undocumented immigrants. Arizona, for instance, permits police officers to check the immigration status of people they stop, detain or arrest.

For some researchers, the topic is personal. At the University of New Mexico in Albuquerque, undocumented students are recording the emotional and mental challenges of immigrants in their own communities. "This is for undocumented students to give something back," says Josue De Luna Navarro, a team leader who is studying engineering.

Like his collaborators, he has a legal status known as deferred action for childhood arrivals (DACA), which gives temporary residency to people who entered the United States illegally as kids. "We're always in fight or flight mode," De Luna Navarro says. "We never really get a moment to just breathe." Beyond the fear of deportation, DACA students must cope with being ineligible for federal financial aid, loans and some jobs.

Still, direct research on undocumented people remains difficult. For ethical reasons, most researchers do not ask study participants about their citizenship status, and many immigrants hesitate to seek medical care or register with the government, which limits relevant public data.

But circumstances sometimes provide natural experiments. In 2013, US government immigration agents conducted raids in Washtenaw County, Michigan, where social scientist William Lopez was running a health study. The 151 people who answered the survey after the raids reported worse general health than the 325 who had already completed it, says Lopez, of the University of Michigan. Many said that after the raids, they were too afraid to leave their homes for food or medical care, and displayed symptoms of post-traumatic stress disorder[3].

Some researchers worry that Trump's crackdown could also disrupt long-running studies of immigrant health, such as one in central California run by the University of California, Berkeley. For 17 years, the programme has followed 600 children of farmworkers, most of whom are Mexican and many of whom are probably not legal residents, says study leader Brenda Eskenazi, a neuropsychologist at Berkeley.

In the past year, the researchers have for the first time added questions about fear of deportation to their interviews. They have also begun distributing brochures that outline participants' rights if federal agents come to the door. Says Eskenazi, "We're really concerned about these people." ■

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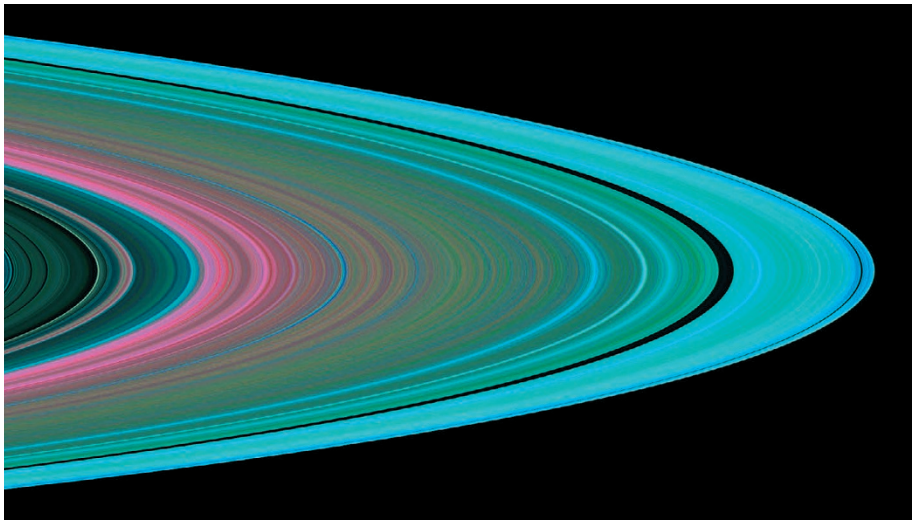
3. Lopez, W. D. *et al. J. Immigr. Minor. Health* http://dx.doi.org/10.1007/s10903-016-0390-6 (2016).



NASA/JPL-CALTECH/SPACE SCIENCE INSTITUTE

Planetary scientists still debate the age and provenance of Saturn's rings.

PLANETARY SCIENCE

Cassini's science swan-song

NASA's Saturn probe heads into the unknown, between the planet and its rings.

BY ALEXANDRA WITZE

After 13 years exploring Saturn and its moons, NASA's Cassini spacecraft has just 5 months left to live. But it will go out with a scientific bang.

On 22 April, Cassini will slingshot past Titan, Saturn's largest moon, for the last time. Four days later, the probe will hurtle into the unexplored region between the giant planet and its rings. Cassini will thread that 2,400-kilometre-wide gap 22 times before its kamikaze dive into Saturn's atmosphere on 15 September.

