“Maximal exposure with minimal disruption, that’s what we’re going for,” explains Horgan from a relatively quiet corner of the lab. Behind him, teams of residents and their teachers cluster around the six surgical stations in the lab’s main teaching area, a 30-by-30-foot room canopied by the branching arms of its six gray-and-black surgical microscopes. Under every scope is clamped the cadaver head upon which each team will practice surgical skills over the five-day run of the course. Two large flat-screen monitors mounted in opposite corners of the room give all the participants a live view from two of the surgical fields. High on one wall, in a place of honor, hangs the white coat of surgical pioneer R.M.P. Donaghy, M.D., who invented many of the techniques of microneurosurgery in this very room four decades ago.

The focus of the room’s attention, the human skull, is a tight collection of 22 bones, many of them wafer thin, and held together by the tightly-knit connections called sutures. For centuries, those physicians who dared operate in the region of the brain gained access from the top or sides of the head. Neurosurgeons give the name “skull base” to the part of the skull that the brain rests upon. Although the brain, with a tissue consistency somewhat like tofu, mostly floats within its enclosure, its lower portions do sit directly upon the bottom of the skull. Within this area is a maze of bony channels that house the arteries and veins and nerves that nourish the brain and allow it to communicate. For decades after surgeons began operating on the tumors, aneurysms, and other maladies that afflict the upper brain, the areas in the underside of the organ and the cervical spine connection remained off-limits, the neurosurgical version of some unapproachable mountain escarpment. Indeed, neurosurgeons tend to veer into the paralane of mountain climbers or spelunkers when describing these challenges.

“Thirty or 40 years ago, it was almost impossible to access these areas,” says Horgan. “You would have to traverse the brain to get to them, or really pull upon the brain. Would either have to move the brain — actually pushing it — or go through it in order to get to those spots. Or you just left them alone, and didn’t treat the problems in these areas — they were just considered inaccessible.” But slowly, and with increasing activity from the 1980s on, new routes to the base areas of the brain were plotted. “Having
a knowledge of the anatomy of the base of the skull is very important,” says Horgan. “You need to know precisely which bones you can remove and how much you can drill without getting into trouble with nerves or arteries or veins.” To the lay observer, these routes are squirm-inducing — they often involve operating through the back of the mouth, or moving the eyeballs slightly and entering from the back of the eye sockets — but they are worth the effort if they give the surgeon access to a centimeter of open space under the brain. “A centimeter is an enormous amount of room for us, comparatively,” says Horgan.

When Neurosurgery Division Chief Bruce Tranmer, M.D., recruited Horgan to Vermont, the promise of having a skull base lab was a crucial part of the offer, Horgan says. It meshed with Horgan’s desire to teach and do research in addition to his many weekly hours of surgery, and it met a crucial need in the field. “It takes a long, long time to become a neurosurgeon,” he says. Neurosurgeons complete seven-year residencies after medical school. Most are approaching their mid-30s before their training is done. “Anything we can do to make the training more complete and up-to-date is worth it,” Horgan says.

As a regional resource, UVM’s lab is appreciated by neurosurgeons throughout New England. “The best way to learn this anatomy is through repeated cadaver dissection,” says Carl Heilman, M.D., chair of the Department of Neurosurgery at Tufts Medical Center and president of the New England Neurosurgical Society, the professional group that underwrites the cost of residents’ tuition in the January course. “UVM’s Skull Base Laboratory has helped many neurosurgery residents, from Yale, Harvard, Tufts, and others to solidify their knowledge.”

At the same time, the lab gives UVM/Fletcher Allen residents the chance to pursue research into new surgical techniques. Fourth-year resident Richard Murray, M.D., was interested in the developing field of endoscopy — the use of an optical-fiber instrument to view and operate directly within cavities and organs. Murray’s research specifically looked at approaches to the cervical spine through both the mouth and the nose. “The Skull Base Lab offered the ideal setting for this research,” Murray says. He set up a complete endoscopic operative system in the lab, carefully measured and analyzed angles of exposure, and drew useful conclusions on the limitations of each approach, and ways to judge patient suitability. “This project offered me, as a junior researcher, the chance to engage in meaningful research, which I could then present at a national level,” he says. Murray presented his findings at this February’s North American Skull Base Society meeting in Arizona.

Medical students also benefit from the lab. William Ares, a third-year medical student with a deep interest in neurosurgery, calls his participation in the January workshop “an incredible opportunity for me. I had the chance to interact with world-renowned surgeons from some of the premier neurosurgery programs in the country. The workshop and the lab give me an avenue for hands-on learning that a medical student just couldn’t realistically get in the operating room.”

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—William Ares, ’12

In 1905, when the College of Medicine completed its third home at the corner of Prospect and Pearl streets in Burlington, the main lecture room was named Hall A. For the next 63 years, students such as the members of the Class of 1955 (shown above listening to the legendary Prof. Ellsworth Amidon, M.D. ’32) spent much of their time in the hall. Today’s students take in lectures in the Sullivan Classroom or in the recently renovated Carpenter Auditorium, but the College’s educational mission of inspiring a lifetime of learning in the service of the patient remains the same. The Hall A magazine section is a meeting place in print for all former students of the College of Medicine.