Summertime ... and the Learnin’ Is Easy
Something for everyone at diverse courses on aging

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Did’t get enough of school? Sweltering-summer-time offers three courses for up-and-coming researchers in the field of aging who thirst for more. Located around the country, all three are free for participants. One provides a broad survey of the field, one caters to the needs of early-career faculty members, and the third targets graduate students and includes a lab component. But all receive high marks on instruction, stimulation, and fun.

Think “summer school,” and images of wasted days come to mind. Inside a sweltering classroom, the girl in the front row doodles patterns on her otherwise blank notepad. The boy behind her fans himself with his baseball cap. The teacher drones on. Right triangles, Marco Polo, the Bay of Pigs—the students aren’t sure because they’re not listening.

Yet in the field of aging, researchers are signing up in droves for summer school, competing for limited spots in three first-rate programs. “My experience was outstanding,” says neurobiologist Alyson Peel, a 2000 student at the Marine Biological Laboratory (MBL) course in Woods Hole, Massachusetts. “My only regret is that I didn’t do it a year sooner.” The MBL course is the newest of several options. The National Institute on Aging (NIA) attracts researchers to two summer sessions, one held at Airlie House in Virginia and another that rotates annually among Michigan, Texas, and California. Best of all, because the courses are subsidized by sponsoring organizations, all three are free for participants.

For up-and-coming researchers such as Peel, a postdoc at the Buck Institute for Age Research in Novato, California, these programs offer more than an introduction to the field. Students gain insight from leading scientists and have an opportunity to situate their own work within the panorama of aging-related research—in a casual and stimulating environment. Each course is unique (one provides a broad survey of the field, one caters to the needs of early-career faculty members, and one targets graduate students and includes a lab component), so players in the aging game are enrolling in one or more to survey the vista and have fun in the process.

The Old Hand
Run by NIA and the Brookdale Foundation (a group that funds efforts to improve the lives of elderly people) since 1987, the Summer Institute on Aging Research is the oldest course and accepts only scientists with postgraduate degrees. Each July, it brings 40 students to the Airlie House conference center in Virginia. Of the three summer programs on aging research, the institute tackles the broadest range of material; it includes the basic biology of aging, diseases of aging, and research on the aging of ethnic and racial minorities.

The 2001 session emphasized social and behavioral sciences, says attendee Kimberly Folse, a sociology professor at Texas A&M International University in Laredo. For example, the institute presented cutting-edge research on the burden of caregiving for Alzheimer’s and dementia patients. In addition, discussions focused on methodological challenges involved in studying populations over time and stressed the value of including diverse groups. “[The course] was the highlight of my career so far,” says Folse. “Here’s some knowledge I can really use.”

With guidance from the NIA director, deputy director, and staff, the institute also takes on the process of grant application and review. Each afternoon, participants break into discussion groups and exchange critical feedback on their research abstracts. “It gives you ideas in terms of how to present yourself,” says Folse. The week culminates in a mock review of two funded NIA projects, which students critique as if they were reviewers for the National Institutes of Health. This feature separates the Airlie House course from the others, says J. Taylor Harden, director of the program since 1997: “We want students to think, ‘Have I done an appropriate review of [the] literature to know what’s going on at the cutting edge of technology? Is there a hint of innovation? Is this going to help move my field forward?’”

Coming of Age
The Airlie House program’s expansive view of the landscape of aging research catalyzed the creation of a second, more focused course called the NIA Training Program. Now in its ninth year, the program is colloquially known as the “Miller Course” after its founder, Richard A. Miller of the University of Michigan, Ann Arbor. “At Airlie House, researchers were exposed to everything,” says Arlan Richardson, a professor of molecular biology at the University of Texas Health Science Center in San Antonio, who co-coordinates the Training Program with Miller and Judith Campisi, a cell and molecular biologist at Lawrence Berkeley National Laboratory in California. “The biologists got bored when the sociologists were speaking, and the sociologists got bored when the biologists were speaking. Over two-thirds of the presentations were not in the area you wanted.”

Over 5 days, the NIA Training Course explores a range of topics within the biology of aging. It brings together 20 students and rotates among Ann Arbor, San Antonio, and one of several locations in California. Last summer the participants...
lodge in spacious single bedrooms at a ranch outside San Antonio. “The environment was nice. It was really open, really green,” says cell biologist Antonello Lorenzini, a postdoc at the Lankenau Institute for Medical Research in Wynnewood, Pennsylvania. Last summer, the students and faculty celebrated the last evening with dinner at a riverside restaurant and a twirl at the oldest dance hall in Texas.

Each morning, one of six lecturers gives an overview of a topic such as calorie restriction, replicative senescence, or model systems. Although students commend the lectures, the favorite and most practical section for many of them comes after lunch. For two and a half hours, the class concentrates on applying for grants and developing a compelling research proposal. Each day, five students deliver a 15-minute presentation of their research, then field questions and critical comments. Because the course attracts NIA administrators and is taught by senior scientists, the students gain from the perspective of both funders and researchers who have obtained grants. “It helps to have the director of the NIA there, so you know if you have a snowball’s chance of getting a grant or not,” says Craig Conrad, who was a postdoc at the University of North Texas Health Science Center in Fort Worth when he participated in the 2001 course. Each afternoon ends with a lecture by a guest faculty member from a local institution.

“The flavor changes each year,” says Campisi. “It’s more animal in San Antonio because that’s where all the caloric restriction people are, immune in Ann Arbor because of Miller, and genetic in Berkeley because of Cynthia Kenyon,” who takes a genetic approach to studying aging in worms.

