

# NEWS IN FOCUS

**POLITICS** Serbia's science transformation could cost hundreds of jobs **p.275**

**MATHEMATICS** Machine learning leads researchers to unsolvable problem **p.277**

**ASTRONOMY** How Hawaii is leaving its mark on the Solar System **p.278**



**ASTRONOMY** New star maps illuminate how the Milky Way evolved **p.284**

GUILLERMO LEGARIA / AFP/GETTY



Anthropologists examine rock art at Serrania La Lindosa in Colombia, an area previously made inaccessible by guerrilla groups fighting the government.

## GOVERNMENT

# Colombia creates its first science ministry

*But cultural changes must occur to truly improve the nation's research, scientists say.*

BY ANDREW J. WIGHT

Colombian scientists are cautiously optimistic after the country's Senate voted to create the nation's first Ministry of Science, Technology and Innovation.

Researchers hope that the decision, announced in mid-December, is a sign that the government will start to address years of declining budgets and poorly coordinated science priorities. The move elevates Colombia's

existing science agency, giving research an advocate and agenda in President Iván Duque's cabinet, and placing it on an equal footing with ministries such as defence or foreign affairs.

But others say that, for the research environment in Colombia to truly improve, there needs to be a cultural shift in how the country educates and employs scientists.

The new ministry will struggle without a system of meritocracy, the competent execution of state policy or adequate resources, says

immunologist Gabriela Delgado at the National University of Colombia in Bogota. "This can't work the same as other ministries," she says, referring to the corruption scandals that have plagued other parts of the government.

"We have the people, we have the knowledge, we have the biological resources — we are just missing the funding," says Paul Chavarriaga, a plant biotechnologist at the International Center for Tropical Agriculture in Cali, Colombia.

The science ministry will take shape ►

► through a restructuring of Colombia's science agency, the 50-year-old Colciencias, which has been subject to budget cuts in recent years. Funding decreased from US\$135 million in 2013 to \$106 million in 2018.

The ministry's creation follows a 2016 treaty between the government and the left-wing guerrilla group known as the Revolutionary Armed Forces of Colombia (FARC) that ended 50 years of civil conflict in Colombia. A top government priority has been to open up highly biodiverse regions — once inaccessible because of guerrilla control — to scientists and economic development.

Colombia currently invests only 0.24% of its gross domestic product (GDP) in research and development (R&D), according to figures from the United Nations Educational, Scientific and Cultural Organization. That increases to 0.67% if building and other infrastructure costs are included, says Fanor Mondragon, a chemist and member of the Colombian Academy of Science, based in Medellín.

Duque has pledged to increase R&D spending to 1.5% of GDP by 2022, following a failed commitment to a similar investment by former president Juan Manuel Santos in 2015. Of the other countries in the region, Brazil (1.17% of GDP), Argentina (0.59%) and Mexico (0.53%) invest the most in R&D.

#### OUTSOURCING

Mondragon says that Colombian industries currently outsource most of their R&D, and that the country needs institutes of applied sciences to bring resources and talent back to Colombia.

"We need to deliver both applied and basic research," Mondragon says. "Putting money into Colciencias isn't enough, because we do not have a science and technology system to promote the research we need in Colombia."

Colombians generally have a favourable view of science, says Ximena Serrano Gil, president of the Colombian Association of Scientific Journalism in Bogotá. But they don't see it as being a priority or integral to their daily lives, she adds. Colciencias conducted a survey of Colombian students last year and found that half of them weren't interested in science.

Serrano Gil hopes that the creation of the ministry will promote the democratization of knowledge through public policy and the participation of researchers and journalists.

The ministry's leadership is also crucial, says Mondragon. "It is important the minister has a knowledge-based vision for the development of the country."

Iván Darío Agudelo, the Colombian senator who championed the science ministry's formation, says Duque will pick the new minister during the 12-month transformation of Colciencias. Agudelo hopes the president will choose someone in the mould of neuroscientist Andrés Couve Correa, the inaugural head of Chile's Ministry of Science and Technology.

"We need to have a minister with a scientific aptitude and a political attitude," Agudelo says. ■



Protesters in Kolkata hold signs condemning unscientific claims made at a major science conference.

INDIA

## Protesters decry anti-science talks

*For the second time in four years, a major meeting has been used as a platform for outlandish beliefs.*

BY T.V. PADMA

Indian scientists have criticized two speakers at a major conference for making bizarre, unscientific claims, including that ancient Hindus invented stem-cell science. Groups of researchers held protests in Bengaluru, Kochi, Kolkata and Thiruvananthapuram on 6 January, calling for an end to presentations at the Indian Science Congress that promote unscientific personal beliefs.

"Any theory based on personal beliefs and not verified by science should not have any place in a science congress," says physicist Soumitro Banerjee, general secretary of the non-profit Breakthrough Science Society in Kolkata, which promotes science and organized the protests.

In response to the outcry, congress organizers say that, from next year, they will require speakers to submit abstracts of their talks. "We will also ensure moderators for all sessions who can ensure that the content is scientific," says biochemist Premendu Mathur, general secretary of the Indian Science Congress Association in Kolkata.

The congress, the country's largest annual gathering of scientists, was held in Jalandhar

from 3 to 7 January this year. It is the second time in four years that the conference has been condemned for giving a platform to people promoting unscientific ideas: in 2015, a speaker claimed that ancient Indians were the first to build aeroplanes.

During a talk on 4 January, chemist Gollapalli Nageswara Rao, vice-chancellor of Andhra University in Visakhapatnam, cited an ancient Indian poem, the Mahabharata, as proof that knowledge of *in vitro* fertilization and stem cells existed in India thousands of years ago. Rao did not respond to *Nature's* questions about the incident.

Krishnaswamy VijayRaghavan, principal scientific adviser to the Indian government, wrote in a blogpost that it is unfortunate that a vice-chancellor of a university says something that is "scientifically completely untenable".

Another speaker contested Albert Einstein's theories of relativity and Isaac Newton's theories of gravity during the children's section of the science congress. ■