apply for the following EIC and ERC schemes ([EIC Transition](#) and [ERC Proof of Concept Grants](#)) that foresee building of the proposals on the results of previous eligible projects.
- Funding schemes and initiatives **at EU level** for projects with TRL 4–7 that are relevant to the field of biotechnology/synthetic biology: European partnerships (e.g., [Eurostars programme](#)), Horizon Europe [ERC Proof of Concept Grants](#) and [EIC Transition](#)).
- Funding offered by VC initiatives, e.g., [Manifest Grants by 50Y](#).

## Examples and best practices

- Promotion of the development of more targeted funding sources could be one of the focuses of the established Baltic Biotech Hub. An initiative also supporting bioeconomy and connecting the key-players of regional innovation ecosystems across Europe, the [Vanguard Initiative](#), might be a good example on how to advocate for synergies between EU funding tools and regional/national funding through national, EU, and international outreach.

## Objectives

- To promote the development of more targeted funding sources for biotechnology/synthetic biology projects with TRL 4–7.

## Outcomes

- Series of roundtable discussions on specific needs of biotechnology/synthetic biology sector for the development of new national and EU funding schemes for projects with TRL4–7 (see Action Item [Promoting Applied Research](#)).
- White paper (possible target audience: RIS3 management groups, for example, management group for RIS3 area “Biomedicine, medical technologies and bio-pharmacy” in Latvia; Estonian Liaison Office for EU RTD and Lithuanian RDI Liaison Office LINO, the Counsellor for Research and Space at the Permanent Representation of the Republic of Latvia to the EU; National Contact Points for Horizon Europe, Ministries of Education and Science) with recommendations on how to promote research translation and development of funding schemes for biotechnology/synthetic biology projects with TRL 4–7 (see Action Item [Promoting Applied Research](#)).

To support effective implementation of the proposed actions, it may be beneficial to incorporate considerations of gender equality and inclusiveness, along with corresponding measures, such as:

- it should be ensured that the events are organized with accessibility in mind, e.g.:
  - accommodations for people with special needs or experiencing special circumstances (e.g., help for auditory, visual, movement impairments);
  - possibility to participate online in the events to accommodate personal obligations like child care or unpredictable circumstances like sudden illness;
- roundtable discussions may also include the topic on how the funding schemes can address the needs of diverse researchers. Experts in gender equality, disability rights, and workplace inclusivity could also be invited to provide insights on designing funding programs that account for life disruptions (e.g., maternity/paternity leave, health crises). Real-world examples of how funding schemes have effectively supported inclusion (e.g., flexible timelines for grants, providing stress management tools at workplace) could be demonstrated;
- for diverse opinions, invitation of experts in gender equality, disability rights, and workplace inclusivity to the roundtable discussions would be beneficial to provide insights on designing funding programs that account for life disruptions (e.g., maternity/paternity leave, health crises) and to demonstrate examples of how funding schemes have effectively supported inclusion (e.g., flexible timelines for grants, providing stress management tools at workplace);
- as an integral part of the white paper, recommendations for funding bodies on how to implement diversity and inclusion measures and include ethical and legal guidelines.

Activity	Target
Roundtable discussions	Roundtable discussions with national and EU policy makers and representatives from the European Commission and National Contact Points for Horizon Europe in Latvia, Estonia, and Lithuania on specific needs of biotechnology/synthetic biology sector for the development



	of new national and EU funding schemes for projects with TRL 4–7: <b>2 roundtable discussions organized</b> <b>3 roundtable discussions attended</b>
White paper	<b>1 white paper</b> (based on the outcomes of the roundtable discussions) with recommendations on how to promote development of funding schemes for biotechnology/synthetic biology projects with TRL 4–7

### Key Performance Indicators and benchmarks

KPI
Number of EU-funded biotechnology/synthetic biology research projects with TRL 4–7
Increase in attracted funding within biotech projects with TRL 4–7

### Key stakeholders

Organisation type	Potential role
<a href="#">Academic institutions, research centres</a>	Organization and/or participation in discussions and development of a white paper.
<a href="#">Industry partners</a>	Participation in discussions and development of white paper.
<a href="#">Ecosystem builders</a>	Organization and/or participation in discussions and development of a white paper.
Governments/state organizations	Facilitators of the discussions with national and/or EU policy makers, platforms for C&D, contributors to the discussions.

