

Final Grant Report
September 2013

Innovations in Public Health Laboratory System Workforce Recruitment and Retention

**Association of Public Health Laboratories (APHL)
National Center for Public Health Laboratory Leadership (NCPHLL) Innovations Grant**



**City of Milwaukee Health Department Laboratory
Laboratory System Improvement Program (L-SIP)**

**Zeidler Municipal Building
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Milwaukee, WI 53202**

**414.286.3526
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www.milwaukee.gov/healthlab

September 25, 2013

Dear Stakeholders:

This spring, the City of Milwaukee Health Department Laboratory (MHDL) was awarded a \$10,000 grant from the Association of Public Laboratories (APHL) National Center for Public Health Laboratory Leadership (NCPHLL) to continue advancing the workforce development improvements identified through the MHDL's Laboratory System Improvement Program (L-SIP).

As partners of the MHDL and stakeholders of the Local Public Health Laboratory (LPHL) System, many of you have been involved in our L-SIP efforts since we first began this journey in November 2010. During this particular grant, all of you have played a key role in working toward improving workforce development in Milwaukee's LPHL System, whether through participation in the educational outreach efforts to local college and high school students at our Laboratory Science Career Forum in April, or the strategic conversation of the Workforce Development Team in May. We are also sharing our report with those of you who expressed an interest in participating but were unable to attend due to conflicting schedules. We would like to take this opportunity to acknowledge and sincerely thank each of you for the time and effort you personally invested in our recent grant activities, and your ongoing support and commitment to our L-SIP process. The progress we have made during the last three years would not have been possible without you.

For your information, the following is a report on all of the grant activities and goals accomplished during the funding period of the recent Innovations Grant. We were successful in completing the majority of our defined grant milestones, as well as additional objectives established throughout the project. By sharing these findings generated by our local and state subject matter experts in continuing education and workforce/career development, we believe this report can become a useful tool in advancing workforce development solutions in the laboratory sciences for Milwaukee and beyond. We encourage you to use the ideas and results identified in this report. We welcome your feedback as we reflect on these recent activities, and encourage your involvement as we prepare to plan for future L-SIP initiatives.

Best Regards,

A handwritten signature in black ink, appearing to read 'Steve Gradus', with a long horizontal flourish extending to the right.

Steve Gradus, Ph.D.
Laboratory Director

SUMMARY OF GRANT ACTIVITIES

Milwaukee Laboratory System Improvement Program (L-SIP) Community Co-Chair Meeting

Grant planning started in March 2013 with input from Milwaukee's L-SIP Community co-chairs, including a review of grant strategies, goals and objectives. The Co-chairs have been actively involved in Milwaukee's L-SIP improvement efforts since summer 2011, when the Milwaukee Laboratory Advisory Committee (MLAC) and Subject Matter Experts were first convened to guide strategic planning. The four Community Co-chairs – Dr. Gul Afshan (Milwaukee School of Engineering), Dr. David Petering (University of Wisconsin-Milwaukee), Dr. Randall Lambrecht (Aurora Health Care), and Dr. Dara Frank (Medical College of Wisconsin) – were later named in early 2012. Their role was to join MHDL leadership in working with research and workforce development stakeholder committees to advance and strengthen system partnerships and define L-SIP goals and objectives. The Co-Chairs were joined by project consultant Amy Murphy and Nancy McKenney, Director of the Wisconsin Department of Health Services Workforce Development, during planning meetings for this grant. These brainstorming sessions helped establish the framework for two main grant events – a Laboratory Science Career Forum and Workforce Development Team Meeting.

Laboratory Science Career Forum

This event was held on April 25, 2013, at the University of Wisconsin-Milwaukee (UWM) Zilber School of Public Health (ZSPH) About 40 students, as well as some staff representatives, from seven local colleges and universities and one high school attended the forum, which was designed to educate students on the different laboratory science career options available to them. Commissioner of Health Bevan K. Baker delivered the keynote address. Nine of Milwaukee's Local Public Health Laboratory (LPHL) System stakeholders presented information on their diverse career paths and unique laboratory science experiences to three separate groups of students who rotated between three breakout rooms. The speakers fielded student questions after each of their presentations. The event included breakfast and lunch for participants, and concluded with a panel discussion of four laboratory science professionals representing the focus areas of public health, clinical, industry and academia, with panelists responding to and discussing career-related questions submitted by students (Appendix 1-Speaker/panelist list and Appendix 2-Student Participation).

Results

As a component of the Career Forum, the MHDL developed a qualified pre-survey for students to complete at the beginning of the event to gauge their initial knowledge of and interest in public health and laboratory science careers, and a post-survey with mostly the same questions at the end of the event, students completed pre- and post-surveys as a way of measuring knowledge gained through the forum. Results show that students' knowledge increased as far as, for example, understanding the role of public health laboratories and being aware of laboratory science career opportunities available to them post-graduation (Appendix 3-Survey results). In comparing post-survey responses with pre-survey responses, the number of students who reported having a high knowledge of the role of public health laboratories increased by 61 percent; none of the respondents reported little or no knowledge in this area following the forum. Meanwhile, the number who said they were familiar with lab science as a possible career

opportunity increased by 77 percent, while the number reporting little to no familiarity with those careers decreased by 64 percent.

Participants also completed an evaluation of the event, rating the utility, flow and venue accommodations. MHDL received 35 completed evaluations, which rated most components of the event in the good to superb range. Nearly all participants said they would participate in a similar event again, or would recommend participation to someone they know. We received very positive feedback through evaluation comments, as well as email communications from participants, in addition to some constructive criticism that will help us improve the event in the future (Appendix 4-Evaluation results).

Workforce Development Team Meeting

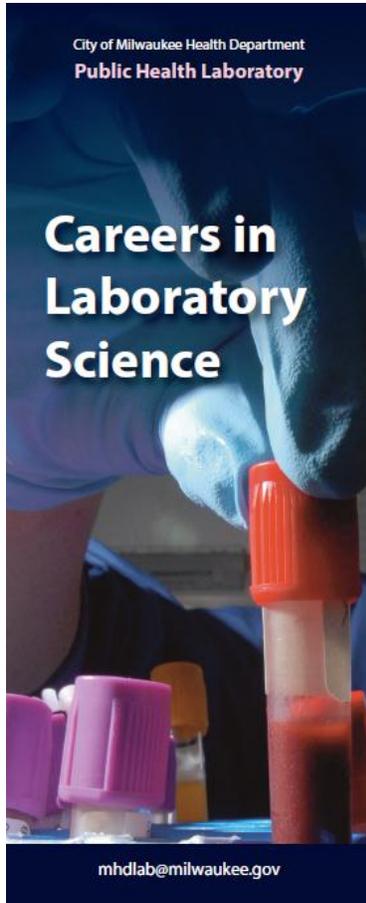
The Workforce Development Team (WFDT) Meeting was successfully executed and professionally facilitated (Amy Murphy Consultants, Inc.) on May 29, 2013, at the Milwaukee School of Engineering (MSOE) Alumni Partnership Center. Special thanks go to L-SIP Community Co-chair Dr. Gul Afshan and MSOE staff for hosting this venue. About 20 local subject matter experts from Milwaukee area health care, government and academic organizations – representing both the supply and demand sides of the Local Public Health Laboratory (LPHL) System workforce – convened to identify specific gaps in workforce recruitment and retention in the LPHL System in Milwaukee. In its discussion, the group took into consideration local, state and national workforce data, including survey responses submitted ahead of time by meeting participants, addressing factors such as internships, employee certifications, continuing education opportunities and partnerships. Using that information, meeting participants identified workforce gaps in a large-group discussion, and then in small groups brainstormed ideas for improving workforce recruitment and retention (Appendix 5-Participant list).

