"We are going to dance in the streets."

The AKP's grip on science extends beyond YÖK. In 2005, Erdoğan began to place political loyalists in top posts at Turkey's research-funding agency TÜBİTAK, which had previously enjoyed a degree of autonomy. Many of them were from the Gülen movement — a transnational religious and social organization. Scientists say that research funds were no longer distributed according to merit and that the agency has seemed to be anti-evolution. In 2009, TÜBİTAK removed a portrait of Charles Darwin from a cover of a government-backed science magazine and sacked the editor (see *Nature* **458,** 259; 2009). Under the AKP, which turned Turkey from a constitutionally secular nation to one where religion is state-sponsored, creationism is often taught in schools and debated in universities. (The AKP fell out with the Gülenists in 2013 and purged them from TÜBİTAK, leaving it in chaos.)

In 2011, the science ministry assumed control of the Turkish Academy of Sciences, TÜBA. It decreed that TÜBİTAK and YÖK would appoint two-thirds of TÜBA's members, who would then elect the remaining one-third. Most of TÜBA's original members resigned in protest and launched another national academy, Bilim Akademisi, which has regularly challenged science standards.

Earlier this month, the academy, of which Alpar is president, identified two universities that had approved theses and certificates in astrology, and called on YÖK not to allow such unscientific practices. It also contested a government order forbidding university researchers from interviewing refugees without government supervision. The academy argued that the government's claim that the interviews would infringe data-protection laws was invalid.

Until a new government forms, the AKP remains in charge. It irked scientists further on 11 June by appointing Ahmet Arif Ergin as head of TÜBİTAK. "It is extremely undemocratic and inappropriate for a caretaker government to make such an important political appointment," says Mungan.

But the election results have brought hope. "You can't imagine what a relief it has been in scientific circles — the one-man rule had looked unstoppable, but now it is over," says Şevket Ruacan, a pathologist at Koç University in Istanbul and a former TÜBİTAK board member. Change will take time, he says, "but conservative religious influences may now be reduced in education and it may become possible to reduce the political influences in scientific matters".

At least Turkish scientists have not wanted for funding. Research spending has more than trebled since Erdoğan came to power — a result of his now-stalled endeavour for Turkey to be admitted to the European Union. Some major infrastructures have been developed, including the ambitious €60-million (US$68-million) Izmir Biomedicine & Genome Center, due to open in September. ■

IRA T. NICOLAI/GETTY

Researchers hope to find drugs that extend a person's healthy years.

CLINICAL RESEARCH

Ageing pushed as treatable condition

Regulators asked to consider innovative trial design.

BY ERIKA CHECK HAYDEN

Doctors and scientists want drug regulators and research funding agencies to consider medicines that delay ageing-related disease as legitimate drugs. Such treatments have a physiological basis, researchers say, and could extend a person's healthy years by slowing down the processes that underlie common diseases of ageing — making them worthy of government approval. On 24 June, researchers will meet with regulators from the US Food and Drug Administration (FDA) to make the case for a clinical trial designed to show the validity of the approach.

Current treatments for diseases related to ageing "just exchange one disease for another", says physician Nir Barzilai of the Albert Einstein College of Medicine in New York. That is because people treated for one age-related disease often go on to die from another relatively soon thereafter. "What we want to show is that if we delay ageing, that's the best way to delay disease."

Barzilai and other researchers plan to test that notion in a clinical trial called Targeting Aging with Metformin, or TAME. They will give the drug metformin to thousands of people who already have one or two of three conditions — cancer, heart disease or cognitive impairment — or are at risk of them. People with type 2 diabetes cannot be enrolled because metformin is already used to treat that disease. The participants will then be monitored to see whether the medication forestalls the illnesses they do not already have, as well as diabetes and death.

On 24 June, researchers will try to convince FDA officials that if the trial succeeds, they will have proved that a drug can delay ageing. That would set a precedent that ageing is a disorder that can be treated with medicines, and perhaps spur progress and funding for ageing research.

"What we're trying to do is increase health span, not look for eternal life."

