to study the compound's effects. Flumazenil is an antagonist of benzodiazepine (BZD) drugs, a group of tranquilizing agents of which the best known is valium. According to Marczynski, BZD agents, along with the signal transmitter gamma-amino butyric acid (GABA), form an inhibitory system that contributes to neuronal death over time by depriving nerve cells of needed nutrients. Flumazenil may protect neurons by preventing the body's naturally occurring BZD compounds from attaching to their receptors and exerting their damaging influence, he says.

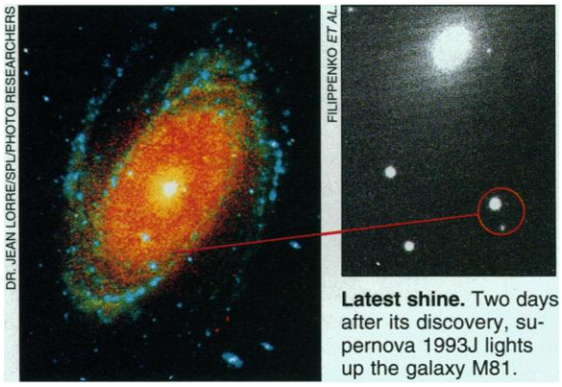
Though Marczynski's results are provocative, that's nothing new in a field that has seen many leads fail to pan out. Says Zaven Khachaturian, associate director for neuroscience and neuropsychology of aging at the National Institute on Aging, mindful of past pitfalls: "This is a very interesting single animal study, but one needs to be careful. I wouldn't jump to suggesting it's a therapy for Alzheimer's or age-related memory problems."

–John Travis

ASTRONOMY

A New Supernova In the Northern Sky

Even in this age of space telescopes and giant mountaintop observatories, astronomy can still reward amateurs. Francisco Garcia, a star-gazer in Lugo, Spain, proved it once more when, on the night of 28 March, he noticed an eruption of brightness from one arm of a nearby spiral galaxy called M81. At once, he alerted a fellow member of the Madrid Astronomical Association, Diego Rodriguez, who photographed the anomalous bright spot. The news spread within hours, and the following night, astronomers led by Alexei Filippenko of the University of California, Berkeley, confirmed what Garcia himself suspected: He had discovered a new supernova. Only a day or two old when it was spotted, supernova 1993J, as it has been named, is the brightest to shine in the Northern Hemisphere since 1937.



DR. JEAN LORRE/SPL/PHOTO RESEARCHERS

FILIPPENKO *ET AL.*

Latest shine. Two days after its discovery, supernova 1993J lights up the galaxy M81.

The discovery, says George Sonneborn of NASA's Goddard Space Flight Center, has set the astronomical community "all on fire." True, the supernova that exploded in 1987 in the Large Magellanic Cloud, a satellite galaxy of the Milky Way, was far brighter, bright enough to be seen with the naked eye; this new blast, at its peak on 31 March, was still 40 times too faint to be visible. But SN 1987A could be seen only from the Southern Hemisphere, Sonneborn points out. "A lot of Northern Hemisphere observers who felt left out by 1987A have now got their chance."

Already, supernova researchers have evidence that they're looking at a member of the same supernova class as 1987A. Supernovas can result from the explosion of a white dwarf—an ancient, burned-out star—or the collapse of a supergiant star. The second type—called type II—is the more violent kind, and it has a trademark: Spectra of the light from the explosion reveal hydrogen left over from the giant star's atmosphere. White dwarfs, in contrast, having burned up all their hydrogen, show no such emission lines. SN1987A belonged to type II, and so, it seems, does the new event.

Filippenko, who is coordinating ground-based observations of the supernova, says he and his colleagues have already seen the telltale hydrogen lines—though because the hydrogen lines are quite weak, he is quick to add, "I wouldn't bet my life" that it's a type II. Still, there's another reason to think it is, Filippenko says: Other astronomers think they may have identified the progenitor star in earlier images, and it's a supergiant.

But the suspect is a red supergiant, a larger and cooler star than the blue supergiant that exploded in 1987A. And, if so, the explosion should play out differently over the coming weeks and months. Indeed, it already shows signs of doing so. Within 2 days of the discovery, the International Ultraviolet Explorer (IUE) satellite was watching the brilliant ultraviolet emissions of the early stages of the explosion fade, giving way to visible light, as the expanding gases cooled. Sonneborn, an IUE investigator, says SN 1993J is cooling more slowly than 1987A did—just what you'd expect for a red progenitor, says Robert Kirshner of the Harvard-Smithsonian Center for Astrophysics.

Meanwhile, a gallery of astronomical instruments is lining up to observe other aspects of the supernova. Starting early this week, the Very Large Array, a giant radio telescope in New Mexico, was scheduled to observe its radio emissions. And at press time the Hubble Space Telescope was turning toward the fading supernova. In one project, starting next week, a group led by Kirshner hopes to measure the angular size of the explosion—a first step to determining its distance. If they succeed, astronomers trying to learn the size and age of the universe will have another rung in their distance scale, and this newest supernova will have brought astronomers a step closer to answering some of their oldest questions.

–Ray Jayawardhana

Ray Jayawardhana is a science writer based in New Haven, Connecticut.

ASTRONOMY

Tribe of Brown Dwarfs Discovered?

The search for brown dwarfs—objects too large to be planets but not quite massive enough to catch fire as stars—has so far turned up more embarrassing false leads than convincing results. In 1984, for instance, astronomers at the University of Arizona announced the discovery of an object the size of several dozen Jupiters emitting a faint infrared glow, only to have it dismissed as an observational artifact. The handful of suspects fingered since haven't fared much better. At the Royal Astronomical Society's national meeting in Leicester last week, however, astronomer Richard Jameson of the University of Leicester claimed that his team has captured not one, but an entire tribe of brown dwarfs—nearly two dozen—in the Pleiades (the Seven Sisters), a cluster of young stars and gas.

If the claim holds up, it will fulfill a long-standing prediction in astrophysics. Theorists hold that not every cloud of star-forming matter should be big enough to spawn a full-fledged star when it collapses. If the resulting object is less than 8% as massive as the sun, it won't be able to sustain the heat and pressures needed to burn hydrogen and will gradually cool, emitting infrared radiation as it

KIM GORDON/SPL/PHOTO RESEARCHERS

Seven sisters....and a retinue of dwarfs?