RESEARCH INSTITUTES

Egypt science city in trouble

State support needed for project pioneered by Nobel laureate Ahmed Zewail.

BY PAKINAM AMER & MOHAMMED YAHIA

Questions are swirling over the future of Egypt's first science city, after the death of the Nobel laureate who made the project his legacy. The Zewail City of Science and Technology, a campus outside Cairo comprising a non-profit university and several research institutes, is named after the man who spearheaded it: Egyptian-born US chemist Ahmed Zewail, the first Arab to win a science Nobel prize.

But Zewail's death at the age of 70 on 2 August raises fresh doubts about the research hub's already precarious finances. The institute, which opened in 2011, had relied heavily on Zewail's star name and contacts to attract the support of scientific luminaries, as well as donations of 700 million Egyptian pounds (around US$80 million). It is now running out of that money, and, despite a loan of 1 billion Egyptian pounds from the ministry of defence, it has not raised enough cash to support a planned move to a new $450-million campus in 2019, says Sherif Fouad, a spokesman for the institute.

"Fundraising has always been a challenge, and I think it is likely to be affected by the loss of Dr Zewail in the short term," says Sherif El-Khamisy, a molecular biologist at the University of Sheffield, UK, who is also director of Zewail City's Center for Genomics. But he and others affiliated with the hub say they are hopeful that it will survive. In a speech on 6 August after Zewail's death, Egypt's president, Abdel Fattah el-Sisi, asked Egyptians to continue to donate to the city, but vowed that the nation's armed forces — whose engineers are building the new campus — would finish construction even if no more money comes through.

It is likely that Egypt's government will ultimately need to step in with support, says Salah Obayya, a physicist who is acting as chairman of Zewail City until a replacement for Zewail is elected. "The logistical support envisaged from the state is expected to override the initial fear or uncertainty," says El-Khamisy. ■

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CHARLES OMMANNEY/GETTY REPORTAGE

George W. Bush had barriers erected along nearly 1,100 kilometres of frontier during his presidency.

ECOLOGY

Trump's border-wall pledge raises hackles

Ecologists fear plan to seal off the United States from Mexico would put wildlife at risk.

BY BRIAN OWENS

With Republican presidential candidate Donald Trump talking about walling off the United States from Mexico, ecologists fear for the future of the delicate and surprisingly diverse ecosystems that span Mexico's border with the southwestern United States.

"The southwestern US and northwestern Mexico share their weather, rivers and wildlife," says Sergio Avila-Villegas, a conservation scientist from the Arizona-Sonora Desert Museum in Tucson. "The infrastructure on the border cuts through all that and divides a shared landscape in two."

Trump's policies tend to be short on detail, but he has talked about sealing off the entire 3,200-kilometre border with a wall that would be 10–20 metres high. "We will build a wall," Trump says in a video on his campaign website. "It will be a great wall. It will do what it is supposed to do: keep illegal immigrants out."

Constructing a wall "would be a huge loss", says Clinton Epps, a wildlife biologist at Oregon State University in Corvallis. "We know how important the natural movement of wildlife is for the persistence of many species."

Far from being a barren wasteland, the US–Mexico borderlands have some of the highest diversity of mammals, birds and plants in the continental United States and northern Mexico — including many threatened species.

A wall could divide species that make a home in both nations. Bighorn sheep, for example, live in small groups and rely on cross-border connections to survive, says Epps. Other species, such as jaguars, ocelots and bears, are concentrated in Mexico but have smaller, genetically linked US populations.

"Black bears were extirpated in West Texas, and it was a big deal when they re-established in the 1990s," Epps says. Breaking their links with Mexican bears could put the animals at risk again. And birds that rarely fly, such as roadrunners, or those that swoop low to the ground, such as pygmy owls, could also have trouble surmounting the wall.

Such a physical barrier would worsen the habitat disruption caused by noise, bright lights and traffic near the border. And a wall would cut across rivers and streams that cross the border, severing a vital link. "When water crosses the border, it unites ecosystems," says Avila-Villegas. "If we block the water, it affects nature on a much more fundamental level."

Trump is not the first US politician to hit upon the idea of sealing the southern border. In 2006, President George W. Bush authorized the construction of a 1,126-kilometre border wall, of which nearly 1,100 kilometres were completed. The existing barriers are a mixture of 6-metre-high steel walls, 'bollard fences' made of steel pipes set upright in the ground about 5 centimetres apart, and lower vehicle barriers that Avila-Villegas says resemble the

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