In December, as During was preparing to leave Yale, RAC consulted with the university about his project. But Wivel decided that RAC need not intervene for several reasons: Levine was conducting a local ethics review, During is a citizen of New Zealand, and RAC permits U.S.-supported gene therapy to take place overseas if the host country runs a review that's "reasonably consistent" with RAC's methods.

Officials at Yale scrambled to complete their human subjects review in November. During was insisting that time was of the essence because there was a "limited window of opportunity" to intervene in the disease process. New Zealand's Health Research Council created a panel in January to review During's project on a rush basis. It rejected an initial protocol in February, but when During submitted new primate data, the authorities gave the nod for a simple safety test on 1 March. Meanwhile, the U.S. Food and Drug Administration—which had to clear an export permit for the vector—reviewed During's material and gave the OK, just days before the trial was to begin.

During told *Science* that "both children are doing extremely well and are essentially back to their presurgical state at 5 days postsurgery," having experienced a mild fever for 48 hours. Even During says therapeutic benefits are highly unlikely, but he hopes the test will demonstrate the safety of the technique and perhaps yield data on the persistence of the transplanted gene.

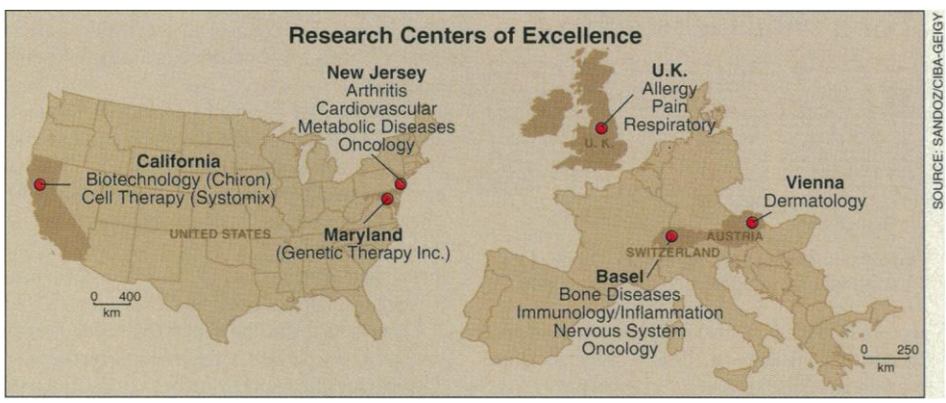
During and his colleagues are pleased with the outcome, because, as their press release says, they packed "5 years' research into 6 months." As for the paperwork, During now claims, "We ended up going through as much scrutiny as if we had just stayed within the U.S."

–Eliot Marshall

PHARMACEUTICALS INDUSTRY

Giant Merger Creates Biotech Power

BERLIN—Last week's announcement that Swiss pharmaceutical giants Ciba-Geigy and Sandoz are planning to join forces is the latest in a string of mergers that is changing the face of the world's pharmaceutical industry. If shareholders and regulators approve the deal, the new joint company, to be called Novartis, will be the world's second-largest pharmaceutical company, ranking behind the recently merged Glaxo-Wellcome. Novartis will also be a research powerhouse: Last year alone, the two parent companies spent well over $2 billion on R&D efforts in a global network of research centers, academic labs, and affiliated biotechnology companies.



Global research. Novartis plans to maintain at least three research centers of excellence in the United States and Europe currently run by the parent companies, Ciba-Geigy and Sandoz.

Just how the planned merger will affect this far-flung research empire will not become clear until the two companies begin to integrate their operations. In news conferences last week, however, company executives were upbeat about the prospects for R&D in the joint company. Noting that Novartis will be born with assets of $12.5 billion in cash and marketable securities, company officials said this huge sum will ensure that "even greater financial resources will be available for research and development."

Hundreds of research and related administrative positions are likely to be eliminated, however, as Ciba and Sandoz—both of which have headquarters in Basel and U.S. centers in New Jersey—trim overlapping operations. In all, Novartis managers plan to cut about 10% of the companies' 134,000-strong work force over the next 3 years. Some 28,000 of those employees work in the United States and 43,000 in Europe. Daniel Vasella, the Sandoz chief executive who will become Novartis's president, says he expects the fewest job cuts in the R&D sector. Indeed, he said in a statement that the merger "unlocks resources for further expansion."

Eric S. Lander, director of the Whitehead Institute–Massachusetts Institute of Technology Center for Genome Research—which will be participating in a new $1 million gene-mapping venture announced by Sandoz earlier last week—says "I don't think basic science is the issue" in the wave of drug-company mergers. Compared to the development and marketing of new pharmaceuticals, he says, the research is relatively inexpensive. "The 'R' is extremely cheap in comparison to the 'D,' " Lander says. "So if they are merging, they are merging for their 'D.' They'd be crazy to merge for their 'R.' "

Historically, most of the two companies' profits have come from traditional pharmaceuticals. Ciba is a leader in drugs for arthritis and high blood pressure, and owns the second-largest supplier of generic drugs in the United States; Sandoz leads the market in immunosuppressants, as well as drugs to treat schizophrenia and fungal infections. But in recent years, both Ciba and Sandoz have taken over smaller companies to strengthen their research efforts in biotechnology. In 1994, Ciba paid $2 billion for a 50% stake in Chiron Corp., a leading U.S. biotech company, and Sandoz followed suit last July by paying $295 million for gene-therapy pioneer Genetic Therapy Inc.

Novartis is expected to expand research efforts in biotechnology—where Sandoz and Ciba officials already claim to lead all competitors "in gene, cell, and organ-based therapies"—while maintaining an interest in combinatorial chemistry and more traditional areas of research. Once Ciba's specialty chemicals division is spun off as a separate firm, health care will account for 59% of Novartis's business, followed by agrochemicals (27%) and nutrition (14%).

According to a company document, Novartis's pharmaceuticals branch plans to maintain "research centers of excellence" in at least three U.S. and three European sites. These centers will concentrate on research in five main areas: cardiovascular and metabolic diseases, such as renal failure, osteoporosis, and type II diabetes; central nervous system diseases, including schizophrenia, Alzheimer's, and epilepsy; dermatology; immunology, inflammatory and respiratory diseases, such as asthma, arthritis, and transplant rejection; and oncology. Meanwhile, to help ease the impact of expected job losses, Novartis plans to establish a foundation, with an $80 million endowment, "dedicated to job retraining and to fund start-up entrepreneurial activities specifically in biotechnology and emerging technologies."

–Robert Koenig

Robert Koenig is a writer in Berlin.