Results

Ideas were presented to and discussed by the full group and organized into seven main improvement areas:

- **Expanding internship opportunities**
- **Diversifying the PHL workforce**
- **Securing funding for workforce development**
- **Creating pathways that highlight a variety of careers in public health**
- **Standardizing the collection of workforce data in a shared resource system**
- **Developing strategies to inform undergraduate and graduate students/teachers**
- **Developing a marketing campaign for the general public**

All of the ideas generated are captured in Appendix 6-WFDT Meeting Improvement Goals.



Laboratory Science Career Opportunities informational brochure

MHDL staff gathered information and developed a basic template for this brochure, which contains summaries of laboratory career options in the categories of clinical, environmental and public health laboratories, as well as information on education required, career tracks and resources. Our internal Graphics staff designed the brochure and it was outsourced for printing. This brochure will be invaluable for distributing at career fairs and related events, as well as providing to our academic partners for circulation to students/potential MHDL interns. We also will post an electronic version in the “Internships” section of our website (Appendix 7-Careers brochure).

Updating & printing MHDL Test Reference Manual

Although not initially identified in our proposal, another milestone related to this has been the MHDL’s updating and professional printing and binding of our Test Reference Manual, which will be a valuable tool in better informing existing and prospective partners/clients of the services our laboratory offers. Our new manual can be found on the [Testing & Fees](#) page of our website.

GOALS TARGETED FOR FUTURE COMPLETION

Revamping MHDL Internship Program

It became apparent during our WFDT Meeting discussion that internship opportunities need to be expanded and improved upon throughout the LPHL System. Taking this into consideration, MHDL has begun taking steps to improve the student experience offered through our internship program, particularly with regard to updating safety and training videos and related equipment, and streamlining internship-related paperwork in order to allow more opportunities for student input/feedback. This will help us to identify the strengths and weaknesses of our program, and make modifications accordingly, in order to provide the best possible learning experience for our interns. This is an ongoing review that is still in progress.

Updating L-SIP webpages

We have established and begun implementing a plan for continually updating our L-SIP webpages to not only reflect all of the workforce development efforts of this grant and other L-SIP-related developments, but also to better present existing content to our stakeholders.

LESSONS LEARNED

As a positive lesson and something we have seen throughout our L-SIP efforts, we have learned that there is a desire across the system to collaborate and partner in order to set and implement improvement goals. As during past Innovations Grants, we continue to form new contacts and foundations for future partnerships, as well as strengthen existing partnerships, as a result of promoting and furthering our L-SIP efforts (Appendix 8-L-SIP timeline). The work that we have put into improving the LPHL System in Milwaukee thus far has proven to be a worthwhile investment not only for MHDL, but for the laboratory system as a whole. By leveraging the partnerships we have formed in order to continue our efforts, it is clear that the system will only improve further in the future.

MORE INFORMATION

A more complete history of Milwaukee's L-SIP activities to-date can be found at our L-SIP website, www.milwaukee.gov/LSIP, as well as in this recently published article in [2013 Supplement 2, Volume 128 of Public Health Reports](#).

This work was supported by the Association of Public Health Laboratories under cooperative agreement #U60HM000803 (CFDA#93.065) from the Centers for Disease Control and Prevention (CDC). Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the Association of Public Health Laboratories, the Centers for Disease Control and Prevention and/or Assistant Secretary for Preparedness and Response.



Laboratory Science Career Forum April 25, 2013



Appendix 1

| Laboratory Science Career Forum Speakers & Panelists | | | |
|---|---|---|--|
| Name | Title | Organization | Email Address |
| Gul Afshan | Professor, Biochemistry/Molecular Biology Director, BioMolecular Engineering Program | Milwaukee School of Engineering (MSOE) Physics and Chemistry Department | afshan@msoe.edu |
| Sanjib Bhattacharyya | Deputy Laboratory Director | City of Milwaukee Health Department Laboratory (MHDL) | sbhatt@milwaukee.gov |
| Michael Carvan | Shaw Associate Scientist | University of Wisconsin-Milwaukee (UWM) School of Freshwater Sciences, Great Lakes WATER Institute | carvanmj@uwm.edu |
| Chris Cunningham | Assistant Professor, Pharmaceutical Sciences | Concordia University Wisconsin | chris.cunningham@cuw.edu |
| Steve Gradus | Laboratory Director | City of Milwaukee Health Department Laboratory (MHDL) | sgradu@milwaukee.gov |
| Karen Harrington | Senior Manager, Clinical Affairs | Hologic/Gen-Probe Prodesse | karen.harrington@hologic.com |
| Christopher Johnson | DNA Analyst | Wisconsin State Crime Laboratory–Milwaukee | johnsonca@doj.state.wi.us |
| Jeff MacDonald | Microbiologist | Milwaukee Metropolitan Sewerage District (MMSD) | jmacdonald@mmsd.com |
| Stacy Meyer | Lead Medical Technologist | Aurora Consolidated Laboratories (ACL) | stacy.meyer@aurora.org |
| Erik Munson | Director of Microbiology | Wheaton Franciscan Laboratories | erik.munson@wfhc.org |
| Agnieszka Rogalska | Assistant Medical Examiner | Milwaukee County Medical Examiner’s Office | agnieszka.rogalska@milwcnty.com |
| Steve Sobek | Chief, Bureau of Laboratory Services | Wisconsin Department of Agriculture, Trade & Consumer Protection (DATCP) | steve.sobek@datcp.state.wi.us |

