A drug that counters swine flu

In spite of the massive government backing of the swine flu vaccination program, and the manufacture of enough vaccine for some 170 million Americans, only 60 million now appear to be taking advantage of it. One reason is that the public is still concerned about the safety of the vaccine although it has been exonerated from causing deaths (SN: 10/30/76, p. 276). Another reason is that many people do not believe that a swine flu epidemic will occur and hence do not want to bother getting vaccinated.

With so few Americans vaccinated, then, there is still a possibility that a swine flu epidemic might sweep the United States. But, if that should happen, there might well be a second line of defense against it—an experimental antiviral drug called Isoprinosine, made by Newport Pharmaceuticals International Inc. of Newport Beach, Calif. Isoprinosine can kill swine flu virus in both experimental animals and in tissue culture, Newport virologist Lionel N. Simon reported last week at the congress of the Pan American Medical Association in Hollywood, Fla.

Isoprinosine is one of a handful of antiviral drugs awaiting approval by the Food and Drug Administration (SN: 3/20/76, p. 188). It counters viral infection by stimulating the immune system (T and B cells). Newport scientists have also found the drug to be effective against the A-Victoria strain of flu, which may also strike this winter, and against which the swine flu vaccine for higher risk patients is also designed.

If there is a swine flu epidemic, Simon told SCIENCE NEWS, his company could make large batches of Isoprinosine quickly, and "we would cooperate with the government in any way they saw fit." Exactly what the government might do with the drug under such circumstances, however, is not known. An FDA spokesman stressed that the drug could not be used in an emergency "unless they [Newport] provide safety data and showed probable cause that it worked." However, this is what Newport is already doing in attempting to get the drug approved. In other words, the FDA can hardly be expected to say it would approve the drug in an emergency, because if it did, the public could criticize it for not approving the drug for other uses in the first place.

Simon, on the other hand, reports that Newport has already filed an IND (investigational new drug) for Isoprinosine with the FDA and that clinical trials with the drug are already taking place in the United States. Should a swine flu epidemic occur, he speculates that there might be some provision under the laws that govern the FDA for allowing Isoprinosine to be used on a widespread experimental basis. Even if such a legal loophole existed, though, he admits that it would take massive organization by the FDA and other arms of the government to marshal Isoprinosine for countering an epidemic.

Of course, in the wake of an epidemic Congress and the President might see fit to implement legislation that would allow Isoprinosine to be used to counter the disease. Certainly they took similarly quick and unprecedented action when they passed emergency legislation for the manufacture of swine flu vaccine. □

An asteroid comes calling—close

Although there may be many hundreds of asteroids whose paths take them inside the orbit of the earth, they are usually small, dark and only rarely discovered. The first was detected in 1932, and one spotted in January of 1976 (SN: 2/7/76, p. 84) was only number 20. Now another has been found, and back-tracking indicates that on Oct. 20 it passed within a mere 1.2 million kilometers of the earth, barely three times as far as earth's moon.

The object, designated 1976 UA (see IAU circulars 2999 and 3000), is a tiny one, according to Brian Marsden of the Harvard-Smithsonian Center for Astrophysics in Cambridge, Mass. He says its absolute magnitude of about 21.5 suggests that it is no larger than 0.4 kilometers across. It is following a course that ranges between about 70 million and 183 million kilometers from the sun, tilted about 6° relative to the plane of earth's orbit. Its "year" is a little more than nine months long.

The only such object ever observed in a path that carried it closer to the earth was Hermes, discovered in 1937, which came within about 800,000 kilometers. (Some such objects have struck the earth itself or burned up in the atmosphere, but none of those have been charted beforehand in their orbits.) The newcomer was first spotted by William Sebok, a graduate student at the California Institute of Technology, in a photographic plate taken Oct. 25 with the 122-centimeter Schmidt telescope at Palomar Mountain Observatory. It was also found on plates made independently the same day by Caltech astronomer Eleanor Helin, and has now been reported, says Marsden, by at least four other observers.

Asteroids whose paths cross the earth's are known as Apollo asteroids, referring to the name given to the first of them by its discoverer, Karl Reinmuth of Heidelberg Observatory. Though all of the known ones are far too small to be studied in detail by earth-based telescopes (the largest is about 8 kilometers across), their proximity to earth makes them tempting subjects for investigation. Eugene M. Shoemaker of Caltech has suggested that one of them could be an exciting target for observation by an unmanned space probe.

The date of the newcomer's discovery was also the culmination of an exciting five days for astronomers. On Oct. 21, a magnitude 7 nova, the brightest in 14 months, was reported in the constellation Vulpecula—and, Marsden adds, it has held on to its brightness "remarkably well." Two days later, a *super*nova was reported by a Berlin astronomer to be visiable in the galaxy NGC 488, with a photovisual magnitude on that date of 17.0. The day after that, *two* supernovas were reported: one with a photographic magnitude of 15.0, southwest of the nucleus of IC 1801, and another, with photographic magnitude 17.5, northeast of the nucleus of an anonymous galaxy at right ascension 0h 58.2m and declination –7° 21′. □

Synthetic DNA turns on gene

If scientists are eventually to put manmade DNA to practical use, they will need to be able both to write the script and direct the action.

The first human directors of bacterial gene expression are two groups of researchers, led by Herbert Boyer of the University of California at San Francisco and by Ray Wu of Cornell University. They published results of essentially identical experiments in the Oct. 28 NATURE. This work had been reported earlier by Boyer at the Miles International Symposium (SN: 6/19/76, p. 389).

The artificial genetic material used in these experiments was a copy of a region of the bacterial chromosome that regulates the expression of other genes. Normally a specific protein sits on that region and keeps the genes from working. But when the synthetic DNA was added, it bound all the repressor protein, and the cell turned on full force production of enzymes coded by those genes. Boyer's group measured a 40-fold increase in a specific bacterial enzyme.

This success in directing complements Har Gobind Khorana's demonstration that bacteria can follow a manmade script (SN: 9/4/76, p. 148). Khorana synthesized DNA containing information for production of a normal bacterial component, but one that was absent from the specific bacteria can follow a manmade script ficial gene corrected the cells' deficiency.

The researchers believe that all these directing and writing techniques will be valuable in the eventual development of bacterial factories for production of rare biological substances and in further exploration of the mechanics of gene expression. □