BUSINESS & REGULATORY NEWS

US genome center becomes fully fledged institute

In January, the National Center for Human Genome Research (NCHGR, Rockville, MD) was renamed the National Human Genome Research Institute (NHGRI), becoming the 18th institute at the US National Institutes of Health (Bethesda, MD). According to Francis Collins, director of NHGRI, the NCHGR already resembled an institute rather than a center, particularly with its high level of funding, educational initiatives, and intramural research program: "Now we're getting the name to fit the organization," he explains. One advantage will be the ability to award grants of up to $50,000 without advisory council review. Previously, the NCHGR was bound to await advisory council approval when awarding grants or sponsoring conferences at short notice. The NHGRI's future goal, says Collins, is to develop "the ultimate human genetic map, with markers that are much more closely spaced." NCHGR was established in 1989 at the inception of the Human Genome Project and expanded in 1993.

What the Blechs afoot at GeneMedicine?

Bermuda-based Corange Ltd—the parent company of Boehringer Mannheim—last month invested another $4 million in GeneMedicine (The Woodlands, TX), increasing its stock ownership to approximately 10% and making Corange GeneMedicine's largest shareholder; this all coming a few days before the US Food and Drug Administration (Rockville, MD) gave GeneMedicine the go-ahead for phase I clinical trials of interleukin-2 in cancer. The investment is part of the 1995 multiyear alliance agreement—to jointly develop head-, neck-, and skin-cancer drugs—under which Corange pays GeneMedicine not only $1.25 million every quarter to cover research and development costs, but also annual equity investments of $4 million and milestone payments. Interestingly, between mid-December and the end of January, David Blech, sole owner and director of the financial advisory firm D. Blech & Amp Co., has bought GeneMedicine shares in excess of $4 million, giving him an approximate 5% stake in the company.

Cypress offers good substitute for bad blood

Cypress Bioscience (San Diego, CA) is set to enter the final testing stages of a promising substitute for whole platelet transfusions, potentially capturing an estimated $500 million market. Approximately 250,000 US patients, who receive platelet transfusions in an attempt to halt active bleeding, fail to respond adequately to traditional therapies. In phase II clinical trials, infusible platelet membranes (IPMs)— partial platelet membranes bearing only selected surface proteins— halted bleeding in 65% of patients, half of whom had not previously responded to any other therapy. "Alloimmunization [antibody response to platelet surface protein] is not as much of a problem," says Michael Kulwiec, director of marketing and business development at Cypress, "because the manufacturing process removes certain antigens known to cause immunogenicity." In addition, IPMs have a much longer shelf life than traditional platelets (three years compared to five days), and a viral inactivation step during manufacturing reduces the risk of transmitting viral pathogens to transfusion recipients. Cypress hopes to begin a phase II dose-ranging study this year, with final phase III trials soon after. If phase III is successful, IPMs will be the only platelet transfusion substitute of their kind. "Blood substitute products are a goal for many companies, including the military. But as far as I know, our technology is ahead of other substitutes," says Kulwiec.

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Gene therapy researchers to join club

US gene therapy researchers now have a society all of their own—the American Society of Gene Therapy (ASGT)—but the organizers hope that the ASGT will eventually develop into a truly international body. George Stamatoyannopoulos, head of the society and professor of medicine and genetics at the University of Washington School of Medicine (Seattle), says the "final aim is to have an overseas membership of 20–30% or more." The first meeting for ASGT is planned to take place in Seattle from May 28 to June 1, 1998, with a projected membership of 1500. According to Stamatoyannopoulos, ASGT's goals are to promote the exchange of ideas and information on gene therapy among researchers, but also to foster the commercial applications of gene transfer technology. "Biotechnology is crucial to the development of gene therapy, company representatives will play an integral role in the society," he says.

