For most cancer patients, the pathologist remains a signature at the bottom of a report. But when a patient with an aggressive prostate cancer asked to look at the slides showing the malignancy, Peter Humphrey, MD, PhD, invited him to review his slides at the microscope. After they had finished discussing what they revealed, the patient explained: “I wanted to see the enemy.”

Dr. Humphrey is Director of Genitourinary Pathology, a field in which he is an internationally recognized expert. His goal is the same as that patient’s – to see the enemy. His research efforts have aimed to refine the diagnosis of prostate cancer under the microscope. He also takes it a step further, looking for characteristics of the cancer that can help guide treatment decisions. Dr. Humphrey’s work on grading of prostate cancer has helped to make distinctions between aggressive prostate cancers that require immediate treatment and slowly growing ones that could be considered for “active surveillance.”

After establishing a diagnosis of prostate cancer, based upon examination of biopsy slides under the microscope, pathologists give prostate cancer a “Gleason Grade” that specifies the risk posed by a specific cancer and that can guide management. This grade is one of the most powerful indicators of outcome for patients with prostate cancer. Dr. Humphrey’s work on grading includes continued improvement and applications of the Gleason system, in collaboration with colleagues from around the U.S. and world, through research and publication of journal articles and textbooks. Dr. Humphrey is co-editor of the 2016 World Health Organization Classification of Tumors of the Urinary System and Male Genital Organs, which is the worldwide standard for histopathological diagnosis and grading of prostate cancer. He wrote the textbook Prostate Pathology and co-wrote the textbook Gleason Grading of Prostate Cancer. He is also on the editorial boards of The American Journal of Surgical Pathology, Modern Pathology, and Human Pathology. Additionally, he is a past president of the International Society of Urological Pathology, Association of Directors of Anatomic and Surgical Pathology, and The Arthur Purdy Stout Society of Surgical Pathologists.

At Yale, he has worked to develop a completely subspecialized genitourinary pathology diagnostic service, and to standardize approaches to diagnosis in genitourinary pathology, utilizing regular consensus conferences with genitourinary pathology attendings at a multithered microscope, and standardized template reporting. With subspecialization, there is optimization of diagnosis, enhancement of teaching of pathology residents.

“We never forget that every single biopsy we look at is from a patient whose life could be changed by our diagnosis.”
and fellows, and development of lines of research in genitourinary malignancies, including prostate cancer.

A critical goal in prostate cancer research is to identify markers and integrate clinical, radiological, pathological, and molecular features that signal the most aggressive malignancies, according to Dr. Humphrey. These efforts require collaboration between a range of medical specialties and the basic sciences. "Yale is an ideal place to do that work," he said.

He joined Yale School of Medicine in 2014 with appointments in both the Departments of Urology and Pathology. He was drawn by the commitment here to invest in leading edge technology and by a growing, interdisciplinary team of experts. For example, Yale is a leader in multi-parametric MRI imaging of the prostate. A leading expert on prostate MRI, Jeffrey Weinreb, MD, is a Professor of Radiology and Chief of the MRI service.

"The more I learned, the more I was impressed with the broad commitment by Yale School of Medicine, Yale New Haven Hospital, the Yale Departments of Pathology and of Urology to build and create a superb multidisciplinary foundation focused on urologic diseases and malignancies," said Dr. Humphrey.

"To be able to contribute at an early phase of that foundation building was something I was seeking for a genitourinary pathology section. It also became clear that there were so many talented and extremely bright physicians at Yale who focused on genitourinary diseases, from many different specialties, including urology, medical oncology, radiation oncology, radiology, and pathology. So the combination of a critical mass of outstanding colleagues and the Yale environment, which encourages cutting-edge work, thinking, and innovation was exactly what our team needed to succeed."

During her residency, Angelique Levi, MD, had focused her research on prostate cancer, but when she joined the Department of Pathology at Yale, she focused on other areas. "With Peter’s arrival, I came back to my prostate pathology roots, because it’s too unique an opportunity to work with someone of his stature in the field of urologic pathology, renowned for his contributions at a national and international level," she said. "Many early career scientists, pathologists, urologists, and trainees are drawn to work with Dr. Humphrey because of his passion for teaching, collaborative style, and modest nature."

Dr. Humphrey’s road to pathology started humbly enough. "I remember looking at pond water using a microscope," he recalled. As a boy, he loved microscopes and the hidden worlds they revealed. Though his current equipment is far more sophisticated than those microscopes, the basic principles of the technology have not changed since the 1600s, he said with a smile. He expects that the field will become increasingly digitized, allowing pathologists to do their work on computer screens.

He comes from a family of surgeons but decided in medical school not to go into surgery. His surgeon father had a great appreciation for pathologists, so this offered a window on the specialty. His interest in pathology was strengthened when, as a third-year medical student, he helped care for a patient with rib pain. No one could find the cause. Finally a pathologist interpreted a biopsy of the rib, revealing metastatic cancer, “a diagnosis that changed everything,” he recalled.

That pathologist relied on years of experience visually distinguishing between normal cells and cancer cells. Though there have been significant advances in technology, much still rests on the skills of the pathologist. “Our diagnosis of cancer is an interpretation,” he said.

Multiheaded microscopes in the genitourinary pathology area can accommodate four sets of eyes, allowing for attending physicians to train residents and the subspecialty’s fellow and also to confer with each other about diagnoses. The work of the group is growing, as multiple biopsies are now more common in cases of suspected prostate cancer. Again, Dr. Humphrey’s arrival has played a role. “Now we get consult cases from all over just because he’s here,” said Adebowale Adeniran, MD, Director of Cytopathology. In addition to collaborating on the genitourinary pathology service, Drs. Adeniran and Humphrey collaborate on research together. “He has been a great mentor to me,” said Dr. Adeniran, adding that Dr. Humphrey advocates for younger physicians to get blocks of dedicated time to develop their research careers.

Pathologists may only rarely see their patients. But contributing to better outcomes for patients drives the team to find more precise ways to diagnose and characterize cancers. “We never forget that every single biopsy we look at is from a patient whose life could be changed by our diagnosis,” Dr. Humphrey said.