news THE UNIVERSITY OF TEXAS HEALTH SCIENCE CENTER AT DALLAS
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FEBRUARY 25, 1976 CONTACT: Bob Fenley

******March of Dimes Funds Cell Study*

DALLAS--How a cell's chromosomes are distributed when it divides to form two "daughter" cells is the subject of a two-year $30,000 March of Dimes research grant awarded to Dr. William T. Garrard, assistant professor of biochemistry at The University of Texas Health Science Center. The Basil O'Connor starter grant is one of 75 awarded to young scientists engaged in birth defect research.

Unequal chromosome distribution in sperm, egg or embryonic cells causes miscarriages, fetal or newborn death, and a wide range of multiple and often severe birth defects.

The chromosomes are packets of genetic material in a cell's nucleus. When the cell divides normally, its chromosomes also divide by splitting lengthwise and each daughter cell receives the same number of them.

Before splitting, the halves of each chromosome are held together at one point, the centromere splits, each half is guided apart and into one of the two new cells by the spindle fibers, providing each cell with a set of chromosomes that is a duplicate of the parent cell's set.

Obviously important in the process is the connection between chromosomes and their spindle fibers. A wrong attachment can send both chromosomes of a pair into one cell. This type error in a human reproductive cell or fertilized egg causes mongolism and a number of less common but often more severe birth defects.

Dr. Garrard will look for chromosomal proteins which bind chemically to tubulin, the chief protein in spindle fibers. He believes that these proteins are concentrated at the point where chromosome pairs are joined and that they "recognize" the spindle fibers, with which they form a link strong enough to pull apart the chromosome pair.

From this study, Dr. Garrard expects to provide better understanding of the causes of a major class of serious birth defects.

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5323 HARRY HINES BLVD. ☐ DALLAS, TEXAS 75235 ☐ TEL. (214) 688-3404