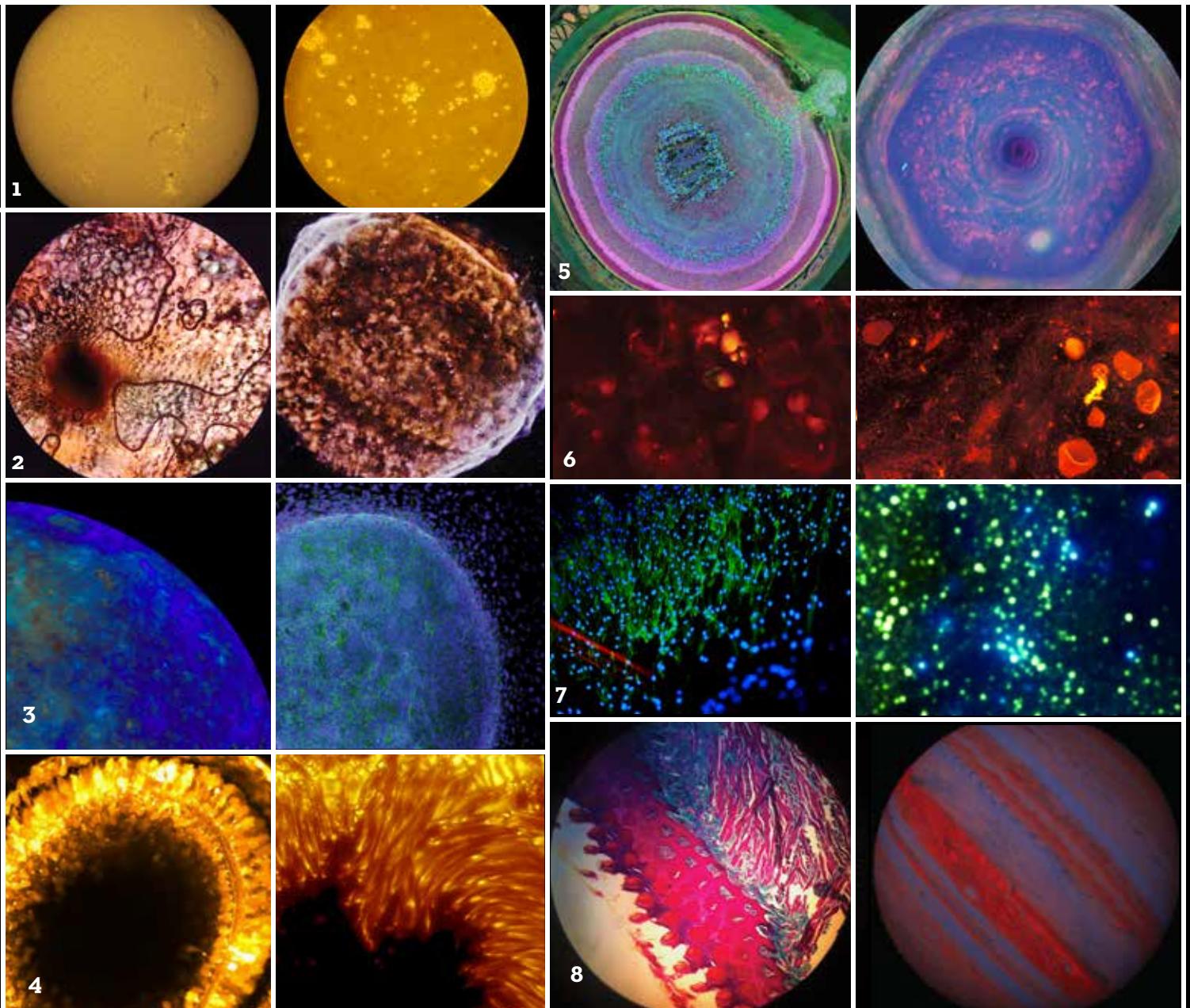


# MICRO TO MACRO

We often think of the Earth as large – and it is compared to things on the human scale. Yet, a million Earths can fit inside our Sun, which is very small compared to many other objects in space. Likewise, we generally think of grains of sand as being incredibly small in contrast to experiences in our everyday lives. However, the realm of cellular and molecular biology and its constituents, for example, are much smaller than that sand grain and impossible for the unaided eye to see.

