

Pathology Engagement in Global Health

Exploring Opportunities to Get Involved

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Pathology and laboratory medicine (PALM) is now commonly referred to as the "neglected cornerstone" of the global health solution. Recent analysis has shown that access to PALM services is severely inadequate in low- and middle-income countries (LMICs).¹ This shortcoming immensely inhibits the progress of the United Nation's sustainable development goals for global health care. The challenge to the global pathology community then is to work together to achieve high-quality laboratory service in these settings. For many years, national organizations in the United States such as the Centers for Disease Control and Prevention (CDC), The United States President's Emergency Plan for AIDS Relief (PEPFAR), and the Association for Public Health Laboratories (APHL) have worked together to strengthen laboratories globally.² Similarly, the American Society for Clinical Pathology (ASCP) Center for Global Health, the United States and Canadian Academy of Pathology (USCAP) Friends of Africa program, and the College of American Pathologists (CAP) See, Test, and Treat program have all focused their efforts on bringing improved health care to low-resource settings both internationally and locally. While these efforts have had important impacts, the average individual pathologist or trainee who wants to contribute may still find obstacles to getting involved. However, the way pathologists can participate in global health is expanding, with increased possibilities for volunteerism, education, and training.

PATHOLOGY OPPORTUNITIES

There are now more ways to get involved than ever before. Opportunities are abundant for pathologists to lend their expertise to help improve laboratory infrastructure, training programs, and for volunteering time to work for laboratories. Telepathology case consultation, tele-education, research

partnerships, and on-the-ground laboratory improvement initiatives are just some of the many ways to get involved. Examples of engagement opportunities, sources of funding, and research grants are listed in Tables 1 and 2. These possibilities are constantly changing and new opportunities may arise, however, so we encourage those interested to visit the Web sites listed, as well as the Global Health Opportunities page on the Pathology Resident Wiki³ to access an updated resource to get engaged.

TRAINEE INVOLVEMENT

Building global pathology relationships is an exciting way to get trainees involved in cases offering a wider array of infectious diseases, tumor pathology, and unique clinical presentations. Global pathology activities also give trainees opportunities in advanced training in laboratory development planning, resource management, as well as fostering critical thinking skills. Allowing and encouraging trainees to get involved in global pathology has long-term effects too; physicians who volunteer time while in training are more likely to volunteer later in their careers.⁴

Dr Razzano—A Resident's Experience: Global Pathology Training in Uganda

My goal to pursue PALM as a career began with my passion for working in global health and desiring to build and improve laboratories in low-resource settings. I quickly realized once starting residency that I needed firsthand experience to focus my efforts toward this goal. With the support of my residency program, I was able to set up an international elective rotation in anatomic pathology in a laboratory in Mbarara, Uganda. While there, I was introduced to the practice of pathology without the safety net of the plentitude of ancillary tests that I had become accustomed to rely on for making a diagnosis. It was hematopathology without flow cytometry and genetics. It was histology without the world's market of immunostains. It was fine-needle aspiration of organs like thyroid without image guidance. It was, for me, a trainee accustomed to the challenges of choosing and then synthesizing the results of abundant tests, an opportunity to learn to do more with less. Not only did this help to improve my diagnostic ability, but also it gave me face-to-face exposure to the everyday challenges of bringing high-quality care to patients in a resource-constricted laboratory. This experience shaped my choice of future subspecialty, helped me focus my career plans, and has been one of the most valuable training experiences in my residency.

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Table 1. Pathology and Laboratory Medicine Volunteer and Collaboration Opportunities

