Emma Lutz ’17 spent the past summer cloning. Ten years ago, as a member of the Class of 2007, she likely would have been working as a lifeguard or a cashier over the break. Instead, she took on something that used to be the exclusive province of graduate students: an intensive nine-week research stint in biological sciences at Harvard’s T. H. Chan School of Public Health.

For many UMass Amherst students, such challenging research has become an integral part of the undergraduate experience. Lutz, a double major in microbiology and public health, worked on a project titled “Construction of a Late-Stage Gametocyte-Specific Fluorescent P. falciparum Line.” The parasite Plasmodium falciparum, she explains, causes the most dangerous form of malaria. At Harvard, Lutz worked on a team attempting to construct a fluorescent parasite line to study these lethal parasites at a critical point in their life cycle.

She learned conventional cloning and basic parasitology techniques, including how to culture parasites, centrifuge and purify a culture, perform an invasion assay, and freeze and thaw parasites. Most importantly, she says, “I learned about a routine day in the life of a researcher. My goal is to work in a lab.”

Lutz probably wouldn’t have landed this competitive opportunity without the help of the UMass Amherst Office of Undergraduate Research and Studies (OURS), a division of the Learning Resource Center. “They helped me find the program and prepare my application,” she reports.

Lin Tang, director of the Learning Resource Center, explains that OURS actively searches for research and scholarly opportunities for undergraduate students in all disciplines. It has been in operation for nine years and serves ever-growing numbers of undergraduates seeking research opportunities. Nearly a thousand students visit the office each year. Tang enumerates the benefits of undergraduate research: Students learn directly from top faculty in their field. They establish connections and network within their discipline. They develop and enhance their skills and expertise. And they connect classroom and real-world learning.

Biochemistry major Kyle Swainamer ’18 has worked in Jeanne Hardy’s chemistry lab since the second semester of his freshman year. His current work, on the protein crystallization of caspases, could lead to new treatments for cancer and neurodegenerative diseases.
Golden Chances to Present Academic Work

The growth of the annual Undergraduate Research Conference, held on campus each April, reflects the growth of statewide undergraduate research opportunities:

2005: 411 students from the Massachusetts higher-education system; 124 UMass Amherst students.

2015: 1,100 students from the Massachusetts higher-education system; 420 UMass Amherst students.

Many students discover or redouble their commitment to career paths through undergraduate research; others find that it’s time to change course. “Discovering what you don’t like is just as important as finding what you do like,” says Debra Phillis of the OURS staff. She cites one student headed for medical school who discovered that he preferred lab work to working with humans.

The OURS staff meets with undergraduates individually to find research opportunities—on campus, locally, nationally, and even internationally. Through their giant, ever-expanding database (“You could call us the Match.com of research opportunities,” Lin jokes), they’ve found students positions working with NYU Project Healthcare, as museum interns, or in public health in Ghana, studying sea turtles in the Everglades, doing research at the Brookhaven National Laboratory or such leading corporations as AstraZeneca, Genzyme, and Bose, and serving in any number of other roles at hundreds of other sites.

As more students attend college, more of them look for research opportunities, intensifying the competition for some slots. For example, undergraduates applying for National Science Foundation research internships have only a 5 to 8 percent chance of getting one. OURS has helped UMass Amherst students land some of those, but the office is eager to help all undergraduates, not just those with the highest GPAs, find opportunities that meet their interests. Students are pleased with the results: the office has a 95 percent satisfaction rate.

One such satisfied student is civil and environmental engineering major Tracy Donoghue ‘17, who had a summer research position at the University of Houston’s Cullen College of Engineering. She worked in structural engineering rehabilitation, fabricating a new kind of composite patch for steel structures that are prone to fatigue, and learned to use all sorts of engineering equipment. “The best part for me was seeing how my ideas and calculations relate to something physical,” Donoghue says. “It affirmed that civil engineering is the perfect major for me.”

Advocate for Undergraduate Research

Gretchen Holbrook Gerzina, the new dean of Commonwealth Honors College, assumed her post in July and soon became aware of the long history of support for undergraduate research at UMass Amherst. “Commonwealth Honors College has shown its commitment not only through the curriculum, but also through its research conference and individual research experiences,” she says.

Most CHC students complete substantive research that culminates in a thesis—an experience many alumni recall as an undergraduate high point. Many students present their research at the annual CHC-sponsored Massachusetts Statewide Undergraduate Research Conference. Open to all students in the commonwealth’s public higher education system, it has grown exponentially along with undergraduate research opportunities on the campus. The 22nd conference will be held in April 2016.

Gerzina herself is a keen researcher, internationally renowned scholar, and prolific author. She is an expert in Victorian literature, biography, African American literature, and the story of black people in England. Throughout her academic career, at Vassar College, Columbia University, and most recently Dartmouth College, she has mentored many undergraduate research assistants.

Gerzina wants students in all disciplines to have such opportunities, because undergraduate research benefits both faculty and students. “Students learn the nuts and bolts of research and see how to become fully engaged in the research process,” she says. “Faculty benefit from the students’ commitment and fresh perspectives.”