

◀ the Vietnam Academy of Science and Technology, which hosts the first DNA-testing laboratory to be upgraded. In the 1990s, his institute proposed plans for identifying the missing, he says. However, “due to difficult circumstances at the time”, these did not take off.

Last month, the government signed a training and consultancy contract with Bioglobe, which will allow the sequencing effort to start.

“The technical challenges are considerable but tractable,” says Bioglobe’s chief executive, Wolfgang Höppner, who crafted the proposal for Vietnam. In the country’s hot and humid climate, DNA in bones that have lain in shallow graves for decades is likely to have degraded extensively. Moreover, contaminants from soil microbes can inhibit the enzymes that scientists use to amplify what little DNA remains to levels that can be analysed. And because of the large numbers of bones involved, the work needs to be done efficiently, adds Höppner.

Höppner’s proposal makes use of kits from Germany-based biotech company Qiagen, which have been designed to protect and reveal as much DNA as possible when dealing with difficult sources such as old, buried bones, and are also amenable to automated, ‘high throughput’ processes.

The identification process involves powdering bone samples and chemically breaking down their cells. Before amplification, the

DNA is extracted in sealed Qiagen cartridges that contain chemicals to wash away substances that could inhibit the process. Another Qiagen kit then checks the amplified DNA against a large set of genomic markers to create a DNA profile of the sample. The kit can also detect whether inhibitors are still present.

In cases in which inhibitors prove stubborn, samples will be analysed manually by slower, more complex methods that have been optimized by an experienced forensic laboratory run by the International Commission on Missing Persons (ICMP). That lab, in Bosnia and Herzegovina’s capital Sarajevo, led the effort to identify people killed during the 1990s conflict, including nearly all of the 8,000 or so who were massacred in 1995 in Srebrenica.

TRAINING BEGINS

The ICMP will also have a role in training Vietnamese scientists. Truong’s lab will next month send six scientists on a three-month programme. They will spend most of their time in Hamburg focusing on DNA tests, but they will also have a stint at the ICMP to learn other critical aspects of identification: how to avoid jumbling bones from different skeletons when exhuming them from mass graves, or how to look for clues in bones that might aid identification, such as pointers to height or gender.

It was possible to extract useful levels of DNA from around 80% of the bones from the

Srebrenica victims, says Thomas Parsons, head of the ICMP lab. The Vietnamese bones have been in the ground for longer and in a more damaging climate, but highly optimized methods and careful selection of skeletal samples will help, he says.

The Vietnam project will also need reference DNA from family members to compare with the bone DNA from victims. It plans to have an outreach programme calling for people to donate saliva samples to create a reference data bank — but this will not be easy. Many war victims may have died too young to have had children, and their parents may also be dead, so reference samples will have to come from more distant relatives whose DNA is less similar. “That is why it is particularly important to do the DNA analysis with a larger than normal set of markers,” says Höppner.

The outreach programme will also call for people to come forward with information on where bones might be buried. Unlike in Bosnia, where investigators could in some cases use satellite imagery to identify mass graves, the Vietnamese effort will rely on witness reports, as well as on common and military knowledge.

Once all three government DNA-testing centres are upgraded, probably by 2017, they will together be able to identify between 8,000 and 10,000 people a year, says Truong. He also anticipates that the DNA project will improve Vietnam’s scientific culture. ■

POLITICS

Taiwan’s SARS hero is poised for vice-presidency

Epidemiologist who spearheaded response to outbreak is popular with scientists — and others.

BY DAVID CYRANOSKI IN TAIPEI

A famous and influential epidemiologist, Chen Chien-Jen, is set to become Taiwan’s vice-president after elections on 16 January.

If he does, it is hoped that Chen — an epidemiologist looked upon as a hero for his role in subduing Taiwan’s outbreak of severe acute respiratory syndrome (SARS) in 2003 — will help to infuse the new government with an air of integrity and collaboration, maintain good relations with China and stimulate ideas for revitalizing the economy.

“He can negotiate with anyone, and is always trying to help,” says the National Taiwan University’s president, Yang Pan-Chyr. “You wouldn’t think such a person would

be a candidate for a politician.”

Chen announced in November that he would be the running mate for Tsai Ing-Wen, leader of the Democratic Progressive Party (DPP). If Tsai were to win, it would be only the second time in Taiwan’s history that the ruling Kuomintang (KMT) party has been dethroned.

Tsai is ahead in all the polls: she leads the KMT candidate by 30 percentage points, according to the non-profit Cross-Strait Policy Association, which carries out research on relations between Taiwan and the mainland — and the KMT’s own survey puts her lead at 8 percentage points.

Chen, too, is popular — the Cross-Strait Policy Association puts his ‘admiration’ rating at 54%, compared with 27% for his counterpart

in the KMT. This is probably a result of his celebrity status with regard to the SARS epidemic.