Appendix 2

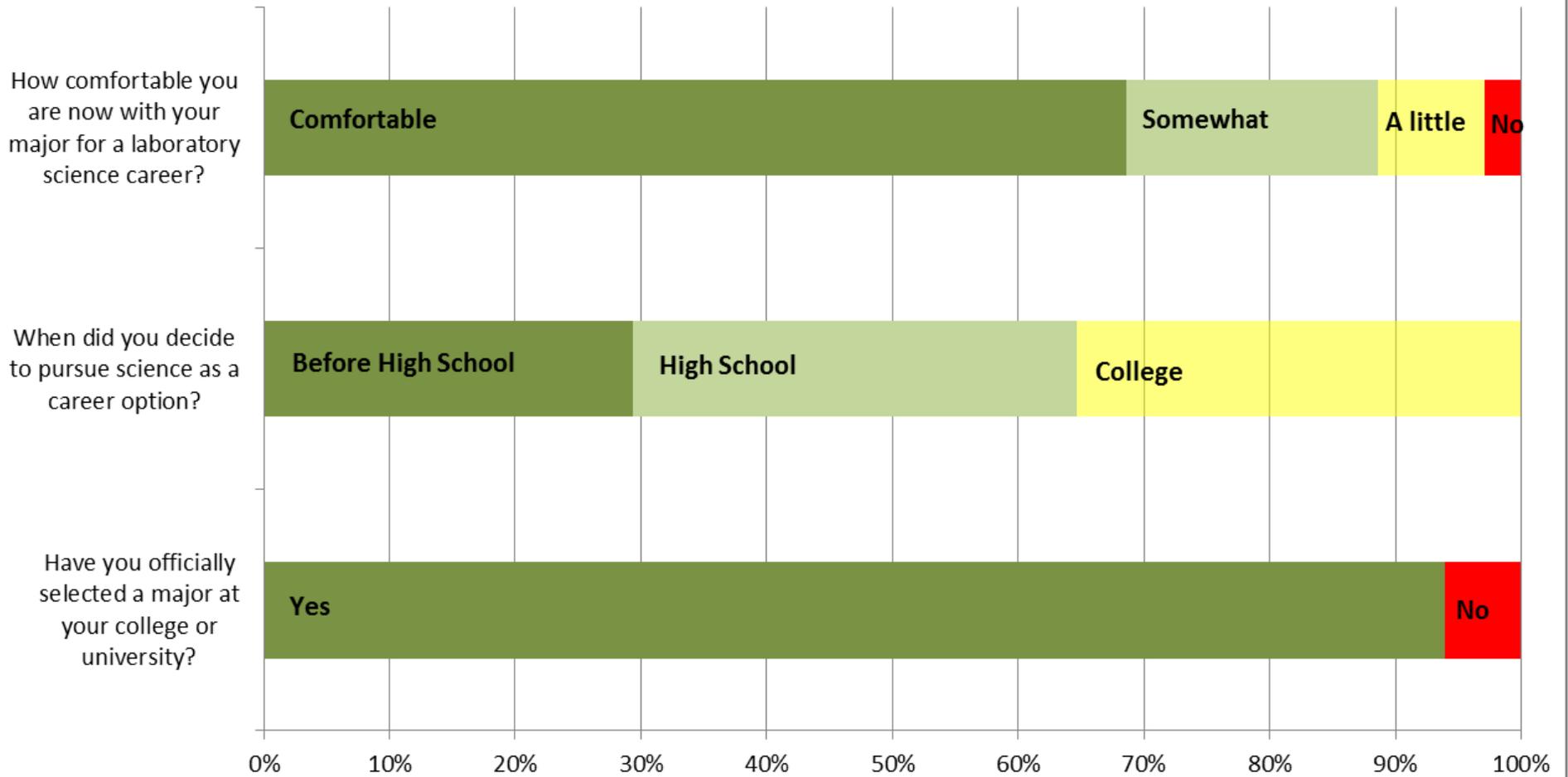
Student Participation in Career Forum

| School | Program/Course of Study | # of students |
|---|--------------------------------|---------------|
| Alverno College | Biology | 4 |
| Brookfield Central High School | N/A | 4 |
| Cardinal Stritch University | Biology | 2 |
| Concordia University | N/A | 1 |
| Milwaukee Area Technical College (MATC) | Biotechnology | 6 |
| | Clinical Laboratory Technology | 1 |
| Milwaukee School of Engineering (MSOE) | BioMolecular Engineering | 5 |
| | Nursing | 1 |
| University of Wisconsin-Milwaukee (UWM) | Biomedical Sciences | 4 |
| | Biochemistry | 1 |
| | Cytotechnology | 1 |
| | Master of Public Health | 1 |
| | Medical Laboratory Sciences | 1 |
| | Public Health Microbiology | 1 |
| Wisconsin Lutheran College | Life Science & Biology | 5 |
| TOTAL | | 38 |

Appendix 3

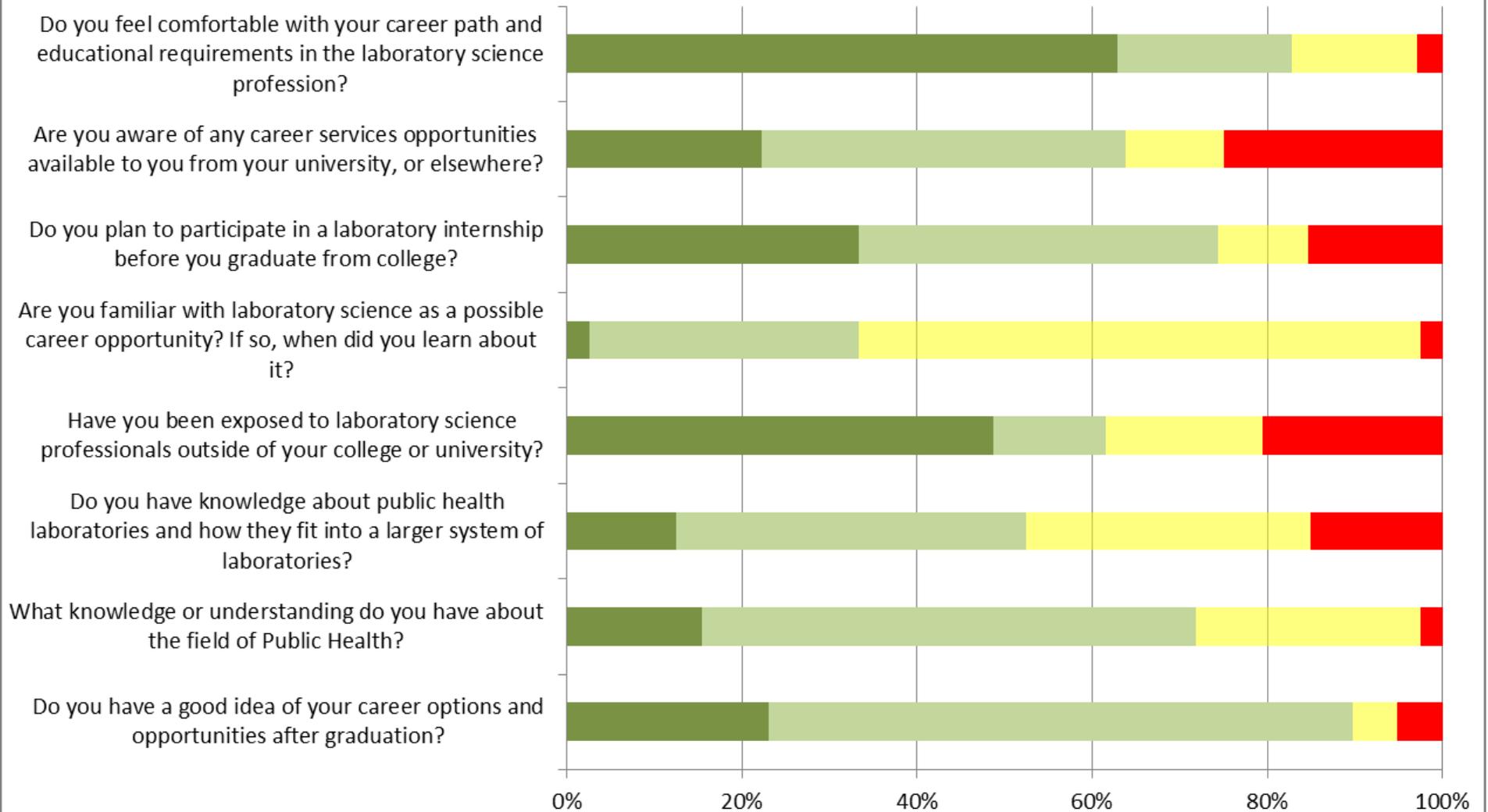
| Survey Source | # | Question |
|---------------|----|--|
| Pre-Survey | 1 | Have you officially selected a major at your college or university? |
| | 2 | Do you have a good idea of your career options and opportunities after graduation? |
| | 3 | When did you decide to pursue science as a career option? |
| | 4 | What knowledge or understanding do you have about the field of Public Health? |
| | 5 | Do you have knowledge about public health laboratories and how they fit into a larger system of laboratories? |
| | 6 | Have you been exposed to laboratory science professionals outside of your college or university? |
| | 7 | Are you familiar with laboratory science as a possible career opportunity? If so, when did you learn about it? |
| | 8 | Do you plan to participate in a laboratory internship before you graduate from college? |
| | 9 | Are you aware of any career services opportunities available to you from your university, or elsewhere? |
| | 10 | Do you feel comfortable with your career path and educational requirements in the laboratory science profession? |
| Post-Survey | 1 | Do you have a good idea of your career options after graduation? |
| | 2 | What knowledge and understanding do you have about the field of Public Health? |
| | 3 | Do you have an understanding about public health laboratories and how they fit into a larger system of laboratories? |
| | 4 | Have you been exposed to laboratory professionals outside of your college or university? |
| | 5 | Are you now familiar with laboratory science as a possible career opportunity? |
| | 6 | Will you be interested to participate in a laboratory internship before or after you graduate from college? |
| | 7 | How comfortable you are now with your major for a laboratory science career? |
| | 8 | Are you aware of any career services opportunities available to you from your university, or elsewhere? |
| | 9 | Do you feel comfortable with your career path and educational requirements in the laboratory science profession? |