During a meeting on 27 May at the US National Institute on Aging (NIA) in Bethesda, Maryland, Robert Temple, deputy director for clinical science at the FDA's Center for Drug Evaluation and Research, indicated that the agency is open to the idea.

Barzilai and his colleagues eschew claims of a quest for immortality, because they think that such assertions have led to a perception that the field is frivolous and irresponsible. "The perception is that we are all looking for a fountain of youth," says Stephanie Lederman, executive director of the American Federation for Aging Research in New York. "We want to avoid that; what we're trying to do is increase health span, not look for eternal life." ▶

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Ageing research has hit bumps in the past decade, as companies marketing drugs touted to prolong life have gone bust (see *Nature* **464,** 480–481; 2010). But organizers of the TAME trial think that the field is now in a better position because animal studies have shown that some drugs and lifestyle practices can extend life by targeting physiological pathways[1].

For instance, the NIA-sponsored Interventions Testing Program, in which investigators at three sites are systematically trialling candidate age-delay treatments, has shown that a handful of interventions convincingly and reproducibly prolong the lives of various strains of mice. Those include cutting down on calorie intake and taking a drug called rapamycin that is used to prevent rejection of transplanted organs.

And researchers from the Novartis Institutes for Biomedical Research in Cambridge, Massachusetts, reported in December that elderly people develop a stronger immune response to an influenza vaccination if they also take a rapamycin-like drug[2]. Rapamycin, which acts on a biological pathway involved in cell growth, is now seen as one of the most promising drugs for delaying ageing, but given over long periods of time it also suppresses the immune system.

SAFETY FIRST

The TAME test is for metformin, which suppresses glucose production by the liver and increases sensitivity to insulin. The drug has been used for more than 60 years and is safe and prolongs healthy life and lifespan in worms[3] and in some mouse strains[1]. Data also suggest that it could delay heart disease, cancer, cognitive decline and death in people with diabetes[4]. Plans call for the trial to enrol 3,000 people aged 70–80 years at roughly 15 centres around the United States. The trial will take 5–7 years and cost US$50 million, Barzilai estimates, although it does not yet have funding.

Matt Kaeberlein at the University of Washington, Seattle, who is running a trial of rapamycin in elderly dogs, says that the concept behind Barzilai's trial is sound. Even though other drugs might be more effective at delaying ageing in animal studies, he says, the many years of experience with metformin in people, combined with data suggesting that it impacts the ageing process in people, make it a good candidate for a first clinical trial in the field.

"It's a smart way to engage the FDA in a discussion about recognizing ageing as an indication that is appropriate for clinical trials," Kaeberlein says. ■

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MOISES SAMAN/MAGNUM

Infrared technologies are subject to tight restrictions because of their military applications.

TECHNOLOGY

US 'export rules' threaten research

Proposed updates to national-security regulations would restrict collaboration with foreign scientists and industry.

BY ALEXANDRA WITZE

The US government is considering policy changes that could dramatically affect how researchers handle equipment and information that have national-security implications. Among other impacts, scientists would need to reconsider what they can discuss with graduate students from other countries, or when travelling abroad on work trips.

One set of rules would affect technologies such as infrared detectors, which are commonly used for environmental and other types of monitoring but can fall under military restrictions because of their night-vision capabilities. Another set of proposed rules would revise the government definition of "fundamental research" in ways that could affect any scientist who collaborates with industrial partners.

The proposals are part of a long-running effort to overhaul Byzantine regulations that seek to prevent certain information and technologies from reaching countries perceived to be hostile by the United States. These 'export control' rules can create a major — even perilous — headache for US researchers. In 2012, a plasma engineer at the University of Tennessee in Knoxville began serving a four-year jail sentence for violating these rules by working with graduate students from China and Iran while on a US Air Force contract.

Public-comment periods on the proposed rules close on 6 July and 3 August, and science groups are trying to raise awareness of what is at stake. "Once the rules get put in place, it's very hard to dial back if you find them overly aggressive," says Gregory Quarles, a physicist

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