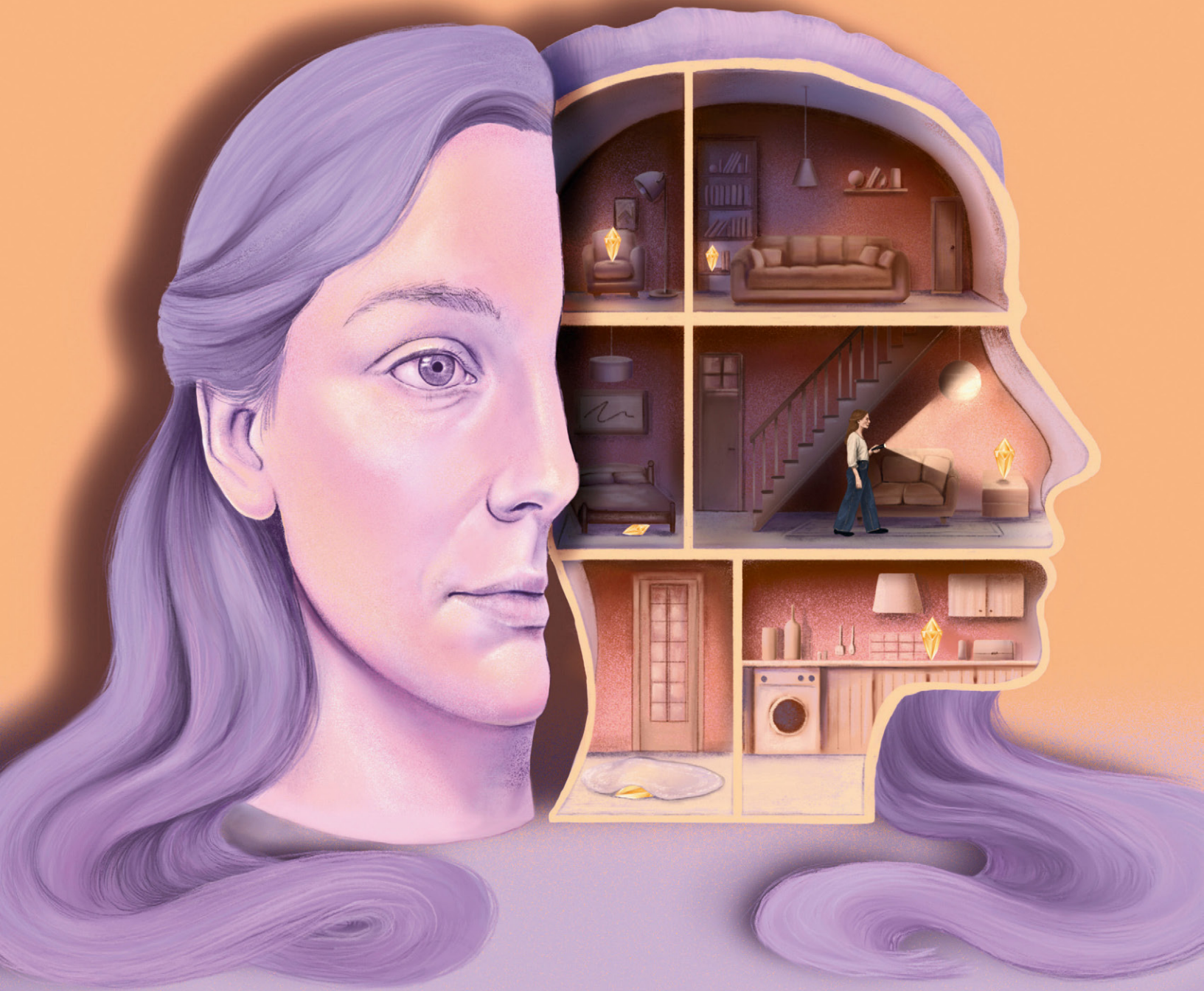
BBC

IMPOSSIBLE WORLDS: THE PLANETS REWRITING THE RULES

Science Focus

SHARPEN YOUR MEMORY

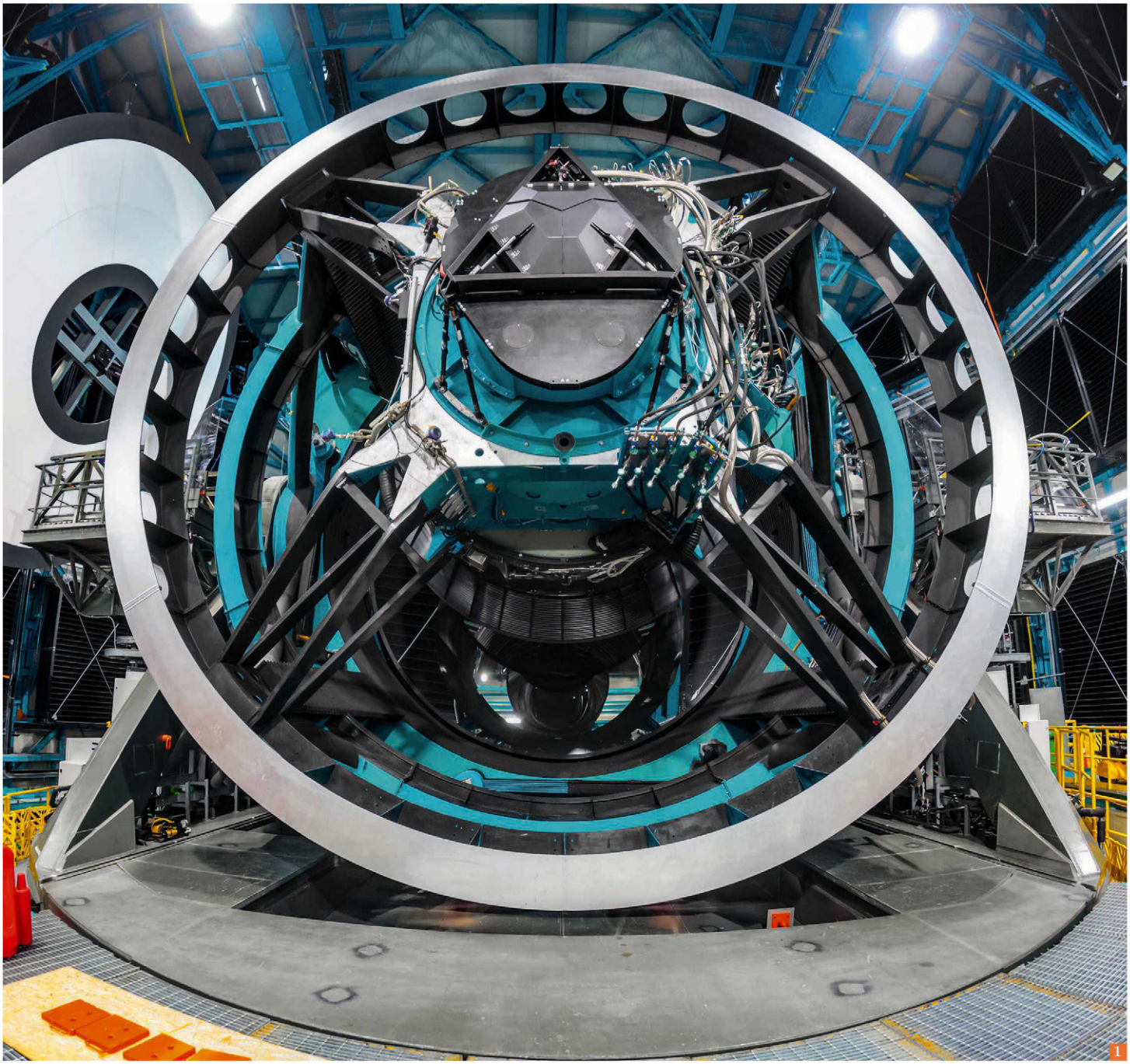
