Europe Wakes Up to Aging
As its population gets on in years, the European Union is turning its research focus to gerontology
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(Published 4 December 2002)

With 20% of its residents currently aged 60 and up, Europe is outpacing the rest of the world in an elderly population boom. But it has neglected investigations into basic mechanisms of aging; these studies have historically received less funding than those on diseases of old age. Although the picture varies from nation to nation, research into the fundamental process of aging has gained priority status since the European Union’s birth—but not enough, according to researchers in the field. A new E.U. program, kicked off last month, will back bigger science projects with larger piles of money, but the budget for aging-related research is still uncertain. The scarcity of money for studies on the fundamentals of aging stems largely from a lack of political interest in the subject.

One thing is certain about growing old in Europe: Seniors have plenty of company. One out of five people in Europe is 60 or older, making it the region with the largest percentage of elderly in the world. By 2050, seniors will account for more than 40% of the population in southern countries such as Greece, Italy, and Spain. “It’s graying time in Europe,” says molecular biologist Brian Clark, who heads the Danish Centre for Molecular Gerontology at Aarhus University in Denmark.

Responding to this demographic shift will require a sweeping societal rethinking of decisions about education, health care, lifestyle, work, and social care from a longer perspective than ever before, say Clark and other experts. Until now, research and data to guide those decisions have been lacking, but under the influence of the still-maturing European Union, the overall picture is starting to improve—although the situation varies considerably from country to country.

Compared with the United States, which committed early on to exploring all aspects of growing old by establishing the National Institute on Aging (NIA) in 1975, European countries have lagged. As a focus of scientific inquiry, aging has attracted little attention, and funding has been scarce. What’s more, the available funds have typically gone into studies of how best to prevent and treat the diseases of later life. But old age itself is the greatest risk factor for many of these diseases, and keeping people healthy into their advanced years calls for understanding aging at the molecular level, says Clark. Yet scientists who explore these basic mechanisms have had to scrabble for funding.

Because aging touches so many facets of human existence, from repairing DNA to preserving one’s physical independence, unifying the field is a major challenge. A 1999 survey by the European Commission—the executive branch of the E.U.—found that investigations of aging are often subsumed under studies of individual diseases or physiological systems. Not only are gerontology research groups small, but communication among them has been weak, and resources have been coordinated poorly.

New Momentum
Change began brewing with the creation of the E.U. in 1992, however. In the same way that a single European market has unlocked the economic power of member states, an integrated scientific effort from the British Isles to Finland also packs synergistic muscle. In recent years, the E.U. has begun to rank aging higher among its research priorities. And although few member states have set up national centers on aging, some research hot spots have cropped up.

In the United Kingdom, for instance, the Biotechnology and Biological Sciences Research Council has funded about...
$16 million of grants for the science of senescence since 1998 (see “Researchers Join Up”). The Wellcome Trust biomedical charity contributed $3.6 million to build a new biogerontology facility at the University of Newcastle’s Institute for Ageing and Health (IAH), which opened in 1994. And last winter, France announced plans for a new Longevity Institute “without walls” to help coordinate gerontology research (see “Vive la France†). Between national initiatives such as these and growing support from the E.U., scientists are gaining fresh hope that explorations of aging will gather momentum, despite persisting obstacles.

“There’s an opportunity now to make something happen,” says Tom Kirkwood, a biological gerontologist at IAH. Current collaborative European efforts in this field trace their roots to molecular gerontologist Dick Knook of the TNO Centre for Ageing Research in Leiden, the Netherlands. In autumn 1976, Knook, then director of the Institute for Experimental Gerontology in Rijswijk, received a call from a representative of the European Economic Community’s medical research committee. The committee wanted Knook to put together an expert panel on aging. At the time, research groups on aging-related topics were tiny and scattered. Knook called up 20 friends in the field for advice. They brainstormed about how to build and organize a network of groups that probed biomedical aspects of aging, and then they chose a handful of topics to target.

The result was Eurage, an effort aimed at promoting studies of the diseases and biological process of aging, including the aging immune system, drug metabolism in the elderly, and brain aging and dementia. During a 12-year period, the initiative brought together 159 European groups from 14 countries to learn about one another’s research and to exchange students, technicians, data, and materials. One of the project’s innovations was to create an old-animal bank that supplied researchers with elderly rats and mice, as well as organs and tissue samples. The specimens were offered free of charge—a major bonus, given that old animals are rare, hard to care for, and thus expensive, Knook says. The resource was so successful that NIA later set up its own animal bank (see National Institute on Aging animal and cell resources†).

Eventually, Eurage—a “victim of its own success,” Knook says—grew large enough that the European Commission decided to split it up. The upshot was a number of separate aging-related scientific endeavors from 1990 to 1998 under the E.U.’s Third and Fourth Framework Programmes for research. These 5-year programs support and coordinate regional E.U. research and technology.

Under the Fifth Framework Programme (FP5), introduced in 1998, the E.U. for the first time identified gerontology as an important area: It explicitly targeted aging as a key topic for investigation within a project on improving the quality of people’s lives. This new recognition, combined with FP5’s increased emphasis on international collaboration, was “a major step ahead at the European level” in marrying expertise across aging-related disciplines and countries, says Alexander Bürkle, a molecular toxicologist at the University of Konstanz in Germany. At least 10 international research projects on aging emerged, but the overall amount of per capita funding was still relatively low compared with similar efforts in the United States and Japan.