### Implementation

- Roadmap:
  - **Phase 1:** assessment of the current funding needs (analysis of existing funding schemes for research translation and identification of possible gaps);
  - **Phase 2:** identification of key stakeholders and experts that might contribute to the roundtable discussions and development of recommendations (e.g., biotechnology/synthetic biology experts, technology transfer and commercialization professionals, representatives from National Contact Points, European Innovation Council, and National Innovation Agencies,

- experienced project managers from RPOs, experts in diversity, inclusiveness, and ethics, possible end-user representatives);
- **Phase 3:** organization of roundtable discussions, attendance of roundtable discussions;
  - **Phase 4:** based on the outcomes of the roundtable discussions, development of recommendations and white paper.
- **Timeframe estimation:**
    - preparation for roundtable discussions - 2 months, implementation - one-day event, 5 one-time events;
    - preparation of the white paper - 1 month.
  - **Budget estimation:**
    - organization and attendance of roundtable discussions: ~20 000 EUR.
  - **Possible funding sources:**
    - EU programs (Horizon Europe);
    - national grants;
    - sponsorships.
  - **Dissemination:**
    - biotechnology/synthetic biology community organizations (e.g., Nucleate Baltics, LithuaniaBIO, Biocatalyst Foundation, universities, research institutes, etc.) to share the events to their members/network;
    - NCPs to share the information about roundtable discussions;
    - dedicated platform (e.g., action plan implementation project website), where recommendations, white paper, news on the upcoming and past events, etc. would be published.

# Positioning Baltics as a Biotech Region

## Need(s) and challenge(s) addressed by the Action Item

- Limited cross-border collaboration among universities, startups, and companies weakens the regional biotech innovation ecosystem.
- Distance from global biotech hubs reduces the Baltics' visibility and access to markets and networks, hindering international partnerships, investments, expertise adoption, and talent mobility.
- The Baltic States struggle to attract large biotech investments, often seen as separate entities rather than a unified region.
- Biotech infrastructure and regulations differ across the Baltics, causing inefficiencies and slowing innovation.

## Current status

- The Baltics are not yet recognized as a biotech hub on the global stage. The region's fragmented efforts and lack of a unified identity prevent it from gaining the recognition needed to compete with established biotech leaders.
- The Baltic States struggle to attract large-scale biotech investments, as they are often viewed individually rather than as a unified region. There are no joint success stories and aligned policies, it is difficult to position the region as an attractive destination for both local and international investors.

## Objectives and desired outcomes

- Establish the Baltic Biotech HUB
  - Aggregate and position the Baltics (Lithuania, Latvia, Estonia) as a unified and competitive biotech region on the global stage.
  - Develop a compelling pitch and value proposition for the region.
- Map Connections and Competencies
  - Identify key stakeholders, expertise, and infrastructure across the Baltics to foster collaboration and resource sharing.
- Core Messaging and Positioning
  - Develop a unified narrative and branding for the Baltic Biotech HUB to attract international investors, partners, and talent.
- Foster Joint R&D and Business Activities
  - Encourage cross-border collaboration in research, innovation, and commercialization efforts.

To support effective implementation of the proposed actions, it may be beneficial to incorporate considerations of gender equality and inclusiveness, along with corresponding measures. Hence, for diverse opinions, roundtable discussions as well as the Baltic Biotech Action Council should involve participants from various sectors of biotechnology/synthetic

biology (public health, academia, startups, industry, NGOs) with diverse backgrounds and level of experience, including women in leadership roles, entrepreneurial talents, young innovators, early-career researchers, etc.

