iExplore Laboratory Science: Developing the Future Public Health Workforce

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Our Team

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State Hygienic Laboratory at The University of Iowa  Tulligen® Community Initiative  The University of Iowa
National Public Health Workforce Shortage
250,000 by 2020

New Partnerships

New Sciences

New Techniques
Why Focus on STEM at SHL?

- Estimated 45-50% of the nation’s environmental/public health workforce will retire within the next 5 years.
- A demand for public health workers with different skill sets to accommodate the changing dynamics of public health.
- Major transformations in the health system
- Greater demand for public health services
Iowa STEM Initiative

• 90% of Iowans believe STEM should be a priority

• 88% of Iowans agree that an increased focus on STEM education will improve Iowa’s economy

• 87% of Iowans support state efforts to devote resources and develop initiatives to promote STEM education in Iowa.
Goals of Iowa STEM Council

1. Build community awareness around STEM opportunities and importance

2. Equip schools and educators with the materials needed to advance STEM achievement in our communities

3. Strengthen school-business partnerships to solidify the continuum from school to career
Developing Career Pathways

WANTED

A Future Public Health Workforce
The iExplore Laboratory Science Project was designed to:

• Increase the interest of elementary and secondary students into careers in environmental and public health science fields

• Integrate with and support school curriculum (Iowa Core – Science)

• Reflect the research on how students learn science
  – Hands on, minds on
  – Authentic
  – Real world case studies
Health isn't just about you and me. Telligen Community Initiative ensures that it's about all of us.

We finance organizations that help us all live healthier lives.

SCROLL TO FIND OUT IF YOU'RE A GOOD FIT.
# Funding Priorities

<table>
<thead>
<tr>
<th>Health Innovation</th>
<th>Social Determinants of Health / Health Equity</th>
<th>Healthcare Workforce Development</th>
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<tbody>
<tr>
<td>This area is encouraged to think creatively and differently regarding issues and opportunities that can bring innovation to the way we all envision to achieve and advance health.</td>
<td>The social determinants of health are the conditions in which people are born, grow, live work and age. The social determinants of health can be most responsible for resulting health inequities. TCI believes in advancing health equity and achieving this requires novel approaches to positively address the social determinants of health. Catalytic funding is needed to foster new approaches to these upstream issues.</td>
<td>TCI provides resources in this funding priority to help educate, recruit, and retain a diverse, high quality workforce that is geographically distributed and more accessible to vulnerable populations and communities.</td>
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Our Story: Applying for Funding

• Defined project idea and funding needs.
• Identified Telligen Community Initiative as a potential funding source.
• Determined which of the three funding priorities aligned with our project idea.
• Developed a funding proposal outline to match application parameters.
• Aligned our proposal with the Telligen Community Initiative Application Rubric.
• Had multiple internal reviews and contacted Telligen with any questions.
iExplore Laboratory Science Aligned With the Telligen Community Initiative Mission

✓ Healthcare Workforce development
✓ K-12 population
✓ Rural Iowa Schools
✓ Authentic experiences in water quality
✓ Focus on the careers of laboratorians at SHL
✓ APHL Competencies
STATE HYGIENIC LABORATORY – UNIVERSITY OF IOWA

AWARD / $50,000

PRIORITY / HEALTHCARE WORKFORCE DEVELOPMENT

LOCATION / IOWA CITY, IA STATEWIDE
AREA OF FOCUS

Grant Summary:

The iExplore Laboratory Science initiative will provide opportunities for middle level (grades 6-8) students in the underserved populations in Iowa to both deepen their content understanding in Science, Technology, Engineering, and Mathematics (STEM) and explore career opportunities in environmental and public health laboratory science, through real-world, hands-on laboratory science experiences. Funding from TCI will be used to: 1) Increase awareness of the variety of STEM career pathways, with a focus on public health laboratory science careers; 2) Increase opportunities to expose students from rural communities to real-world public health laboratory science experiences; and 3) Develop an understanding of the relationship between the school science curriculum and the type of work laboratorians do at the State Hygienic Laboratory (SHL) at the University of Iowa as they engage in public health laboratory science careers.
Field of Streams: Water Quality and Career Opportunities

• The iExplore Laboratory Science initiative is designed to provide opportunities for middle level (grades 6-8) students in the underserved populations in Iowa to both deepen their content understanding in STEM and explore career opportunities in environmental and public health laboratory science, through real-world, hands-on laboratory science experiences.