Panic over the viral infection, which initially emerged in mainland China but quickly spread across many parts of the world, was exacerbated in Taiwan because the United Nations recognizes China’s claim that Taiwan is part of China, and thus refuses to give it an independent seat at meetings of the World Health Organization. Excluded from international discussions and sample sharing, Taiwan’s outbreak spiralled out of control even as authorities elsewhere were getting a grip on the epidemic.

It was Chen, who was appointed health minister as the epidemic was escalating in Taiwan, who headed containment efforts. He



Presidential candidate Tsai Ing-Wen has picked epidemiologist Chen Chien-Jen to be her running mate in the upcoming Taiwan election.

SOURCE: WEB OF SCIENCE

bolstered attempts to isolate patients so as to prevent spread in hospitals, and boosted screening for fever. Even today, mentioning his name can elicit an enthusiastic thumbs-up. “Chen is great,” a taxi driver in Taiwan told *Nature* in early January. “With SARS, he was so fast.”

Chen is also popular in scientific circles, where he is known for other groundbreaking work. His research on the effects of arsenic exposure led health agencies around the world to lower the levels deemed acceptable (C.-J. Chen *et al.* *Br. J. Cancer* **66**, 888–892; 1992), and his assessment of the risk of liver cancer in people with chronic hepatitis led to new treatment guidelines (C.-J. Chen *et al.* *J. Am. Med. Assoc.* **295**, 65–73; 2006). An online petition supporting Chen’s candidacy has received more than 1,600 signatures — including those of prominent academics. “Within days, hundreds of names poured in,” says Ming-Liang Lee, the former Taiwanese health minister who started the petition.

Many researchers value Chen’s personality. “He has the capacity and appeal to pull people together,” says Ming-Chu Hsu, chief executive of TaiGen, one of Taiwan’s most successful biotechnology companies.

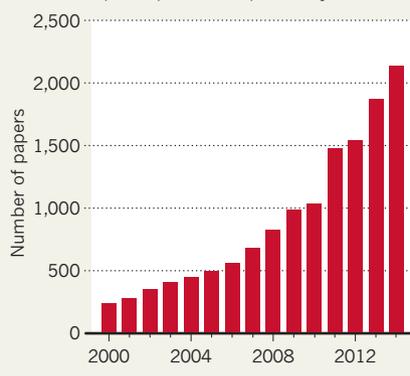
Chen carries a reassuring air of reliability. “He would be someone we can trust. Everyone seems to think so,” says Yang.

Chen himself told *Nature* that attributes honed during his time as a scientist — for example, the ability to solve problems — are beneficial to politics. He also said that it is crucial to revitalize Taiwan’s stagnant economy: increased competition in electronics from China and elsewhere has slashed the profits that once made Taiwan wealthy.

Tsai has outlined five areas in which Taiwan can innovate: biopharmaceuticals, green

CROSS-STRAIT COLLABORATION

The number of science papers co-authored by researchers from Taiwan and from mainland China has quadrupled in the past ten years.



energy, big data, precision machinery and national defence. To bolster those aims, Chen plans to establish a research system that encourages researchers and entrepreneurs to take risks. “Now the government doesn’t allow failure, so everyone goes for ‘me-too’ modifications, not innovation,” he told *Nature*.

Scientists and technology-based industrialists say that Chen and Tsai’s intention to promote innovation could bring a much-needed focus on Taiwanese science, although advocates are trying to keep things in perspective. “I think all science and technology would benefit from his taking office,” says Yang. “But maybe we are expecting too much.”

The DPP has traditionally emphasized Taiwanese autonomy, which riles Beijing, but “we don’t want to be troublemakers,” says Chen. He acknowledges that he himself came up against the Chinese authorities during the SARS epidemic, but says that agreement on

how to handle information on health and infectious diseases has largely resolved the issues.

A continuation of the status quo suits neuroscientist Chiang Ann-Shyn at Taiwan’s National Tsing Hua University; he expects Chen to act as an antidote to the DPP’s sometimes provocative statements on independence. “Relations with China have been good. I don’t think Chen will do anything radical,” he says. Two decades of stable relations following a crisis in the mid-1990s — when the mainland tested missiles in the strait — have led to a boom in business between Taiwan and the mainland, and research collaborations between them have quadrupled in the past ten years (see ‘Cross-strait collaboration’).

Hsu agrees with Chiang; her company’s antibiotic against multi-drug-resistant *Streptococcus pneumoniae* was the first drug developed in Taiwan to be submitted for approval on the mainland under new rules. “Health is one thing we can work on together,” she says.

Chen becomes emotional when talking about the possible end of his research career. Until recently, he had assumed that this would be at the nation’s premier research organization, the Academia Sinica, where he was vice-president until he declared himself Tsai’s running mate.

But although he was at first reluctant to join the electoral race, he finally decided that improving Taiwan’s social and economic situation was more important than his research.

A devout Catholic who consulted his archbishop before making his decision, Chen says that he considers his political career a “calling from God”. He adds: “I told the people in my laboratory that, for the coming years, it’s more important that I serve the people.” ■