RADIOLABELED ANTIBODIES

IMMUNOMEDICS' PATENTS ATTRACTING ATTENTION

NEWARK, N.J.—Almost since its inception, Immunomedics Inc. has touted its strong patent position covering the use of radiolabeled antibodies for cancer imaging and therapy. And for just as long, biotech companies have virtually ignored this five-year-old relative late-comer.

That situation, however, may be changing drastically now that Centocor (Malvern, PA) has paid a six-figure up-front fee to license the patents and will add in royalties based on future product sales. The non-exclusive rights cover Centocor's imaging agents for ovarian, breast, and prostate cancers.

Whether other monoclonal antibody companies will follow Centocor's lead—or if they will eventually be *forced* to follow its lead—remains open to debate.

"Immunomedics' U.S. and foreign patents dominate the field of radiolabeled antibody-based cancer detection and therapy," states Immunomedics vice president for patent affairs Bernhard Saxe in the firm's 1986 annual report. He likens the company's patents to owning proprietary rights to the automobile—while other firms' patents on advances such as linker technology are analogous to patenting carburetors. Saxe explains that Centocor licensed a package of about a dozen U.S. patents, plus their European counterparts (which are currently being contested in court) and other similar patents throughout the world. He says the patents cover all cancer imaging via radiolabeled antibody fragments, and all cancer therapy using radiolabeled antibodies *or* antibody fragments.

NeoRx (Seattle, WA) president Robert Abbott counters that he is "not sure that the claims of the patents necessarily encompass the entire field," and he points to an abundance of prior art. He says that NeoRx, which specializes in labeling antibodies with technetium-99m, has not decided whether it will try to license Immunomedics' patents. "The licensing of a patent is more than just an ethical issue to a company," he adds. "It's also an economical one."

"We don't feel that Immunomedics' patents will interfere with our utilizing our technology and proceeding to market," says William Ryan, general counsel at Cytogen Corp. (Princeton, NJ). Cytogen has U.S. patent coverage on a site-specific method of attaching antibodies to other molecules, including radioisotopes. "Immunomedics' patents don't block us from doing what our patented technology allows us to do," he concludes.

Others aren't so sure. Eugene Moroz of the law firm of Morgan & Finnegan (New York, NY) has studied Immunomedics for the investment bank of First Boston Corp. "We concluded that the patents were strong, and we couldn't find anything that would impact negatively on the claims," he says. "They're basic."

George Masters, president of Immunomedics, sees Centocor's decision to license as an acknowledgement of Immunomedics' proprietary position. Centocor president Hubert Schoemaker sees it as purely a business decision: "On any U.S. patent, whether you win or lose in the court depends on the judge," he says. "Our policy is to not infringe valid patent claims and to enforce our own patent claims." Schoemaker points out that some four years ago Hybritech (San Diego, CA) was offering non-exclusive licenses to its patented sandwich immunoassay technology using monoclonal antibodies. The biotech community paid little attention, however, believing that the courts would rule the patent invalid. Following an unsuccessful challenge to the patent, Monoclonal Antibodies Inc. (Mountain View, CA) was recently forced to pay a fine and license the technology under quite burdensome terms.

"The courts are not as casual about finding patents invalid as they once were," stresses Robert Benson, a patent attorney with the firm of Leydig, Voit & Mayer (Chicago, IL). "Anybody who ignores patents now does so at their own detriment."

Masters says that Immunomedics intends to license its technology on a non-exclusive basis to any interested companies, rather than to devote its resources to litigation. By law, companies whose products in development infringe the patents are not required to take licenses until the products receive Food and Drug Administration approval. But such a wait-and-see strategy could prove costly: Saxe reports that Immunomedics' patents are available on a graduated fee schedule, so the longer a company waits, the more it will have to pay.

—Arthur Klausner

ENVIRONMENTAL BIOTECH

RELEASE DATA START TO ROLL IN

NEW YORK—We knew it all the time, but now there are data to confirm that releasing genetically manipulated microorganisms into the environment can be safe. Steven Lindow's "ice-minus" experiment, performed on potato tubers last summer, is over. The data on frost protection are still being analyzed; the data on the environmental fate of the released *Pseudomonas syringae* are nearly complete. In a press release from the University of California (Berkeley), Lindow said that none of the genetically modified ice-minus bacteria have been detected beyond the experiment's 30-meter bare soil buffer zone. Even immediately after spraying, the number of bacteria deposited on the soil dropped off precipitously toward the perimeter; almost none were detected even 15 meters into the buffer zone.

Ray Seidler, the Environmental Protection Agency's (EPA) project officer for the experiment, said that his report was going out for peer review at the beginning of November. EPA's Office of Research and Development (ORD) laboratory (Corvallis, OR) provided technical assistance to monitor the microorganisms during and after the hand-spraying. EPA personnel were in charge of monitoring the aerial movement of the bacteria, while personnel from U.C. Berkeley monitored ground movement. Tests will continue for several months, said Lindow, to look for evidence of survival and growth of bacteria within the experimental plot.

In a year full of firsts, EPA has also approved the first field-test of a genetically engineered microorganism under the Toxic Substances Control Act (ToSCA). The 18-month experiment will test the genetically engineered microbial tracking system developed by Monsanto (St. Louis, MO) scientists David Drahos and associates. (See *Bio/Technology* **4**:439, May '86.) The bacterium, *Pseudomonas aureofaciens*, contains two genes from *Escherichia coli* that allow it to metabolize lactose. This marker is readily picked up on Lac indicator plates by a color change in the bacterial colony: thus the bacteria can be tracked easily once they are released. The test—which is being conducted by Clemson University (Clemson, SC) scientists at the Edisto Research and Education Center—involves applying the root-colonizing bacteria to winter wheat in seed furrows.

—Jennifer Van Brunt