The Babe
In comparison to the other two courses, the Molecular Biology of Aging class at MBL, funded by the Ellison Medical Foundation (which also funds SAGE KE), is in its infancy—yet it is quickly making a name for itself. “We try to get the leaders in the world [to lecture],” says molecular geneticist Leonard Guarente of the Massachusetts Institute of Technology, who co-organizes the course with human geneticist Douglas Wallace of Emory University in Atlanta, Georgia. Going on its fourth year, the 3-week program draws 20 students to MBL. “I enjoyed both the scientific and the social environment of the course,” says cell biologist Tatiana Kostrominova, a postdoc at the University of Michigan, Ann Arbor, who attended in 2000.

In dorms on the MBL campus, students share rooms, which lends a summer camp feel to this course. “It was a beautiful place by the ocean,” says Kostrominova. “You feel very calm watching the ships go by.” Students take time off on weekends; social activities include parties and a trip to Martha’s Vineyard.

Much like the other two programs, the MBL course offers a broad introduction to the field of aging. In addition to its length, this course differs from the other two by incorporating a lab component—two elements that particularly serve the interests of beginning researchers. In the morning seminars, Guarente, Wallace, and visiting lecturers introduce specialized topics in aging. Then the students eat lunch cafeteria style before assembling in the lab, where they spend the afternoons identifying the developmental stages of worms, transferring them from plate to plate, or streaking yeast. The course leans heavily toward molecular research and has emphasized Caenorhabditis elegans, says Mitch McVey, a teaching fellow for the lab component in 2000.

Although speakers at MBL come and go, many hang out before or after their lectures and talk to students. “[They] were very accessible in the cafeteria, in the evening, and at various watering holes in the neighboring town,” says geneticist James Cypser, a graduate student at the University of Colorado, Boulder. Kostrominova adds, “You could ask questions you wouldn’t normally ask at a large meeting.”

Student Body
The most obvious difference among the three courses is in the type of participants. The Airlie House program attracts students who reflect the broad scope of topics it covers. They’re from psychology departments, kinesiology departments, even a center for American Indian and Minority Health. Although class members in the MBL and Miller courses share scientific interests because most study the biology—as opposed to the sociology—of aging, they represent different career stages. “I would highly recommend both courses, but which one depends on the level of the person asking,” says Campisi, who has taught at both.

MBL occasionally includes a few senior investigators as well as students who have had no exposure to the study of aging, but graduate students usually dominate. The NIA Training Program, in contrast, draws mostly junior faculty between their first and fifth years of an assistant professorship, most in the process of setting up labs or moving their already established research programs into the field of aging.

This demographic variation points toward a general difference in the teaching philosophies of the courses. The MBL program stresses the importance of bench work. “It’s one thing to [think about it in the] abstract and hear about it in lectures,” says McVey. “It’s another to do it in the lab and really drive it home.” The NIA Training Program, in contrast, steers clear of technique, devoting afternoons to the practical and conceptual development of ideas for grant review. “Personally, I think what students at this stage need is not practice of how to isolate specific genes,” says Miller, but knowledge of “what constitutes an important problem.”

Lessons Outside the Classroom
The three programs have different strengths. Yet all afford an opportunity to exchange ideas with the most exciting minds in the field, both old and young. “You can do a lot of networking,” says Xudong Huang, an instructor and biochemist at Massachusetts Gen-
eral Hospital in Boston, who established a collaborative project with a fellow student at the NIA Training Program. At all the courses, students spend much of their free time discussing the day’s lectures, debating theories, and delving into the deeper philosophical questions of research on aging: Do species undergo separate aging processes that can’t be generalized, or is there an underlying or unifying phenomenon? “We played Pictionary in the evening,” says Kostrominova. “But we didn’t completely forget we were biologists.”

For many researchers, the most powerful lessons come from how the courses alter their perspective on their work. “What I learned at MBL served as a complete paradigm shift for me in how I view neurodegeneration,” says Peel. “I realized [that] unless you understand all the things that happen as a function of aging, you can’t understand why neural cells start to die.”

For others, the experience offers a new way to conceptualize research on aging. “Miller has an interesting way of looking at the field of aging—comparing it to the field of infectious diseases,” says Conrad. “Up to the point of germ theory, there was no way to address the problem [of infectious disease]. At this course, I learned that’s kind of where we are in aging. Nobody knows what causes it, but we’ll have a whole lot of information once we do figure it out.” And some of the benefits of attending the course extend beyond the field of aging per se. Conrad, for example, appreciated the patio discussions about the difficulties of starting a lab.

At all three courses, students learn in the cafeteria and the bar as well as the classroom. None of them are fidgeting, waiting for the bell to ring, or feigning stomachaches. They’re not scheming escapes or pining for ice-cold drinks—because they’re too busy dissecting research proposals, watching worms wiggle, and debating whether yeast could possibly shed light on why humans go gray. They probably don’t even remember they’re stuck in summer school, because they’re having such a good time.

Jennifer Toy is a science writer in Boston. Having just finished her undergraduate degree, she’s taking a break from school—no matter how much fun it is.

Further Reading

Summer Institute on Aging Research application deadline: 8 March.
National Institute on Aging Training Program application deadline: 5 March.
Questions: Richard A. Miller (millerr@umich.edu)
MBL Molecular Biology of Aging application deadline: 1 March.
http://courses.mbl.edu/Courses/BAG.html