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## 18 EXTREME SPACE

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### 18 Frantic Finish

Supernovae portend cosmic catastrophes. When a massive star slides into an energy crisis at the end of its life, or a sun that has already died is overfed with matter, the end is an explosion of unimaginable proportions. What exactly happens here? Scientists at the Max Planck Institute for Astrophysics make supernovae explode on the computer.

### 26 Traps in Space-Time

Black holes are a permanent fixture in science fiction literature. In reality, there is hardly a more extreme location in the universe. These mass monsters swallow everything that ventures too close to them. It sounds quite simple, but the nature of black holes is complex. A group at the Max Planck Institute for Gravitational Physics wants to solve some of the puzzles these exotic cosmic bodies present.

### 34 Cosmic Particle Accelerator

Black holes, pulsars, remnants of exploded stars – these celestial bodies accelerate particles to enormous energies and emit high-energy gamma radiation. The two observatories known as H.E.S.S. and MAGIC make this extreme spectral region accessible. Astronomers at the Max Planck Institutes for Nuclear Physics and Physics use these high-tech detectors.

**ON THE COVER** On a clear night, the starry sky appears calm and peaceful. In reality, however, all hell breaks loose in the heavens: stars absorb matter from other stars, suns explode and black holes greedily devour gas and dust. In short, there are a lot of extreme places in the universe – and they hold particular appeal for researchers.

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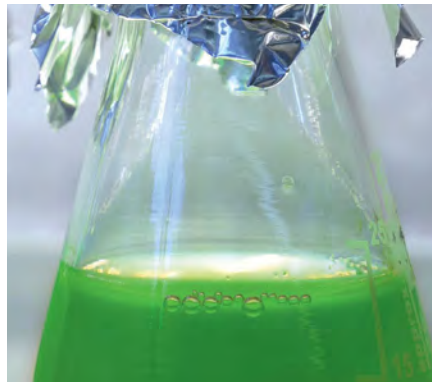
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Life is motion and interaction with the environment. This is equally true of cells, but for cells to get from one place to another, they not only have to be able to move, they also have to interact with their environment. Researchers are studying how they manage this.

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Personal Portrait: Ben List

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