Six simple steps to train your brain to fight forgetfulness

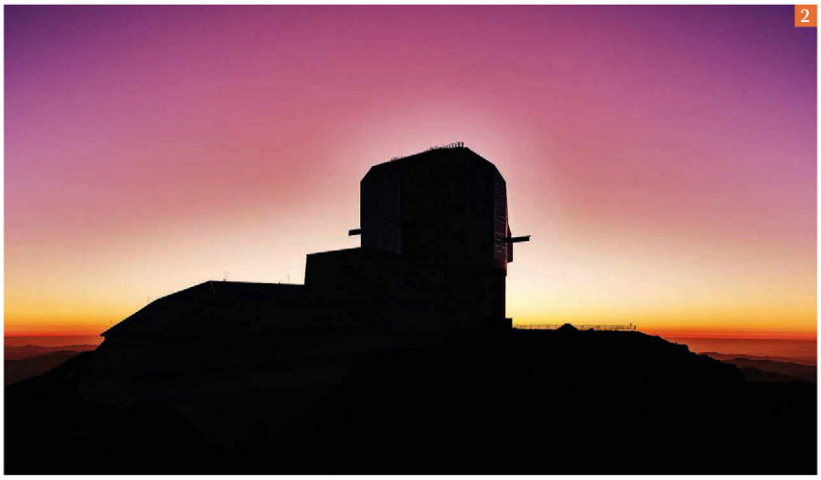


HOW TO HEAL WITHOUT SCARS

THE SEARCH FOR THE OTHER HUMANS

IS GENE-EDITED FOOD SAFE TO EAT?