Career Day Audience Identifiers



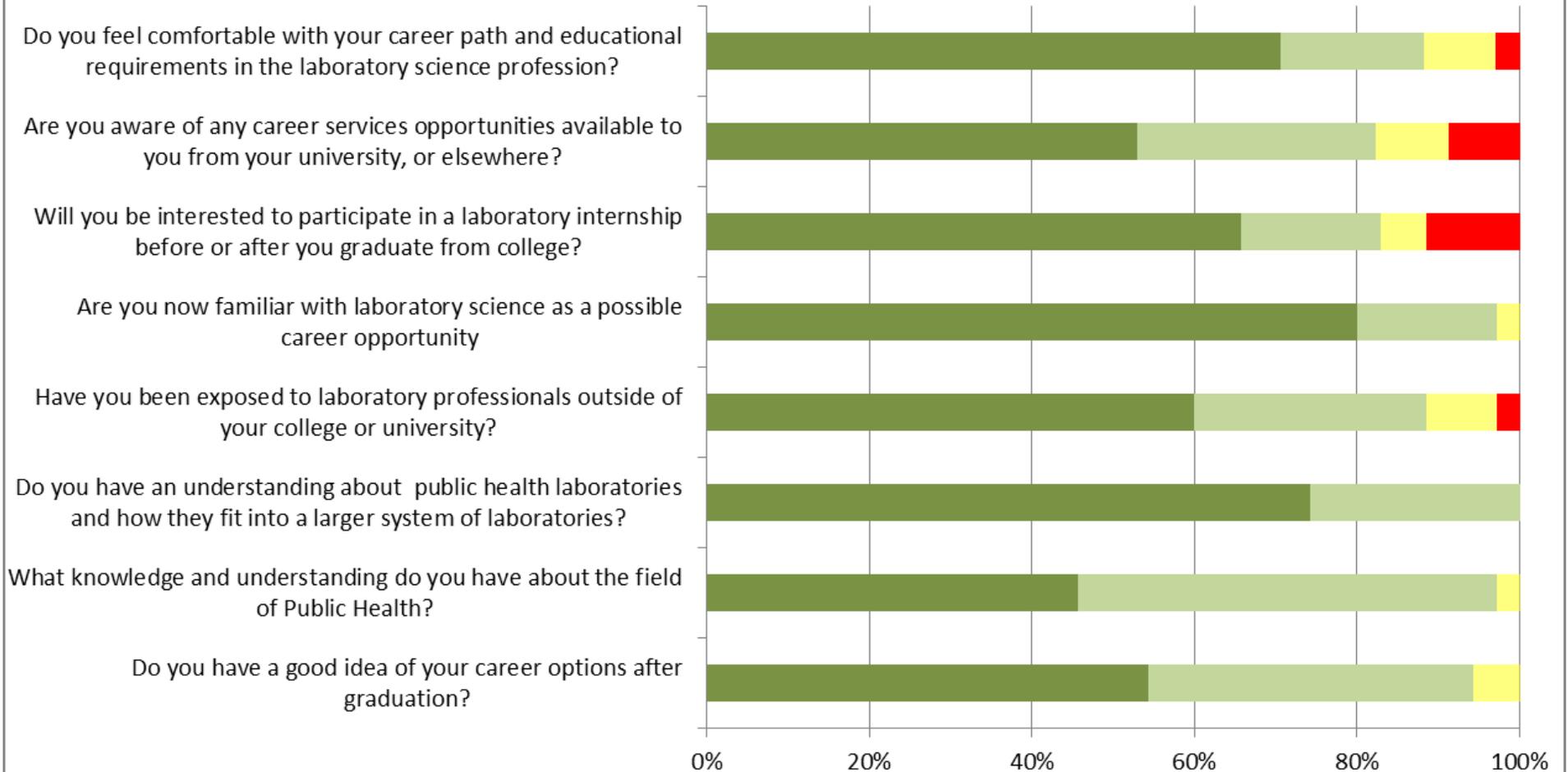
Career Day Pre-Survey

■ YES ■ SOMEWHAT ■ LITTLE ■ NO



Career Day Post-Survey

■ YES ■ SOMEWHAT ■ LITTLE ■ NO



Appendix 4

City of Milwaukee Health Department Laboratory

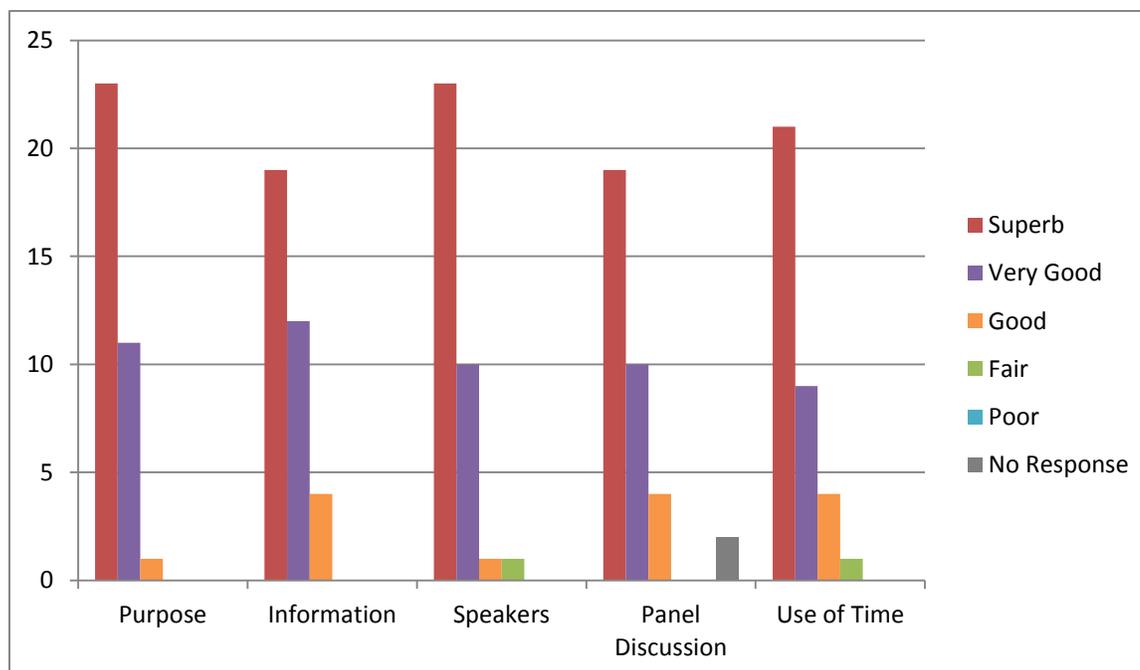
Laboratory Science Career Forum

April 25, 2013

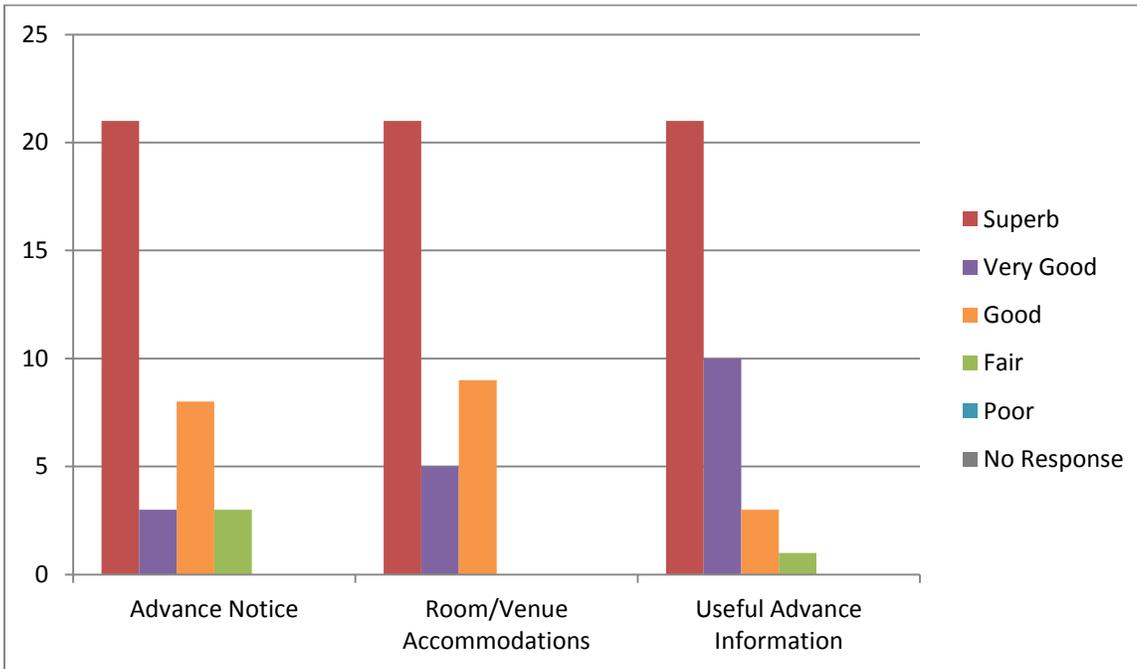
EVALUATION RESULTS

A total of 35 forum participants returned their evaluation forms. This is a compilation of their responses.

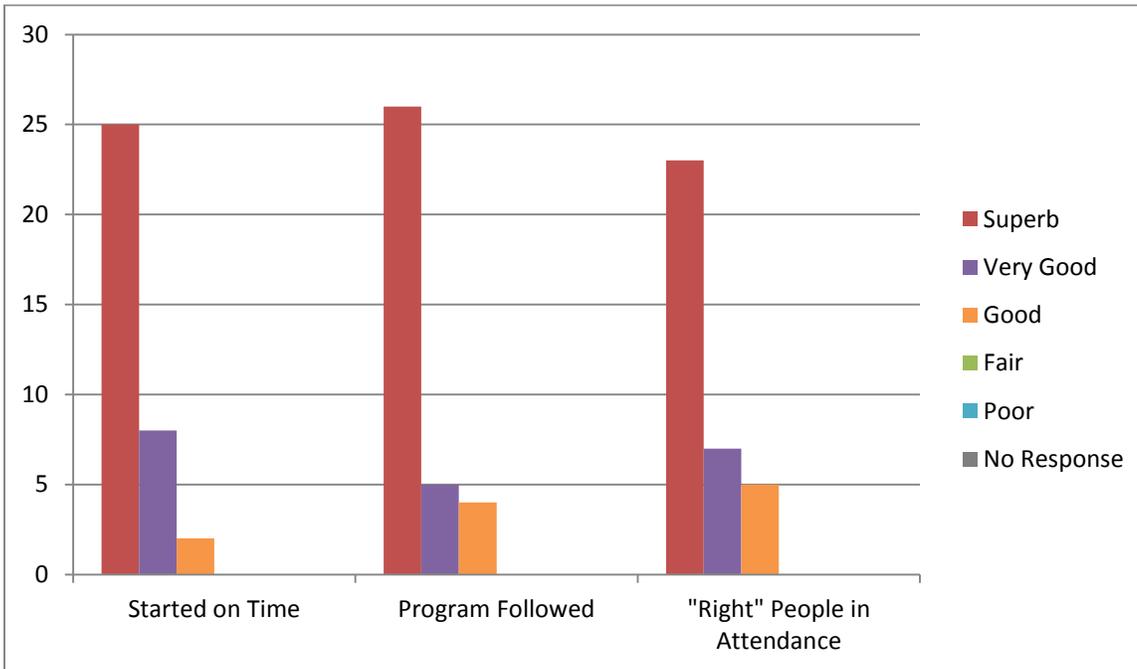
| Utility of Event: | RESPONSES | SUPERB 5 | 4 | GOOD 3 | 2 | POOR 1 | NO RESPONSE |
|---|-----------|-------------|-------|-----------|------|-----------|----------------|
| Purpose of the Career Forum was met: | # | 23 | 11 | 1 | | | |
| | % | 65.7% | 31.4% | 2.9% | | | |
| Information presented was useful: | # | 19 | 12 | 4 | | | |
| | % | 54.3% | 34.3% | 11.4% | | | |
| Speakers were engaging/interesting: | # | 23 | 10 | 1 | 1 | | |
| | % | 65.7% | 28.6% | 2.9% | 2.9% | | |
| Panel discussion addressed topics of student concern: | # | 19 | 10 | 4 | | | 2 |
| | % | 54.3% | 28.6% | 11.4% | | | 5.7% |
| Forum was a good use of my time: | # | 21 | 9 | 4 | 1 | | |
| | % | 60.0% | 25.7% | 11.4% | 2.9% | | |



