

## Shot in the arm for protein delivery

The nicotine patches worn by desperate smokers and the 12-hour antihistamine pills swallowed by hapless allergy sufferers highlight the growing ability of pharmaceutical companies to control the delivery of simple drugs over time. That skill, however, has long eluded scientists working with proteins and other large molecules.

For example, the complicated three-dimensional structures of proteins seldom survive the high temperatures and watery solutions traditionally used to encapsulate small molecules or peptides in biodegradable microspheres that slowly release their contents in the body.

Researchers from two biotech companies now report success at encapsulating human growth hormone, a protein sometimes prescribed for treating children of unusually small stature. "We've used an entirely novel process to make the microspheres," says Scott D. Putney of Alkermes in Cambridge, Mass.

In monkeys, a single injection of hormone-laden spheres provided sustained release of the protein for more than a month, scientists from Alkermes and Genentech in South San Francisco report in the July *NATURE MEDICINE*. The new encapsulation method, which involves lower temperatures and no water, should also work with other therapeutic proteins, says Putney. If the microspheres prove as safe and effective in humans as in monkeys, people may soon be able to avoid the daily injections now required for most forms of protein therapy, says Putney.

## Feasting on neuropeptide Y research

Neuropeptide Y ranks among the most effective eating stimulants ever found. Injected into the brains of even sated rats, the chemical triggers voracious feeding, apparently by sending signals to the hypothalamus, a brain region known to govern food intake.

Investigators now report the discovery of a cell surface protein through which the hypothalamus may receive the neuropeptide's command to chow down. Several cell surface proteins that bind to neuropeptide Y had previously been identified in the brain, but none seemed to fit the requirements for the feeding receptor that scientists thought must exist.

The new protein, whose structure differs significantly from that of the other potential neuropeptide Y receptors, is the best candidate yet, Christophe Gerald of Synaptic Pharmaceutical Corp. in Paramus, N.J., and his colleagues contend in the July 11 *NATURE*. One line of evidence supporting that assertion is that production of the newly discovered receptor, called Y5, is localized to cells in the hypothalamus. The protein also binds to other neuropeptide Y-like brain chemicals that stimulate feeding.

The identification of Y5, the researchers say, should speed the development of inhibitors that could be used to treat obesity and other eating disorders. "You'd be blocking Y5, so you would expect to block the feeding stimulus," says Gerald.

Surprisingly, some recent research on neuropeptide Y has cast doubt on whether the brain chemical's normal function is to influence feeding behavior. Richard D. Palmiter and his coworkers at the Howard Hughes Medical Institute of the University of Washington in Seattle have genetically manipulated mice so that they do not make neuropeptide Y. "There was no defect in their feeding behavior," notes Palmiter, who described the mice in the May 30 *NATURE*.

That observation suggests that the hunger stimulated by injections of neuropeptide Y may be an experimental artifact. The flood of neuropeptide Y could cause behavior unlike that caused by normal amounts, says Palmiter. Gerald, however, contends that Palmiter's mice merely indicate that the other neuropeptide Y-like chemicals in the brain can substitute for the real thing or that other feeding pathways can compensate for the absence of neuropeptide Y.

## TV's role in life-and-death decisions

A new study suggests that television shows depict cardiopulmonary resuscitation (CPR) as an unrealistically effective procedure. The authors of the report worry that terminally ill people and their families may make real-life medical decisions based on misperceptions fostered by the tube.

Susan J. Diem of the Veterans Affairs Medical Center in Durham, N.C., and her colleagues watched all of the episodes of *ER* and *Chicago Hope* during the 1994-1995 viewing season. They also tuned in to 50 consecutive episodes of *Rescue 911*. Each time this emergency medical procedure was performed, they noted the outcome.

The team found 60 depictions of CPR. In most cases, cardiac arrest was caused by a trauma, such as a gunshot wound. Most of the victims were children, teenagers, or young adults. When Hollywood dictates the script, the survival rates appear quite good—75 percent of the patients survived the immediate cardiac arrest, and 67 percent were shown being discharged from the hospital.

Medical research tells a different story. Just 40 percent of CPR patients survive their crisis. While television shows don't usually portray any negative consequences of CPR, patients who experience heart-starting therapy can be left with severe disabilities, such as brain damage, Diem says.

The danger, in the researchers' opinion, is that unrealistic television portrayals encourage patients, particularly terminally ill ones, to expect miracles. "An 85-year-old woman with metastatic breast cancer may believe that CPR can work as well in her situation as it does for the 23-year-old trauma victim on television," the authors report in the June 13 *NEW ENGLAND JOURNAL OF MEDICINE*.

Neal A. Baer of Warner Brothers Television responds by saying that physicians don't spend enough time with their patients talking about CPR. "Instead of blaming television for failing to portray CPR accurately. . . physicians need to make a concerted effort to discuss this difficult topic openly with all their patients," he counters in an editorial in the same issue.

## Heat wave claimed solitary, sick people

As the mercury climbed last summer, Chicago's death toll rose with it. Hospitals and medical examiners were overwhelmed as their caseloads mounted. Now a study suggests that many of the 700 deaths caused by the sizzling heat wave of July 1995 could have been averted.

The work, published in the July 11 *NEW ENGLAND JOURNAL OF MEDICINE*, found that people who lived alone had twice the risk of death during hot weather. Those who were bedridden or needed help from visiting nurses were even more vulnerable.

The researchers also found that more than half of the deceased people had lived on the top floor of their building. Unlike some earlier studies, the new work indicates that the use of electric fans had no bearing on survival.

The researchers interviewed friends, relatives, and neighbors regarding 339 people who had died in the heat. They also interviewed 339 people who were close in age to and lived in the same neighborhoods as the casualties.

Those most likely to survive had air-conditioning, lived in a building with an air-conditioned lobby, or had a way to get to a cooler location, the researchers found. A network of social contacts also proved critically important.

"During the summer heat wave of 1995 in Chicago, anything that facilitated social contact, even membership in a social club or owning a pet, was associated with a decreased risk of death," note Jan C. Semenza, of the Centers for Disease Control and Prevention in Atlanta, and her coworkers. Usually, people do not succumb to the heat on the first day. Therefore, most can adapt their daily routines to ride out the heat, the researchers say.