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On the origins of autism: The quantitative threshold exposure

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The Quantitative Threshold Exposure (QTE) hypothesis is a multi-factorial threshold model that accounts for the cumulative effects of risk factor exposure in both the causation of autism spectrum disorder (ASD) and its dramatic increase over the past 30 years. The QTE hypothesis proposes that ASD is triggered by the cumulative effects of high-level exposure to endogenous and environmental factors that act as antigens to impair normal immune system (IS) and associated central nervous system (CNS) functions during critical developmental stages. The quantitative threshold parameters that comprise a cumulative risk for the development of ASD are identified by the assessment of documented epidemiological factors that, in sum, determine the likelihood that ASD will occur as a result of their effects on critically integrated IS and CNS pathways active during prenatal, neo-natal and early childhood brain maturation. The model proposes an explanation for the relationship between critical developmental stages of brain/immune system development in conjunction with the quantitative effects of genetic and environmental risk factors that may interface with these critical developmental windows. This model may be useful even when the individual contributions of specific risk factors cannot be quantified, as it proposes that the combined quantitative level of exposure to risk factors for ASD rather than exposure to any one risk factor per se defines threshold occurrence rates.

Biography

Sarah Crawford received a Master's Degree in Biochemistry from Princeton University in 1982 and a PhD Degree from the Department of Biochemistry and Biophysics, Columbia University College of Physicians and Surgeons in 1987. She has been affiliated with Southern Connecticut State University for over 20 years and is currently the Full Professor in the Department of Biology where she teaches Genetics and Medical Genetics and directs a research laboratory in cancer biology. In 2013, she was awarded a patent by the US Patent Office for a novel cancer treatment for the brain cancer, glioblastoma.

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