| Event Venue & Accommodations: | RESPONSES | SUPERB 5 | 4 | GOOD 3 | 2 | POOR 1 | NO RESPONSE |
|---|------------------|---------------------|----------|-------------------|----------|-------------------|------------------------|
| Advance notice of the event was provided: | # | 21 | 3 | 8 | 3 | | |
| | % | 60.0% | 8.6% | 22.8% | 8.6% | | |
| Venue & room accommodations were ideal: | # | 21 | 5 | 9 | | | |
| | % | 60.0% | 14.3% | 25.7% | | | |
| Advance information provided was useful: | # | 21 | 10 | 3 | 1 | | |
| | % | 60.0% | 28.6% | 8.6% | 2.9% | | |



| Flow of Event Program: | RESPONSES | SUPERB 5 | 4 | GOOD 3 | 2 | POOR 1 | NO RESPONSE |
|--|------------------|---------------------|----------|-------------------|----------|-------------------|------------------------|
| Career Forum started on time: | # | 25 | 8 | 2 | | | |
| | % | 71.4% | 22.9% | 5.7% | | | |
| Program followed or appropriately amended: | # | 26 | 5 | 4 | | | |
| | % | 74.3% | 14.3% | 11.4% | | | |
| The "right" people were at the Career Forum: | # | 23 | 7 | 5 | | | |
| | % | 65.7% | 20% | 14.3% | | | |



| | RESPONSES | YES | NO |
|--|------------------|------------|-----------|
| Would you participate in a similar event again? | # | 33 | 2 |
| | % | 94.3% | 5.7% |
| Would you recommend participation to someone you know? | # | 35 | 0 |
| | % | 100% | -- |

COMMENTS

Significant highlights I learned today:

A lot, it was great. Networking was fantastic as well.

Network connections; resume tips.

I learned about the variety of jobs available in STEM fields. Like Karen H., I thought the only jobs out there were in academic research.

The many different career options available.

How diverse it was/many opportunities; lots of career choices.

There are many more opportunities than I previously knew about in lab science!

Greater appreciation of range of careers.

Many options shown.

Emerging trend of molecular biology; tips for getting interviews, internships; contact info for speakers.

Resume building.

Many different career paths, I am now considering a career in public health.

Networking potential and interview skills.

The different opportunities in the lab. Also the speakers were very helpful as far as careers and academics.

The various possible careers, tips on building a network and resume.

I learned a lot about changing what your focus is and all the possibilities of colleges to go to, including out of state.

Importance of getting involved in public health. Why I should be enthusiastic about getting involved was very important for understanding what impact an individual could have in the community.

1. Communication; 2. Keep yourself open to any position, then from there you move on; 3. Staying in touch with the organization of your field of interest.

Different career options for microbiologists and other opportunities.

What jobs/types of jobs are in the field of public health and what kinds of pathways to take to enter this field of work.

They have opportunities in the labs for every interest. I enjoyed learning about the different fields in lab science and how they affect public health.

There are multiple areas in the field of lab science that are very different from one another.

I learned there are more opportunities in laboratory science than just sitting in a lab doing the same thing every day.

Specific majors to go into, in order to pursue some of these careers.

What could have been improved?

Timing – could be better at staying on schedule.

Temp of rooms.

All good.

I was glad to be sitting close to the panel. I think it would have been hard to hear if I were in the back. Perhaps a microphone for future events.

What are the career opportunities for an AS degree?

Wider variety of specific fields in biotechnology.

We only had one week notice (Wisconsin Lutheran) before the event date. More industry professionals would be great!

Less time on the personal history, or more time for presenters to speak. Provide info on grad school itself as well.

More reps from hospital/clinical settings.

More literature on how to be a successful applicant.

Discussion about the “every day” life of each career.

More time after questions for bathroom use. A sheet with the emails of the presenters would be great for additional questions.

The breakout rooms were not set up in a way to allow everyone to clearly see the PowerPoint and presenters.

More time for questions.

Food accommodations for gluten-intolerant individuals.

Talk more about what high school students can do (research internship, mentorship, etc.)

Since they allowed high schoolers to attend, it would have been nice for some topics to be relevant to high school students.

People could have mentioned the logistics of their job and their daily schedule-ish.

I don't think it should be encouraged that nursing students attend. While this was very interesting, I don't think it was very applicable to nursing.