### Key Performance Indicators and benchmarks

KPI name
Alignment of LT, LV, EE biotech roadmaps
Identified and created value proposition of Baltic states biotech (Why to do Biotech in Baltic states)
Round tables with governmental institutions
Baltic Biotech HUB positioning (marketing) strategy
Strengths and competencies MAP
<b>Baltic Biotech Action Council</b> (associations, academia, business) to promote unified messaging

### Key stakeholders

Organisation type	Potential role
<a href="#">Ecosystem builders</a>	Concept testing and transfer, networking, co-funding
Governments (incl. municipalities, Innovation Agencies)	Contributors to the roundtable discussions, co-funding
International partners (incl. Industry associations, EU bodies)	Experience transfer, networking

### Implementation

- Roadmap
  - Months 1-3: Build the foundation (roadmap alignment, stakeholder buy-in).
  - Months 4-6: Define value and strengths (value proposition, ecosystem mapping).
  - Months 7-9: Deepen collaboration (roundtables, marketing strategy creation).
  - Months 10-12: Launch Baltic Biotech HUB (aligned strategy, public dissemination).
- Timeline and Milestones

- **Months 1-3:** Stakeholder engagement and roadmap alignment workshops completed.
- **Months 4-6:** Value proposition finalized; draft Strengths and Competencies MAP ready.
- **Months 7-9:** Roundtables held; Baltic Biotech HUB strategy developed.
- **Months 10-12:** Roadmap published; marketing campaign launched; project concludes.
- Financial estimations
  - **Milestone 1: Stakeholder Engagement and Preparation (Months 1-3)**
    - Steering committee formation and workshops: Travel, venue rental, facilitation, materials (€20,000)
    - Collection of roadmaps and baseline data: Analyst time, consultancy, data collection (€15,000)
  - **Milestone 2: Value Proposition and Competency Mapping (Months 4-6)**
    - Focus groups and industry engagement: Expert consultations, incentives, workshops (€15,000)
    - Development of Strengths and Competencies MAP: Mapping software/tools, design, data input (€20,000)
  - **Milestone 3: Roundtables, Strategy Development (Months 7-9)**
    - Roundtable events: Venue, travel, facilitation, documentation (€15,000)
    - Marketing strategy creation: Branding consultancy, strategy documents (€30,000)
  - **Milestone 4: Roadmap Publication and Launch (Months 10-12)**
    - Roadmap publishing: design, printing, and dissemination (€15,000)
    - Marketing: promotional materials, events, media outreach (€50,000)
    - Conference participation: booths, travel, branding (€30,000)
  - Total estimated budget: €210,000

# Improving Public Awareness and Attitude

## Need(s) and challenge(s) addressed by the Action Item

- Lack of awareness about biotech possibilities
- Not the most positive attitude towards biotech (complexity to understand, a loud group of conspiracy believers)
- Some lack of diversity and inclusiveness

## Current status

- Universities organize **Open Door Days**, where potential new students may visit the university's facilities/laboratories.
- **European Researchers' Night** science festival that takes place every year in autumn, facilitated by major universities and research centers around the region.
- **Local iGEM teams** are taking active part in biotechnology popularization as integral part of their annual synbio projects ("human practices").
- **Science entertainment centres** such as [Ahhaa](#) in Estonia, [Vizium](#), [Futurimo Riga](#), [TehnoAnnas pagrabi](#) in Riga, and [Science Island](#) in Kaunas enable children can educate themselves in a funny atmosphere, but currently they do not have exhibitions focused on biotechnology.

## Examples and best practices

In Estonia, multiple activities are dedicated to educating and engaging public in science:

- Science popularisation TV show "[TeadusEST](#)" about research done in Estonia.
- Science School at the University of Tartu that organises [various courses](#) in the fields of life sciences (biology, chemistry, physics, math, etc.), both online and on site
- Estonia-TUIT iGEM team public engagement activities include annual science-oriented Escape room and art exhibition.
- Institute of Bioengineering also participates in various events/festivals outside Tartu like River and Family Days in Narva, Võru town days, and Ukraine community in Estonia, Opinion festival in Paide, school visits in Tallinn, Alatskivi, etc. Interviews for Estonian tv channel ETV+, interviews for the radio, education fairs in Japan, Indonesia, Kazakhstan, Georgia, Azerbaijan, Turkey, etc.

