State Hygienic Laboratory at the University of Iowa

Advancing Public Health Workforce Priorities in Iowa

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National Public Health Workforce Shortage

250,000 by 2020

New Partnerships

New Sciences

New Techniques
Student Mentorship Program

http://www.shl.uiowa.edu/edtrain/opp/index.xml

GERMinators with SHL Scientist Stephany Cochran

SHL Scientist John Vargo with student mentee
Do we need an Internship Program?

**Pros**
- Workforce Development/Recruitment
- Relationships
- Advances Projects
- Community awareness
- Other

**Cons**
- Funds
- Resources
- Administrative Constraints
- Location of facility
- Other

**Internship Objectives**
- Building Strategic Communication
- Create Internship Tracking System
- Internship Objectives
- Marketing/Promotion
- Recruiting
- Onboarding To Completion
- Career Leads
Internship Program

http://www.shl.uiowa.edu/edtrain/internships/index.xml
# Interns and Practicum Students

<table>
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<tr>
<th>Student</th>
<th>Focus Area</th>
<th>Location</th>
<th>College</th>
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<tr>
<td>Peggy Douglas</td>
<td>Micro</td>
<td>Coralville</td>
<td>UI College of Public Health</td>
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<td>Reid Senesac</td>
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<td>Shima Ebed</td>
<td>Newborn/Maternal Screening</td>
<td>Coralville/Ankeny</td>
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<td>Ravish Patel</td>
<td>Process Improvement</td>
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<td>Adriana Pusnik</td>
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<td>Sarah Ischer</td>
<td>Lab Safety</td>
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<td>Kaitlyn Daugherty</td>
<td>Rad Chem/Environmental</td>
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<td>Mackenzie Stump</td>
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<td>Dana Bohan</td>
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<td>Kyle Read</td>
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<td>Lakeside</td>
<td>Wartburg</td>
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<td>Joe Pugh</td>
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<td>St. Olaf College</td>
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<td>Wesley Hottel</td>
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<td>Kathleen Andruch</td>
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<td>Zoe Muehleip</td>
<td>Public Policy</td>
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<td>Simpson</td>
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<td>Bianca Rodriguez</td>
<td>Education, Training, Professional Development</td>
<td>Coralville</td>
<td>University of Iowa</td>
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</table>
National Internship Model

http://www.shl.uiowa.edu/edtrain/tools/index.xml

Fellowships

- Total Fellows – 29
  - 23 CDC/APHL Emerging Infectious Disease Fellows
  - 3 CDC/APHL Environmental Fellows
  - 2 CDC Public Health Associate Fellows
  - 1 ASM International Fellow
Fellowships

• APHL-CDC
  – Infectious Diseases Laboratory Fellowship
  – Environmental Public Health Lab Fellowship
  – Antimicrobial Resistance Fellowship
  – Bioinformatics Fellowship
  – Newborn Screening Fellowship
    • [https://www.aphl.org/fellowships/Pages/default.aspx](https://www.aphl.org/fellowships/Pages/default.aspx)

• CDC
  – Public Health Associate Program (PHAP)
    • [https://www.cdc.gov/phap/index.html](https://www.cdc.gov/phap/index.html)
  – Laboratory Leadership Service (LLS) Fellowship
    • [https://www.cdc.gov/lls/index.html](https://www.cdc.gov/lls/index.html)
Job Shadow/Tours
Online K-12 Classes

Newborn Screening: Growing up with PKU

An interactive presentation by the State Hygienic Laboratory - Iowa's public health & environmental laboratory
© 2009, State Hygienic Laboratory of The University of Iowa

Germy the Germ

A presentation of the University Hygienic Laboratory © 2009

Edible Aquifers

A "hands-on" science course presented by the University Hygienic Laboratory

Find definitions here!

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K-12 Courses Online
State Hygienic Laboratory
at The University of Iowa
uhl.uiowa.edu

Newborn Screening: Growing up with PKU
Grades 5 - 8

Germy the Germ
Grades K - 3

Edible Aquifers
Grades 3 - 6

Sponsored by AHEC
Area Health Education Center
Southeast Iowa

http://www.shl.uiowa.edu/edtrain/tools/index.xml
http://www.shl.uiowa.edu/edtrain/tools/playdiddyouseethat.xml
Iowa Governor’s STEM Advisory

https://www.iowastem.gov/
Who are STEM Leaders in Your State?

