tee, and elected or nominated by the scientific community.

Last week the Bassanini committee began working its way through this and some 60 other representations by CNR researchers, directors, and unions. It seemed sympathetic to several of the concerns voiced by CNR researchers. During the first day's debate, Senator Giancarlo Tapparo, a committee member, said the management of the new CNR could lack scientific direction and risk becoming a "business." He backed the suggestions from CNR staff for the scientific committee to have a more prominent role. Berlinguer has left behind a rich legacy of debate for the weeks to come.

–SUSAN BIGGIN

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AGING RESEARCH

Single Gene Controls Fruit Fly Life-Span

According to the Bible, Methuselah lived 969 years. Now, he has another claim on immortality: Caltech geneticists have named a newly discovered fruit fly gene in his honor. The reason: As Yi-Jyun Lin, Laurent Seroude, and Seymour Benzer of the California Institute of Technology in Pasadena report on page 943, fruit flies with a mutated *methuselah* gene live up to 35% longer than normal fruit flies.

Forever young? A mutated *methuselah* gene could add weeks to this fruit fly's life.

This is not the first gene found to affect an organism's life-span. Researchers had previously identified a half-dozen in the worm *Caenorhabditis elegans*. In some respects, *C. elegans*'s life history can be very different from those of many other animals because it can enter a dormant "dauer" stage, which enables the worm to survive long periods of adverse conditions. Some people had thought that *C. elegans* might be a special case and that aging in other species is more likely to result from the haphazard buildup of damaging mutations in individual cells. "Now," says Cynthia Kenyon, a molecular geneticist at the University of California, San Francisco, "it's inescapable that aging is regulated deliberately by genes." And she adds, because "it happens in both worms and fruit flies, you have to be crazy to think it won't happen in vertebrates."

The Caltech team's discovery also bolsters the idea that molecular stresses such as tissue-damaging free radicals contribute to aging, because the mutant *methuselah* gene in the long-lived flies also makes them able to withstand higher levels of stress. "It's an extended life-span gene that really fits with the previous work," comments Michael Rose, a population geneticist at the University of California, Irvine.

To track down aging-related genes, Lin and his colleagues generated scores of mutant fruit fly strains by genetically unleashing one of the insect's transposable elements, a stretch of DNA that can jump around the genome, causing mutations wherever it happens to interrupt a gene. Then he tested how long the resulting mutant offspring lived and also how well they survived certain stressful conditions.

One mutant yielded young that lived more than 100 days instead of the usual 60 to 80. The flies were also better able to resist stress. They lasted 50% longer than wild-type flies when deprived of food. They tolerated heat better, surviving about 18 hours rather than the usual 12 at 36°C—a temperature that can cause cell proteins to break down. And they were more resistant to paraquat, a herbicide that can damage cells by generating oxygen free radicals. That suggests, Benzer explains, that "if you can resist stresses or better repair damage, then you can increase life-span."

Still unclear is how the *methuselah* gene mutation makes flies more stress-resistant, but the protein it makes may be part of a signaling pathway that controls how well cells resist or repair these stresses. The amino acid sequence of the protein suggests that it is a member of a large family of membrane-bound molecules called G protein–coupled receptors. These receptors typically receive a variety of molecular signals at the cell surface, including neurotransmitters, and then relay those signals into the cell. What signal the methuselah protein responds to is unknown, however, for the part of the molecule that would receive it is unlike any in the known G protein–coupled receptors. "It's completely novel," says Benzer.

If the methuselah protein is part of a signaling pathway, though, its situation would be similar, but not identical, to that of the protein produced by one of the worm's longevity genes, *daf-2* (*Science*, 15 August 1997, pp. 897 and 942). The *daf-2* gene is also part of a signaling pathway that influences how well cells age and cope with stress. In the 16 October issue of *Cell*, Kenyon's team reports that the activity of DAF-2 protein, an insulin receptor, likely leads to the release of a hormonelike signal that coordinates aging throughout the nematode. The researchers found that even when a mutated DAF-2 is inactive in just some of the nematode's cells, all tissues enter into the dauer phase. "It's a way of ensuring all cells do the same thing," Kenyon explains.

It's unlikely that the methuselah protein responds to insulin, and so researchers still have a lot to do to figure out just what triggers the presumed receptor, as well as the precise outcome of its activity. But Kenyon and others who do research on aging are pleased to have the gene to work on. "Now," she says, "we have another experimental system to investigate" for clues to what sets the allotted span in fruit flies and ultimately in other organisms.

–ELIZABETH PENNISI

FOOD SAFETY

U.K. Government Tries To Reassure Wary Public

The British Parliament returned last week from a summer break during which fears about the safety of genetically modified crops were never far from the headlines. The government promptly moved to tighten controls on the introduction of such crops in an effort to calm public concerns. The environment and agriculture departments proposed regulations to slowly phase in and monitor the planting of genetically modified crops and established a new committee to scrutinize the biotechnology industry. But the calming effect of these moves was partly offset by a decision to delay plans for a new independent food standards agency, which would monitor genetically modified foods as well as food hygiene and safety.

Genetically modified crops are a hot political potato across Europe (*Science*, 7 August, p. 768). Several countries, including Austria and Luxembourg, plan to ban them altogether. Britain is not planning to go that far, but Environment Minister Michael Meacher announced that no commercial planting of genetically modified crops will be allowed before the fall of 1999, and those that contain insect-resistance genes cannot be planted for at least 3 years. The first plantings, he says, will be strictly limited and monitored for ecological effects along with comparable plantings of conventional crops. Roger Turner, director of the British Society of Plant Breeders, welcomes the government's

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