In Lithuania, multiple activities are dedicated to educating and engaging public in science:

- TV show "Science Soup" focuses on advances in various fields of life sciences.
- The [Women in Biotech initiative](#), led by LithuaniaBIO, promotes female leadership in the life sciences. Each year, it brings together inspiring women entrepreneurs, scientists, and activists to share their innovations and success stories in biotechnology. The initiative's main event connects students, researchers, and entrepreneurs, creating opportunities for networking, collaboration, and sharing experiences. By celebrating the achievements of women in the field, WINB inspires future leaders and strengthens innovation in biotechnology across Europe.

- [Extracurricular study programs](#) meant for high school students that teach different aspects of molecular biology, microbiology, genetics, etc.
- The [STEAM Open Access Centres](#) are distributed across the country and all of them are equipped with standardized biology-chemistry, physics-engineering, robotics-IT laboratories that allow students to conduct their own research

In Latvia, multiple activities are dedicated to educating and engaging public in science:

- A dedicated TV programme for school students "[Gudrs, vēl gudrāks](#)", for which the questions/informative material is often prepared by RPOs.
- Latvian iGEM team public engagement activities include work with school children, public events, as well as educational visits
- festival '[Lampa](#)', which gathers speakers delivering talks on different topics of interest to general public, including topics on science

Examples outside the Baltic-Finnish region and or other field(s).

- [Sense About Science](#) is an independent charity that promotes the public interest in sound science and evidence. Besides government transparency in policy making, risk assessments of various technologies, Sense About Science also has focused on popularising science and helping scientists better communicate public to the general public. Sense About Science also organises [workshops](#) for early career stage researchers.
- Youtube channels focused on popularising life and exact sciences:
  - [Curiosity stream](#)
  - [SmarterEveryDay](#)
  - [Shomu's Biology](#)
  - [ASAPScience](#)
- The [American Association for the Advancement of Science](#) has more than a century of experience in including societies in sciences, supporting evidence-based information, diversity, equality and inclusion, science education.

Best practices can be summarised in the following categories:

- Practical interaction with subject matter (workshops)
- Presenting complex ideas in a way understandable for the general audience (science popularising TV shows, YouTube channels, etc.)
- Accessible information (online resources that are free of charge)
- Targeting various communities (various cultural backgrounds, age groups, education)
- Visual representation and gamification (scientific board and online games, videos illustrating complex scientific models like intracellular structures, etc.)
- Emphasising real-world problems and solutions that are relatable to the audience

## Objectives

- Educate the public on biotechnology's potential to address societal challenges like health, climate change, and food security.
- Provide clear, relatable, and accurate information to counter misconceptions and reduce stigma around biotechnology.
- Promote diversity by targeting underrepresented groups and showcasing inclusive success stories in the biotech sector.

- Develop interactive workshops and gamified experiences to make biotechnology accessible and engaging.
- Collaborate with science centers, universities, and schools to integrate biotech-focused content into existing programs.
- Leverage regional and international best practices to design effective public engagement initiatives.
- Partner with media platforms and science communicators to amplify outreach and improve public understanding.
- Showcase real-world applications of biotechnology, emphasizing tangible benefits and relatable solutions.
- Inspire youth to pursue biotech careers through extracurricular programs like iGEM teams and STEAM centers.

