fellow neuroscientists in New Orleans when he presented his latest results on a much tougher challenge: using grafts to treat Huntington's disease.

What makes Huntington's the tougher job is that while the Parkinson's grafts need only to produce the neurotransmitter dopamine to be effective, the success of Huntington's grafts may depend on the grafted neurons actually hooking up correctly with other neurons. Madrazo claims to have met that challenge. One year after surgery, he says, his sole Huntington's transplant patient has improved. But other researchers who work with Huntington's patients see little evidence of real improvement in the data the Mexican surgeon offers. What is more, they argue that his latest gamble was recklessly premature—because he didn't start out with an animal model. "You have to do it the scientific way," says Walter Koroshetz, who treats Huntington's patients at Massachusetts General Hospital. "You have to do it in animals first."

But that doesn't mean that brain tissue transplants aren't going to have a role in Huntington's, because other groups are taking Koroshetz's advice. After carrying out successful grafting experiments in rats in which he destroyed the brain region that degenerates in Huntington's disease, Ole Isacson of Harvard Medical School has now completed apparently successful grafts of brain tissue from fetal rats into five baboons with drug-induced brain lesions that cause a Huntington's-like condition. Before the grafts, the baboons showed involuntary movements similar to those in human Huntington's patients. Within 9 weeks of surgery, they had improved significantly, and examination of their brains showed that the grafted rat neurons had survived. Koroshetz calls those results "encouraging," noting that Isacson is "starting at the beginning and working his way up." He cautions, however, that the technique is "not [ready for human trials] yet."

Retinoids May Help You See in More Ways Than One

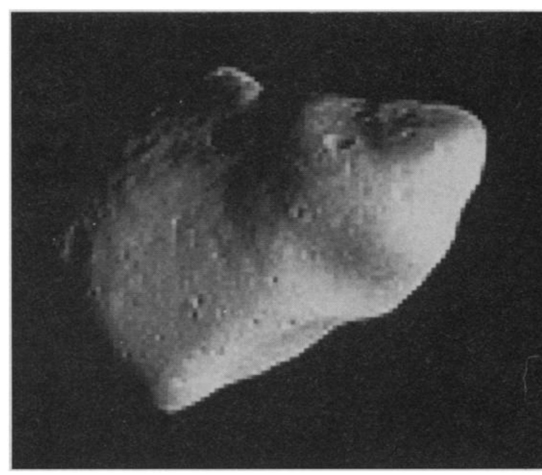
One of the most intriguing problems in developmental biology is how the early embryo provides the clues that tell cells which part of the organism to become. The first signals must give simple directions such as: "You're the front, you're the back." And those fundamental orientations provide the initial geometry of the developing embryo. In very early development this seems to be accomplished by gradients of diffusible molecules—high at one part of the embryo, and gradually tapering off with distance from that point. But the search for similar gradients in the developing nervous system has been long and controversial. Which is why attendees at one session of the meeting perked up at a report that hints at the existence of such a gradient in the developing retina of the mouse.

One possible gradient substance that has gotten a lot of press lately is retinoic acid, a relative of vitamin A. Retinoic acid has an influence on early wing development in the chicken, and also has been shown to turn on developmentally important genes. But the debate continues over whether retinoic acid really does form gradients that orchestrate development, and if so, where it does this. "In no system is there really good evidence of a gradient," says Thomas Jessell, who works on the problem at Columbia College of Physicians and Surgeons. Researchers are actively looking for such gradients in the chick limb bud, and in the spinal column.

In New Orleans, Ursula Dräger of Harvard reported findings that suggest retinoic acid may influence development in yet another tissue, and a fitting one at that: the retina, where a related molecule, retinal, later acts as the light-sensitive pigment in adult eyes. Dräger's group found that the developing retina contains two forms of an enzyme that makes retinoic acid. One form, found only in the ventral retina, is much more active, leading to higher retinoic acid concentrations in the ventral than in the dorsal half.

This kind of asymmetry is just what one would expect of a molecule that helps pattern the developing retina, Dräger says. Jessell calls the result "intriguing," adding that "it suggests retinoids may have some role in development of the eye as well as in its later function." ■ Marcia Barinaga

Galileo Hits its Target


JPL/NASA

The Galileo spacecraft has sent back the first closeup view of an asteroid, taken from a distance of 16,000 kilometers, and the image is triggering congratulations all around. Ground-based astronomers are justifiably proud of how well they predicted what Galileo would see in its 29 October encounter with Gaspra. Mission controllers are pleased at the stunningly accurate camera aim, which let them receive the image a year ahead of schedule despite Galileo's crippled antenna system.

The astronomers' achievement is all the more impressive considering that Gaspra, a lump of rock shaped like a partially deflated football that was found to measure only 20 by 12 by 11 kilometers, is nothing more than a point of light from Earth. Nonetheless, Earth-based astronomers had determined the size and shape of the asteroid to within 10% or 15%. They even came remarkably close to its surface reflectivity of 20%—about twice as reflective as Earth's moon.

Astronomers also forecast Gaspra's ravaged appearance. Based on the calculated frequency of collisions large and small in the asteroid belt, Noriyuki Namiki and Richard Binzel of the Massachusetts Institute of Technology concluded that a body as small as Gaspra must be a fragment from a relatively recent catastrophic collision of larger bodies. So small an object, they said, could not have survived long in the rough and tumble of the asteroid belt. And lo and behold, Galileo found a body so irregularly shaped—and yet relatively free of impact craters—that team member Joseph Veverka of Cornell University assumed it must be a fragment from a catastrophic collision that took place no more than several hundred million years ago.

Astronomers had thought they might have to wait until November 1992 to learn how well their predictions held up. Controllers had expected Galileo's antenna problems (*Science*, 23 August, p. 846) to throw off its camera's aim, so that an entire mosaic of images would have to be returned to Earth to find Gaspra—something that could not be done until the spacecraft swung past Earth next year. But Galileo's targeting turned out to be so good—on the order of putting a large house in San Francisco in your cross hairs from Los Angeles—that only a part of one image needed to be returned to allow Gaspra's early debut. ■ Richard A. Kerr