SmithKline Beecham malaria vaccine delivers

In January, SmithKline Beecham Biologicals (SBB, Rixensart, Belgium) and Walter Reed Army Institute of Research (Washington, DC) announced that their malaria vaccine showed efficacy in a preliminary clinical challenge trial—bringing hope to the estimated 500 million individuals infected with the parasite each year. The trial, published in the *New England Journal of Medicine* (336:86–91, 1997), demonstrated that 6 out of 7 volunteers receiving the vaccine remained free of infection, whereas all non-vaccinated volunteers became infected. SBB's subunit vaccine is based on the parasite's circumsporozoite protein, but with two adjuvants—QS21 from Aquila Pharmaceuticals (Cambridge, MA) and monophosphoryl lipid A from RIBI Immuochem Research (Hamilton, MT)—additives that boost different aspects of the immune response. The new vaccine may still prove ineffective against some strains of *Plasmodium falciparum*—a problem SBB plans to address after conducting field tests in West Africa, due to begin in the next few months. Malaria vaccine research has traditionally been challenging because of the difficulty of obtaining full protective immunity: Of 16 malaria vaccines under development four years ago, only two have been continued. The pace of vaccine development has appeared to be slowing recently because of diminishing public funds, fragmented public sector efforts, and limited interest within the vaccine industry.

Business & Regulatory News Briefs written by Emma Dorey, Michael Francisco, Andrew Marshall, Dorella Rangel, and Gunjan Sinha.

Bittersweet biotech

Mouth-puckering grapefruit juice has always been less popular than sweeter varieties. A California company, however, may soon be using a novel purification method to change that. Broadening the scope of their patented radial-flow-chromatography method (Superflo), originally designed to purify drugs cheaply and with higher yields, Sepragen Corp. (Hayward, CA) has filed for a patent to use the technology for debittering fruit juices. By modifying Superflo, a single-step debittering process (SepraDebitt) extracts proteins responsible for giving juice its bitter taste. The filtration technology uses high-volume liquid raw materials and has many applications, including ridding fresh water of toxic pollutants, as well as purifying beer and wine, Sepragen says. Not only will the debittering process make such juices as grapefruit and cranberry more palatable to more people, it will also free the citrus industry from the vagaries of nasty weather. Icy winters produce sour fruit, resulting in huge losses for the fruit juice industry; because the taste is so overpowering, bitterness prevents a juice from being blended, says Sepragen president Vinit Saxena. "We think SepraDebitt has broad market appeal for the food processing industry and we are currently negotiating with people in the citrus industry." For fans of tart grapefruit, cranberry and other juices, this may prove a bittersweet development.

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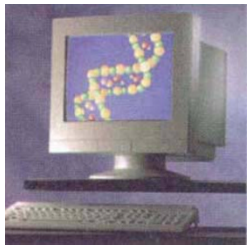
NABIR initiative enters next stage

January 30 marked the deadline for receipt of applications for the US Department of Energy's (DOE, Germantown, MD) natural and accelerated bioremediation research (NABIR) program, announced in November of last year. According to John Houghton, comanager of the NABIR program, the DOE has received 75 applications from DOE laboratories and other federal agencies as well as another 100 applications from university and other private sector research institutions. The NABIR program was established last year with an allocation of $10 million for FY '97 and early '98, a budget that Houghton "hopes to be increased in coming years." The initial emphasis is on the remediation of metals and radionuclides at DOE contaminated sites, focusing on six scientific areas: Biotransformation/biodegradation, microbial ecology, molecular engineering, biogeochemical dynamics, monitoring, and bioaugmentation. Over the next few months, proposals will be peer-reviewed by mail and review panel: "We expect to have a final decision about the funding of proposals by June or July," says Houghton. Proposals will also be considered for the Bioremediation and its Societal Implications and Concerns (BASIC) program, which addresses societal concerns about bioremediation (*Nature Biotechnology* **14**:1077).

