

### **Volunteer organization focuses on digital pathology to advance training in developing countries**

April 2023—At the medical center of the University of Medicine and Pharmacy at Ho Chi Minh City, patients are not screened for bladder cancer using urine cytology because the pathology department does not have the capability for such screening. But that may soon change, thanks to an organization focused on using digital pathology to increase the availability of pathology education resources in developing countries.

The Open Pathology Education Network, or OPEN, is a volunteer organization inspired in part by the upswing in online education during the pandemic, says Lewis Hassell, MD, professor of pathology at University of Oklahoma Health Science Center and president of the board of trustees for OPEN. Dr. Hassell is also co-chair of the education committee of the Digital Pathology Association.

“The COVID pandemic opened my eyes to the potential for using digital pathology as a remote-learning tool,” he says. This, in turn, led Dr. Hassell to conceive the concept of OPEN in 2021.

“It was not hard to find pathologist volunteers for OPEN,” says Matthew Leavitt, MD, an early member of the organization and executive director of the nonprofit DDx Foundation, which focuses on safe and ethical patient data exchange. Dr. Leavitt is also former CEO and founder of the digital pathology network PathNet and the digital pathology company Lumea. But Drs. Leavitt and Hassell and other early members of the organization realized that to become viable, OPEN would need to attract funding as well.

To launch the organization and garner support, they undertook small pilot projects that could be completed at a low cost and that could demonstrate OPEN’s value, Dr. Leavitt says. “We decided to find some early use cases for pathology education where we could show a measurable, real difference in health care in an area.”



Dr. Tran

The urine cytology project for bladder cancer screening at the Ho Chi Minh City medical center is one of two pilot projects underway, both in Vietnam. Ngoc Tran, MD, a hematopathology fellow at Oregon Health and Science University and an OPEN volunteer, who co-chairs OPEN’s informatics committee with Dr. Leavitt, helped arrange the project. Dr. Tran did her residency at the University of Medicine and Pharmacy at Ho Chi Minh City and was aware of the pathology department’s needs.

Three pathologists specializing in urine cytology volunteered to teach a class focused on this type of testing in the spring of 2022, but the project ran into its first challenge before it began. Pathologists at the Ho Chi Minh City facility did not have the training necessary to properly prepare urine cytology samples, nor did they have access to the commercially available kits that simplify the process. OPEN volunteers collaborated with those pathologists to find ways to make slides of acceptable quality for performing urine cytology, Dr. Leavitt says.

“We utilized the tools that they already had—the tools that we had in common—and developed protocols from scratch,” he explains. “By doing that, we created a standard that could be applied anywhere.”



Dr. Leavitt

Because the Vietnamese medical center does not have a digital scanner, the pathologists there attached a camera to a microscope to stream images of the slides they created during video conferences with OPEN members. It took several months of meetings for the OPEN cytopathologists leading the class to become comfortable with reading the slides prepared in the Vietnamese laboratory, Dr. Leavitt says.

Once they had established slide-preparation protocols, the OPEN volunteers conducted the class using a teaching set of anonymized urine cytology digital pathology images. About a dozen members of the pathology department in Ho Chi Minh City, including pathologists and lab technicians, are participating in the regular teaching sessions, Dr. Leavitt says. Lumea provided the participants with complementary access to its platform. The pathologists can log in to Lumea over the internet to access the urine cytology digital pathology images and then enlarge them, circle portions of them, and annotate them with questions and comments. OPEN instructors review the digital pathology images with the program participants through teaching sessions held by video conference.

OPEN's other pilot project underway in Vietnam is a one-year class in gynecologic pathology at Da Nang Oncology Hospital, arranged in partnership with the International Gynecologic Cancer Society. IGCS provides mentored fellowship training, which includes holding virtual tumor boards at hospitals worldwide, Dr. Hassell says. The society agreed to partner with OPEN on pathology training at the hospital to enhance the quality of the support that local pathologists could provide in gynecology tumor boards, he adds. Five pathologists are participating in the program, and some of the hospital's oncology fellows are following the curriculum as well.



Dr. Hassell

Dr. Hassell, who specializes in gynecologic pathology, is one of three volunteers teaching the class, which began in April 2022. He and two other gynecologic pathology instructors send program participants reading material, videos, and images to study in advance of monthly mentoring sessions held via videoconferencing. But, at CAP TODAY press time, OPEN was in the process of rolling out a learning-management system called Open edX, created by the Center for Reimagining Learning, a nonprofit organization that is a collaboration between Harvard University and the Massachusetts Institute of Technology. For future OPEN courses, class participants will be able to access coursework contained in that system by clicking a "courses" link on the OPEN home page ([open-pathology.org](https://open-pathology.org)) to get to a webpage listing links to the various offerings or by going directly to [courses.open-pathology.org](https://courses.open-pathology.org).

Using the Open edX platform, which costs OPEN about \$70 a month for 500 users, instructors can organize reading material, images, and videos into course frameworks that they can tailor to their teaching style, Dr. Tran says. For example, instructors can set up courses to be self paced or instructor paced. Furthermore, courses can be divided into sections or units, and instructors can use templates to create multiple-choice or fill-in-the-blank test questions that can be scored automatically. Instructors can also use Open edX's test templates to create image-based test questions for which students can click on a location within an image to record an answer, a feature that is useful for identifying diseases, Dr. Tran says.

OPEN will use Open edX to structure course content into modules based on level of difficulty and organized by

subspecialty, Dr. Hassell adds. “Our basic construct is centered around how you might organize a residency program,” he explains. “So you’ll have a first-year module on gyn pathology, a second-year module on gyn pathology, a third-year module on gyn pathology, and then you’ll have a fourth module that will be a kind of advanced practice.”

