

the other paper, led by Li Lei, a developmental biologist at the Institute of Zoology, Chinese Academy of Sciences, in Beijing, say they grew three embryos for that long.

The teams tracked the progress of the embryos, which were created using *in vitro* fertilization, to check whether they grew as they would have in the womb. They examined the timing and shape of structures in the embryos and the structures that support embryonic growth, the types of protein that are expressed by cells at different stages and the primordial germ cells that go on to become eggs or sperm. Then they compared these observations with what is known about development of this species from past experiments, in which embryos were removed from pregnant monkeys at different stages up to 17 days.

Both groups report that embryos in a dish develop in the same way as those in the womb. “It’s ok to assume that the observations made are a representation of what happens *in vivo*,” says Ispizua Belmonte.

The teams stopped their experiments on day 20, when the embryos turned dark and some cells detached – signs that the structures were collapsing. Li says it’s not clear why that happened. He and Ispizua Belmonte say that culturing the cells in an extracellular matrix that better mimics the womb might help them to survive longer. Next, Ji hopes to grow embryos to the point when the primitive nervous system starts to form, around day 20.

### Subtle differences

Savatier says one difference between monkey and human embryos, described in the Ji and Ispizua Belmonte paper, is that the genes that are expressed in monkey cells that form the placenta are different from those in humans. But to study these processes in later stages in human embryos, regulators would need to lift the 14-day ban.

After the US teams grew human embryos to 13 days, some scientists and ethicists pushed for a revision of the policy, and a poll conducted in the United Kingdom in 2017 reported strong public support for extending the limit beyond 14 days. Savatier and others think the latest results showing the unique features of human embryonic development will strengthen arguments to change the policy.

Researchers are optimistic that the gel matrix could be used to grow human embryos to a more advanced stage if the rules change. Ji says that another group at his institute has developed a protocol specifically for human embryos that will soon be published. “This system could be suitable for human embryos to be cultured to 20 days,” he says, “but we are not planning to do it.”

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# GENOMES TRACE ORIGINS OF ENSLAVED PEOPLE WHO DIED ON ISLAND

Former slaves left on St Helena were probably taken from west-central Africa, a genome study finds.

By Ewen Callaway

**G**enomes from enslaved Africans who were freed and died on a remote Atlantic island in the mid-nineteenth century are offering clues about their origins in Africa. The findings come from the largest study of genome data obtained so far from remains of enslaved people and offer insights into the transatlantic slave trade, in which an estimated 12 million Africans were kidnapped and enslaved in North and South America and the Caribbean.

Researchers analysed DNA taken from 20 people from the British island territory of St Helena, whom the British Navy had liberated and brought there. The research, posted on the bioRxiv preprint server last

**“By illustrating the history and the condition of a few, we are at the same time illustrating the condition of the many.”**

month, suggests that the people might have been captured in parts of west-central Africa, including present-day Angola and Gabon (M. Sandoval-Velasco *et al.* Preprint at bioRxiv <http://doi.org/ddq2>; 2019).

### No island paradise

St Helena, which lies in the Atlantic Ocean nearly 2,000 kilometres west of Angola, occupies a unique chapter in the history of the transatlantic trade in people. After Britain outlawed the slave trade in 1807, its navy intercepted slave ships and sent an estimated 24,000 people to St Helena. They had been aboard ships heading largely to Brazil and Cuba between 1840 and the late 1860s.

Many of the people freed arrived in poor health and were housed in squalid conditions, and as many as 10,000 died. In 2006, construction work uncovered mass burials, and archaeologists unearthed the remains of 325 people – more than half under 18.

Unlike cemeteries in the Americas, which tend to hold multiple generations of people who had once been enslaved, nearly all of the

people who died on St Helena were likely to have been born in Africa.

Shipping records – the main historical source on the African origins of people taken into captivity – tend to record only the ports from which slave ships set sail, but other records suggest that many of the people were captured farther inland.

In an attempt to better trace the Africans left on St Helena, a team led by palaeogenomicist Marcela Sandoval-Velasco and ancient-DNA researcher Hannes Schroeder, both at the University of Copenhagen, tested remains from 63 of the people for intact DNA. They sequenced partial genomes from 20.

Seventeen were male – backing up records indicating that, in its final decades, the transatlantic slave trade captured more men than women. Analysis of the genome data found that none of the people were closely related, nor did they belong to a single African population.

Comparisons with genome data from thousands of modern Africans from dozens of populations suggest that the people from St Helena are most closely related to people living today in central Gabon and northern Angola. But the researchers caution that gaps in present-day genome data from potential homelands, such as the Democratic Republic of the Congo, make it difficult to say for certain where the people buried in St Helena were taken from. “Although it’s very hard to exactly pinpoint their origins, I think what we see in our results is that they are not coming from a single population,” says Sandoval-Velasco.

This insight suggests that the liberated Africans on St Helena lived in a challenging multicultural setting where they might not have understood the language and customs of others left on the island. “We hope that by illustrating the history and the condition of a few, we are at the same time illustrating the condition of the many, but it shouldn’t stop there,” Sandoval-Velasco says.

Genome analysis shines a powerful light on people exploited in one of history’s darkest chapters, says Rosa Fregel, a population geneticist at the University of La Laguna in the Canary Islands. “Usually it’s just about numbers – how many people from each country. Here, we are talking about particular people and their origin,” says Fregel. “Ancient DNA has the potential to tell their story.”