SOUTHWESTERN NEWS

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**NEWLY DISCOVERED GENE FAMILY MAY REGULATE IMPORTANT BIOLOGICAL PROCESSES**

DALLAS–June 11, 1999–A newly discovered gene defines a family that appears integral to the creation of cells, UT Southwestern Medical Center at Dallas researchers reported in the July issue of *Human Molecular Genetics.* Their finding may lead to breakthrough treatments for male infertility and cancer.

The scientists cloned the gene, *Morc,* in both mouse and human cells. It is found only in the testis, but similar proteins also are in other tissues in all the multi-cellular organisms tested, including zebrafish, nematodes, slime mold and plants.

"*Morc* is apparently part of a novel pathway that regulates sperm production," said lead author Dr. Andrew Zinn, assistant professor of internal medicine. "Possibly even more important is that, because we have found similar human proteins in many tissues, we believe *Morc* defines a new gene family that plays an as yet unknown, important function in all cells."

Zinn, an investigator in the Eugene McDermott Center for Human Growth and Development, and Dr. Mark Watson, assistant professor of pathology, previously led a collaborative team that discovered a mutation in mice that prevents sperm maturation. This led them to discovery of the *Morc* gene. They dubbed the mutation *morc*, or *microrchidia*, a medical term for abnormally small testis. The germ-cell arrest in mutant mice occurs only in males and affects the earliest stages of sperm production, or meiosis.

Because they know how the mutation affects male reproduction and they have now found *Morc,* they believe that other genes in the family may perform a similar function in cell division of somatic cells, or mitosis, as *Morc* does in meiosis. Somatic cells are those that become differentiated into the tissues and organs of the body, as opposed to germ cells, from which a new organism can develop.

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"*Morc* family members may serve a general role in the regulation of cell division in all tissues and may malfunction in cancer cells," Watson said. "The next step is to discover with which proteins *Morc* interacts in the nucleus. This will give us clues as to its biochemical function."

The scientists are investigating when *Morc* is expressed in the mouse embryo. This will give them further clues to its function. They already know that mice with the gene mutation are normal at birth and attempt to begin production of mature germ cells at puberty but fail. By the time the mice reach six months of age, all the sperm-producing cells are dead.

The other researchers involved in the study were: Dr. Norimitsu Inoue, a postdoctoral fellow in the Eugene McDermott Center for Human Growth and Development; former UT Southwestern pathology research assistant Karl Hess; and Dr. Randall Moreadith, formerly of the UT Southwestern Department of Internal Medicine. Researchers at the University of Tennessee also participated in the study.

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