



# International Conference & Exhibition on Cell Science & Stem Cell Research

29 Nov - 1 Dec 2011 Philadelphia Airport Marriott, USA

## Unique role of the RhoGAP domain protein, PORF-2, in proliferation and apoptosis of neural stem cells

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The RhoGAP domain containing protein, preoptic regulatory factor-2 (Porf-2) was first discovered in 1990 in the rat hypothalamus. It was shown to be widely distributed in both neural and extraneural tissues, with high levels of expression in regions with actively proliferating cells, such as fetal brain, placental growth cone, testicular germ cells and skin. The Porf-2 gene has homologues in a phylogenetically broad distribution including fish, reptiles, birds, rodents, ungulates, and primates, including humans. Northern blot and nuclease protection analyses have been used to show that age, gender and gonadal steroids modulate Porf-2 mRNA levels. Both insulin and IGF-1 down-regulate Porf-2 through both Akt and MAPPK pathways, and Porf-2 expression is increased in the diabetic nephropathic kidney. This increase is reversed by long term administration of an antioxidant-fortified diet. Recently, Porf-2 was shown to have anti-proliferative and pro-apoptotic actions in neural stem cells, modifying levels of p21 and p53, respectively. Thus Porf-2 may contribute to normal growth and development, as well as organ degeneration in disease. These roles as well as its role in preventive and regenerative therapies need to be explored further.

### Biography

Dr. Nowak is currently on the faculty in the Department of Biomedical Sciences at Ohio University. She received her baccalaureate degree from Trinity College (Washington, DC), her PhD from the University of Wisconsin (Madison) and her MD from Washington University (St. Louis). Following a residency in internal medicine, she was a research and clinical fellow in endocrinology and metabolism at UCLA. Her research has been funded through the NIH, the March of Dimes, the American Heart Association, the Pharmaceutical Research and Manufacturers of America and Burroughs Wellcome. She has trained over 50 students and fellows in basic and clinical research.