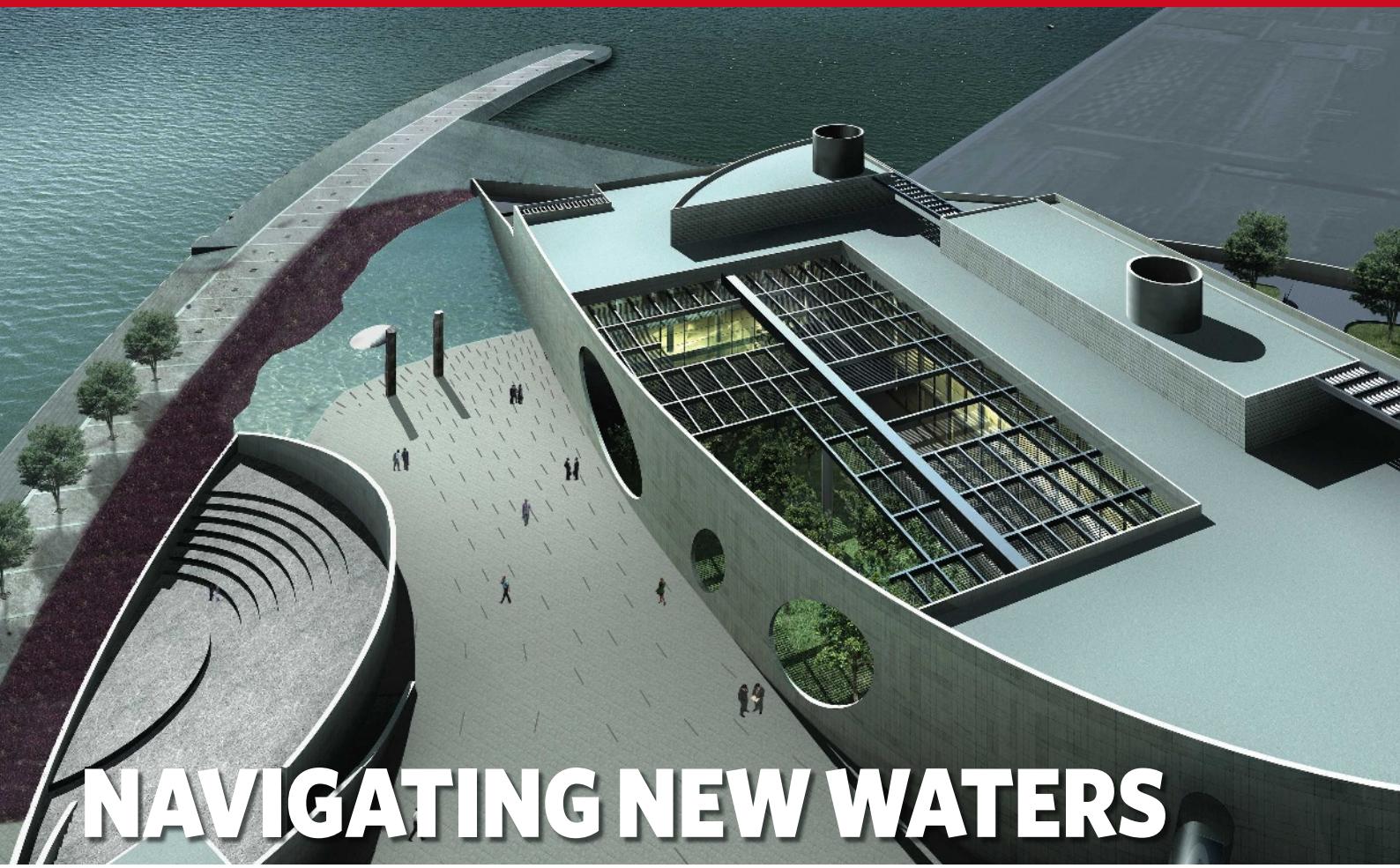

NAVIGATING NEW WATERS

Portugal's spending on research is near the lowest in western Europe. Can a single-minded lady with half a billion euros change things, asks **Alison Abbott**.

Three years ago, everyone seemed to want neuroscientist Zachery Mainen. Janelia Farm Research Center, the Howard Hughes Medical Institute's prestigious new hub in Ashburn, Virginia, had just made a generous offer to recruit him and his frontier studies on decision-making. His current employer, Cold Spring Harbor Laboratory in New York, made a more tempting counter offer. But it was a third, unexpected proposal that he couldn't refuse. Even though the research centre in question did not yet exist. And even though it was in Portugal.

