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JOURNAL ARTICLE

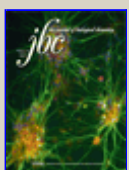
Sertoli cells in culture and mRNA differential display provide a sensitive early warning assay system to detect changes induced by xenobiotics

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We have used cultured rat Sertoli cells as an "early warning system" to monitor for morphological and biochemical changes induced by two different xenobiotics-cadmium acetate and polychlorinated biphenyls (PCBs). Sertoli cells begin to round, become vacuolized, and detach from their substrate within 24 hours of culture in the presence of cadmium at concentrations of 0.5-1.0 microM. Similar results were obtained with a lower dose of cadmium (0.01 microM) after 72 hours. When Sertoli cells are cultured for 24 hours in the presence of a mixture of PCBs (3,3',4,4'-tetrachlorobiphenyl, 2,2',4,6,6'-pentachlorophenyl, and 2,2',3,3',4,5,5',6,6'-nonachlorobiphenyl) at concentrations of 1.0-2.0 microM, they enlarge. After 72 hours, a lower dose of PCBs (0.01 microM) produces similar cellular enlargement. Despite their changes in morphology, no reduction in Sertoli cell viability was seen at any of the concentrations or time points studied for either toxicant. Using mRNA differential display, a number of novel cDNAs were detected when cells were cultured with either cadmium or the PCBs, demonstrating that changes in gene expression accompany the changes in Sertoli cell structure. We propose that Sertoli cells in culture and mRNA differential display provide a sensitive morphological and biochemical assay system to detect early direct effects of low concentrations of toxicants on mammalian Sertoli cells.

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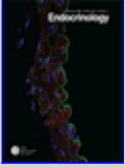


J. T. Fleming, W.-H. Yao, and G. S. Sayler

Optimization of Differential Display of Prokaryotic mRNA: Application to Pure Culture and Soil Microcosms

Appl. Envir. Microbiol., October 1, 1998; 64(10): 3698 - 3706.

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V. Syed and N. B. Hecht

Rat Pachytene Spermatocytes Down-Regulate a Polo-Like Kinase and Up-Regulate a Thiol-Specific Antioxidant Protein, Whereas Sertoli Cells Down-Regulate a Phosphodiesterase and Up-Regulate an Oxidative Stress Protein after Exposure to Methoxyethanol and Methoxyacetic Acid

Endocrinology, August 1, 1998; 139(8): 3503 - 3511.

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