BioMerge emerges

In the drive to develop an up-to-the-minute system for managing genomic data, Molecular Informatics Inc. (MI, Santa Fe, NM) has licensed its BioMerge computer software to Monsanto (St. Louis, MO), as part of MI's strategy to advertise BioMerge before its release for commercial sale next month. "The largest task today is figuring out how to use genomic information—how to manage and integrate it," explains MI's vice president of business and development J. Maverick Granger. Most existing software systems allow read-only access to such data. BioMerge accepts data from many sources and converts it into a uniform format, storing it in a database accessible by many people simultaneously. The system can not only edit and manipulate data, but also track who has made changes and how data has been altered "like a Lotus Notes for genomics data," Granger adds. MI has also signed prerelease licensing agreements with HySeq (Sunnyvale, CA), Chiron (Emeryville, CA), and Genzyme (Cambridge, MA). The financial details of these agreements have not been disclosed.



PDUFA deal struck, but at a price

The Biotechnology Industry Organization (BIO, Washington, DC) and the Pharmaceutical Research and Manufacturers of America (PhRMA, Washington, DC) have negotiated a restructuring of the Prescription Drug User Fee Act (PDUFA) with the US Food and Drug Administration (FDA, Rockville, MD) that should make drug approval less of headache—but at a price: User fees for FDA reviews/inspections will increase by about 20%. The proposed increases will pay for computers and other equipment intended to help the FDA boost productivity. In return, the revamped PDUFA should result in a transition to paperless submissions over a five-year period, a more consistent regulatory process, improved notification to sponsors of application deficiencies, a procedure for resolving scientific disputes, and faster reviews. "It's a bit sketchy to predict the outcome," says Carl Feldbaum, president of BIO, because the new PDUFA provisions will only become a reality if approved by Congress later this year. "We're dealing with a few theologians in Congress who think any change, however radical, is good, and people in the FDA who think that any change is a threat to public health," he says, "but so far we've made superb headway." The amended PDUFA proposal awaits ratification by Congress.

Taking the needle out of HIV testing

Epitope Inc. (Beaverton, OR) has developed a convenient and accurate needle-free system for HIV-1 antibody sample collection. OraSure works by gathering antibodies from an oral mucosal fluid—not saliva—by placing a treated pad between a patient's gum and lower cheek. Results of a study involving 3570 people showed the test to be as accurate (99.97%) as the blood-test for HIV (*J. Am. Med Assoc.* 277:254–258, 1997). The Whitman-Walker Clinic (Washington DC) has replaced traditional blood-based HIV testing with Orasure. In addition, the test should have a larger market than needle-based kits: "Because it is simple to use and far more portable than traditional methods, Orasure opens up opportunities for testing at community and other events," says James Millner, Orasure's deputy director of communications.

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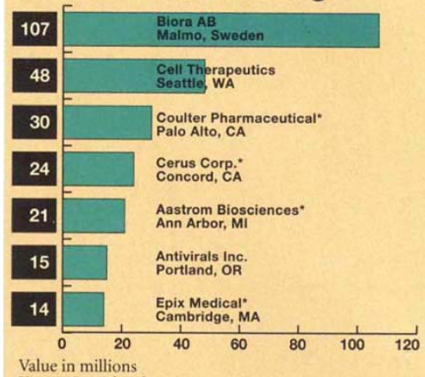
Got milk? Not like PPL's new variety

PPL Therapeutics (Blacksburg, VA; Edinburgh, UK), in collaboration with Wyeth-Ayerst (Philadelphia, PA), has announced the first ever expression data for the production of human protein in the milk of transgenic cows. For PPL's first transgenic cow, Rosie, born last year, each liter of milk contained 2.4 g of the human protein α-lactalbumin, compared with 2.5–2.7 g found in human milk. PPL manager, Julian Cooper, expects that α-lactalbumin "might have important physiological benefits" and be "of use in general nutrition products." Furthermore, the transgenic milk is more nutritionally balanced than bovine milk, and could, for example, be given to babies or the elderly with special nutrition or digestive needs, he says. PPL reports that 15 transgenic founder cattle have now been born. Their second transgenic cow product will be a phenylalanine-free form of α-lactalbumin for use as a nutritional supplement in people suffering from phenylketonuria—a debilitating disease in which phenylalanine cannot be broken down. Cattle transgenic for phenylalanine are expected to reach sexual maturity in the coming months.

