



Grant Project Guidance and Successful Projects

Key Elements of Competitive Projects

- **SIZE AND DURATION OF PROGRAM IMPACT:**
 - Enrollment and duration plans merits investment of funds
 - ♣ minimum of 15 students served, with explicit plans to scale
 - ♣ at least 1-2 weeks; 40 hours
- **LIFE SCIENCES CAREER ALIGNMENT:**
 - Content related to MLSC-defined life sciences careers
 - ♣ Biotech, Medical Technology, Biomanufacturing/Bioprocessing, Biomedical Science/Engineering, Pharmaceuticals, Diagnostics, Genomics, Bioinformatics, Digital Health, AI/data science for life sciences

Post-Secondary Education Grant Project Examples

Exemplar 1

- **Project:** *Integrated Life Sciences Micro-credentialing Program*

In this project, MLSC grant funds supported the launch of a new, one-year program integrating biotechnology, biomanufacturing, molecular biology, and life sciences data science. The curriculum was informed by employer input, Massachusetts job market research, and identified workforce-readiness gaps, with the goal of preparing students for entry-level positions such as Manufacturing Associate, Quality Control Analyst, and Process Development Technician.

Students developed technical skills through a design-build-test-produce model that included DNA construct design, molecular cloning and genome modification, molecular validation, fermentation, protein purification, and data analysis. Training emphasized troubleshooting,

- **LIFE SCIENCES SKILLS DEVELOPMENT:**

- Skills-based curriculum
 - ♣ Specialized curriculum with specific and technical skills training related to life sciences careers
 - ♣ Skills descriptions with clear connections to life sciences careers
- Development of professional skills related to life sciences careers or tasks
 - ♣ Collaboration, continuous improvement process, presentation/communication, project management (post-secondary students), etc.
- Authentic practice
 - ♣ Applied learning (real-world modeling/projects) with equipment-based solutions, multi-step projects, community/stakeholder presentations, etc.

- **INDUSTRY-RELEVANT EQUIPMENT:**

- Exposure to modern/industry-relevant equipment,

reproducibility, laboratory documentation, and application of skills in realistic settings. Students worked with industry-aligned equipment including an ÄKTA chromatography system, PCR and real-time PCR systems, imaging equipment, CO₂ incubators, microscopes, cell counting and electroporation systems, and other instrumentation, exposing them to modern life sciences tools and technologies. Performance-based assessments and stackable micro-credentials measured mastery of technical abilities, culminating in a Microcertificate in Biomanufacturing and Biotechnology.

Career awareness and work-based learning were embedded throughout the program. Students completed professional development focused on resumes, communication, presentations, professional profiles, and mock interviews, while learning to connect their laboratory and data science training to specific life sciences occupations. The program pathway culminated in a required six-month, full-time, credit-bearing co-op with a life sciences organization, where students applied their technical skills using industry-standard tools and received exposure to professional workplaces. Industry partners including CreaGen BioSciences and Charm Sciences supporting with curriculum advising, program evaluation, guest speaking, site visits, equipment advising, and co-op opportunities. Partnerships with nearby colleges and high schools

tools, technologies

- **CAREER AWARENESS:**

- Activities and/or events to increase awareness of and interest in life sciences careers or continuing education
 - ♣ Field trips, guest speakers or panels, careers website research, career fairs
 - ♣ Culminating projects connecting class skills to careers/field work
 - ♣ Connection between course equipment and real-world applications
 - ♣ Connection between course skills and career skills
 - Variety of skills areas and related careers
 - ♣ Extracurricular opportunities for skills-based practice or applied learning
- Development of career-readiness
 - ♣ Mock interviews, resume support, internships, work-based learning, etc.

broadened program access through dual-entry and early college opportunities.

Detailed structures for evaluation supported long-term plans for curriculum refinement and program sustainability, with project leaders planning to measure enrollment and completion, technical competency and micro-credentials, co-op participation, post-completion outcomes (employer evaluations, employment within six months), partnership growth, and follow-on funding. Long-term maintenance plans also supported program sustainability through departmental, institutional, and philanthropic collaborations and commitments.