Workforce Development Team Meeting

May 29, 2013



Appendix 5

Workforce Development Team (WFDT) Meeting Participants

| Name | Organization | Title |
|----------------------|---|--|
| Gul Afshan | Milwaukee School of Engineering (MSOE) | Program Director and Professor, BioMolecular Engineering Program |
| Sanjib Bhattacharyya | Milwaukee Health Department Laboratory (MHDL) | Deputy Laboratory Director |
| Robert Burlage | Concordia University-Wisconsin | Professor, School of Pharmacy |
| Mark Edgar | Wisconsin Center for Public Health Education and Training | Program Coordinator |
| Mary Ertl-Dettmann | Wheaton Franciscan Healthcare | Manager, Laboratory Education |
| Steve Gradus | Milwaukee Health Department Laboratory (MHDL) | Laboratory Director |
| Nighat Kokan | Cardinal Stritch University | Professor, Genetics and Microbiology |
| Linda Laatsch | Marquette University, College of Health Sciences | Associate Professor and Department Chair, Clinical Laboratory Science |
| Michael Laiosa | University of Wisconsin-Milwaukee Zilber School of Public Health | Assistant Professor |
| Susan Leister | Alverno College | Director, Internship Program |
| Nancy McKenney | Wisconsin Department of Health Services-Division of Public Health, Office of Policy and Practice Alignment | Director of Workforce Development |
| Sharon Mertens | Milwaukee Metropolitan Sewerage District (MMSD) | Laboratory Manager |
| Debra Meuler | Cardinal Stritch University | Chair, Natural Sciences Department Associate Professor, Biology |
| Amy Murphy | Amy Murphy Consulting | Consultant |
| Veronica Neumann | Milwaukee Area Technical College (MATC) BioTech Program | Instructor and Instructional Chair, Life Sciences |
| Kwadwo Owusu-Ofori | Milwaukee Health Department Laboratory (MHDL) | Laboratory Operations Manager |
| David Petering | University of Wisconsin-Milwaukee | Director, Children's Environmental Health Sciences Core Center |
| John Werner | Wisconsin Lutheran College | Assistant Professor, Biology |
| Saron Wilson | Milwaukee Area Technical College (MATC) Clinical Laboratory Technology Program | Clinical Coordinator and Instructor, Clinical Laboratory Technician Program |

Workforce Development Team Meeting May 29, 2013

IMPROVEMENT GOALS

| Expand Internship Opportunities | Diversify Public Health Lab Workforce | Secure funding for workforce development | Create pathways that highlight a variety of careers in public health | Standardize collection of workforce data in a shared resource system | Develop strategies to inform undergraduate & graduate students & teachers | Develop marketing campaign for general public |
|---|---|--|--|--|--|--|
| Copy Fox Valley Model for Health Care Alliance | Develop strategies to address racial & ethnic diversity | Schools pay lab for taking interns (from tuition) | Mentors (especially young workers with college-age) | Partner with WHWDC* on minimum & standard data set | Workshop on PH/LS* careers/activities for high school students & their teachers | Barbie Public Health action figure |
| Define benefits to employer for providing internships | Recruit ethnically diverse schools for lab careers | Write WTCS Career Expand Grant | Define & document a career path | Annual survey of workforce landscape | Sustained campaign for PH Laboratory Science awareness (mid high school – college) | Present at conferences on PH/LS opportunity |
| Create incentives for internships | Work with Diversity Matters | Industry Sponsor-a-Student | Alternative certification path | Develop data task force connect to DWD* or DPH* | Educate/market to teachers | Public Health Fair |
| Integrate core public health competencies into curriculum | | Apply for Community Teams Program | Identify a set of skills for PHLs | Partner with APHA to get real salary & benefits data | Career brochure/flyer for faculty members | Greater PH engagement with social media |
| Expand on a robust PHL system's internship/research network & partnership | | Compete for funding from non-traditional resources | Professional development credits for public health updates (annual?) | | On-site education on PH Lab Systems (elementary – college) | Embracing the broadest definition of public health as a marketing tool |
| | | Collaborative grants | Rewrite job descriptions to make career ladder | | High Interest Days – grade school | Public Health social media |
| | | | Enrich career development opportunities | | | Raise significance status of PHL* System workers |
| | | | Track workforce development for succession planning | | | Community workshops on public health issues |

Parking Lot: Database for LPHL systems workforce resources

***Abbreviations:**

WHWDC – Wisconsin Health Workforce Data Collaborative (WHWDC)
 DWD – Department of Workforce Development
 DPH – Department of Public Health
 APHA – American Public Health Association

PH – Public Health
 LS – Laboratory Science
 PHL – Public Health Laboratory

Appendix 7

Local Public Health Laboratory System Partners include:

- University of Wisconsin – Milwaukee
- Milwaukee Water Works
- Milwaukee Metropolitan Sewerage District
- Milwaukee County Zoo
- Milwaukee County Medical Examiner
- Marquette University
- Milwaukee School of Engineering
- Aurora Health Care
- Wheaton Franciscan Health Care
- Medical College of Wisconsin
- Wisconsin State Laboratory of Hygiene

Additional partners also include other local public health agencies, academic institutions and research partners, first responders, clinical laboratories and medical clinics, as well as national organizations such as the Centers for Disease Control and Prevention and World Health Organization.

City of Milwaukee Health Department Public Health Laboratory

Frank P. Zeidler Municipal Building
841 North Broadway, Room 205
Milwaukee, WI 53202

Phone: (414) 286-3526
Fax: (414) 286-5098
Email: mhdlab@milwaukee.gov
Website: www.milwaukee.gov/healthlab

City of Milwaukee Health Department Public Health Laboratory

Careers in Laboratory Science

Why pursue a career in laboratory science?

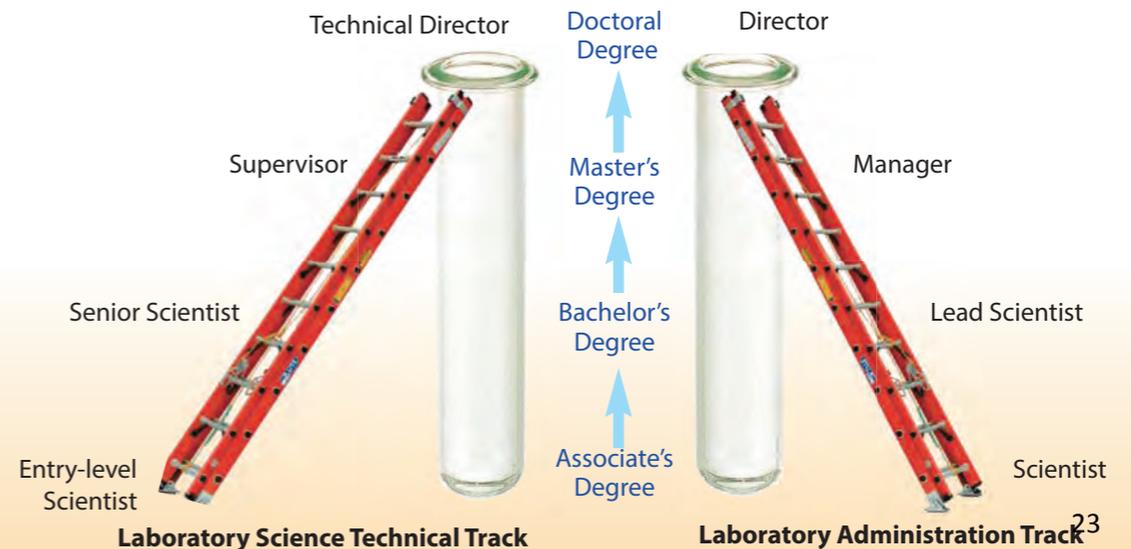
Laboratory science professionals are critical to ensuring healthcare safety, whether it's the blood supply, environmental health or other public health concerns. With a variety of job opportunities available in the field – for educational backgrounds ranging from a high school diploma to a PhD, along with the potential for advancement within the profession or training for other healthcare professions, now is the perfect time to pursue a laboratory science career.

