

Update of the Hamster Chronicles: Endocrine Disruption -> Uterine Cancer -> Ovarian Cancer Patient “Avatar” System

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My involvement with the topic of gynecological pathophysiology began more than three decades ago with the development of a novel animal experimental system that was originally designed to model a historical medical treatment protocol that generated tragic consequences. I refer to the once common practice of administering high doses of the synthetic estrogen, diethylstilbestrol (DES), in the mistaken belief that it would prevent miscarriage. Indeed, numerous clinical and experimental animal studies (including our own) of the effects of perinatal DES exposure documented teratogenic and neoplastic lesions throughout both the female and male reproductive tracts and thereby established DES as a transplacental carcinogen and the prototypical endocrine disruptor agent. Development of our model of that medical misadventure (what became known at the clinical, scientific, and legal level as the “DES Syndrome”) involved extensive experience with the hamster cheek pouch as a very convenient transplantation site for both tissues and cells. We are now testing the feasibility of applying that approach to a translational research project that targets human ovarian cancer. The overarching hypothesis of that project is that the hamster cheek pouch could serve as a uniquely convenient and clinically relevant patient “avatar” system. In other words, xenotransplants generated at that host site from tumor biopsies and/or surgical tumor debulking protocols could be predictive of the patient tumor’s initial aggressiveness, its potential to recur and/or metastasize, and its likely responsiveness to established and/or new therapeutic approaches. I will provide an overview of how we developed these aspects of the hamster system and what we have and continue to learn from them.