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NMR based metabolomic profiling of human embryonic stem cell derived neurons

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Over the past decade, it has been increasingly evident that distinct metabolic signatures are associated with different stages of cellular differentiation. In this study, we investigate the metabolome-transcriptome fingerprint of stage specific neuronal development. We derived neurons from the human embryonic stem cells by establishing a reproducible protocol comprising *embryonic bodies-to-rosettes-to-neural progenitor cell* (EB-Rosette-NPC) based neuronal commitment *in vitro*. Metabolomic data were acquired by high field NMR (800MHz Bruker). Fresh cell samples and conditioned media were analyzed for endometabolites (1 million cells per sample; 500 μL sample).

Further analysis for candidate metabolites was done by the in-house developed algorithm for peak clustering and detection. The query for metabolic compounds was done using Chenomx and crucial metabolic pathways were determined by KEGG analysis. Further in-depth evaluation of candidate genes specific to metabolic pathways was done by RNA sequencing. Overall, our data reveal pathways involved in neuronal fate commitment and provide new knowledge on the metabolic biomarkers of neuronal development

Biography

Soumya Pati has completed her Ph.D at University of Delhi during 2009, and currently working as a postdoctoral fellow at Jan and Dan Duncan Neurological Research Institute, Baylor College of Medicine. Her research has contributed 7 publications in reputed journals, and also a book chapter in cancer stem cells in Springer. She has received many international grants and awards for her research activities

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