Dr. Hassell has loaded four gynecologic pathology modules onto Open edX and is refining them. By the end of the year, he aims to have courses in six to eight subspecialties on the site.

When the Da Nang Oncology Hospital project concludes this spring, OPEN instructors will administer final tests to assess how much participants have learned and, thereby, evaluate the effectiveness of the remote-teaching program and identify areas for improvement, Dr. Hassell says.

OPEN’s courses are free for participants, which Dr. Hassell hopes will always be the case. As a volunteer-run organization, OPEN’s costs are low, but additional funding will be needed to cover administrative and technical support in the future. Therefore, OPEN volunteers are focusing on fundraising, such as procuring educational grants, and have already been awarded a \$10,000 grant from the CAP. They are also exploring whether various types of companies, including pharmaceutical firms and device manufacturers, may be interested in supporting the project since OPEN could potentially open new markets for them.

When the pilot projects in Vietnam are completed, those who oversee OPEN plan to expand it to other countries by partnering with humanitarian organizations and leveraging the global contacts of OPEN volunteers, Dr. Hassell says. “Our board is quite geographically diverse,” he notes, “and the pathology presence on social media is quite active, so we don’t think reaching pathologists in areas where there is a need will be a problem.” —*Renee Caruthers*

## Digital pathology companies enter business ventures

Several companies have entered into digital pathology-related business agreements in recent weeks, including the following.

- The medical robotics company Clarapath has acquired the digital pathology company Crossscope. The acquisition combines Clarapath’s histology automation hardware, including its SectionStar all-in-one tissue sectioning and transfer system, with Crossscope’s workflow and computational pathology tools, including its artificial intelligence-powered telepathology platform.
- Leica Biosystems and Paige are expanding their digital pathology partnership. Under the deal, the companies will introduce a co-branded version of Paige’s platform as the core interface between pathologists and Leica Biosystems’ hardware. Users of Leica’s Aperio GT 450 scanners will have access to Paige’s full suite of digital pathology software, including its FullFocus viewer, FullFolio artificial intelligence-powered worklist, Paige Prostate Suite, Paige Breast Suite, and suite of biomarker algorithms, as well as all third-party AI software products deployed through Paige.

[Leica Biosystems](#), 844-534-2262

- Proscia recently inked deals with Agilent Technologies, PathGroup, and Spectrum Healthcare Partners. Agilent and Proscia have entered a multi-year global distribution agreement under which they will offer Agilent’s laboratory customers a comprehensive digital diagnostic pathology system that combines Agilent’s pathology staining solutions with Proscia’s Concentriq Dx enterprise pathology platform.

In separate announcements, Proscia reported that it has contracted for its Concentriq Dx digital pathology platform with PathGroup, a provider of anatomic, clinical, digital, and molecular pathology services based in Nashville, Tenn., and Spectrum Healthcare Partners, a multispecialty physician-owned company based in South Portland, Me.

Concentriq Dx is CE-marked under the European In Vitro Diagnostic Medical Devices Regulation. It is available for primary diagnosis in the United States during the COVID-19 pandemic under an FDA emergency use authorization.

[Proscia](#), 215-608-5411

- Qritive and Corista have entered a partnership in which the companies have agreed to integrate Qritive's artificial intelligence-powered modules for cancer diagnostics with Corista's DP3 digital pathology image-management platform to prioritize and grade cancer cases and detect difficult-to-diagnose cancers. The combined solution will screen for prostate and colon cancers, quantify immunohistochemical markers, and detect lymph node metastases. It works with any whole slide image-scanning device and laboratory information system.

[Corista](#), 978-287-6188

- Hamamatsu Photonics has entered partnerships for its NanoZoomer slide scanners with Agilent Technologies and Siemens Healthineers. Agilent is incorporating Hamamatsu's NanoZoomer systems into its open and agnostic end-to-end digital pathology solution.

In a separate announcement, Hamamatsu reported that it has entered a multi-year distribution agreement with Siemens Healthineers in which it will provide NanoZoomer whole slide scanners to support Siemens' expansion into the digital pathology market in the Americas and Europe.

NanoZoomer products convert glass slides into high-resolution digital data through high-speed scanning. The FDA recently granted 510(k) clearance to the NanoZoomer S360MD slide scanner system for primary diagnostic use.

[Agilent Technologies](#), 800-227-9770

[Siemens Healthineers](#), 800-888-7436

- PathPresenter and Pramana are collaborating to create a seamless user experience for labs adopting Pramana's digital pathology-as-a-service solution for whole slide image generation and PathPresenter's image-management/image-viewing platform. As part of the agreement, PathPresenter has validated DICOM whole slide images created by Pramana for import and viewing via PathPresenter's software.

## **Haemonetics enhances autotransfusion system with next-generation software**

Haemonetics Corp. has received FDA 510(k) clearance for Intelligent Control, the next-generation software update for its Cell Saver Elite+ autotransfusion system.

Cell Saver Elite+ allows hospitals to recover a patient's blood in surgical procedures that have the potential for medium to high blood loss, helping to avoid unnecessary allogeneic transfusions. After recovering blood, the system washes it and delivers it to a product bag.

The Intelligent Control software upgrade provides more than 50 automation enhancements, including complete user control with a manual mode option and expanded wash volumes.

[Haemonetics](#), 800-537-2802

*Dr. Aller practices clinical informatics in Southern California. He can be reached at [raller@usc.edu](mailto:raller@usc.edu). Dennis Winsten is founder of Dennis Winsten & Associates, Healthcare Systems Consultants. He can be reached at [dwinsten.az@gmail.com](mailto:dwinsten.az@gmail.com).*