

thermia. There is one major drawback, however, as Jain reported at the American Association for Cancer Research meeting this week: The animals' lifespans decrease. "What we found," Jain told *SCIENCE NEWS*, "is that metastases [cancer cells that split off from the original tumor to spawn new ones elsewhere] grow much more violently, much more easily, when you give glucose."

While the finding dampens prospects for using glucose in hyperthermia, it serves to showcase some of the engineering used to develop such data.

Take the thermal probe, a thermistor with attached wires. Tiny thermistor (resistor) beads are surgically implanted into the flanks of rats along with a slurry of cancer cells. Later, when a tumor forms the probe will be part of it, permitting monitoring of its changing thermal environment without traumatizing — such as bruising — surrounding tissue each time an experiment is conducted.

Probes can measure tumor temperature directly, or be heated to a temperature just above that of the ambient tissue. A reading of the power level needed to maintain the temperature gives an indication of the blood flow rate by signaling how fast the tumor gains or loses heat.

The Carnegie-Mellon team also pioneered use of glass slides in rabbit ears to view tumor growth in living animals. A half-centimeter hole is cut in a rabbit's ear and enclosed on either side with glass windows. Several million cancer cells are then inserted into the chamber. As they grow, a protein they produce induces nearby blood vessels to grow toward them. Jain calls the glass chambers "a very powerful tool. It allows us to observe directly how blood flow, mass flow and tumor growth are affected by drugs and heat in a living organism. We actually place the rabbit's ear under the microscope, videotape what is occurring and make detailed measurements which are analyzed by computer."

The goal of this and related work is better data from which to computer-model effective, and more important, safe hyperthermia treatment — something perhaps no more than a few years away. □

## Interferon in another bug

A third microorganism has been genetically engineered to produce human interferon. The Cetus Corp. of Berkeley, Calif., has announced that interferon is being made in the soil bacterium *Bacillus subtilis*. This bacterium is considered more useful industrially than the widely used *Escherichia coli*. And it may be safer because it is not naturally associated with mammals as is *E. coli*. Human interferon genes were first shown to function in *E. coli* last year (SN: 1/26/80, p. 52) and more recently in yeast (SN: 3/7/81, p. 148). □

## Sexual development and teen drinking

Chronic use of alcohol may delay sexual maturity in male adolescents. That's this week's sobering news for the increasing number of high school-age youths who drink.

Robert A. Anderson Jr., assistant professor of physiology and biophysics at the University of Illinois at Chicago, reported his findings at this month's meeting of the Federation of American Societies for Experimental Biology in Atlanta. Anderson put 18-day-old mice on a liquid nutrient diet and after two days added a five percent ethanol solution to the diet of an experimental group. After 29 days of the liquid diet one-half of the mice in both groups were examined. Significant deficiencies in sexual maturation were found among the mice who regularly ingested alcohol. They had smaller reproductive organs than the control group and their sperm showed a higher incidence of ab-

normalities and were less effective at fertilization. The age period under study, from 20 to 49 days of age, is roughly comparable to adolescence for mice.

The rest of the mice continued to undergo treatment for a total of 43 days. It was found that the alcohol-fed mice reached the same levels of sexual maturity as the control group and all measurements of fertility were approximately the same.

A few experiments have studied the relation of alcoholism to male infertility (SN: 11/4/78, p. 311), but Anderson said that there are no studies on the effects of continued alcohol use from adolescence through adulthood. "All we can say at this point," he told *SCIENCE NEWS*, "is that the use of alcohol during adolescence may delay sexual maturity."

Certain enzyme and hormonal changes are necessary for males to reach sexual maturity. Anderson says he plans to study how alcohol acts on the production of the male sex hormone testosterone. Chronic drinking may slow testosterone production and delay maturity. □

## Court restricts rights of retarded

In an April 20 decision, the Supreme Court ruled that federal law does not give mentally retarded persons the right to be treated outside large state hospitals. The 6 to 3 decision overturned a lower court decision in favor of a group of patients at the Pennhurst State Hospital in Spring City, Penn. The patients argued that the Developmentally Disabled Assistance and Bill of Rights Act of 1975 had been violated by inhumane conditions at the hospital.

The law, which last year channeled \$65 million to the states for care of the retarded, contains a "bill of rights" section that describes the right of a retarded person to an "appropriate treatment" in an environment "that is least restrictive of the person's liberty."

But the Court ruled that Congress, in passing the law, had done no more than provide funds "to encourage, rather than mandate, the provision of better services" to the mentally retarded. The Pennhurst patients demanded relocation to local treatment facilities, but the Court said that Congress did not impose a requirement of care outside of state hospitals as a condition of eligibility for federal money. The opinion added that the law did not create any new constitutional rights for mentally retarded persons in state institutions. The justices stressed that they were not forbidding Congress to strengthen the 1975 law by designating specific types of treatment as a condition of federal financial help.

The dissenting justices argued that Congress had laid down clear requirements on the right of the mentally retarded to treatment in settings that give them maximum personal freedom. The

"bill of rights" section "cannot be treated as only wishful thinking on the part of Congress or as playing some fanciful role in the implementation of the act," the dissenters continued.

The decision is likely to affect other lawsuits by advocates for the retarded against New York, New Jersey and Connecticut. The Supreme Court has asked the Federal Court of Appeals for the Third Circuit to consider several further issues in the Pennhurst case, including whether the 1975 law gives disabled persons the right to bring private lawsuits in the first place and what penalties may be imposed on a state for failing to meet the law's conditions.

Vincent Gray, executive director of the Association For Retarded Citizens Inc. of D.C., a Washington-based organization, said that he is disturbed by the Court decision although its impact will vary. Some states, along with Washington, operate under federal court decisions that mandate the right to local treatment for retarded persons. These decisions are not based on the contested Developmentally Disabled Assistance Act and will not be affected by the new Supreme Court ruling. "But states with no laws specifying local treatment for the retarded are in deep trouble now," said Gray.

In another controversial case, the Supreme Court agreed to hear an appeal by the State of Massachusetts of a 1979 federal court ruling that patients who are involuntarily hospitalized for illness have a constitutional right to refuse medication (SN: 4/11/81, p. 230). The case, *Okin v. Rogers*, grew out of a suit by seven patients at Boston State Hospital. □