Richard Sprott has a dream: to circumvent the cumbersome process of supplying labs with specialized research animals by moving people rather than animals. His brainchild, the International Biogerontology Resources Institute (IBRI) in Friuli, Italy, intends to attract researchers by offering access to an extensive collection of strains from around the world, superb veterinary care, and, of course, a business trip to Italy. Unique to IBRI is a research agenda dedicated to developing animal models—a task some view as a relatively unsexy side of science.

The Waiting Game
At the animal research facility at Stanford University, a technician carries mice off the loading dock cage by cage. In blue surgical scrubs, a face mask, and knee-high galoshes, she showers the plastic shoeboxes with disinfectant. Another tech emerges from a room buzzing with the whirl of sanitation machines. He pushes a steel cart that shelves 24 sterile cages. With a pair of forceps, he plucks each golf-ball-sized mouse from the old container and transfers it to its pristine new home. Then he wheels them into the quarantine room.

For the next 1 to 2 months, the mice sit in seclusion, where a veterinarian checks them daily for coughs, skin lesions, or any other symptoms that indicate infection. If a mouse gets sick, the technician will transplant fetuses from ailing pregnant females into healthy surrogate mothers to salvage the strain. Months will pass before pups are born and mature. Eventually, healthy animals will move from quarantine to the research labs, where scientists will use them for experiments.

And that’s only the last stage of the tedious process by which animals move from one lab to another. Administrative tasks required to order the animals can soak up months and years, particularly if a strain comes from abroad. Arlan Richardson, a physiologist at the University of Texas Health Science Center at San Antonio (UTHSCSA), slogged through this process. “We spent almost 12 months just [on] the paperwork” to get a mouse from Japan, he says. More than a year and a half after Richardson requested the animal, he could begin his research.

Yet in the aging field—as in other disciplines that rely on specific animal strains—scientists tolerate this lag and even expect it. The net result: “Aging” researchers are going gray while waiting for their lab animals.

But the situation might be changing. The International Biogerontology Resources Institute (IBRI) in Friuli, Italy, aims to circumvent this cumbersome process by moving people rather than animals. The institute intends to attract researchers by offering access to an extensive collection of strains from around the world, superb veterinary care, and, of course, a business trip to Italy. Unique to IBRI is a research agenda dedicated to developing animal models—a task some view as a relatively unsexy side of science. “It’s not seen as exciting,” says founder and president Richard Sprott. “Everyone needs models, but no funding agencies want to pay for them.” With this focus, he predicts that the institute will rise as the premier centralized facility at which to study animal models of aging—and that it could make a unique contribution by streamlining research for the entire field.

The Goal
Sprott started cultivating the idea for IBRI during his tenure as the director of programs on the Biology of Aging at the National Institute on Aging (NIA). The NIA cultivated commonly used rodents and some nonhuman primates, and Sprott noticed that scientists were reluctant to try other strains because it was a hassle to obtain them. He aspired to make uncommon animals generally available. The notion of IBRI “was my best guess as to how to solve the problem,” says Sprott.

A shared, central facility would provide a site where investigators could develop and house strains, which other researchers could easily access, he reasoned. The goal: a taste test where scientists can sample a variety of animals before committing. In addition, such a facility could rigidly control the health of the animals so investigators from around the world could expect uniformity in results. “Quite frankly, one of the biggest factors holding gerontology back is the simple quality of animals,” says physiologist Roger McCarter of UTHSCSA, a member of IBRI’s eight-person scientific council. For example, researchers once hypothesized that exercise cuts life short because rats that worked out in a conventional lab setting died younger than sedentary ones did. But the facilities harbored infectious diseases. When animals were stressed by exercise, the sick ones expired prematurely—and provided apparent support for the idea that increased metabolic rate shortens life. “Keeping diseases out is vital for aging research. It’s important to know that we’re all playing on the same football field to start with,” says McCarter.

Viva Italia?
When Sprott came up with the idea for IBRI, he knew he had a hot ticket. Yet he lacked the facility and the financial capital to back such an enterprise. In the early 1990s—while he was scouting for a good spot—an Italian pharmaceutical company called Fidia persuaded its government to help build the best animal facility in Europe and arguably the world. Fidia wanted to conduct geriatric drug testing, and officials wanted to stir up
jobs in an economically depressed area. But when the country's economy took a dive, the government abandoned the costly project.

With empty buildings on its hands, the Italian government was eager to unload the site. Officials contacted Sprott, who stepped in to help find a buyer. The enthusiasm from Italy spurred a realization that Europe would provide the perfect location for the institute. “If we had it in the U.S., Europe and Asia would not trust us,” says Sprott. “If we had it in Asia, no one would go there [because of the distance for many researchers]. Apparently no one thinks Italy will try and take over the [animal research] market.” Sprott contacted the presidents of companies that were potential buyers—people he knew from his work at NIA—and got a nibble. Last year, Harlan, the commercial supplier of laboratory animals, cemented the deal. CEO Hal Harlan purchased the site from the government and now rents space to IBRI for a nominal charge.

“Gerontological research is such an important area, and when the opportunity arose to assist in the formation and development of an international institute, we were quite excited to be a part of it,” says Harlan.

In an optimistic spirit, Sprott had previously begun to develop the institute’s management and agenda. He organized a series of annual symposia and workshops in Italy—the first one in the spring of 1998, just after the institute incorporated—to call international attention to the need for the development of animal models. Sprott recruited members for IBRI’s Scientific Advisory Committee from among the participants at the symposia, and they began meeting separately to oversee the institute. After Harlan’s deal, IBRI contracted workers at the institute to nurture the animals to old age (or “age” them) to save researchers time.