## Outcomes

The outcome of activities and the respective communication tools and channels have been selected to ensure outreach to diverse audience and can be grouped by the target audience and communities

- Children younger than 12-14 years old
  - Create the exposition in science centres like Ahhaa in Tartu, Eurika in Helsinki, etc. about biotech industry in Baltic states
  - Simple, visual installations in science entertainment centers
  - Board games about life-sciences (e.g. created by iGEM teams from [Estonia](#) and [Latvia](#)).
- Young adults (12-18 years old)
  - Create chapter(s) in high school biology textbooks about biotech possibilities and successful examples. In Estonia, there is an elective course in applied Biology in high schools. During this elective course, students learn about different branches of applied biology including biotechnology and bioengineering. There is an [online resource](#) (in Estonian) about possible structure and materials for the course. Also, there is an online course for Estonian high school students – Edumus online school, that has the course [about applied biology](#). However, there is a lack of overview of enterprise and research aspects specific to Baltic states in available study materials.
  - STEAM center collaborations, student exchange regionally and elsewhere - see [STEAM LT](#) and [LSCT](#)
- University students and early career researchers
  - Build a community of Biotech enthusiasts that meet during events for the general audience, try to expand communication with them to further use to disseminate information about biotech and bioengineering
  - More emphasis on science communications in the relevant university programs. To meet this goal, create a joint course dedicated to developing public speaking skills and sharing complex ideas with a wider audience.
- Public at large:
  - Regularly publish popular science articles in local mass media;



- Participate in local tv programmes to showcase the biotechnology/synthetic biology research findings and their possible benefits for society.
- To create online material about opportunities to visit Biotech companies, university visits, etc. and help with communication and organising visits.

### Key Performance Indicators and benchmarks

KPI name
Number of biotech-focused public events organized
Audience reach through media and campaigns
Participation in interactive workshops or exhibitions
Inclusion of biotech content in existing educational programs
Youth engagement in biotech activities
Adding of biotech expo section in science entertainment centres

### Key stakeholders

Organisation type	Potential role
<a href="#">Academic institutions</a> and <a href="#">research centers</a>	Develop and host public engagement activities, integrate biotech content into education programs, and provide expertise
Science entertainment centers	Host biotech-focused exhibitions and workshops, creating interactive learning opportunities for the public
<a href="#">Industry partners</a>	Support public events, offer funding for campaigns, and provide real-world examples of biotech applications
<a href="#">Ecosystem builders</a>	Facilitate partnerships, organize biotech-focused festivals and initiatives, and manage outreach programs.
Government bodies (incl. Ministries of Education)	Fund public awareness campaigns, support policy changes promoting biotech education, and drive inclusiveness goals
International partners	Provide expertise, funding, and mentorship for cross-border biotech engagement initiatives.

## Implementation

- **Phase 1: planning and stakeholder engagement (months 1-3)**
  - Convene key stakeholders, including academic institutions, science centers, industry partners, government bodies, and ecosystem builders, to align objectives and roles.
  - Develop a detailed action plan for public engagement activities, including timelines, budgets, and responsibilities.
  - Establish partnerships with media platforms and science communicators for content dissemination.
- **Phase 2: development of educational and outreach materials (months 4-8)**
  - Create biotech-focused interactive workshops, exhibitions, and gamified learning tools in collaboration with science centers.
  - Develop new educational materials for schools and universities, including textbook chapters and online courses.
  - Produce accessible online content, such as videos, articles, and virtual tours of biotech companies and labs.
- **Phase 3: public engagement and awareness campaigns (months 9-18)**
  - Organize at least 10 public events annually, such as open days, workshops, and exhibitions.
  - Launch a multi-platform media campaign, including TV, online, and social media outreach, to reach 500,000 individuals annually.
  - Collaborate with local science festivals (e.g., European Researchers' Night) to showcase biotech advancements.
- **Phase 4: integration into educational programs (months 19-30)**
  - Partner with schools to integrate biotech-focused content into biology and STEM curricula.
  - Expand STEAM center collaborations, creating opportunities for student exchanges and hands-on biotech projects.
  - Develop and offer a joint science communication course in universities to train students and researchers in effective public engagement.
- **Phase 5: monitoring, evaluation, and scale-up (ongoing)**
  - Track progress using KPIs such as the number of events, audience reach, and youth participation in biotech activities.
  - Regularly collect feedback from participants and stakeholders to refine engagement strategies.
  - Expand successful initiatives to additional regions and explore international collaboration opportunities to further amplify impact.