This unprecedented journey promises to yield fresh discoveries for the venerable spacecraft. "It will be like a whole new mission," says Linda Spilker, Cassini's project scientist at NASA's Jet Propulsion Laboratory (JPL) in Pasadena, California. "There are fundamental new scientific measurements to make."

Those include the first direct tastes of particles in Saturn's rings, and of its upper atmosphere; the best measurements yet of the planet's magnetic and gravitational fields, which could answer long-standing questions such as how fast the planet rotates and how old its rings are; and the sharpest look yet at the inner rings.

It all begins with the spacecraft's final fly-by of Titan, the 127th such close encounter. Cassini will scan the moon's methane lakes one last time, looking for waves, bubbles or other phenomena roiling the surface. Earlier fly-bys have revealed changes in the lakes over time, and the final pass is the last chance to look for seasonal shifts, says Sarah Hörst, ▶

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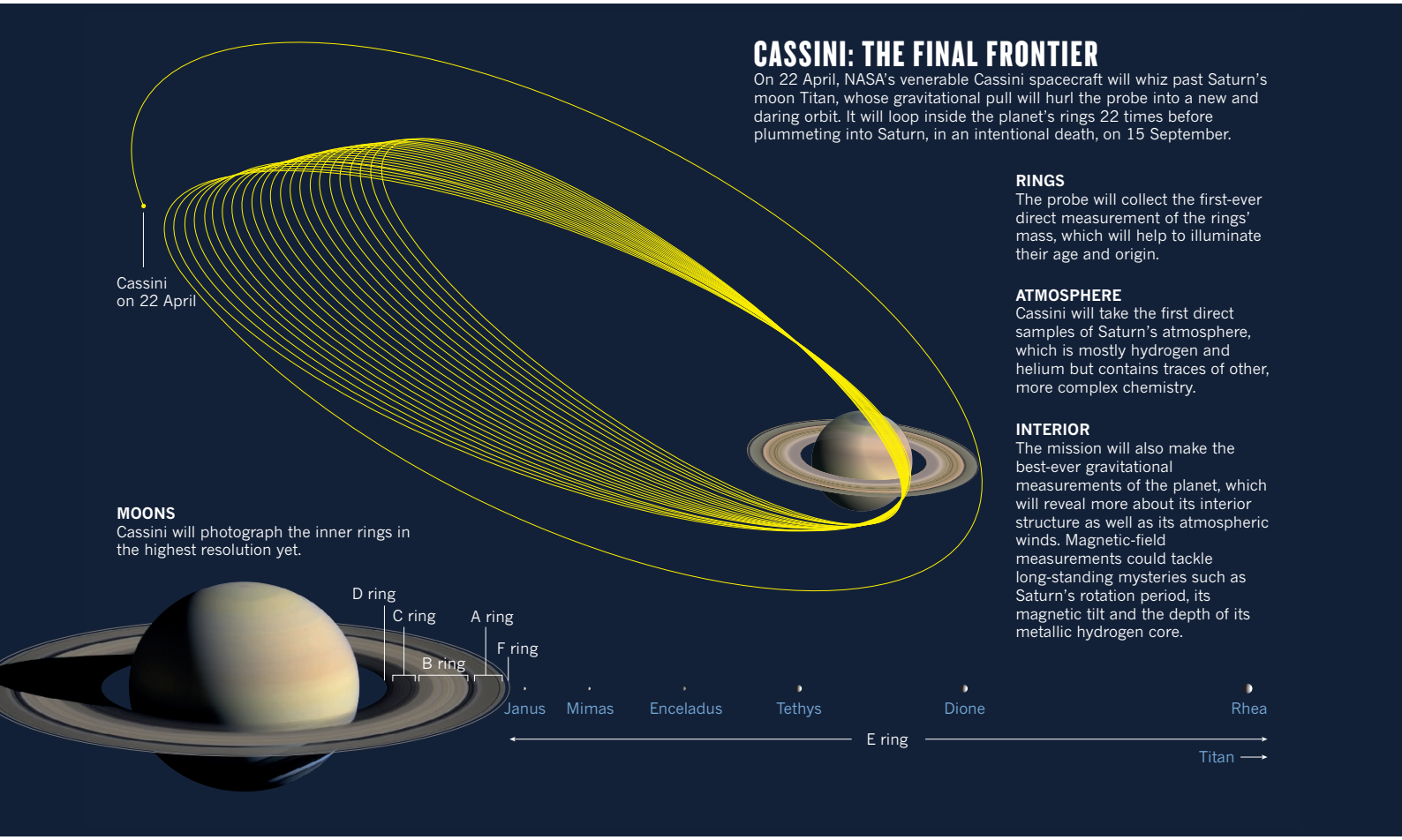