Never in his most fanciful moments had Mainen imagined shifting his career to this small, relatively poor corner of Europe. Yet last July he became one of the first scientists to be signed up by the Champalimaud Foundation Research Centre in Lisbon. When completed in 2010, the centre will be the most grandiose and expensive life-sciences research project the country has even seen.

The scheme has been master-minded almost single-handedly by a forceful lady named Leonor Beleza. Beleza knew little about science until 2004, when she found herself named president of a half-billion-euro endowment for biomedicine left by Portugal's richest man, António de Sommer Champalimaud, on his death. Beleza spent a year or so consulting with the world's scientific élite before deciding how to spend it — lavishly, as it turned out. The Champalimaud Foundation Research Centre will have everything money can buy: a striking US$120-million building designed by renowned architects, top-of-the-range equipment and at least 300 scientists. It will also have a waterfront location on the very spot from which Vasco da Gama and other fifteenth-century navigators departed to discover the unknown world.

"This new institute will make a huge difference to life sciences in Portugal." — António Coutinho

What convinced Mainen to move there was the opportunity to pursue his research — on how animals use experience and sensory input to make decisions — in any direction he chose, and without undue pressure to secure additional funding. "It's got the backing to be a world-class research institute," he says from his temporary laboratory at the Gulbenkian Institute of Science in Oeiras, where he is working until the new building is finished.

It is as bold a project as can be imagined in a country that for some time has had one of the lowest investments in science and research in the European Union outside the former communist member states. In the past few years, the Portuguese science base has grown and modernized rapidly, and spending has risen, says research minister José Mariano Gago. Even so, in 2005, Portugal spent 0.8% of its gross domestic product on research and development, compared with an average in the European Union of 1.8%. Some hope that the unprecedented injection of money from Champalimaud will quicken efforts to transform the country's research. "This new institute will make a huge difference to life sciences in Portugal," says António Coutinho, director of the Gulbenkian Institute.

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Generous tycoon

Champalimaud began building up his fabulous fortune in the 1930s with a cement factory. Portugal, a dictatorship since 1926, was a friendly country for the determined capitalist at the time. But after the 1974 'Carnation revolution', the new socialist regime forced Champalimaud nearly penniless into exile. Undaunted, he rebuilt his wealth in Brazil and, with the maturing of Portugal's democracy, Champalimaud was able to return home in 1992 and buy back many of his former companies.

Champalimaud was a very private man and made his own decisions. It was only after his death that his relatives found out he had earmarked one-quarter of his wealth for biomedical research. But on the day Champalimaud signed his will, he called Beleza out of the blue to ask in confidence whether she would agree to be president of the planned foundation. "I was flattered — but really surprised," she says. "I had only met Champalimaud fleetingly on a few occasions over the years and was not aware he had particularly noticed me." Attracted by the philanthropic opportunity, Beleza said yes. She heard nothing more until Champalimaud died four years later.

Beleza, a carefully elegant and engaging lady nearing 60, trained as a lawyer but spent most of her professional life in politics. Known for her dogged determination, she was once considered Portugal's Margaret Thatcher. But she dropped from the limelight after she was implicated in a scandal involving the distribution of blood contaminated with HIV during her stint as health minister in the late 1980s. More than 120 people with haemophilia had become infected by blood products imported from Austria.

Uncharted territory

Beleza pulled out of politics altogether when she took up the reins of the Champalimaud Foundation and had to decide what to do with the sudden fortune. Champalimaud had left no guidance on how the money should be spent other than that it should be for biomedical research. Seeking direction, Beleza took herself on a brisk tour of the scientific world, visiting places such as the Massachusetts Institute of Technology (MIT) in Cambridge, Cold Spring Harbor Laboratory and the local Gulbenkian Institute, which was funded by another Portuguese foundation established by a wealthy benefactor, Calouste Gulbenkian.

"I didn't know Champalimaud as a person, so I had to try to reconstruct in my mind what he might have wanted," Beleza says. Two things occurred to her immediately. Being an entrepreneur, Champalimaud would probably like to support translation of results from the bench to the clinic, she thought. And since he was nearly blind when he died at 86, it would be appropriate to support research into vision.