# Aligning Regional Participation in EU Policy

## Need(s) and challenge(s) addressed by the Action Item

- Baltic biotech ecosystems are **not actively participating** and are **not recognized** in EU as biotech ecosystem;
- Representation in the EU on regulatory discussions related to biotech is **not united**;
- **Lack of knowledge** about regulatory pathways for novel products.

## Current status

- Participation in EU regulatory discussions are incoherent in between the Baltic states. Industry representation is based on local industry associations/organisations participation in international organisations
  - Local work groups (ecosystem → government)
  - European scope memberships

Organisation	International Memberships
<a href="#">LithuaniaBIO</a>	EuropaBIO, ScanBalt, ECH Alliance, Bio-based Industries, Alliance for regenerative Medicine
<a href="#">Biocatalyst Foundation</a>	EuropaBIO, ECH Alliance, YEBN
<a href="#">Cleantech Estonia</a>	Cleantech for Baltics, Deep Ecosystem

- As an industry association, LithuaniaBIO is actively participating in government bodies work groups to address regulatory issues and represent industry and academia.
- EU regulatory discussions from governmental representatives are ongoing, some communication between Baltic countries are present
- Lithuania is [actively promoting](#) life science sector advances and positioning as a leader for biotechnology in the Baltic states, Estonia is [focusing](#) on Health Technologies, while Latvia [emphasizes](#) bioeconomy and pharmaceuticals.

## Examples and best practices

[Nordic Innovation](#) is an organization under the [Nordic Council of Ministers](#). We aim to make the Nordics a pioneering region for sustainable growth by promoting entrepreneurship, innovation and competitiveness in Nordic businesses. Other initiatives in Scandinavia include the [Nordic Life Science magazine](#) and [Nordregio](#).

## Objectives

- Identify **key industry representative** organisations in different Baltic states and enable Bioconnect action plan - Baltic Biotech HUB.
- **Regular meetings/summits** to discuss regulatory issues and representation possibilities in EU (industry perspective)
- **Active collaboration** with government organisations/work groups to address the issues in EU regulations.
- **Active participation** in EuropaBIO policy workgroups, National Association Council or other committees.

## Outcomes

- Establishment of **Baltic Biotech HUB** - connecting and communicating, forming joint understanding and ideally position on int'l regulatory matters
- Recognition of Baltic countries valuable contribution to life science & biotech development in EU
- Active representation of Baltic countries position in EU regulatory policies

To support effective implementation of the proposed actions, it may be beneficial to incorporate considerations of gender equality and inclusiveness, along with corresponding measures. Hence, for diverse opinions, the local working groups should involve participants from various sectors of biotechnology/synthetic biology (public health, academia, startups, industry, NGOs) with diverse backgrounds and levels of experience, including women in leadership roles, entrepreneurial talents, young innovators, early-career researchers, etc.

## Key Performance Indicators and benchmarks

KPI name
<b>Establishment of Baltic Biotech HUB</b>
Annual Regulatory Baltic Summit
Participation in EU regulatory discussions
Inclusion of diverse stakeholders
Recognition of Baltic contributions in EU

## Key stakeholders

Organisation type	Potential role
<a href="#">Ecosystem builders</a>	Coordinate HUB activities, organize summits and workshops,

	and ensure effective communication between stakeholders.
Governments (incl. Ministries, Innovation Agencies)	Participate in EU regulatory discussions, facilitate policy alignment across Baltic states, and support HUB establishment.
International partners (incl. Industry associations, EU bodies)	Offer mentorship, facilitate connections with global regulatory bodies, and provide best practices for representation.
European regulatory bodies	Engage with Baltic representatives to understand and incorporate regional perspectives into EU policies.
Media and communication platforms	Amplify the visibility of Baltic biotech contributions through targeted outreach and coverage

