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Thomas Steitz Honored with Gairdner International Award

HHMI investigator Thomas A. Steitz is among five scientists who have been honored with the prestigious 2007 Gairdner International Award in recognition of their contributions to medical science.

Presented to medical scientists worldwide whose work is expected to significantly improve the quality of life, the Gairdner Award is one of the most esteemed awards in medical research. In addition to Steitz, 25 current HHMI investigators are recipients of the Gairdner Award. According to the Gairdner Foundation, 68 of the 283 scientists who have received the Gairdner in the past 48 years have gone on to win the Nobel Prize.

The Gairdner Foundation honored Steitz and Harry F. Noller of the University of California, Santa Cruz for pioneering work that led to the identification of the detailed structure and function of the ribosome, the subcellular structure in which proteins are synthesized. Noller and Steitz identified that RNA-catalyzed reactions are critical, and their work explains how many antibiotics work and how new ones can be developed.

Steitz, whose lab is at Yale University, uses the methods of x-ray crystallography and molecular biology to establish the structures and mechanisms of the proteins and nucleic acids involved in gene expression, replication, and recombination.

Steitz and his colleagues used a high-energy x-ray beam to probe fragile crystals of RNA and protein. Their studies produced detailed images of the ribosome, the cellular factory where amino acids are linked into chainlike proteins. In two articles published in the journal *Science* in 2000, Steitz and his colleagues unveiled the basic structure of the ribosome, a protein-making machine found in all cells. Their work provided the first unequivocal proof that the ribosome is a ribozyme, an RNA enzyme.

In more recent experiments, Steitz and his research group have been chiseling away at the problem of antibiotic resistance. Their research has produced a detailed explanation of how the main target of antibiotics in bacterial cells evolves to become resistant to some of these medications. The findings are already leading to new experimental antibiotics that are being engineered to circumvent resistance, which is a major worldwide health problem.

Each Gairdner awardee receives \$30,000 and a statue (Le Coeur) at a gala dinner that will be held on October 25, 2007 at the Four Seasons Hotel in Toronto. The awardees are chosen through a rigorous two-stage arms length process, by two medical advisory committees made up of leading medical scientists from Canada and around the world.