Beleza's tour refined her initial ideas. She recalls having an epiphany when talking with MIT's Nobel laureate Susumu Tonegawa, who told her that vision was too narrow an area for a research institute. "He explained how much our vision is controlled by our brains and that we need to understand much more basic neuroscience before we can start systematically translating results to the clinic." This and other conversations convinced Beleza that a large part of the money should support basic research without any requirement for translation or, indeed, any strings attached at all.

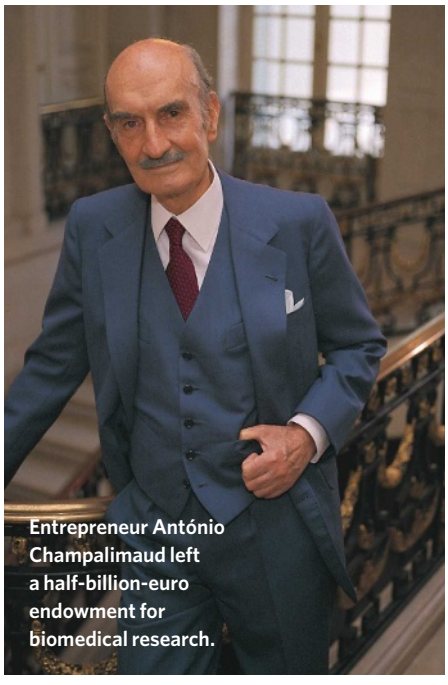
Coutinho offered to help develop a competitive neuroscience programme for the centre, along with temporary lab space for new recruits, allowing them to start without delay. And he encouraged her to also consider cancer research, an area that is more readily translatable. It is also particularly appropriate in Portugal, where cancer care there is among the poorest in Europe, according to a 2005 consultancy report on health care commissioned by the Champalimaud Foundation.

In the final plan, Beleza settled on an annual prize of €1 million (US$1.6 million) for vision — to be awarded for research or for preventing blindness — together with the new research centre, which will combine clinical cancer research and basic neuroscience with a focus on identifying the neural circuits involved in driving behaviours.

The decision came as a disappointment to many scientists around Portugal who had lobbied for a more general distribution of the wealth. But Beleza was adamant about pursuing the big project. Her conversations with the scientific élite had convinced her of the value of focusing resources. They had also shown her that good scientists will move to Lisbon only if the conditions on offer are better than those elsewhere. One advantage that the new principal investigators will have, for example, is a 'parachute fund'. This will allow them to take some of their allocated research money with them if they decide to bail out of the Champalimaud institute — an important provision for scientists who may be wary about joining a new and unproven institute.

J. THYS/AFP/GETTY IMAGES

Leonor Beleza was asked to head the Champalimaud Foundation.



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Entrepreneur António Champalimaud left a half-billion-euro endowment for biomedical research.

Changing tack

This, and the opportunity to do blue-sky basic research, are tempting Portuguese expatriate Rui Costa, currently at the National Institutes of Health in Bethesda, Maryland, to move permanently to the Champalimaud Institute. Costa already has an adjunct position there, examining the dopaminergic circuits involved in movement. "It's nice that the Champalimaud people will allow you not only to do good science, but to do it under new conditions," he says. So far Beleza has recruited just three principal investigators and not, as yet, a director. She says she wants the best scientists from all over the world, but "it would be nice if some were Portuguese".

Reaction to the centre has generally been positive, although it is still early to say how well it will compete with established research institutes or whether the mix of cancer and neuroscience will prove fruitful. With no thought to modesty, top award-winning architect firm Charles Correa Associates — who built the Brain and Cognitive Neuroscience Complex at MIT — has been contracted to build a research institute with a cancer clinic worthy of the project's grandiose aims. The target completion date of 2010 will coincide with the centenary of Portugal's republic. Until then, on the foundation's webpage, the virtual fly-through of the architectural plans provides an exhilarating ride.

Outside, the complex boasts a broad public plaza that ascends gradually alongside the building to yield a sudden, stunning view of the Atlantic Ocean. The design is a fitting symbol of voyages into the unknown, of both fifteenth-century ocean explorers and twenty-first-century researchers. And Mainen, for one, is excited about the discoveries ahead. "I never expected to end up here," he says, "but I hope this project will plant Portugal's flag on the research map." ■

Alison Abbott is *Nature*'s senior European correspondent.