IMAGE UNAVAILABLE FOR COPYRIGHT REASONS

Initial Public Offerings



Value in millions
Key: * Completed
Source: *Nature Biotechnology*

Gene of the month

Researchers at the University of Iowa College of Medicine (Iowa City) and the University of California (San Francisco) have pinpointed the mutant gene responsible for a significant percentage of primary open angle glaucoma (POAG), which causes blindness in nearly 12,000 US citizens a year. The disease predisposition gene, *TIGR*, encodes trabecular meshwork-induced glucocorticoid response protein, which is involved in pressure regulation of eye fluid. Researchers detected one of three *TIGR* mutations in five of eight families affected by the juvenile-onset form of POAG and in approximately 3% of adult-onset POAG patients tested, compared with none in a healthy control group (*Science* 275:668–670, 1997). *TIGR* mutants are thought to obstruct ocular fluid drainage, leading to elevated pressure, resulting in glaucoma. InSite Vision (Alameda, CA) holds exclusive diagnostic rights to patents related to the gene, and intends to develop noninvasive screening tools to identify genetic predisposition to POAG—a disease traditionally undetected until irreversible optic nerve damage and vision loss have occurred.

IMAGE UNAVAILABLE FOR COPYRIGHT REASONS

Joint Ventures

Company 1	Company 2	$ Million	Details
Suntory (Osaka)	ICOS (Bothell, WA)	30	The resulting company, Suncos, will commercially develop ICOS's recombinant platelet-activating factor acetylhydrolase (rPAF-AH) in the search for rPAF-AH-associated disease treatments. Suntory will make an initial capital contribution of $30 million and ICOS will grant a license for the rPAF-AH technology to Suncos. Other activities will be funded jointly.
Terrapin Technologies (S. San Francisco, CA)	Sanwa Kagaku Kenyusho (Japan)	22.5	Using Terrapin's compound library and molecular fingerprinting technology, the collaboration will focus on the discovery and commercial development of pharmaceutical products to treat diabetes mellitus and insulin resistance. Terrapin will receive $22.5 million in license fees, research funding, milestone payments, and royalties.
Amgen (Thousand Oaks, CA)	Progenitor (Columbus, OH)	22	The worldwide license agreement allows Amgen exclusive rights to develop and commercialize a range of products using Progenitor's leptin receptor technology, in exchange for a $500,000 licensing fee and milestone payments that could total $22 million. Amgen can purchase $5.5 million common stock in the event of a Progenitor IPO.
Inhale Therapeutic Systems (Palo Alto, CA)	Eli-Lilly (Indianapolis, IN)	20	Inhale will receive $20 million, as well as milestone payments and royalties on resulting products, to help develop an osteoporosis-drug delivery system. Lilly will acquire commercialization product rights.
ArQule (Medford, MA)	Monsanto (St. Louis, MO)	12	In exchange for $12 million, as well as milestone payments and royalties, ArQule will provide customized libraries of small-molecule compounds to Monsanto for use in the discovery and development of crop protection and other agricultural products.
Memorial Sloan Kettering Cancer Center (MSK) (New York)	Sequana Therapeutics (La Jolla, CA)	10	Both will contribute $5 million initially to fund the cancer genetics joint venture, Genos Biosciences (La Jolla, CA). Using MSK's extensive cancer database in conjunction with Sequana's advanced genetics and genomics technologies, Genos Biosciences plans to research cancer-causing genes.
ILEX Oncology (San Antonio, TX)	MPI Development (Mattawan, MI)	5	ILEX will receive a licensing fee, milestone payments, and royalties in exchange for development and marketing rights for piritrexim—the DNA synthesis inhibitor for treating bladder and other cancers. In return for its expertise in oncology drug development, ILEX receives a $5 million equity investment from MPI, and will review new oncology technologies discovered or acquired by MPI.