Professional Organization	Program Name	Description	Web Site ^a
American Society for Clinical Pathology (ASCP)	ASCP Trainee Global Health Fellowship	Grants are available to visit ASCP Partner sites for a minimum of 4-week rotations for exposure to pathology in a low- to middle-income country setting.	https://www.ascp.org/content/about-ascp/ascp-foundation/providing-scholarships
	ASCP Center for Global Health Volunteer Program	Volunteer opportunities are available to participate in virtual projects, in-person volunteering, as well as acting as an expert site advisor.	https://www.ascp.org/content/get-involved/center-for-global-health/volunteer
	ASCP Global Health Ideation Challenge	Generate ideas to improve global pathology – and you could win prizes for doing so!	www.ascp.org/ideationchallenge
Pathologists Overseas	Pathology and Laboratory Medicine Volunteer Program	Volunteer opportunities are geared to match interest and opportunity with the main goal of improving systems.	http://www.pathologistsoverseas.com/
College of American Pathologists (CAP)	CAP See, Test, and Treat Program	Pathologist-led volunteer opportunity to reach your local underserved population to improve women's health.	http://foundation.cap.org/get-involved/see-test-treat-program/
Association of Public Health Laboratories (APHL)	APHL Global Health Volunteer Program	Participate in improving public health laboratories in Africa, the Caribbean, Eastern Europe, or Southeast Asia in a variety of capacities including management, mentoring, assessment, technical training, and more.	https://www.aphl.org/programs/global_health/Pages/volunteer.aspx
American Society of Cytopathology (ASC)	ASC Volunteering Opportunities	Multiple opportunities exist to volunteer expertise, help in the training of cytopathology staff, and improve access to health care services either virtually or in-person all around the world.	https://www.cytopathology.org/asc-volunteer-opportunities/
Other potential avenues of involvement:	Suggested Idea:	Description:	Examples:
	Remote research collaboration	Partner with pathologists in developing nations to increase their access to publication in higher impact journals.	Cases shared in diagnosis can become published case reports. One such example of remote collaboration led to first-time first-authorship in the English literature for an Afghan pathologist when he partnered with a US-based pathologist to publish their shared case. ²¹
	International laboratories recruiting pathologists	Many laboratories are advertising long- and short-term positions directly from their hospital Web sites.	John H. N. Deck, MD, FRCPC, details his experience working in a pathology laboratory in Afghanistan after retirement. ²²

^a Web sites were accessed November 27, 2018.

FACULTY EXPERIENCE

Dr Jiang—On-the-Ground Patient Care: Cervical Cancer Screening in Peru

Peru has one of the highest incidences of cervical cancer globally. I learned of a week-long volunteer opportunity from an amazing cytotechnologist at Duke University, Nasera Hassan, CFIAC, who led the development of a cervical cytology screening school at a clinic in Cusco, Peru.^{5,6} The work was intense, screening hundreds of Papanicolaou (Pap) smears, many of which were from women who had traveled many miles to the clinic. While the Pap smears lacked computer-assisted screening, the workflow was otherwise familiar.

The histology laboratory was another story—essentially a kitchen, complete with rice cooker and electric griddle. Initially, I was hesitant—but patients needed results, and no one else among the team of cytopathologists and cytotechnologists had histology experience. So I got to work—with a little practice, the culinary equipment worked reasonably well, and I had the satisfaction of single-handedly running the histology laboratory.

I took this trip when I was a cytopathology fellow, freshly board certified—and it taught me that not only are pathologists integral to providing quality cervical cancer screening, but also that even I, as junior as I was, was able to perform a critical service with my unique skill set.

Table 2. Research and Funding Sources

Organization	Award Program	Description	Web Site ^a
Susan G. Komen	Susan G. Komen Career Catalyst Research Grants	Early career investigators are eligible to apply for this award to aid in developing breast cancer research projects.	https://ww5.komen.org/ResearchGrants/FundingOpportunities.html
National Institutes of Health Fogarty International Center	Global Health Program for Fellows and Scholars	Individual students, postdoctoral fellows, or faculty from the United States or from LMICs apply for opportunities for global health mentored research training through participating US university consortia.	https://www.fic.nih.gov/Programs/pages/scholars-fellows-global-health.aspx
Conquer Cancer Foundation of the American Society of Clinical Oncology	Global Oncology Young Investigator Award	Early-career investigators are eligible to apply for this award meant to promote quality research in global oncology.	https://www.conquer.org/global-oncology-young-investigator-award
American Society for Clinical Pathology (ASCP)	ASCP Subspecialty Grant	ASCP Foundation Resident Subspecialty Grants are available to aid in expanding exposure to desired subspecialty and includes international rotations.	https://www.ascp.org/content/about-ascp-foundation/providing-scholarships

Abbreviation: LMICs, low- and middle-income countries.

^a Web sites were accessed November 27, 2018.

Dr Gardner—Digital Patient Care: Social Media and Telepathology Volunteering

My parents and siblings have all traveled to foreign countries for volunteer work, but between constant school/training in the past and now having young kids and a busy career, I have not been able to do this. Thanks to social media and telepathology, I have still been able to help pathologists and patients around the world in my spare time without having to travel. As a volunteer with a telepathology project organized by ASCP's Partners for Cancer Diagnosis and Treatment in Africa,⁷ I can provide consult diagnoses on skin, bone, and soft tissue pathology cases from Rwanda. With Twitter and Facebook, I can educate pathologists around the world, help them brainstorm about challenging cases, and help them get connected with the global community of pathologists online.^{8,9} Through social media connections, I have helped pathologists from low-income countries obtain pathology rotations in the United States. I create YouTube videos to teach dermatopathology and soft tissue pathology for free to pathologists around the world.¹⁰ My goal is to help those pathologists who are already working in low-resource or underserved areas by educating and supporting them remotely. In the digital age, any pathologist can volunteer in global health, even without a transoceanic flight or a month away from home. Every little bit helps. If we each give 5 minutes per day online to help pathologists in low-resource areas, imagine how powerful that would be.

