BIOMEDICINE

Female allergy to sperm

Is there anything more dreadful than being allergic to someone you love? Allergists insist that this possibility is remote. However, three cases in which women had shown allergic reactions to male sperm have been recorded in the medical literature. And now a fourth, even more dramatic case is reported in the April ANNALS OF ALLERGY by Edwin J. Mikkelsen and his team at the Mayo Medical School.

The case concerned a 30-year-old woman who showed allergic reactions nearly every time she had intercourse. The reactions consisted of itching and swelling of the eyes and vagina, hives and sensations of faintness. She showed the same reactions no matter whom she had intercourse with.

Using a condom, however, prevented the reactions, leading Mikkelsen and his co-workers to suspect that she was allergic to sperm or to something in the male seminal fluid. She was. That something appeared to be a protein not present in sperm, but present in the seminal fluid.

Thus female allergy to sperm "may be more common than previously thought," Mikkelsen and his team conclude.

Radio waves: No genetic mutations

Disquieting evidence has been accumulating during the past several years that nonionizing radiation emitted by electronic equipment—microwaves, radio waves and electrical fields—can hurt our health. Rats exposed to amounts of microwaves that conceivably could escape from microwave ovens, for example, became emotional and prone to seizures. An electrical field common in home and office altered the levels of fats in human volunteers (SN: 6/29/74, p. 419).

Now a Northern Illinois University biologist, Sidney Mittler, has come up with some reassuring news about radio waves, at least as far as genetic mutations are concerned. He reported his results at the recent annual meeting of the Environmental Mutagen Society in Miami.

Because fruit flies are commonly used to study environmentally provoked genetic mutations, Mittler exposed them for 12 hours to two radio frequencies—146 and 29 megahertz. Both frequencies are used by ham radio operators and are close to citizens band frequencies. The flies received 600 times the energy that one would receive while standing at the base of a 300-foot antenna of a 50,000 watt FM transmitter. Even with this exposure, the flies experienced no genetic damage.

T and B cell architecture

B and T lymphocytes are the body's major immune defenses. B cells make antibodies that attack invading antigens. T cells fight the invaders in person. Understanding the architecture and specific actions of each kind of cell is presently one of the hottest challenges in immunology.

So immunologists were understandably enthusiastic when investigators at the Memorial Sloan-Kettering Cancer Center and at Rockefeller University reported that dramatic differences in B and T cells could be visualized under the scanning electron microscope. Specifically, B cells were thought to be studded with lots of little fingers, and T cells were thought to appear relatively smooth (SN: 1/26/74, p. 52).

Now Elaine L. Alexander and Bruce Wetzel of the National Cancer Institute report in the May 16 SCIENCE that they have been unable to confirm the earlier findings. Instead, they see both B and T cells as having short fingers. "It is not possible to distinguish T and B lymphocytes on the basis of surface morphology," the reseachers declare, and they concede that preparative techniques might account for the discrepancy.

PHYSICAL SCIENCES

Superweak

It's a bird, it's a plane, it's superweak!

The decay of K-zero mesons is one of those particle physics processes that just shouldn't proceed the way it does. It caused a great excitement about a decade ago when it was found to violate two cherished principles at once, those which call for a balance of positive and negative electric charges (matter and antimatter) and a symmetry of left and right.

To explain the violations Lincoln Wolfenstein of Carnegie-Mellon University proposed the existence of a fifth kind of interaction or class of force—superweak—to add to the four already known (the strong, electromagnetic, weak and gravitational). But experimental attempts to find predicted effects of superweak were ambiguous.

Last year superweak surfaced again when a group of experimenters at the CERN laboratory in Geneva found it the best way to explain their latest results on K-zero decay (SN: 7/27/74, p. 55). Now there is further support from an experiment that measured interference between two modes of K decay, into two pi mesons and into muons and/or electrons. The experiment was done by W. C. Carithers and six others from Columbia University and New York University. They report in the May 12 PHYSICAL REVIEW LETTERS that this aspect of K-zero decay is "in good agreement with the prediction of the superweak model."

New particle scorecard

That exotic new quality that may or may not be charm seems to be conjuring up the existence of exotic new particle after exotic new particle. The latest entry in the line-up is presented by P. L. Jain and B. Girard of the State University of New York at Buffalo in the May 12 PHYSICAL REVIEW LETTERS.

The researchers found it in the interactions of protons of 300 billion electron-volts energy at the Fermi National Accelerator Laboratory, and they believe it may be the lightest of the series of particles that theory expects to be made of a charmed quark and an anticharmed antiquark. Its lifetime is about 10^{-13} second, and its mass is likely to be about 1.25 billion electron-volts. Jain and Girard are uncertain about the mass because one of the new particle's decay products is a neutrino. Neutrinos leave no tracks, so the experimenters can't know which way the neutrino went nor its momentum.

Qualitative analysis of the sky

More and more chemicals come to light—or rather to radio—in interstellar space. The latest, reported in ASTROPHYSICAL JOURNAL LETTERS (197:L29), is methyl formate ($HCOOCH_3$). It is another Australian contribution to molecular astronomy, in which R. D. Brown and five others from Monash University in Melbourne and the Commonwealth Scientific and Industrial Research Organization's Radiophysics Division in Sydney used the 64-meter antenna at Parkes, New South Wales. The new molecule lies in that happy hunting ground of molecular astronomers, the interstellar cloud called Sagittarius B2.

Molecular astronomers have found so many molecules in the interstellar clouds that they can proceed by chemical analogy in picking likely new ones to seek. Several known species contain the methyl group (CH_3): methanol, acetonitrile, methylamine, methyl acetylene and acetaldehyde. There is also formic acid (HCOOH). This inspired Brown and co-workers to look for the combination ($HCOOCH_3$). They did a laboratory study to determine its spectrum and then found at least one line, 1,610,249 megahertz, in the sky an possibly a second, 1,610,906 megahertz.