• Funding from Telligen Community Initiative is being used to:
  – Increase awareness of the variety of STEM career pathways, with a focus on public health laboratory science careers;
  – Increase opportunities to expose students from rural communities to real-world public health laboratory science experiences; and,
  – Develop an understanding of the relationship between the school science curriculum and the type of work laboratorians do at the State Hygienic Laboratory (SHL) at the University of Iowa as they engage in public health laboratory science careers.
Field of Streams: In Action
Where were you during the Flood of 2008?
Field of Streams Lesson
Public Health Laboratory Competencies

- **Technical**
  - Micro, Chemistry, Research, Bioinformatics

- **Cross-Cutting**
  - Safety, Informatics, Surveillance, General Laboratory Practice

- **General**

- Quality Management System
Cross-Cutting Competency: General Laboratory Practice

- Demonstrates general knowledge and skills related to the scientific and technical components of laboratory testing.
- Adheres to policies and principles regarding the use and storage of laboratory reagents, equipment and supplies, maintenance and calibration of laboratory equipment, performs steps in the pre-examination, examination, and post-examination phases of testing.
- Maintains compliance with regulations and guidelines governing laboratory testing.
General Laboratory Practice

1. Demonstrates general knowledge and skills related to the scientific and technical components of laboratory testing
   - using mathematical and statistical concepts and practices, troubleshooting, modeling laboratory practices, documentation and ethics

2. Adheres to policies and principles regarding the use and storage of laboratory reagents and supplies

3. Adheres to policies and principles regarding the use, maintenance and calibration of laboratory equipment
   - Operation, maintenance, instrument and equipment calibration
General Laboratory Practice

4. Performs steps in the pre-examination phase of testing
   - Policies, processes and procedures for the management of samples

5. Performs steps in the examination phase of testing
   - Sample analyses, (testing workflow) and quality control

6. Performs steps in the post-examination phase of testing
   - QC evaluation, test analysis and results interpretation, results reporting, data release, turnaround time and quality assurance

7. Compliance with regulations and guidelines governing laboratory testing
   - Regulatory compliance, proficiency testing, method validation, performance verification and protected information
Field of Streams: Roles And Responsibilities

Teams of 4 made up of:

- an **Environmental Specialist** who will be responsible for the optimal levels of the assigned aquatic specimen,

- an **Environmental Analyst** who will be responsible for testing and recording the data on the environmental parameters for the assigned aquatic specimen,

- an **Environmental Supervisor** who will be responsible for collaborating to craft a report on the assigned aquatic specimen, and;

- an **Environmental Manager** who will be responsible for articulating expectations and holding everyone accountable and for compiling all of the reports into one complete final report to the DNR.
Field of Streams: Roles and Teamwork

- Environmental Manager
- Environmental Specialist
- LIMNOLOGIST
- Environmental Analyst
- Environmental Supervisor
The Field of Streams Activity was Designed to Target the 7th Grade Iowa Core Life Science Standard MS-LS2-1
The Science and Engineering Practices Targeted in MS-LS2-1 Focus on Analyzing and Interpreting Data to Provide Evidence for Phenomena
The Field of Streams Activity was Designed to Target the 7th Grade Iowa Core Life Science Standard MS-LS2-4
The Science and Engineering Practice Targeted in MS-LS2-1 Focus on Engaging in Argument from Evidence Knowing that Scientific Knowledge is Based on Empirical Evidence.
The Importance of Developing Partnerships

SHL/CALS develops partnerships that help us find funding sources that match our needs, such as:

- Telligen Community Initiative
- Carver Trust
- VRW Charitable Foundation
- Olympus Grants
- Iowa Science Foundation (Iowa Academy of Science)
- Others
Final Reflection

Your turn – brainstorm 5 partners that have foundations/grants that align with your mission and vision for a project you wish to fund
What can you do?

- Design future workforce projects
- Align your projects with a funding source
- Apply!

Contact Information
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From all of us at the State Hygienic Laboratory of the University of Iowa, thank you for attending our session!