Exemplar 2

- **Project:** *Mentored Practicum for AI Workforce Development*

In this project, MLSC grant funds supported the creation of an experiential learning initiative to develop career-ready AI and machine learning professionals for the life sciences sector. The program focused on AI and machine learning applications across biopharma, medical devices, computational biology, bioelectronics, and other life

- Hands-on and interactive opportunities to explore life sciences careers

- ♣ Applied learning scenarios
- ♣ Experiential learning through internships
- ♣ Direct connection with professionals and industry settings
 - Mentoring, work review and feedback, etc.

- **PARTNERSHIPS:**

- Industry partnerships that promote *curriculum alignment with industry-standard skills, equipment, and projects*
 - ♣ Industry partners as curriculum or equipment-selection advisors
 - ♣ Collaboration with other schools and programs to expand the reach of life sciences programming and learning
 - Partnerships between secondary schools and post-secondary institutions
- PARTNERSHIPS: Industry and/or non-industry

sciences fields, and it served over 40 students in its first year, with plans to successively expand enrollment.

Using life sciences contexts and data sets, students were trained in Python, AI model development, high-performance computing, AI-driven automation, PyTorch, computer vision, large language models, edge computing, and applications in computational biology. The curriculum also incorporated professional skills training in leadership, presentations, resume development, networking, and goal setting. Students applied these skills through industry-sourced projects, a hackathon, collaborative labs, capstone development, presentations to industry experts and potential employers, and ultimately full-time internships.

Grant-funded expenses such as AI hardware and training platforms, laptops, classroom AV screens, workstations, and server rooms replicated the computing and development environments encountered in industry. Industry partners directly supported project development and implementation. Life sciences employer partners helped shape the curriculum and contributed domain expertise, company problem sets, mentoring, instruction, project evaluation, internships, and hiring opportunities. Partners including GiwoTech, Inia BioSciences, Equitable Technologies / PEEK, Jura Bio Inc., Photodynamic Solutions and others represented diverse life sciences applications, including computational biology and drug discovery, medical

partnerships that introduce students or trainees to people in the workforce

- ♣ Job shadowing
- ♣ Guest speakers
- ♣ Site visits
- ♣ Project feedback
- ♣ Mentoring

- o Strong industry and/or non-industry partnerships with direct support of project development and implementation

- ♣ Letter of support with clearly defined commitments of service, or material supports
- ♣ Varied types of partnerships
 - Speakers and/or demonstrations
 - Project advisory board
 - Curriculum support and development
 - Equipment advising
 - Materials donations
 - Job Shadowing
 - Field trips

devices, bioelectronics, synthetic biology and precision medicine, and photodynamic therapy.

Comprehensive evaluation planning and structures aided impact maximization and program sustainability. The program planned to track certification, student and employer satisfaction, internship placement, full-time hiring, 12-month retention, and growth in industry partnerships, while using mentor feedback and student self-assessments for continuous improvement. To further support program sustainability, the home university set up faculty leaders, facility and equipment maintenance responsibilities, recurring institutional support systems, and plans for expansion.

- Host for events
 - Internships
 - Career Fairs/Networking events
 - Interviews for available job openings
- Partnership that reinforce, complement, supplement existing life sciences education or training
- **IMPLEMENTATION & SUSTAINABILITY SUPPORTS:**
 - Training and support plans for instructors to deliver high-quality programming
 - Clear goals and plan for program implementation, with lead personnel for described
 - Plans for long-term implementation (sustainability and growth: size, reach, skills)
 - A significant portion of the **budget** is dedicated for equipment for long-term use and for multiple trainings, cohorts, or classes
 - Clear plans and structures to address unexpected

challenges in maintaining the program

- **EVALUATION SYSTEMS:**

- o Specific plans for evaluating student technical skills related to life sciences
- o Specific plans for tracking student outcomes after program completion