Nestled in a quiet, picturesque cove on San Juan Island, the Friday Harbor Laboratories (FHL) are causing quite a splash. The historical marine biology research station is branching out—transforming itself from a seasonal research center to a year-round resource for undergraduates, researchers, and scholars of all disciplines.

Last spring, FHL inaugurated undergraduate research apprenticeships that immerse students in field and laboratory research, in topics that range from molecular evolution to marine resource management.

FHL's apprenticeships are one of a kind. They provide substantive research opportunities for students during the academic year, while most field stations can only offer research experiences for undergraduates during the summer months. Each apprenticeship involves five to eight students working closely with faculty and graduate students on a series of research problems around a selected theme. Students receive a $2,000 stipend to help defray the costs of tuition.

Development of the new focus was spurred by an address in 1997 by UW's President McCormick on the importance of experiential learning for undergraduates. “It suddenly dawned on me,” says FHL director and zoology professor Dennis Willows, “that the Friday Harbor Laboratories had some extraordinary underused and underdeveloped resources—people and facilities.”

Eager to tap FHL’s under-exploited riches, Willows secured the enthusiastic support of Debra Friedman, associate provost for academic planning, and in spring 1998, was awarded a grant from the UW provost’s office to launch the undergraduate apprenticeship program.

Initiated in spring 1999, this grant provides funding for two apprenticeships each autumn and spring for the next three years. In the upcoming years, FHL plans to add more apprenticeships, aiming for a total of five each autumn and spring.

With two academic quarters and four apprenticeships completed, the program has shown itself to be immensely successful. “In my long connection with the Friday Harbor Labs, I’ve never seen a program that is more effective in terms of recruiting the enthusiasm and the work of the faculty, graduate students and undergraduates,” says Willows. “There is just nothing like it—in terms of the quality of the effort put out, the creativity of new ideas that emerge, and the interdisciplinary potential.”

Students begin the apprenticeships with little experience using the scientific method and, by the end, generate high-quality data on unanswered questions, and may even submit a collaborative paper for publication. Many students leave the apprenticeships eager to seek future research experience and with the confidence that research is something they can do.

During the ten-week apprenticeship, students are submerged in science. “We were immersed in..."
the primary literature, and techniques we weren’t all familiar with, but since we were all starting from about the same level, it was easier to work through it,” says Muse Davis, a student in the Autumn 1999 apprenticeship.

In the spring 1999 apprenticeship, taught by UW zoology professor Richard Strathmann, students examined the environmental factors influencing egg deposition in the snail *Lacuna*. Rising to the challenge of advising students who had never done research before, teaching assistant Scottie Henderson was also thoroughly engaged. “That was all I ever dreamt about, those little snails,” she says.

Davis describes his apprenticeship as “an all-day occupation most of the time. We had 24-hour access to the lab, the stockroom, and the library,” says Davis. “The tightness of the facility made it easier to be intense about research.”

A key feature of the apprenticeships is providing students with the opportunity to learn in a research setting that approximates the graduate student experience, says Scott Edwards, UW zoology assistant professor and curator of genetic resources at the Burke Museum, who led the apprenticeship in molecular evolution. “Most of the time, undergraduate classes consist of lectures—getting information passively. This program is really putting these students in a research

setting and having them ask questions and get the answers.”

Davis fully appreciated this contrast between the FHL apprenticeship and other courses he has taken. “There is an incredible difference between learning in the classroom and learning by driving your own research,” says Davis.

Edwards, whose research program on campus focuses on molecular evolution in non-mammalian vertebrates says that teaching the course has given him ideas about ways that similar apprenticeship programs could be run on campus, for example at the Burke Museum. Davis, however, holds that Friday Harbor is a special place for this type of program. “I just can’t imagine how you could keep the focus we had at FHL, with all the distractions of Seattle or other classes in the way.”

FHL’s apprenticeships strongly encourage interdisciplinary science. In autumn 1999, students in an apprenticeship on design of marine reserves for the Puget Sound region and those in Edwards’ molecular evolution apprenticeship discovered that they had some common interests. The marine reserve class, taught by UW fisheries professor Bruce Miller, was working on mapping out protected areas for the slow-growing, now endangered rockfish Sebastes. To determine how large an area is necessary to protect the fish, they needed to answer questions about how far fish larvae spread from the adult populations.

Several students from the marine reserve course discussed potential collaborations with the molecular evolution apprenticeship, to learn how to use genetic labeling to find out where the rockfish populations were coming from. “In principle, these kinds of serendipitous collaborations could be capitalized on” in the apprenticeship program, says Edwards.