SOURCE: NASA/JPL-CALTECH/SSI

▶ a planetary scientist at Johns Hopkins University in Baltimore, Maryland.

Titan's gravitational pull will fling Cassini into its 'grand finale' orbits, plunging between Saturn's innermost ring and the planet's cloud tops (see 'Cassini: the final frontier'). The spacecraft will turn its main antenna forward, to act as a protective shield against any errant ring particles as it whizzes along at 110,000 kilometres per hour.

Since November, the probe has been climbing higher relative to Saturn's equatorial plane, providing a new vantage point on the planet's outer rings. The upcoming inner dives will also reveal spectacular new details, says Carolyn Porco, a planetary scientist at the University of California, Berkeley, who leads the mission's imaging team.

High-resolution photographs have captured mysterious propeller-shaped gaps that ripple through some of the farther-out rings, probably formed by unseen moonlets. "The rings really are changing before our eyes," says Jeffrey Cuzzi, a planetary scientist at NASA's Ames Research Center in Moffett Field, California.

Cassini's remote-sensing instruments will get their closest look yet at the rings, on sides both lit and unlit by the Sun. Measurements will show how the chemical make-up of the ring particles varies from place to place — information that is crucial for researchers who are trying to tease out which compounds pollute the rings' otherwise pure ice.

And scientists might finally unravel the rings' biggest mystery — how old they are and how they formed. Between May and July, Cassini will make its most precise measurements of Saturn's gravitational field; by tracking the spacecraft's motion as it flies between the planet and the rings, mission scientists expect to improve their calculations of the mass of the rings by an order of magnitude. A relatively high mass would suggest that the rings were ancient, perhaps formed by a big moon ripped apart billions of years ago. Lighter-weight rings would suggest a more recent formation, perhaps from a visiting comet that disintegrated.

Other fundamental measurements will tackle the giant planet itself. On the grand-finale orbits, Cassini's magnetometer will measure Saturn's magnetic field close to the planet. There, it is roughly ten times stronger — and more complex and scientifically interesting — than in areas already probed, says Marcia Burton, a planetary scientist at JPL.

Those data should shed light on long-standing mysteries such as the depth of Saturn's metallic hydrogen core — which powers its magnetic field — and how quickly the planet rotates. Observations by the Voyager spacecraft in the 1980s suggested that one rotation takes just under 11 hours. But the numbers are different when measured in the northern and southern hemispheres, which hints that something more complicated is going on. "It is hard to imagine how the grand-finale orbits could not lead to a huge improvement in our understanding of Saturn's magnetic field," Burton says.

On 15 September, with its tanks almost out of fuel, mission controllers will steer Cassini directly into Saturn. But the craft will still radio back observations of the gases that make up Saturn's atmosphere. "Even in its final moments, Cassini will be doing groundbreaking science," says Hörst. ■

CORRECTION

The News story 'Clash of the physics laws' (*Nature* **543,** 597–598; 2017) failed to give the full name and affiliation of the person quoted at the end. It was a co-author of the 2011 *Nature* paper, Renato Renner at the Swiss Federal Institute of Technology Zurich. The News Feature 'Cancer's cruel chimaeras' (*Nature* **543,** 608–611; 2017) should have said that mortuary workers, not paramedics, came to take away Max Ritvo's body. And the family foundation was directed to focus more of its research spending on basic science, not all of it.

CORRECTION

The News story ‘Cassini’s science swan-song’ (*Nature* **544,** 149–150; 2017) erred in implying that the inner rings are known to contain propeller-shaped gaps. The gaps are known to exist in outer rings, but no hints have yet been seen of them in the inner ones.