

## Heart attacks: an immune defect?

A lot of attention has been paid to age, blood pressure, the levels of cholesterol in the blood, smoking, exercise and other factors that might lead to heart attacks. Not much notice has been paid to the possible role of immunity in heart attacks. British pathologists and epidemiologists now report in the May 25 LANCET that some immune factor may indeed be involved.

D. F. Davies and his colleagues at West Wales Hospital in Carmarthen and at the Medical Research Council Epidemiology Unit in Cardiff took blood samples from 216 patients who had had a heart attack and from 144 control hospital patients. A higher proportion of heart attack patients than controls had antibodies in their blood to dry milk and probably to egg white, but not to gluten. These differences in proportion were quite striking in the heart attack patients who died within six months after infarction. The possession of antibody to cow's milk protein and to egg white in blood samples taken soon after a heart attack seems, therefore, to be highly predictive of death. Death was increased almost threefold if either antibody was present.

So it appears that foods can act as antigens and provoke antibody responses. But how these antibodies might lead to heart attacks remains to be explored.

## Switching on proteins in the embryo

Although it is not yet clear what mechanisms turn on protein synthesis in the first stages of embryonic development, investigators at least have some idea as far as the sea urchin is concerned. It is activation of ribosomes. Ribosomes are the conveyor belts that line amino acids up into specific proteins, as ordered by messenger RNA molecules.

An inhibitor of protein synthesis has been isolated from the ribosomes of unfertilized sea urchin eggs. The inhibitor is a protein. Some investigators have found that the inhibitor disappears after fertilization of the sea urchin egg, thereby triggering activation of protein synthesis. But Merrill B. Hille, a zoologist at the University of Washington now reports in the June 7 NATURE that he has found a gradual diminution in the amount of the inhibitor after fertilization. This finding suggests that slow loss of the inhibitor, rather than its abrupt disappearance, is responsible for a continuous increase in the rate of incorporation of amino acids into proteins until the fertilized egg reaches embryo stage.

## Chalones: Inhibitors of cell division

During the last six years or so, a group of substances that inhibit cell division have been found in animal tissues. The substances are called chalones. Aside from regulating normal cell division, chalones may also be used to stop cancer cells from dividing. Exactly when does a chalone interrupt cell division? Antoine Simard and his biochemistry team at the University of Montreal went after the answer, using a liver cell chalone.

They report in the May PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES that the chalones blocked the liver cell during interphase, specifically right before the cell doubled its DNA. The chalone appeared to have also blocked the cell at metaphase. This phase of cell division follows interphase; the cell's chromosomes become attached to a structure called a spindle. If the chalone hadn't interfered with cell division, these chromosomes would have divided, and two daughter cells would have formed from the one cell.

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## Pollination by ants

Though ants are common flower visitors, entomologists believe they play little, if any, role in pollination. Rather, they have labeled ants as villains, plunderers and prototypes of the crawling insects that steal nectar and pollen. Now entomologists may have to change their views. Pennsylvania biologist, James C. Hickman, at Swarthmore College has observed ant pollination in a small, annual plant, *Polygonum cascadenense*. The pollination is characterized by low energy expenditure by both ant and plant.

*P. cascadenense* is found in the hot, dry slopes of the Western Cascades of Oregon. Its stamens shed a sticky pollen that adheres to the ant's head and is thus transferred from ant to stigma. Hickman has observed that greenhouse *P. cascadenense* specimens grown in the absence of ants are healthy and flower profusely but produce only a few seeds that will grow (0 to 7 percent). Whereas for the plants in the field, growth takes place in 85 to 100 percent of the seeds.

"Unequivocal demonstration of cross-pollination by ants," says Hickman in the June 21 SCIENCE, "is significant not only because of its controversiality, but more important because all previously accepted pollinating animals fly from plant to plant. Since walking may reasonably be expected to require as much as an order of magnitude less energy per unit distance than flying, the result adds another facet to the growing field of pollination energetics."

Noting the traits adopted by *P. cascadenense*, Hickman enumerates a few traits which he feels would "allow predictive inference concerning ant pollination in plant species." Among them are: The plant must grow in hot, dry habitats where ants are most abundant; the plant must be short or prostrate to minimize distance traveled by the ant; plant population must be dense so as to eliminate the necessity to return to the ground between plants; nectar quantity must be small enough to support ants while discouraging other insects with higher energy demands, and the flower size should be small to minimize attraction of flying insects. "These traits are all interrelated," says Hickman, "and when taken together minimize the interaction energy outputs by both plant and pollinator."

## Light in the deep sea

The adult female angelfish, *Oneirodes acanthias*, possesses a luminous organ called an esca. Ichthyologist William T. O'Day of the University of Southern California in Los Angeles collected angelfish in deep water off southern California and studied the organ through bacteriological staining methods and light and electron microscopy. His observations confirmed the suspected. The esca's luminescence involves symbiotic bacteria. He found that the microorganisms are Gram-negative rods without capsules, spores or flagella. When the microorganisms were grown in seawater-nutrient broth, no light was observed. Hence O'Day concludes that the host provides certain nutrients required for luminescence.

## Eagle transplant successful

In an attempt to bolster sagging bald eagle reproduction in the Northeast, caused by pesticide contamination, the U.S. Fish and Wildlife Service took two eggs from nests in Minnesota in early May and transplanted them to Maine nests. The experiment was successful. Two bald eaglets have hatched and been accepted by their foster parents.

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