Dr Hall—A Role for Research and Institutional Collaboration: Breast Cancer Research in Tanzania

Cancer care is increasingly being recognized as an important priority for global health efforts. As most oncology research is performed in high-resource settings, there is a great need for more data on the spectrum of cancers that arise in LMICs.

My global health work has grown out of long-standing collaborations between my institution and hospitals in Tanzania that started with human immunodeficiency virus (HIV)-related work and have now expanded to involve multiple specialties. Together with the Tanzanian pathologists at each hospital, we have started a breast cancer research program to learn more about the biology of breast cancer in Tanzanian women, with a goal of generating data that can be used to better guide screening and treatment in this population. Global health research projects can and should be beneficial for everyone involved, providing opportunities for education and career development to all collaborators and enhancing the academic standing of pathologists within their institutions. In addition, grant funding for such projects is an effective way to obtain resources that can expand the capacity of pathology laboratories in resource-limited settings.

Many institutions in high-resource settings already have collaborative relationships with institutions in LMICs. Expanding these established connections to include pathology and leveraging the expertise of global health institutes is an effective way to undertake global pathology work. The trust, personal connections, and robust research and clinical partnerships that were already in place among the institutions involved in this Tanzanian breast cancer project have been vital in moving it from an idea to reality.

FUTURE DIRECTIONS AND RESOURCES TO LEARN MORE

For an in-depth analytic overview of the current state of global pathology, please consider reading "Pathology and Laboratory Medicine in Low-Income and Middle-Income Countries,"^{1,11,12} a 3-article series recently published on the topic. There is also a wider body of information-rich articles that can serve as excellent sources of inspiration and guidance. These works describe ways to be involved in global pathology efforts and the importance of doing so,¹³ including highlighting the need for the provision of quality care while participating in short-term medical missions,¹⁴ discussion of testing methods for diseases specific to low-

resource settings,¹⁵ preparing for bioterrorist threats and emerging infections,^{16,17} and a unique approach to using mobile applications to increase educational opportunities worldwide.¹⁸

One enormously important, yet highly underresearched, underreported, and underdeveloped topic is the critical need for the development of laboratory information systems. A recent review published in the *Journal of Medical Internet Research, Medical Informatics* concludes that “there is a clear demand for open-source, reliable, and flexible electronic health record systems in low-resource settings.”¹⁹ Pathologists are in a unique position to generate solutions to this problem and can aid in choosing platforms, software, and the management of data, and work to generate publishable reports with the aim of developing a body of literature to demonstrate the successes and failures of these trials.

Suboptimal or absent infrastructure is a major barrier to implementation of pathology and laboratory services in low-resource countries. Modern laboratory information systems and electronic medical records are becoming ever more crucial to the modern practice of pathology, yet these electronic systems are often lacking in low-resource settings, as they can be costly and often require a skilled information technology team to implement and support them. By partnering with local pathologists and laboratory professionals in these settings, we can learn from them about how their particular medical systems work and about what their unique infrastructural needs are. Once needs are identified, pathologists and other laboratory medical professionals around the world could potentially help resolve some of these infrastructure issues by suggesting creative and innovative solutions that could be adapted and applied to real-life situations. One excellent example of this type of problem solving is the solution to laboratory software access implemented by the African Society of Laboratory Medicine working in conjunction with the CDC, Clinton Health Access Initiative, Joint United Nations Programme on HIV/AIDS (UNAIDS), and the World Health Organization Regional Office for Africa (WHO/AFRO) by partnering with SoftTech Health, in Africa. By using a cloud-based technology, laboratories are able to streamline laboratory processes and bypass the need for physical infrastructure technologies.²⁰ Offering solutions to infrastructural and technologic challenges is yet another way that pathologists who cannot easily travel can still participate in global health. By working as a global community to develop innovations, pool resources, and combine our expertise, we can build a model of success to develop a better world, one laboratory at a time. To find additional educational resources and volunteer opportunities not listed here, please visit the Global Health Opportunities page on the Pathology Resident Wiki³ for more details on how to engage in global health.

GLOBAL PATHOLOGY INTEREST SURVEY

We are conducting a survey of pathologist and laboratory scientist interest, opinion, and experience in global pathol-

ogy. We want to hear from you—whether or not you have experience and interest in global pathology. To take part in our survey, please visit www.tiny.cc/GlobalPath to help us collect data about this important topic!

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