Previewing This Year's FASEB Offerings

While covering its usual wide range of topics, the meeting will emphasize growth factors and signal transduction

WHETHER YOU'RE ONE OF THE ESTIMATED 13,000 biomedical researchers who plan to attend the annual extravaganza of the Federation of American Societies of Experimental Biology (FASEB), which will be held next week in Anaheim, California, or you're one of the thousands who are passing up this year's edition, if you're curious about what this year's highlights will be, read on. *Science* has interviewed executive directors of the societies, program committee members, and symposia chairpersons to get their notions of what among the more than 7000 planned presentations might be of broadest interest.

The assignment of culling a small number of highlights from such an imposing number of sessions was daunting—few meetings cover as wide a range of topics as FASEB's. Although the interviewees said that the meeting was designed to give the lion's share of attention to growth factors, receptors, and the pathways that transmit signals into cells, those topics won't be the only attractions in Anaheim. After all, the presentations will reflect the diverse interests of the five presenting societies: the American Physiological Society, the American Society for Pharmacology and Experimental Therapeutics, the American Association of Pathologists, the American Institute of Nutrition, and the American Association of Immunologists. Some of the highlights in the growth factor and other areas follow:

■ Neonatal development has long been a hot research area and for this year's meeting the American Institute of Nutrition and the American Physiological Society have sponsored a symposium on one of the newer aspects of the work: how hormones in milk regulate neonatal development.

It's hardly news that mother's milk provides both nourishment for newborn infants and also antibodies that help them ward off infectious diseases, but that's not all it does, says symposium cochair Clark Grosvenor of Pennsylvania State University, and its other contributions are just now being recognized. Nutritionists used to think, for example, that the peptide hormones and growth factors in milk would be broken down by the infant digestive system, thereby preventing them from having any effect. But Grosvenor says that recent animal experiments by several groups are showing that the hormones can leak out of the newborn digestive system into the bloodstream, and can thus broadly influence infant development. Milk contains about 50 hormones and growth factors, Grosvenor points out, adding: "They must be doing something."

■ Plenty of electricity has been generated in the past year or two by research into a family of proteins—the neurotrophins—that regulate nerve cell growth and development. That's why the American Society for Pharmacology and Experimental Therapeutics has sponsored a symposium focusing on the rapidly expanding understanding of these proteins. The family now includes five members, nerve growth factor, brain-derived neurotrophic factor, and neurotrophins-3, -4, and -5. Within the past year, researchers have also identified some of the receptors through which the neurotrophins exert their effects, and the neurotrophin-receptor interactions will be explored by the symposium participants. The information is important, says chairman Luis Parada of Advanced Biosciences Laboratory in Frederick, Maryland, because it may lead to better therapies for neurodegenerative diseases such as Alzheimer's.

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■ Another hot topic at the FASEB meeting will be efforts to use smooth muscle cells and the endothelial cells that line blood vessels as targets for gene therapy. Those cells have a potential advantage over other kinds of target cells, says vascular surgeon Alexander Clowes of the University of Washington in Seattle, because if muscle and endothelial cells acquire a new gene, they could release the gene product directly into the bloodstream. Hence the FASEB symposium sponsored by the American Association of Pathologists and cochaired by Clowes, which will discuss, among other things, the efforts of researchers to introduce into endothelial cells a gene encoding the clot-busting protein called tissue plasminogen activator. The hope is that this protein could help prevent heart attacks and other conditions in which abnormal clots form in blood vessels. Yet another effort to be discussed involves introducing into endothelial cells the gene for an enzyme that is defective in patients with severe combined immunodeficiency disease (SCID), an ordinarily fatal genetic condition that leaves its victims unable to fight off infections.

■ Do tumor cells make agents that induce lymphocytes and other white blood cells to attack the tumor spawning those cells? In a talk she will give at a symposium sponsored by the American Association of Immunologists, Beverly Packard, a Food and Drug Administration biophysicist, will say the answer is yes. Aware that tumor infiltrating lymphocytes grow in response to tumors, Packard set out to find the growth-stimulatory agent about 3 years ago. In 1990, she isolated a substance from melanoma cells, which she called oncoimmunin L, that stimulates lymphocyte growth. More recently, she's isolated another tumor-derived substance, oncoimmunin M, that blocks the growth of leukemia cells and causes them to mature. As a result the cells acquire surface molecules that make them stick to other cells. That may help them adhere to, and attack, tumor cells, Packard hypothesizes. Eventually the oncoimmunins might be used to beef up an individual's ability to fight off cancer.

■ And finally, couldn't the world use a new treatment for cocaine toxicity? This may be on the horizon, according to a poster that Kenneth Dretchen of Georgetown University will present at the meeting. Cocaine has a variety of toxic effects, Dretchen says. It can act both on the nervous system, causing symptoms such as tremors and convulsions, and on the heart to produce the pain of angina or even lethal cardiac arrhythmias. But in preliminary studies in rats, Dretchen, who collaborates with researchers at a biotech firm, Pharmavene, Inc. of Gaithersburg, Maryland, has shown that an enzyme called butyryl cholinesterase, which breaks cocaine down to inert byproducts, can reduce cocaine's toxic effects on both the brain and heart.

If further work on the enzyme pans out, it might be a very useful drug, says George Belendiuk, Pharmavene's vice president for research and development. Every year in the United States, 100,000 emergency room visits and 6000 deaths are attributed to cocaine overdoses. ■ ROBIN EISNER

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