CHEMISTRY

Human enzyme produced in bacteria

Blood clots in the lungs can be dissolved clinically by a human enzyme called urokinase. Abbott Laboratories in North Chicago produces that enzyme from kidney cells growing in culture and other companies extract it from urine. Now Abbott announces that its scientists have genetically engineered bacteria *(Escherichia coli)* to produce the protein. The bacterial technique is potentially more efficient than current methods of urokinase production, a spokesman for Abbott says, but substantial research and development is still required before commercialization will be possible.

In a novel purification step, Paul Hung and his team of Abbott scientists took advantage of urokinase's protein-cutting ability. The researchers attached genetic material for urokinase to part of a gene for a bacterial protein. That linkage ensured that urokinase would be synthesized under bacterial control. After synthesis, the human enzyme snipped itself from the bacterial portion. Laboratory tests demonstrated that the bacterially produced urokinase dissolves blood clots just as natural urokinase does. According to Abbott, urokinase is both the first human enzyme and the largest protein yet produced by recombinant DNA techniques.

Thar she blows—again

Five times in the last four years a female humpback whale with a distinctive notch in her dorsal fin has been sighted and photographed by scientists of the Ocean Research and Education Society. In March 1977 she was accompanied by a newborn calf. Last month, when they spotted "old notch-fin" for the fifth time, she again had a newborn with her.

"There has been scientific controversy concerning the calving interval for humpbacks and other species of whales," says Kenneth C. Balcomb III. "This observation documents directly for the first time a three-year period between calves. As gestation takes twelve months and lactation takes up to a year, our observation provides evidence for a year of 'rest,' as had been proposed previously on the basis of examining specimens from the whaling industry."

Other data come from the ORES square-rigger, which is equipped with laboratory facilities, acoustic recording equipment and a computer. The staff observed the humpbacks feeding along the northeastern shores of North America after wintering in the Caribbean about 600 miles southeast of Miami. This year's weekly counts indicate a humpback population of at least 2,000, which ORES says is an encouraging sign for the species' survival.

Nuts to allergies

A "hypoallergic peanut" may be in the offing for people who react to the common goober with hives, or even anaphylactic shock. Martin I. Sachs and colleagues at the Mayo Graduate School of Medicine have isolated the protein apparently responsible for the system-wide allergic reaction. They collected blood sera from peanut-sensitive patients who had elevated antibody levels. Then they determined what peanut component specifically bound that antibody. The results, reported at the meeting in Anaheim of the Federation of American Societies for Experimental Biology, pointed to one of the most abundant peanut proteins. Sachs christened the protein "Peanut I."

The scientists believe isolation of Peanut I will help identify persons who have the allergy and may also allow food chemists to modify peanuts to circumvent allergic reactions altogether. The allergy problem amounts to more than peanuts, Sachs believes. He says, "Peanut-containing foods represent a common source of protein in the American diet."

SPACE SCIENCES

Venus: The drier look?

One of the major questions about Venus — far hotter and drier than the earth despite being the nearest planet to it in size, mass and distance from the sun—has been whether it once had an ocean's worth of water that disappeared when it was dissociated into hydrogen and oxygen. The orbiting Pioneer Venus spacecraft has found hydrogen escaping relatively slowly into space from the top of the planet's atmosphere, which at least allows for the possibility that such an ocean did exist and that its hydrogen is merely almost gone.

The heavier oxygen, however, which ought to have remained, has been more elusive. It has been suggested that the oxygen could have been trapped in the rocks of Venus's crust, but it would have taken an improbable amount of tectonic thrashing to have exposed enough crustal rock for oxidation. The one reported detection of a seemingly significant amount of oxygen in the atmosphere came from an analysis of data from a gas chromatograph that was sent down through the atmosphere on Dec. 9, 1978, aboard the largest of several probes that were also part of the Pioneer Venus mission. An initial study by Vance I. Oyama and colleagues from the NASA Ames Research Center in California indicated that the device had detected more than 60 parts per million of oxygen in the lower atmosphere. This would be not nearly an ocean's worth, and it would only slightly reduce the huge amount of geologic activity required to bind the rest into the crust; other scientists were also concerned because the amount reported seemed too high to fit with measurements made higher in the atmosphere. But the prospect was at least sufficient to fuel the provocative idea of a once-wet Venus.

Now that bit of fuel, at least, seems to have run out. The gas chromatograph measurement initially attributed to oxygen, Oyama's group reports in the April 25 SCIENCE, was actually showing the amount of argon. And the originally supposed argon reading — which caused concern when it differed from mass spectrometer data from the same probe—turns out to have been carbon monoxide, which was completely missing from the first gas chromatographic analysis. (The GC argon measurement is now in general agreement with the MS data, as well as with findings from the Soviet Venera 11 and 12 landing crafts.) The error, writes the team (which spent months tracking it down), came from erroneous assumptions about how long different gases would stay in the instrument's chromatographic columns.

Where oxygen measurements would appear in the group's revised table of atmospheric constituents, there is now only a question mark. "At this time," says the report, "we cannot set either a firm value or an upper limit for the O_2 content . . . ." Further study should resolve the matter, the authors assert, but the amount if any may be small indeed. The combined amount of Ar and CO in the revised analysis differs by less than one part per million from the O_2-Ar total the first time, and other constituents are the same (as is the total atmospheric pressure), leaving little room for oxygen.

Ariane's first science payload

Although only one of the European Space Agency's Ariane rockets has ever been on even a test flight (SN: 2/9/80, p. 90), the next in the series will already be carrying a scientific payload into orbit. Scheduled for launch late next month (the target date as of this week was May 23), the second Ariane will be providing the ride for a satellite called Firewheel, designed by West Germany's Max Planck Institute (with German, U.S. and Canadian experiments) to study the effects of earth's magnetic field on a barium cloud injected into the upper atmosphere. Also on board will be OSCAR 9, latest in a series of satellites used in connection with amateur radio activities.