

**RETHA R. NEWBOLD, M.S.**  
**National Institute of Environmental Health Sciences**  
**(NIEHS)**  
**National Institutes of Health (NIH), Department of**  
**Health and Human Services (DHHS)**  
**Research Triangle Park, NC, USA**



Retha Newbold is a developmental reproductive biologist working at the NIEHS for over 30 years until her retirement in 2009. In addition to her responsibilities overseeing an interagency project for the National Toxicology Program on the multigenerational effects of various endocrine disrupting chemicals, she maintained an active research program focused on the role of estrogens in abnormal and normal differentiation and development.

Some of her most significant work over the years was the development of an experimental animal model to study the adverse effects of diethylstilbestrol (DES) when exposure occurs during critical periods of differentiation. The establishment of this model provided the framework on which many of her subsequent mechanistic studies were based and for her continuing interest in the field of the “developmental origins of adult health and disease”. Using the developmentally DES-exposed mouse, many of her findings have replicated and predicted abnormalities seen in similarly DES-exposed humans. Further, she used the DES animal model to study mechanisms involved in hormonal carcinogenesis, as well as, a guide to determine the risk of exposure to other environmental agents with estrogenic activity that may pose a problem for both wildlife and humans. Many of these environmental drugs and chemicals can alter normal development by interfering with endocrine signaling pathways (endocrine disruptors) and thereby produce a wide variety of effects in both males and females, including changes in reproductive tract tissues and other differentiated tissues including adipocytes and in weight controlling mechanisms that are established early in life. Laboratory studies are designed to help understand and predict the effects of environmental agents on the developing fetus and to identify the basic mechanisms underlying normal and abnormal fetal/neonatal development. Her interests also include studying epigenetic mechanisms involved in the multigenerational effects of DES, and comparing effects induced by DES to other environmental estrogens such as Bisphenol A and genistein, a phytoestrogen found in soy based products including soy infant formula. Major research efforts in the Newbold laboratory, and her continuing interests, are directed at translating fundamental information gained from animal studies into applied toxicological testing systems, and into clinical studies and practice.