## Implementation

- Phase 1: establishing the baltic biotech hub (months 1-6)
  - Identify and onboard key stakeholders from government, academia, industry, and NGOs across the Baltic states.
  - Formalize the HUB structure, governance, and communication channels.
- Phase 2: building collaborative frameworks (months 7-12)
  - Organize initial summits to align on key regulatory priorities and develop a unified action plan.
  - Foster partnerships with EU-level organizations like EuropaBIO.
- Phase 3: advocacy and eu representation (year 2)
  - Draft and submit joint regulatory position papers to EU bodies.
  - Actively participate in EU-level regulatory discussions and policy workgroups.
- Phase 4: capacity building and public engagement (year 2-3)
  - Conduct training sessions on EU regulatory pathways for Baltic stakeholders.
  - Showcase Baltic biotech success through events, publications, and media.
- Phase 5: monitoring and scaling (ongoing)
  - Track progress using KPIs, such as participation in EU discussions and recognition in publications.
  - Expand HUB activities to include broader international collaborations and long-term strategic initiatives

## V. Implementation and Baltic Biotech Hub

The Action Items and tactical actions outlined in the current document are to be viewed as conversation-starters rather than complete blueprints for enabling ecosystem changes. This implies that further elaboration of each Action Item through in-depth dialogue with all relevant stakeholders is paramount as the next step towards testing and implementation.

The BIOCONNECT consortium, representing stakeholders from academia, industry, and civil society, has declared our shared intention to **establish the Baltic Biotech Hub** - a platform for collaboration, resource sharing, and ecosystem building, aimed at fostering biotech innovation across the Baltic region:

- **Promoting regional collaboration:** working across national borders to leverage synergies, harmonize regulations, and align incentives to support biotech initiatives.
- **Fostering research and commercialization:** enabling the translation of cutting-edge research into scalable applications through funding, mentorship, and infrastructure.
- **Supporting talent development:** investing in education and training programs that build a skilled workforce to lead the biotech sector.
- **Advancing sustainable solutions:** prioritizing biotech innovations that address critical challenges such as climate change, resource efficiency, and public health.
- **Improving funding availability:** collaborating to position the Baltic region as a prime destination for biotech investment and partnerships, fostering a vibrant and sustainable ecosystem.

In order to pave the way for the establishment of the Baltic Biotech Hub the BIOCONNECT consortium is putting together consensus evidence in three consecutive steps:

1. Signing an initial Declaration of Intent by the consortium member organizations
2. Collating ecosystem support by mass-signing an extended Community Manifest
3. Ensuring state commitment by signing a trilateral Memorandum of Understanding involving decision maker level government officials from all three Baltic States.

The Baltic Biotech Hub is seen as the primary regional biotech ecosystem framework to oversee the **continued implementation** of the current Action Plan and provide a unified, high-level context for further advancements in the Baltic-Nordic biotech ecosystem.

## VI. Appendices

### Full List of Proposed Actions

Action items	Tactical actions
<a href="#">Growing the regional talent pool</a>	Joint Baltic study programs (BSc, MSc, PhD level)
	Secondary school student and teacher engagement
	Internship programs in collaboration with leading companies
	Baltic Biotech Job Board to connect talent with employers
	Baltic regional postdoc funding program
	Scholarships for low-income students to study biotech
<a href="#">Attracting talent from outside the Baltics</a>	"Baltic Biotech Fellowship" targeting PhD and postdocs
	Expanded Startup Visa and e-Residency for key RIS3 fields
	Relocation packages for key professionals and their families
	Onboarding programs for international professionals
	Career development and upskilling workshops
	"Global Baltic Biotech Network" uniting expat professionals
<a href="#">Upskilling and multidisciplinary</a>	Project- and case study-based joint university courses
	Regional online courses and micro-degrees
	industrial PhD program encouraging academia-industry ties
<a href="#">Engaging entrepreneurial talent</a>	Regional online courses and micro-degrees
	Add entrepreneurial elements to existing study curricula
	Regional biotech incubation program
	Networking events to connect talent, industry, and capital
	Regional biotech hackathons promoting startup creation
	Placements at leading regional biotech startups
<a href="#">Promoting applied research</a>	Commercialization workshops
	Project preparation and management workshops
	Roundtable discussions around applied research promotion
	White paper on promoting research translation
<a href="#">Improving translational expertise</a>	Grants/innovation vouchers offered to promising projects
	Guidelines for research translation best practices
	Tech transfer expert training and networking
	Roundtable discussions around regional tech transfer