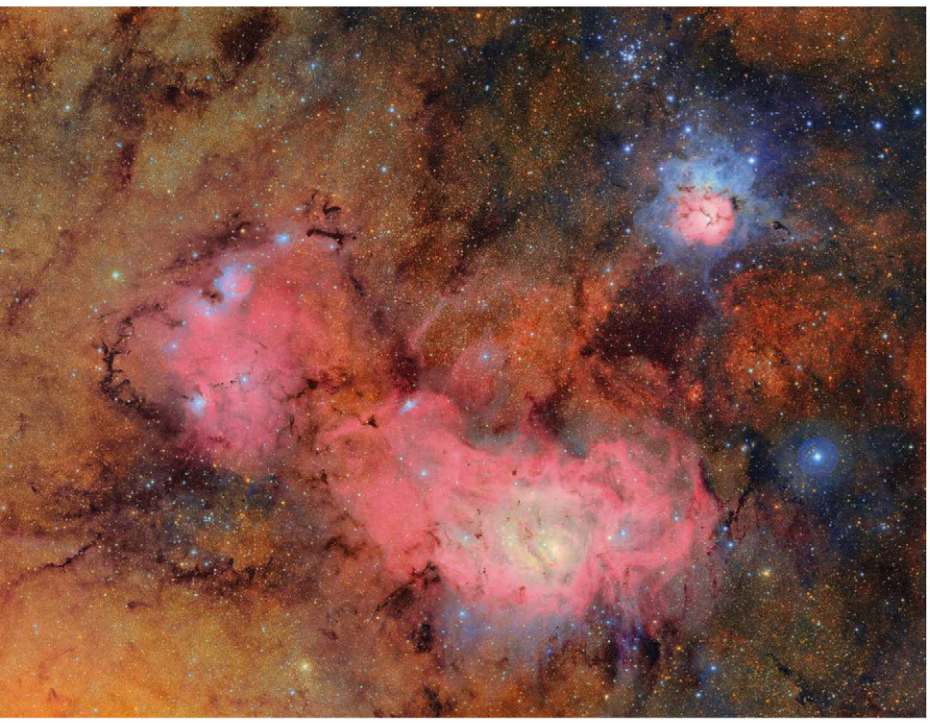


1. Inside the Rubin Observatory is the Simonyi Survey Telescope, pictured here during its initial calibration tests. The telescope features an 8.4m-wide (28ft) mirror and is equipped with the largest digital camera in the world.

2. The 30m-wide (98ft) rotating dome that houses the telescope sits atop Cerro Pachón, a mountain in Chile 2,700m (8,900ft) above sea level.

3. The central pink area in this test shot shows the Lagoon Nebula (otherwise known as Messier 8), while the Trifid Nebula (also known as Messier 20) sits in the top right of the image. Both are active star-forming regions in the Milky Way where young stars are born. This colourful image was made by joining 678 separate, monochromatic exposures taken over the course of seven hours.