Waiting on Tenterhooks

However, the next Framework agenda, FP6, which was launched last month, will support bigger projects and larger amounts of funding. It’s not clear, though, how much wealth will trickle down to research on aging. Together with independent experts, European Commission officials have just finished sifting through 11,700 preliminary scientific proposals from investigators across Europe, and they plan to issue a call for formal proposals before the end of the year. Although many gerontologists are excited about the possibility of getting a bigger piece of the pie, immunologist Claudio Franceschi, director of the National Institute of Aging in Ancona, Italy, sounds a note of disappointment. Unlike its predecessor, FP6 doesn’t highlight aging as a separate category; it buries the topic under the category of “genomics and biotechnology for health.” According to Kirkwood, who submitted a proposal with colleagues to create a large-scale gerontology research network, the difference represents a tradeoff. Aging might not be “up there in lights” as it was with FP5, he says, but the money is better. It might be better for some but not necessarily all. Although the numbers haven’t yet been released, Franceschi and other investigators say they’ve heard unofficial reports that the FP6 budget for basic research on aging will be far less than hoped for. The program will provide significant funds for cancer and other aging-related diseases, says Christian Wimmer, scientific officer for human development and aging at the European Commission, but he urges gerontology investigators not to lose heart. The commission hasn’t yet finalized the amounts for basic studies of biological aging, he says. Even the first call for proposals, due for release 17 December, won’t tell the whole story of how much money is up for grabs; three more requests will follow, and their budgets haven’t all been fixed yet. “The Frameworks are more flexible than one might think,” says Wimmer.

But if the rumors bear out, the situation would underscore how hard it is for those who probe the fundamental process of aging to compete against those studying, say, cancer and Alzheimer’s disease. The tug of war is an old one: For instance, in the Netherlands during the 1960s and 1970s, recalls Knook, the Institute for Experimental Gerontology in Rijswijk stood out for its investigations of how aging affects the liver and immune system. In the late 1980s, however, the institute merged with two others and eventually dropped all mention of aging from its title; it now focuses mainly on heart disease and osteoarthritis. According to Knook, anyone in the Netherlands who wants to explore the basic mechanisms of aging has to go abroad.

Struggling Toward Unification

The E.U.’s Framework programs can’t make up for the unwillingness of member states to fund studies on biological aging,
because they only complement research projects already under way. Instead, international scientific initiatives sponsored by the E.U. facilitate collaborations that no single country could conduct on its own. For example, several European nations boast enviable registries of twins and centenarians, ideal for studies that depend on stable populations and meticulous record-keeping that stretches back hundreds of years. Investigations of the genomics of centenarians would benefit from analysis of environmental factors and cohorts in many countries, not just one, says molecular gerontologist Olivier Toussaint of the University of Namur in Belgium. Similarly, teasing out the genes that control aging in different organisms requires input from researchers who specialize in yeast, roundworms, mice, and other mammals. International projects can draw upon the diverse expertise that member states collectively bring to the table.

In attempting to unite its scientific community, the E.U. must contend with the remnants of its unorganized past. Georg Wick, an experimental gerontologist at the Institute for Biomedical Aging Research of the Austrian Academy of Sciences in Innsbruck, notes that in the United States, people can move from one end of the country to another with relative ease. Postdoctoral fellows in Europe have considerably less mobility than do those in the United States, says Wick, owing in large part to a hodgepodge of rules for residence and work permits as well as categories of employment. A major goal of FP6, however, is to make it easier for scientists both within and outside the E.U. to move to and conduct research in other nations.

E.U. funding mechanisms are complicated and bureaucratic, says Vilhelm Bohr, a geneticist who began his career in Denmark and now runs the molecular gerontology division at NIA in Bethesda, Maryland. Compounding the deluge of forms is the sheer size of international research consortia. Still, Toussaint points out that the E.U. doesn’t have a monopoly on administrative red tape, which can also be a hassle in the United States. And for some European scientists, dealing with such hurdles is manageable. Efstathios Gonos, a molecular biologist at the National Hellenic Research Foundation in Greece, that was sponsored last May in Spetses, Greece, that was sponsored by the European Science Foundation. Such gatherings give scientists an opportunity to meet and exchange ideas. The networking is also key because once people know one another, says Toussaint, they start teaming up on activities and generate a “critical mass” of expertise. And more mass is an advantage, given the E.U.’s current penchant for funding large collaborations.

Although the science of senescence in the E.U. is still young, signs of progress—and fresh blood—are evident. At the Spetses meeting, Konstanz’s Bürkle was surprised to encounter half a dozen new faces among the speakers, all conducting research on aging. Investigators in the field hope that they—like the aging masses of Europe—will soon find themselves with strength in numbers.

Writer Giselle Weiss lives in Basel, Switzerland. She hopes for lots of competition in the 80+ age group when she finally learns how to ski.

Further Reading

europa.eu.int/comm/research/biomed/ageing-book.pdf
European Science Foundation
www.esf.org
Sixth Framework Programme
europa.eu.int/comm/research/fp6/index_en.html