Kelly M. McMasters, MD '89, PhD, has made Louisville his home. His clinical work focuses on cancer surgery — mainly melanoma, but also breast, liver, and pancreatic cancer, sarcoma, and other cancers.

Kelly M. McMasters, MD '89, PhD:

A PASSION FOR Science, A TALENT FOR Surgery, A GIFT FOR Listening

BY KATE O'NEILL

"I am doing what I want to do, where I want to be, and Louisville is where I plan to stay," says Kelly McMasters, MD '89, PhD, Sam and Lolita Weakley Professor and chair, Department of Surgery, University of Louisville School of Medicine.

Dr. McMasters's simple observation stops far short of the pride he must take in a young career already marked by extraordinary accomplishment. Prior to his current appointment, he served as chief of the medical school's division of surgical oncology. He also oversaw development of its multi-million-dollar Surgical Oncology Clinical Research Center. In 2005, he was appointed chair of Louisville's Department of Surgery, a department with a reputation for excellence that dates to its founding in 1837.

A PHYSICIAN-SCIENTIST TO THE CORE

An early interest in basic science brought Dr. McMasters to the MD/PhD program at UMDNJ-Robert Wood Johnson Medical School.

Before completing his medical degree, he earned his PhD in cell and molecular biology in the joint doctoral program with Rutgers, The State University of New Jersey, writing his dissertation on gene expression in ovarian cells.

TOM FOUGEROUSSE

"He did technically challenging work requiring excellent surgical skills combined with a mastery of biochemical studies," recalls Fred Roisen, PhD, chair, Department of Anatomical Sciences and Neurobiology, Louisville, who was then acting chair of the Department of Anatomy at Rutgers Medical School (now RWJMS).

Ignited by his doctoral work, Dr. McMasters chose Louisville for his general surgery residency. He was particularly drawn by the personality, expertise, and teaching philosophy of Hiram C. Polk, Jr., MD, then chair of the Department of Surgery.

During those decades, Dr. Polk built a department that is dedicated to excellence in surgical research, patient care, and education. This was exactly the sort of triple-threat environment in which Dr. McMasters wanted to launch — and continue — his career.

MARION S. WHELAN

Kelly M. McMasters, MD '89, PhD

In Dr. McMasters's first year as chair, the department created the Hiram C. Polk Endowment for Surgical Research, to support young surgical scientists until they can obtain independent funding.

Dr. Roisen remembers Dr. McMasters as a student with a thirst for knowledge and a bent for academic medicine. He has enjoyed watching his colleague blossom into a physician-scientist, a superb researcher, and a compassionate surgeon with a creative mind. "Kelly chose to lead a clinical trial on sentinel node biopsy for breast cancer patients — as opposed to the removal of all axillary lymph nodes — because of his desire to find the best solutions for his patients, even in bad situations," he says.

Aside from a fellowship in surgical oncology at the M. D. Anderson Cancer Center in Houston, Dr. McMasters has made Louisville his home. His clinical work focuses on cancer surgery — mainly melanoma, but also breast, liver, and pancreatic cancer, sarcoma, and other cancers.

Soon after he returned to Louisville, Dr. McMasters undertook major research projects. He was awarded an NIH R01 grant for his work with E2F-1 cancer gene therapy. He also initiated the Louisville Breast Cancer Sentinel Lymph Node Study, involving 4,000 patients and 330 surgeons nationwide.

"It was unclear whether sentinel lymph node biopsy would be accurate in a broad surgical practice," says Dr. McMasters, "but this multi-center study indicated that it can be performed accurately across a wide spectrum of practice settings and was instrumental in moving sentinel node biopsy from an experimental procedure to standard practice around the world."

THE SUNBELT MELANOMA TRIAL

In addition, Dr. McMasters served as principal investigator and author of the world's largest melanoma study, the Sunbelt Melanoma Trial, comprising more than 3,400 patients and 79 sites across the United States and in Canada. The ten-year study looked at minimally invasive means to use sentinel lymph nodes — the first to which cancer would spread — to determine whether melanoma has invaded the lymphatic system. Using molecular staging based on the reverse transcriptase polymerase chain reaction, researchers were able to find one metastatic melanoma cell among 1 million normal cells, Dr. McMasters says.

James S. Goydos, MD '88, associate professor of surgery, was a local principal investigator for the Sunbelt Melanoma Trial, at The Cancer Institute of New Jersey. "The Sunbelt Trial was one of the first to use molecular biology to look for tumors not detectable by other means," says Dr. Goydos. "By changing the way we look at tumors and how they spread, it changed our understanding of the disease.

"It was a huge trial, with a lot of thankless work," adds Dr. Goydos. "A senior person doesn't often want that role, but Dr. McMasters is passionate about the field. He is also dynamic and affable — qualities that are important when you're leading an extensive clinical trial while heading the Department of Surgery at a major research institution like Louisville."

APPRECIATION AND REFLECTION

"The MD/PhD program trained me to work and think scientifically and gave me the molecular biology background I would need for this research," says Dr. McMasters. He reserves special praise for his doctoral advisers at RWJMS: Gordon J. MacDonald, PhD, professor of anatomy (now retired), and William Moyle, PhD, professor of obstetrics, gynecology, and reproductive sciences.

"They supported me through the PhD process, taught me to think creatively and to critically evaluate the results and the literature. Above all, they stimulated me to be a scientist and created an environment where curiosity counted and asking questions was valued," adds Dr. McMasters. "They gave me enough freedom to pursue research in my own way, with autonomy and just enough supervision. This is very important for a scientist who wants to become independent."

As chair, Dr. McMasters realizes, he will have to rely on others to carry his research ahead and expand the department's research mission. "I'll set the direction, write grants, and get funding," he says, adding, "I'm always looking for new people, smarter than I, who are ready to move us ahead in education, clinical care, and research." M