Mallet’s group, J. Lee Nelson of the Fred Hutchinson Cancer Research Center in Seattle and her colleagues published a study in PNAS that showed that cells from the mother can be passed to a fetus in the womb and that they are capable of turning into functioning islet beta cells that make insulin. Their work shows beneficial effects from microchimerism, a process in which a small number of cells from one individual take up residence in another. Most research on microchimerism—either transfer from mother to fetus or fetus to mother—has looked for possible autoimmune effects, although scientists have always considered the possibility of favorable consequences.

For his part, Mallet, whose group was the first to clone the gene for tryptophan hydroxylase 1 in the mid-1980s, continues research on maternal serotonin. Levin notes that further research is needed to determine how the serotonin reaches the embryo and what it does when it gets there, investigations Mallet is now pursuing. His laboratory is also planning to search for other neurotransmitters and hormones from the mother that might contribute to the developing embryo, a task that promises to give new meaning to the notion that a mother’s work is never done.

The Not-So-Dark Matter

HOW DARK MATTER MIGHT EMIT DETECTABLE ENERGY  BY GEORGE MUSser

How is dark matter like the Hundred Years’ War? The war lasted 116 years, and dark matter may not be dark. Conventional wisdom holds that darkness is the whole point of dark matter. Something is pulling stars and gas clouds off course; when astronomers go to look for it, they see nothing that fits the bill, so whatever it is must not emit or absorb light. In fact, if it did respond to light, galaxies would not even exist: the sea of radiation that filled the early universe would have buffeted the matter and kept it from clumping.

Nevertheless, astronomers have speculated for years that dark matter could power certain unexplained sources of light in the cosmos. That interpretation has been controversial—not least because each of these unexplained sources would require a different set of dark particle properties. Now a pair of researchers has found a way to make the dark matter explanation more plausible. “It’s an idea that actually unifies these things and can explain everything with one new particle,” says astronomer Douglas Finkbeiner of the Harvard-Smithsonian Center for Astrophysics.

One way dark matter could produce light would be to meet dark antimatter. The two will annihilate and ultimately yield a burst of gamma rays. Ten years ago the Compton Gamma Ray Observatory (CGRO) detected twice as much gamma radiation as conventional processes should produce. Dark matter annihilation would explain the discrepancy, assuming the dark particles weigh about 100 times as much as a proton.

Another hint dates to the early 1970s, when astronomers detected vast numbers of electrons annihilating with positrons. Lots of things produce positrons, from supernovae to neutron stars, but not in such profusion, and these sources tend to lie in the plane of the galaxy, whereas the emission came from an ellipsoid. In 2003 a team proposed that dark matter annihilation generated the positrons.