The simple question of “how big is this?” often turns out to be not so simple to answer. We can explore this idea of scale through the imagery that different disciplines of science generate. In these images of both the large and the very small, we can find patterns, identify color (which is often applied during the image-making process), and examine texture. Despite their disparate subject matters, these images possess many similarities and offer an opportunity to explore the wonders and beauty of science from “micro” to “macro”.



# MICRO TO MACRO

## 1. Our Sun

The Sun gives off many kinds of light from radio waves to gamma rays, as seen here. The diameter of our Sun is about 864,000 miles (mi) or 1.4 million kilometers (km). *Credit: Alan Friedman*

## Raji Cells

Bunches of cells from a Raji cell line can lead to a strain of Epstein-Barr virus in humans. Raji cells are about 0.000005-0.000008 meters in diameter. *Credit: 22Kartika CC BY-SA 3.0*

## 2. Onion Cells

Here you can see both a nucleus (dark region off center) and some bubbles of air (dark curvy lines). Onion cells range in size from 0.000250-0.0004 meters across. *Credit: Anastasia, CC4*

## SN1006

This X-ray image shows a supernova remnant, the remains of an exploded star. Image is about 70 light years or about 400 trillion mi/644 trillion km across. *Credit: NASA/CXC/Middlebury College/F.Winkler*

## 3. Mercury

Mercury is about 3,032 mi or 4,879 km in diameter. Its surface is heavily pockmarked like our Moon, but it also has striations. *Credit: NASA/Johns Hopkins/Institution of Washington.*

## Embryonic Stem cells

These embryonic stem cells are shown as a colony growing on a cell in connective tissue. They are about 0.000014 meters in diameter. *Credit: California Institute for Regenerative Medicine*

## 4. Neurons

This image shows neurons from the eye of a 0.0035-meter 72-hour old zebrafish larva that was captured using a special microscope with a laser. *Credit: Jaydeep Sidhaye CC BY-SA 4.0*

## Sunspot

This dark central region shows a planet-sized sunspot on our Sun's surface. This sunspot is about 14,000 mi/23,000 km across. *Credit: SST, Royal Swedish Academy of Sciences*

## 5. Mouse Eye

Researchers can study the roles of cells in metabolism by studying certain molecules by color. This image contains tiny slice of a common mouse's eye that spans 0.00332 meters in diameter. *Credit: Bryan William Jones and Robert E. Marc, University of Utah*

## Saturn's North Pole

At the center of Saturn's northern pole, we find a hexagon-shaped wavy jet stream & a large rotating storm at its center. The stream is about 20,000 mi/30,000 km across. *Credit: NASA/JPL*

## 6. Small Magellanic Cloud

200,000 light years away, the Small Magellanic Cloud (SMC) is one of the Milky Way's closest galactic neighbors. The image is about 7000 light years, or 900 trillion mi/1448 trillion km, across. *Optical: NOAO/CTIO/MCELS coll.; Radio: ATCA/UIUC/R.Williams et al.*

## Mycobacterium Tuberculosis

Seen here under ultraviolet light with acid-fast stain, these bacteria can lead to tuberculosis infections. The rods, glowing in yellow, are between 0.000002 to 0.000004 meters in length. *Credit: Ronald W. Smithwick, USCDCP*

## 7. Human Progenitor Cells

Progenitor cells are biological cells that have a tendency to differentiate into a more specific type of cell. *Credit: Rose Spear, Engineering at Univ. of Cambridge*

## DB58

A cluster of bright, young stars is seen in X-ray and infrared light near the center of our Milky Way galaxy about 12 light years (70 trillion mi/113 trillion km) across. *X-ray: NASA/CXC/Northwestern U./C.Law & F.Yusef-Zadeh; Infrared: 2MASS/UMass/IPAC-Caltech/NASA/NSF*

## 8. Rabbit Tongue Cells

An optical microscope with a magnification power of forty was used to image muscle fibers, collagen fibers, the keratin layer and the outer layer of cells in a rabbit's tongue. *Credit: Mohit Lalwani, CC BY-SA 4.0*

## Jupiter

Jupiter, a gas giant, is the most massive planet in our Solar System and has over 50 known moons. At its equator the diameter of Jupiter is about 89,000 mi/143,000 km. *Credit: NASA/GSFC*