• APHL-CDC National STEM Recruitment Project
• STEM Contacts Across the Nation
  – [http://tiny.cc/STEMNation](http://tiny.cc/STEMNation)

Far right- Dr. Jeff Weld, STEM Leader for Iowa
Governor Kim Reynolds with Teacher Extern at SHL
iExploreSTEM Festival

https://iexplorestem.org/resources
STEM BEST

• Iowa STEM Innovator
• A new STEM Best program that has students solving problems for businesses across Iowa

http://steminnovator.org/
STEM Teacher Externship Program

- 16 Teacher Externs since 2011

“I had a wonderful experience and am excited to apply it to my teaching this fall.”

https://www.iowastem.gov/externships
STEM Hill Day
Developing Career Pathways

WANTED

A Future Public Health Workforce

Public Health Lab
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
Student Engagement Example: Color Chromatography

**Example:**

Color Chromatography

**SUPPLIES**
- Coffee filter or paper towel
- Water-based markers or gel food coloring
- Sponge (cut to fit in bottom of cup)
- Water
- White cup

**PROCEDURE**
1. Place sponge in the bottom of cup.
2. Add enough water to come halfway up the sponge.
3. Choose markers or food coloring in non-primary colors.
4. Drip the coffee filter.
5. Fold coffee filter in half 3 times to make a wedge shape.
6. Fold the pointed end of the coffee filter in the cup so it rests on the wet sponge.
7. Leave in the cup and watch as the colors start to spread and separate.

**THE SCIENCE BEHIND COLOR CHROMATOGRAPHY**
- As the water travels up the coffee filter (capillary action), it carries the color pigments with it.
- Different color pigments are carried at different rates and some will travel further than others.
- How fast and how far the pigment travels depends on the size of the pigments molecule and how strongly it is attracted to the coffee filter.
- Some colors will separate because the water carries them at different rates.

**HOW CHROMATOGRAPHY IS USED IN THE LAB**
The State Hygienic Laboratory uses the same principles of color chromatography to identify various types of chemicals and pollutants in the environment. Instead of using water, chemicals at the lab-scale are used liquid to flow through a stationary substance. And like color pigments, chemical molecules also have specific weights that will travel through a stationary object at different rates.

**STATE HYGIENIC LABORATORY**
Ancient
Coralville
SHLUIOWA.EDU
Dimensions of Success DoS Observation Tool

- The DoS Observation Tool assesses 12 aspects (or dimensions) of afterschool STEM programming.
- The tool provides a definition for each dimension as well as rating guides (rubrics) for identifying four levels of quality along that dimension.
- In this section, for each of the 12 dimensions you will find 1) key ideas, 2) high- and poor-quality example activities, and 3) a URL for a high-quality activity video.

Center for the Advancement of Laboratory Science (CALS)

Tiered Fee Structure:
- Based upon market analysis of local conference venues
- Aligned with program, agency and organizational goals
- Includes four tiers for Standard Events, Non-profit Events, Partner Events, and Internal/IAEiris-funded events

Logic Model:
- Series of "if-then" relationships connecting:
  - Resources → Activities → Outputs → Outcomes
  - Focus on SMART (specific, measurable, achievable, realistic, time-bound) goals to address a key problem statement

Policies and Procedures:
- Guided by review of internal departments and external organizations' manuals
- Designed to ensure the safety of visitors, staff and security of the laboratory
- Aligned with University of Iowa policies

Facility Operations Plan:
- Facilities maintenance and management
- Emergency protocols
- Equipment and instrumentation
- ITAV services

Evaluation and Performance Metrics:
- Provides measure of success and guides for future adjustments
- Metrics designed for Finance, Customer Satisfaction, Operational Performance, Workforce and Subject Matter Expertise

Sustainability:
- Goal is to become financially self-supporting
- State appropriations — currently comprises the majority of funding
- Grant opportunities — external collaborations and looking for independent funding as well
- Fees-for-use — minimal fees assessed to cover operating expenses and facility upkeep

Future Vision:
- Strive to be self-sustaining through independent funding and program expansion
- Serve as a national model for training and conference centers for state, regional and national environmental and public health agencies

Reservation Procedures:
- Reservations requested via website, email, telephone or in-person
- Internal users can schedule rooms themselves
- Outlook resource calendar used to manage the schedule for each room

Communications & Marketing Plan:
- Branding and color scheme
- Logo design
- Brochure
- Website
- Email/print articles
- Public radio
- Dedicated CALS email account
- Networking with current and potential customers

Accounting and Finance Procedures:
- Billing processes for external use
- Refund policy and procedure
- Online credit card system through University of Iowa Treasurer's Office
- Operating budget

Essential Resources:
- Subject matter experts and internal buy-in
- Existing programming
- External collaborations with schools, higher education institutions, government agencies, businesses and industry

Program Development:
- Expand programming focused on supporting the current workforce and developing the workforce of tomorrow
- Input from external partners and professional staff to identify training needs and opportunities
- Collaborations with local universities and community colleges to increase resources and align with academic standards

The University of Iowa

CALS Business Model
Grants/Funding

• Look at Foundations in your state that align with your goals
  – Telligen Community Initiative
    • Also in Illinois, Oklahoma, Colorado
  – Abbott Fund
  – Roy J. Carver Charitable Trust

• Partner with someone who already has a grant
  – NIH
  – NSF
Parting Words of Wisdom

• Start small but be strategic
• Get involved at the local, state and national level
  – Join APHL
    • Apply to serve on a national committee
• Contact the STEM leaders in your state
• Look for unique partnerships
• Share resources and wisdom
Questions?

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