Thomas Dean Sargent Biography

Thomas Dean Sargent

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Biography

Thomas Dean Sargent made his first major contribution to molecular **genetics** while he was a postdoctoral fellow in Igor David's laboratory at the National Institute of Health (NIH). He was involved in the production of the complex complementary **DNA** (**cDNA**) libraries and later helped to develop the first subtracted cDNA libraries. This is a powerful methodology that allows the selective detection and characterization of differentially expressed **RNA** molecules.

Using subtracted cDNA libraries in combination with other **cell** biological techniques, Sargent and colleagues isolated classes of RNAs that are expressed at different stages of the embryonic development of the frog *Xenopus laevis*. They identified and characterized several genes involved in cell adhesion and development, and established the requirement for cell-cell interaction and communication in the induction of mesoderm formation in frog embryos. In addition, they also discovered the role of the **transcription** factor AP-2 in the regulation of epidermal **gene expression**. Subtracted cDNA libraries has been used by other groups to discover differentially expressed genes. Sargent's laboratory uses the mouse model to study the **differentiation** of the epidermis using transgenic and **gene** knockout approaches. The focus is especially on the Distal-less class of the **homeobox** genes, which seem to be involved in skin development. The *Xenopus* embryo, which was the first animal model used, continues to be investigated with a special interest in the role the Eph-class of receptor tyrosine kinases play in adhesion and cell-cell communication. The laboratory is also involved in the investigation of embryonic neuronal development using the zebrafish as a model organism.

Sargent is now the head of the Section on Vertebrate Development, Laboratory of Molecular Genetics, the National Institute of Child Health and Human Development (NICHD), NIH. Apart from his position at the NIH, Dr. Sargent holds the position of adjunct Professor of Genetics at the Graduate Genetics program at George Washington University in Washington D.C. He received his Bachelor of Arts degree in 1975 from Indiana University and his Ph.D. in Biochemistry from Caltech in 1981. He was a postdoctoral fellow at the NIH and has been a tenured scientist in the (NICHD) since 1989.