- Are you analytical?
- Do you enjoy problem solving?
- Do you enjoy hands-on laboratory work?
- Does the idea of being a “healthcare detective,” who plays a key role in the diagnosis, treatment, prevention and monitoring of diseases, appeal to you?

If you answered “yes” to any or all of these, then there is a place for you in the public health laboratory system.

Laboratory Science Career Pathways:

How can you change the world from the bottom of a test tube?



City of Milwaukee Health Department (MHD)

Laboratory Mission Statement

To assist the department in guarding the public health by providing quality laboratory services for monitoring acute and chronic diseases and the environment through assessment, surveillance, epidemiology, and dissemination of information.



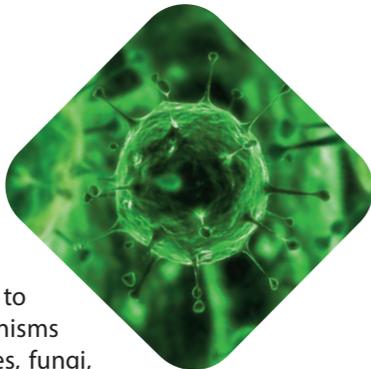
Background

Public health professionals come from diverse educational backgrounds, and can specialize in an array of fields. As a public health professional, you are a leader who can meet the challenges of protecting the public's health by serving local, national, and international communities.

Public Health Laboratory Careers

Microbiologist

Microbiology attempts to understand microorganisms such as bacteria, viruses, fungi, and parasites. Microbiologists use microbiology to detect and prevent illness by culturing, identifying, and characterizing microorganisms that cause disease (pathogens).



Molecular Biologist

Molecular biology attempts to understand the interactions of cellular systems. Molecular biologists use molecular biology to manipulate, isolate, and characterize the molecular components of cells and organisms to determine the specific diagnosis and prognosis of a patient.

Chemist

Chemistry attempts to understand the structure of molecules and the relationship of this structure to chemical reactivity and physical properties. Chemists typically conduct qualitative and quantitative chemical analyses or experiments in laboratories for quality or process control or to develop new products or knowledge.

Environmental Laboratory Careers

Environmental Chemist

Environmental Chemistry studies the sources, reactions, transport and effects of chemical species in air, soil, food and water, and their impact on the environment or public health. Environmental chemists apply their knowledge of environmental science and chemistry concepts, particularly analytical chemistry techniques, to assist in their study of chemical species in the environment.

Environmental Laboratory Technician

Environmental Laboratory Technicians may, under the direction of an environmental scientist, collect samples and perform laboratory analysis of gases, soil, water and other materials to monitor the environment and investigate sources of pollution.



Water Quality Technician

Water Quality Technicians perform a variety of water quality monitoring and control activities needed to protect water resources for both environmental and recreational purposes. Duties may include sampling and performing microbiological or chemical tests of lakes, streams and waste water treatment systems and their surrounding environments.

Clinical Laboratory Careers

Medical Technologist (MT)

MTs perform complex chemical, biological, hematological, immunologic, microscopic and bacteriological analyses, including microscopically examining blood/body fluids, making cultures of body fluid and tissue samples, and evaluating test results, for example. A bachelor's degree is required for this position.

Medical Laboratory Technician (MLT)

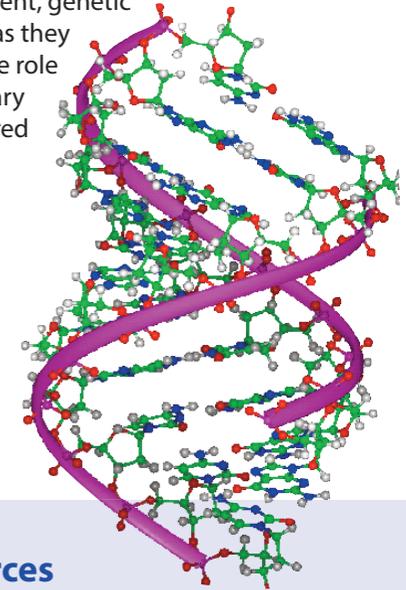
MLTs perform less complex tests and laboratory procedures than MTs, such as preparing specimens and operating automated analyzer, and performing manual tests according to detailed instructions. They typically work under the supervision of a MT or lab manager. An associate's degree is required for this position.

Immunologist

Immunology is a branch of biomedical science that attempts to understand all aspects of the immune system in all organisms. Immunologists use clinical chemistry to perform immunodiagnoses on patient blood and tissue samples.

Cytogeneticist

Cytogenetics studies the structure and function of chromosomes. This position involves the use of cytogenetics to identify, and sometimes prevent, genetic disorders as they play a large role in hereditary and acquired disease.



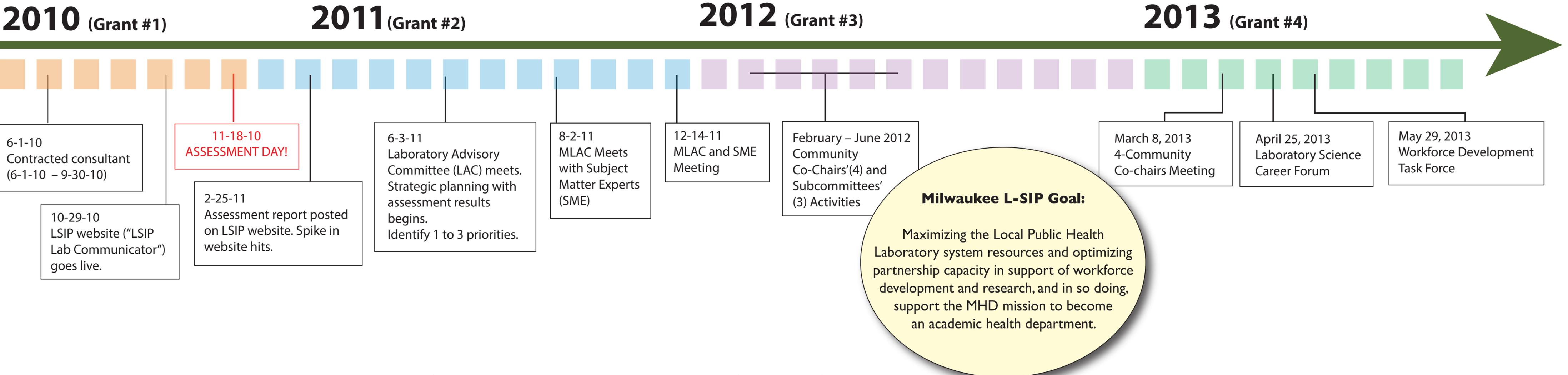
Resources

For more helpful information about laboratory science careers, check out the following websites:

- **Labs are Vital**
<http://labsarevital.ascp.org/>
- **Association of Public Health Laboratories (APHL)**
www.aphl.org
- **Centers for Disease Control and Prevention (CDC)**
www.cdc.org

Appendix 8 - Milwaukee's Laboratory System Improvement Program (L-SIP) Timeline

Project Timeline



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