Though the importance of food as an instrument of foreign policy has been enhanced by the emergence of an Arab "oil weapon," the present strategy is only the culmination of a trend toward politicizing aid, begun some years ago (SN: 5/18/74, p. 322), and the State Department document tends to confirm what some scientists have been saying publicly: The United States is pursuing a policy of triage among nations (SN: 11/30/74, p. 340). Even so, the State Department may represent the more liberal view in the present negotiations: The Washington Post quoted a representative of the National Security Council as saying, "To give food aid to countries just because people are starving is a pretty weak reason." □

How cancer strikes against immunity

The interplay of cancer and the immune system is one of the hottest areas of cancer research right now. The immune components that are most active against cancer seem to be the thymus-derived lymphocytes (T cells) and scavenger cells called macrophages. There is ample evidence that cancer consists of some breakdown in the immune system. However, research by a team of Parisian immunologists now suggests that cancer does not result from a breakdown in immunity. Rather, it results from the ability of cancer cells to ward off the immune fighters that attack them.

This is the first time that cancer cells have been found to resist immune defenses. Such a finding is conceptually exciting and bound to provoke controversy and stepped-up research in cancer immunology circles. What's more, it should open new insights into whether cancer cells and the fetus share common mechanisms for resisting immune rejection. Immunologists have reason to believe that they do (SN: 8/14/71, p. 107; 7/27/74, p. 57). The finding may also lead to new approaches toward the treatment of cancer and toward birth control.

The investigators are Nobel laureate François Jacob, Robert M. Fauve, Brigitte Hevin, Hedwig Jacob and Jean A. Gaillard of the Pasteur Institute in Paris. They report their results in the PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES.

The Parisian immunologists first found that injecting cancer cells into mice did not impair their immune systems. Or at least, it did not impair the ability of their immune systems to fight bacteria. However the cancer cells managed to keep from becoming inflamed. Inflammation usually arises whenever the immune system tries to ward off foreign invaders.

This absence of inflammation, the Parisian team believes, was "indeed remarkable. Since most tumor cells are able to destroy and invade adjacent tissues, one would expect continuous release of dead cell debris to result in strong inflammation."

And the reason the cancer cells were able to keep from becoming inflamed, it turned out, was that they produced a chemical compound of molecular weight between 1,000 and 10,000.

When the same cancer cells were placed in a test tube, they were also able to repulse macrophages trying to engulf them. Several other kinds of cancer cells were likewise able to fight off macrophages in the test tube.

These results suggest that cancer does not depend on a defect in the immune system. Rather, it consists of tumors bypassing immunological defenses by two mechanisms. The tumor produces a compound that prevents inflammation. It also produces a toxic effect on macrophages attacking it. The cancer cells may possibly produce a toxic effect against T cells too, the immunologists believe, although they do not have evidence to confirm it.

Immunologists have long wondered why a fetus isn't rejected by its mother because it contains material that the mother's immune system should consider as foreign. The Pasteur Institute team has obtained evidence that partially answers this question and that links more than ever the common ability of fetuses and cancers to fend off immune invaders.

There are certain cells in the placenta of the pregnant woman that are thought to protect the fetus from immunological rejection. The Pasteur Institute team has found that these cells do not become inflamed. And the cells are able to rebuff macrophages. Although the scientists have not yet isolated any compounds from the placental cells, they think it is quite possible that both placental cells and cancer cells fight immune invaders in an identical manner.

Once the nature of the compound or compounds cancer cells use to resist immune invaders has been elucidated, immunologists might then be able to find some way to counter the substance or substances, and hence effectively treat cancer. If the same substance or substances also turn out to be emitted by placental cells they too might be countered and lead to some form of birth control. □

Fossil teeth point to earliest predator

Most of the land in Nevada and California may be high and dry now, but at one time it formed the bottom of an ocean. A new archaeological find indicates that the temperate seas that existed there 600 million years ago spawned the oldest predator yet found—a large, squidlike mollusc.

Paleontologists J. Wyatt Durham of the University of California at Berkeley and Jean B. Firby of the California Academy of Sciences in San Francisco found tiny cone-shaped teeth embedded in fossils from the White Mountains near Bishop, Calif. Their report is in the November JOURNAL OF PALEONTOLOGY.

The fossils were dated at about 600 million years by comparison with other rocks from the Lower Cambrian of California (about 550 to 600 million years ago). The teeth—or more properly "denticles" (teeth are continually repaired, denticles wear away with time)—were found in long bands similar to the rasping tongues or "radulas" of other molluscs. The denticles appear most like those of living members of the predatory molluscan class Cephalopoda, the team reports. The assignment to geologic period, phylum and class lead them to conclude that they have discovered invertebrate predators 100 million years older than any yet found.

Evidence of arthropods called trilobites, one of the most abundant sea creatures at that time and place, was found concurrently. The team suggests that trilobites may have been the major food of the ancient predator. □

Fossil teeth from squidlike mollusc.