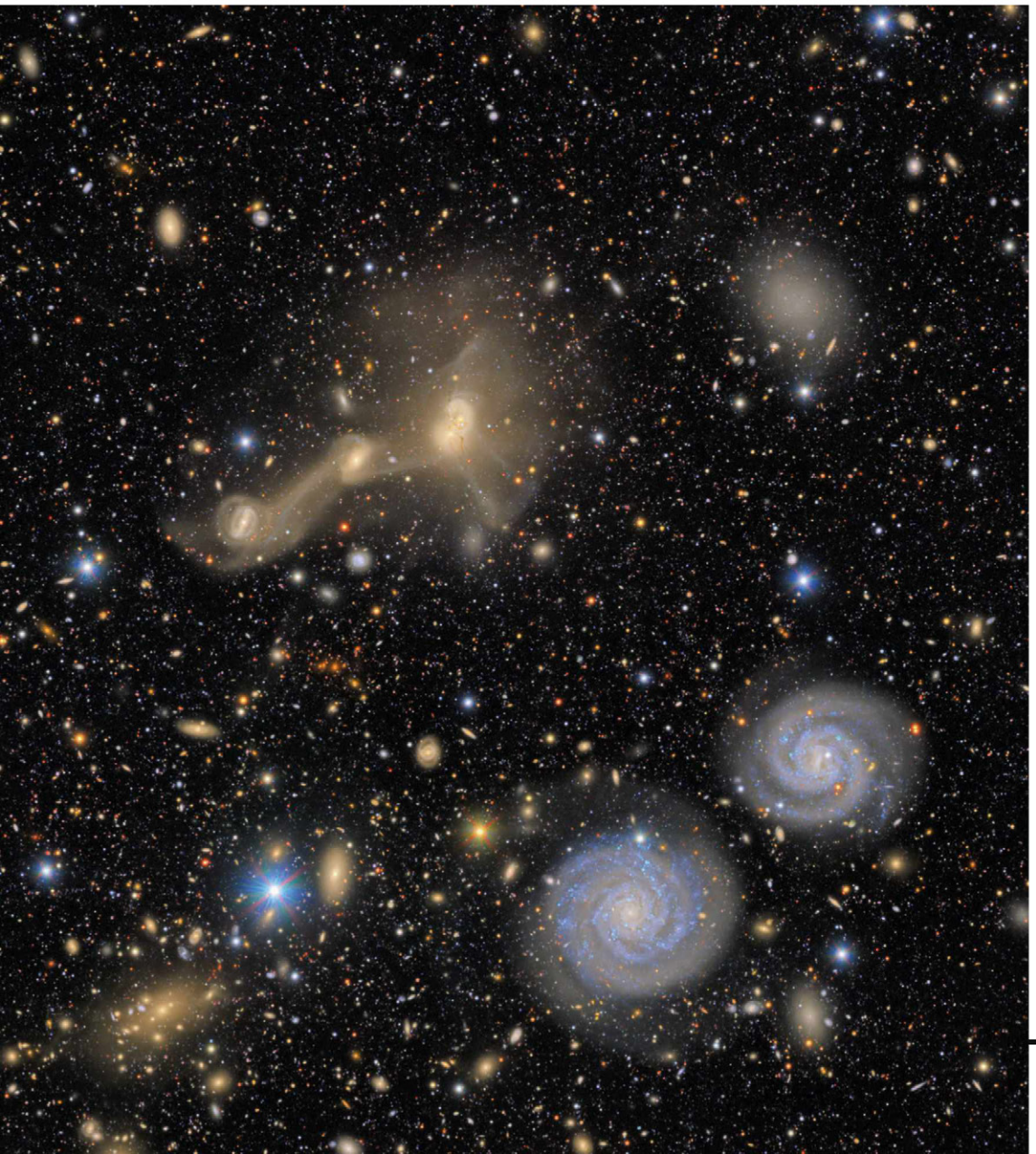
4. With remnants of their spiral arms still visible, three merging galaxies (in yellow, just above centre) are pulling dust, gas and stars from one another. With the two spiral galaxies (in blue, bottom right), these form just a small section of the Virgo Cluster. This is also just a small section of the full image. The pictures Rubin captures are so large that you'd need 400 ultra-high definition TVs just to display one at full size.



SPACE

Breathtaking first images from 'ultimate' telescope reveal new galaxies

The newly opened Vera C Rubin Observatory is on a mission to unlock the Universe's greatest secrets



In a remote mountain range in Chile, a newly unveiled observatory will soon begin mapping the sky. When its survey starts, the Vera C Rubin Observatory will spend every night for the next decade charting the cosmos. And it'll do so at speed – covering the full southern hemisphere sky every few nights by photographing a different part of the heavens with each shot.

Attached to the telescope housed within the observatory is a 3,200-megapixel camera (the world's largest). It's set to capture a total of 20 billion galaxies and another 20 billion stars to create an ultra-high-definition timelapse of the changing cosmos.

The wealth of data it collects could help scientists unravel some of the Universe's remaining mysteries. Charting the changing distribution of celestial bodies between each cycle of observations, for example, will help scientists measure the expansion of the Universe. And, by observing an effect known as gravitational lensing, they could also get closer to explaining dark matter.

Since the observatory was first proposed, back in the 1990s, scientists have been eagerly awaiting these first test images. Soon they'll be poring over a steady stream of photos packed with potential discoveries.

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