

Shirley M. Tilghman

Analysis of the Embryonic Lethal Deletion Mutant s-Acry

[I am studying the region of the mouse genome required during embryonic development.]

I am studying a region of a mouse genome that is required during embryonic development. A deletion on mouse chromosome 14 was generated by radiation exposure of mouse sperm in the effort to understand the consequences of radiation on the mammalian organism. Mouse embryos carrying the deletion die early in embryogenesis. The deleted region is very large and was predicted to contain as many as 15-30 genes. To our surprise, we found that it contains only four genes. To identify the function of these genes we decided to dissect the region by construction smaller “subdeletions” in the same area. The new deletion that is being generated removes two of the four genes. My work will help to identify and analyze genes that are essential during formation of the mouse embryo. Since mouse and human genomes are very similar, that work will also contribute to the understanding of human embryo development. Genes that play a role in development are, in many cases, implicated in cancer. That is because during development cells divide, grow and differentiate. If those processes are perturbed, tumors may arise. Understanding of the role of “cancerous” genes during embryonic development will help to elucidate the mechanisms of their action in cancer.