The apprenticeships also have the potential to influence regional policy. The marine reserve apprenticeship, which will be continuing in spring and autumn 2000, is working closely with citizens and county representatives on the San Juan County Marine Resources Committee (MRC), a body appointed by the San Juan County Board of County Commissioners that recommends actions such as formation of marine protected areas in the waters of the County. Students attended the MRC meetings this past fall and presented their data to the group. The MRC is excited about continued interactions with students at FHL, and included an expansion of this relationship in its work-plan for 2000.
Whiteley Center: A scholarly retreat among the trees

Starting this spring, phrases such as “romanticism,” “post-modernist thought,” and “dialectical humanism” may begin to pop up among the more usual Friday Harbor discourse on ascidian development, tide schedules, and good muddy spots to collect polychaete worms. The Helen Riaboff Whiteley Center at Friday Harbor Laboratories opens its doors this year to scholars and artists of any discipline, from any university or institute throughout the world, as a refuge for quiet work and thought.

“There is nothing quite like this,” says Eugene Nester, professor of microbiology at the UW and a member of the Whiteley Center administrative committee. “I think that was why the Whiteleys decided that something like this would be valuable.”

Helen Whiteley, who was a professor in the UW department of microbiology, and Arthur Whiteley, emeritus professor of zoology at the UW, cherished FHL throughout their careers as a place for not only scientific work, including their collaborations on the molecular aspects of sea urchin development, but also as a place for more creative pursuits such as writing and planning.

Nester says that the Whiteleys, who were the first husband-wife faculty team ever hired at UW, “felt that they should give back to the University, where they spent their entire lives, really.”

The Center is meant to encourage scholars to pursue the creative aspects of their work at Friday Harbor, as the Whiteleys did. John Toews, another member of the administrative committee, who is a professor of history and chair of the program for comparative history of ideas at the UW, says, “the traditional buildings there were made for people who were engaged in marine biology laboratory work. This is different. It’s not a lab—it’s a place to write and think.”

The Whiteley Center differs from other retreats of this kind in that it is relatively small and is intended for short-term use. The Center accommodates up to twelve scholars for individual work or work in small groups, and scholars are expected to stay from a few days to three months.

Scholars will be housed in one of four self-sufficient cottages, equipped with kitchens, fireplaces and views of the water. The Whiteley Study consists of four study rooms for individual or small-group work, and a large lounge for interaction with other scholars from the Center and FHL.

This “collegial interaction” was one of the main intentions of the Whiteleys in establishing the Center. Toews feels that the interaction between humanists and scientists at the Center potentially could be fruitful. However, he feels that this interaction “would have to be more in terms of discussing the implications and philosophy of what people are doing, rather than in terms of their project,” due to the differing backgrounds that the scholars are likely to have.

One of the challenges facing the Whiteley Center is attracting non-scientists, many of whom will be less likely to hear about the Center by word-of-mouth. “Most people in the humanities and social sciences apply for long grants for individual projects where they go away,” says Toews. “This will be something new for them—to be able to take a week to finish an essay, or maybe to get two or three people together to work on developing a new project or a team-taught seminar.”

Toews says that much of the Center’s success in achieving a balance between scientists and non-scientists depends on who is encouraged to apply, and on establishing the balance between disciplines.

In addition to interacting with other scholars from the Whiteley Center, Nester says that “the feeling is that people who go up there should definitely interact with people at Friday Harbor Labs,” perhaps by taking some meals in the main dining hall.

Successful interaction between FHL residents and Whiteley Center scholars may help transform an uneasy alliance between the two groups into a mutually beneficial situation. When initial plans for the Whiteley Center were released, many of the people who live or work at FHL were concerned about the proposed location of the new buildings (adjacent to Fernald Lab, the main lab at FHL). They felt that building in this location might increase traffic and compromise views, and grumblings were heard from students over the re-location of a popular volleyball pit.

Nester says that these tensions have now been amicably resolved. However, solid, productive ties between the labs and the Whiteley Center will ultimately depend on how well scholars from the Center are integrated into FHL life.

FHL will undoubtedly continue to thrive as a center of marine biology research. But the addition of eager, research-hungry undergraduates and diverse, world-renowned scholars is transforming the labs into something more. By providing unique opportunities for learning, creativity, and collaboration, FHL may well become the model of a new type of field station—one with the potential to serve a broad population of students, scholars from all disciplines, and artists all year long.

Stacey Combes and Erica Goldman are doctoral students in the UW zoology department.