<a href="#"><u>Startup-industry collaborations</u></a>	Startup-industry R&D matchmaking platform
	Industry-led innovation challenges for startups and SMEs
	Corporate accelerators for early stage companies
<a href="#"><u>Improving access to laboratory space</u></a>	Regional network of open labs
	Streamlined access protocols for startups and SMEs
<a href="#"><u>Building scaleup capacity</u></a>	Regional piloting and scaleup collaboration platform
	Local specialized and/or wide-function piloting facilities
<a href="#"><u>Improving access to smart money</u></a>	Private-public specialised biotech VC instrument
<a href="#"><u>Enhancing access to existing grants</u></a>	Matchmaking events for academia-industry consortia
	Newsletter with latest funding opportunities
<a href="#"><u>Creating new grants</u></a>	Roundtable discussions for new funding schemes
	White paper on promoting research translation
<a href="#"><u>Positioning Baltics as biotech region</u></a>	Roundtable discussions involving national policymakers
	Regular Baltic Biotech Action Council
<a href="#"><u>Public awareness and attitude</u></a>	Biotech-focused public events
	Inclusion of biotech content in existing educational programs
	Integration in STEAM and science entertainment centers
<a href="#"><u>Aligning regional participation in EU policy</u></a>	Establishing Baltic Biotech Hub



# Abbreviations

**C&D – Commercialization & Development:** Refers to the process of bringing research discoveries to market through business development and commercialization strategies.

**EIC – European Innovation Council:** A European Union initiative that provides funding and support for high-risk, high-impact innovations in science and technology, helping scale up.

**ERC – European Research Council:** A major EU funding body that supports pioneering research projects across Europe, often providing grants to researchers working on breakthrough science and technology.

**GMP – Good Manufacturing Practice:** A regulatory standard ensuring quality and safety of biotech products, esp. pharmaceuticals, through proper production processes and controls.

**IPO – Initial Public Offering:** The process by which a private company offers shares to the public for the first time to raise capital for expansion and R&D.

**KPI – Key Performance Indicator:** Measurable values that demonstrate how effectively a biotech project or initiative is achieving its key objectives.

**NGO – Non-Governmental Organization:** An independent entity that operates without government control, often focusing on social, economic, or scientific goals, such as biotech ecosystem development.

**R&D – Research and Development:** The process of scientific investigation and technological innovation that leads to new products and applications.

**RPO – Research Performing Organization:** Institutions such as universities or research institutes that conduct fundamental and applied research, often collaborating with industry for biotech innovation.

**SME – Small and Medium-sized Enterprise:** Companies with a limited number of employees and revenue, often key players in biotech innovation due to their agility and specialized expertise.

**STEAM – Science, Technology, Engineering, Arts, and Mathematics:** An interdisciplinary approach to education and innovation that integrates artistic creativity with technical and scientific problem-solving.

**TT(O) – Technology Transfer (Office):** An institutional body responsible for managing intellectual property and facilitating commercialization of research from academia to industry.

**TRL – Technology Readiness Level:** A scale used to assess the maturity of a technology from concept to commercialization, commonly used to evaluate innovation potential.

**VC – Venture Capital:** A type of financing provided by investors to early-stage biotech startups with high growth potential, supporting innovation and market entry.