

Gene Target Beats Oil Remedy

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The 1992 tearjerker *Lorenzo's Oil* told the true story of one family's struggle to save their son from X-linked adrenoleukodystrophy (ALD), a deadly degenerative brain disease. Unfortunately, over the ensuing years, the oil of the film's title, a dietary supplement, has not panned out as the cure many people hoped it would be. Now a paper in the November 2009 issue of *Science* suggests that the long-sought cure may come from gene therapy—a famously hyped approach to treatment that tragically caused the death of a teenage experimental subject in 1999.

Since then, however, researchers have continued to cautiously pursue gene therapy for certain disorders with known genetic origins. ALD, for instance, is caused by mutations in a gene called *ABCD1*, leading to unusually high levels of a type of fatty acid that damages the material insulating some neurons. It affects about one in 20,000 six- to eight-year-old boys, leading to death before adolescence. The main treatment is still bone marrow transplantation: a risky procedure that relies on finding a suitable donor, explains Patrick Aubourg, a neurologist at France's INSERM research institute.

Now Aubourg and his team have showed in a preliminary trial that gene therapy stopped ALD in two boys for whom they could not find matching bone marrow donors. After fishing stem cells from each individual's own blood, the researchers inserted a normal version of the *ABCD1* gene into some of the cells and transplanted them back into the kids.

The results were promising: ALD progression halted within 14 to 16 months. A year later neither child had further brain damage or leukemia (a side effect in some past gene therapy trials). The researchers have now treated a third individual and are preparing for larger trials in Europe and the U.S.#