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Electronic device shows promise for identifying pathology specimens

While barcodes and radio-frequency identification are considered the workhorses of pathology specimen identification, a new technology, nearly two decades in the making, may soon get a piece of the action. The Princeton-based biotechnology company PharmaSeq has developed p-Chip, an ultra-small microtransponder tag that can identify and track large numbers of thin and flat objects, such as glass slides and tissue cassettes used in anatomic pathology labs.

p-Chip was originally developed as a platform for performing multiplex biochemical assays. But when PharmaSeq began exploring other applications for the hybrid electronic tagging device, each of which emits a unique serial identification number via radio frequency when exposed to laser light, the company realized its potential for addressing patient sample management in histopathology.

“When a patient has a brain tumor biopsy,” says Richard Morris, PhD, CEO of PharmaSeq, “that sample could be subdivided and sent to 10 different labs to have specialty assays done. Keeping track of the samples and identifying them to the correct patient is a challenging task.”

In 2011, PharmaSeq received a Small Business Innovation Research grant from the National Cancer Institute to investigate the use of p-Chip for labeling tissue cassettes and glass slides in anatomic pathology labs. (The results of that research are summarized in the *Journal of Pathology Informatics* [Mandecki W, et al. 2018;9:9].) The device can be attached to the short edge of glass slides using adhesive or embedded directly into the plastic on tissue cassettes.

PharmaSeq subsequently developed a benchtop p-Chip ID reader that can accommodate both slides and cassettes, as well as a wand reader for identifying archival slides, to facilitate rapid and reproducible readings. “The read-out time [of the p-Chip ID] is less than one millisecond,” says Dr. Morris. “It really is a high-speed technique.”

In the pathology lab, each p-Chip’s unique identification number could be used to retrieve information on a tagged asset because the ID number would be linked to the asset in the laboratory information system, says Michael Riben, MD, medical director, pathology informatics, at the University of Texas MD Anderson Cancer Center, which helped to define requirements for using p-Chip in the histology lab. “Just like a barcode or RFID tag,” he continues, “it can then be used to drive workflow, such as to print a label at the time of block cutting.”

At MD Anderson, Dr. Riben looked at the feasibility of using p-Chips to expedite the retrieval of archival slides. The cancer center stores such slides vertically in cabinets, where they are packed tightly, making the process of finding and retrieving the correct slide difficult and time-consuming. “Our challenge [specifically] was to figure out a way to scan each of the slides rapidly while in storage,” he explains. “We [MD Anderson and PharmaSeq] developed a special holder for the wand reader that would roll over the vertical slides in the cabinet drawer, allowing us to

rapidly read the IDs of p-Chips attached to the edge of the slide.” With the proper software, Dr. Riben continues, p-Chip could speed the retrieval of slides, identify misfiled slides, and expedite the check-in and check-out process.

“The software has a unique ringtone that goes off when you’ve found the object you’re looking for,” Dr. Morris adds. “If you have a drawer full of slides, you can scan that whole drawer in a second or two.”

p-Chip tagging is also a more robust solution for sample management than barcoding or RFID in terms of security and reliability, says Wlodek Mandecki, PhD, president of PharmaSeq. The devices are temperature stable and highly resistant to many of the aqueous solutions and organic solvents used in the pathology lab. In addition, “they can go through the staining and fixing processes without being harmed,” he adds.

“p-Chips are manufactured on silicon wafers in foundries,” says Dr. Morris. PharmaSeq programs the serial number for each chip as part of the manufacturing process. “Right now, we can program about 10¹⁷ numbers, meaning in our lifetime we will never run out of unique IDs,” he explains. Yet, many labs may prefer to use both a barcode and the p-Chip to have a backup form of ID, Dr. Mandecki notes.

A major advantage of p-Chip is its size, says Dr. Riben. At 600 × 600 × 100 microns, it occupies less space on a glass slide than a barcode and can be read more reliably. p-Chips also have advantages over RFID tags, he adds, particularly for archival storage, as RFID tags require greater discriminatory distance between slides to prevent signal problems.

p-Chips too have a lower price point than RFID, says Dr. Morris. “We generally talk about pennies per chip.”

Banking on such benefits, PharmaSeq has embarked on a commercialization plan, Dr. Morris says. “We’ve approached several leading companies in the field.... We’re working with them to develop high-volume applications of the p-Chip for tissue cassettes and microscope slides.” —*Charna Albert*

Proscia adds functionality to digital pathology workflow platform

Proscia has enhanced its artificial intelligence-powered digital pathology workflow-management platform for anatomic pathology labs.

The expanded platform can be configured with multiple workflows across numerous clinical use cases to accommodate the entire range of pathology services. Among the enhancements in the new release are smart workflows that allow cases to be sorted or searched by category, such as workflow type, priority, or assigned user; improved barcode support, which allows the platform to automatically perform the digital accession based on slide barcode information, optionally, in conjunction with laboratory information management system interfacing; role- and group-based rules for case access; custom user interfaces with individual case permissions; and seamless installation behind institutional firewalls or deployment via cloud infrastructure.

Proscia also announced that it will launch a comprehensive dermatopathology-specific computational pathology suite as a module for its Proscia platform later this year.

[Proscia](https://www.proscia.com/877-255-1341), 877-255-1341

CMS announces changes to meaningful use program

The Centers for Medicare and Medicaid Services recently announced that it will overhaul the Medicare and Medicaid EHR Incentive Programs, more commonly known as meaningful use, and rename it Promoting Interoperability.

In step with the rebranding, which is meant to reflect the agency’s commitment to achieving interoperability, it is renaming the Merit-based Incentive Payment System Advancing Care Information performance category the Promoting Interoperability performance category to maintain alignment between the programs.

Among the other changes announced by CMS is a requirement to make electronic health records available to patients when they leave the hospital, beginning next year.

The proposed rule also underscores the requirement for providers to use the 2015 edition of Certified EHR Technology next year to demonstrate meaningful use in order to qualify for incentive payments and receive the allotted Medicare payments.

Under the 2015 CEHRT, patients can use application programming interfaces to collect health information from multiple providers and consolidate it in one location, such as a patient portal, other EHR, or third-party software application.

“This can support a patient’s ability to share their information with another member of their care team or with a new doctor, which can reduce duplication and provide continuity of care,” according to a press release from CMS.

Xifin partners with PriorAuthNow on prior authorization platform

Xifin has reported that it will offer an automated prior authorization process to diagnostic labs by integrating PriorAuthNow’s platform with its Xifin RPM 9 revenue cycle management system.

“Each year, \$31 billion is spent on prior authorizations, and 40 percent of prior authorizations are abandoned due to complex approval policies,” Xifin reported. “The combination of Xifin RPM 9’s intelligent automation with PriorAuthNow’s platform will streamline this process and directly impact diagnostic laboratories’ bottom lines.”

PriorAuthNow connects EHRs with insurance carriers for the purpose of submitting, monitoring, and completing prior authorizations, while Xifin RPM 9 incorporates the prior authorization information needed for reimbursement.

[Xifin](#), 858-793-5700

NovoPath awarded contract

NovoPath has announced that the University of Texas Health Science Center at Houston has purchased its NovoPath anatomic pathology software platform.

[NovoPath](#), 732-329-3209

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