At the moment, the company isn’t profiting from the arrangement. Although Harlan charges researchers fees to house and care for the animals, IBRI is not engineered to serve as a commercial mouse house. “Ultimately, if models of specific commercial interest arose, then Harlan would certainly have first access,” says Steven Austad, a zoologist at the University of Idaho in Moscow and a member of IBRI’s scientific council. “Right now they’re doing something altruistic.”

**Gearing Up**

After flying into Venice or Trieste, researchers travel to the institute by road or rail through the winding green countryside of the Friuli region, an area that borders the northern edge of the Adriatic Sea and is decked with vineyards and renowned for its white wine. Upon arrival, visitors are met by the institute’s stark, modern architecture, a sharp contrast to the rural surroundings. Here, animals receive better care than vacationers at the Club Med resort down the coast.

Although the facility houses equipment such as pH meters for basic procedures, investigators have to borrow or bring their own instruments for specialized research. For example, a researcher who wants to study the learning behavior of rats navigating a maze would have to bring the maze. Scientists can stay at a small apartment on the site or at a nearby teaching facility with dorms and a cafeteria.

IBRI currently ages and maintains cells, tissues, and organs from many species. As part of its research agenda, the institute will characterize the animals’ nutritional needs, life-spans, normal age-related pathologies, and susceptibility to disease. Most facilities don’t spend money on these aspects of animal-model development because, Sprott says, “these are not the hypothesis-driven aspects” that the U.S. National Institutes of Health focuses on. Yet valid results for any project depend on using the same set of baseline information for all animals. IBRI will carve a niche by prioritizing such aspects of research, he predicts.

Eventually the institute aims to house all animal models used for aging-related research. The central collection should facilitate experiments that compare many different animals, says Sprott. And research has already begun. The scientific council has approved five out of five research applications submitted, from both council members and Italian investigators who are affiliated with IBRI. Once research is well established, the council anticipates that competition for access will heat up because of limited space. Although IBRI boasts many advantages, a question remains: Will anyone come?

**Incentives**

Because the institute is still in its embryonic stages—it is scheduled to begin operating in 2002—no one yet knows whether researchers en masse will venture to Friuli. For many investigators, the benefits provide plenty of allure, until they realize that their experimental animals might wind up continents away. Scott Kogan, a hematopathologist at the University of California, San Francisco (UCSF), works in a lab that’s close to
an animal facility—but he has also run a lab 20 minutes from the facility, which is already a prohibitive distance. “If a mouse is sick [at UCSF], we just run downstairs. The contrast of being 2 versus 20 [minutes away] is huge.”

Proximity isn’t the only challenge. Obtaining animals from the individual labs that developed them could pose a problem. At least portions of the biomedical research community resist sharing resources. Through six case studies of centers, the Institute of Medicine issued a report* that explores the issues of and barriers to large-scale collaboration among members of this community. It concluded that “the current systems for rewarding academicians or employees in industry do not encourage sharing but rather focus on individual achievements.” To meet its goals, IBRI will need to develop enticements for investigators to donate their animals. “In principle [IBRI] sounds terrific,” says Linda Cork, chair of the Stanford department of comparative biology. “But I would like to see their marketing plan.”

Still, Sprott believes in IBRI’s potential strength: attracting researchers on a trial basis. “All the models [for aging] will be [at IBRI] at the same time, and [investigators] can’t find that anywhere else,” he says. “It’s an opportunity to quickly try a new model ... and the overall cost is much less than to import the animals.”

Four universities—the Consorzio del Friuli (Udine) in Italy; Pennsylvania State University, University Park; the Medical College of Pennsylvania in Philadelphia; and UTHSCSA—have already joined as members, paying a one-time $10,000 access fee and annual dues of $500 per year to gain priority entree to the resources. And membership of four more—the universities of Idaho, Kyoto in Japan, Newcastle-upon-Tyne in England, and Washington in Seattle—is pending. These institutions are motivated by the desire for impeccably clean animals available in a centralized holding pen—and the promise of access to any and all models used in aging, says Richardson of UTHSCSA. But they are also gambling on access to another resource: new animals for aging-related research that the institute plans to develop.

Better Than a Mouse
IBRI’s scientific council envisions that it will guide research in the province of aging as well as facilitate it. “The idea is to lead the field—to guess ahead of time what animals will be important,” says Austad. Nonhuman primates such as chimpanzees, for example, are useful research subjects because they are our closest relatives. But they cost a lot and can live for more than 30 years. Austad is working on a project for IBRI—still in its conceptual stages—to develop the smaller, shorter lived primate, the bush baby, into an experimentally useful model. Says McCarter, “IBRI will have the capacity to ask the aging field, ‘What sort of animal model would you like to see developed?’ ”

Beating the bush for new animal models. Researchers are developing primates such as the bush baby for aging-related research.

By acting as a scout for the field, the council will face tricky decisions. For example, how will it choose the avant-garde animal models for the field? And will everyone agree? “For many diseases for which a great deal is known regarding the overall biology, like diabetes, cancer, or epilepsy, [the development of models] is somewhat straightforward,” says John McCauley, a research scientist at the Jackson Laboratory in Bar Harbor, Maine. “However, given the varying opinions regarding what aging really is, it would be difficult to get a panel of gerontologists to agree [on] which models are useful.”

At the moment, the realization of Sprott’s vision—a streamlined operation where animals stay in the same place while investigators jet in from around the world—remains uncertain. In principle, it holds great potential to advance studies in the field. Perhaps IBRI will allow researchers to spend more time watching their animals—rather than themselves—go gray.

Jennifer Toy is a writer in Boston. She hadn’t previously realized that Italy’s attractions include laboratory animals.

Further Reading
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