

## S18-8 Maternal Exposure to Nanomaterials Makes an Impact on Next Generation

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Our recent studies about effects of nanomaterials on next generation will be presented. It has been suggested that nanoparticles in the diesel exhaust (DE) transferred from mother to offspring. Edema and obstructions of small blood vessels in the brain were recognized in the offspring of DE-exposure group. These are pathologically judged to be a diffuse multiple infarctions in offspring of mice (Sugamata et al. 2006).

Nano-sized titanium dioxide (TiO<sub>2</sub>), administered subcutaneously to pregnant mice, is transferred to the offspring and affects the cranial nerve systems of the offspring. Various functional and pathological disorders, such as numerous caspase-3 positive cells in the olfactory bulb and monoamine metabolism, were observed. cDNA microarray analysis indicated that maternal exposure to TiO<sub>2</sub> nanoparticles may affect the expression of genes related to the development and function of the central nervous system (Shimizu et al. 2009). In spite of any dosage such as inhalation, endotracheal administration, nasal drip and subcutaneous administration, once nanomaterials enter the bloodstream of a pregnant mother mouse, they have effects on them and can sometimes lead to the onsets of diseases. From our research and the reports accumulated in and out of the country, nanomaterials are considered to be an important potential factor for the onset of various diseases. We believe they can truly be called “the fourth etiological agent”, after bacteria, viruses and prions. (We thank all collaborators involved in the research)