


Phosphodiesterase signaling system is disrupted in the cerebella of subjects with schizophrenia, bipolar disorder, and major depression

[S. Hossein Fatemi](#)  [Correspondence information about the author S. Hossein Fatemi](#)  [Email the author S. Hossein Fatemi](#)

,
[Timothy D. Folsom](#)  [Email the author Timothy D. Folsom](#)

,
[Teri J. Reutiman](#)  [Email the author Teri J. Reutiman](#)

,
[Gabriela Vazquez](#) 

Abstract:

Phosphodiesterases (PDEs) are a superfamily of enzymes that degrade cAMP and cGMP and influence multiple physiological processes including learning, differentiation and apoptosis. Genetic and postmortem studies have identified a number of phosphodiesterases (PDEs) associated with bipolar disorder (Fatemi et al., 2008a), schizophrenia (Fatemi et al., 2008b; Iwamoto et al., 2008; Millar et al., 2005), and major depression (Numata et al., 2008; Wong et al., 2006), suggesting impairment of PDEs and cAMP and cGMP signaling in subjects with these disorders.