

International Conference on Protein Engineering

October 26-28, 2015 Chicago, USA

Development of a convenient expression and assay for the activity of TET2 dioxygenase

Mridul Mukherji

University of Missouri-Kansas City, USA

Methylation of DNA at the carbon-5 position of cytosine plays crucial roles in the epigenetic transcriptional silencing during metazoan development. Recent identification of Ten-Eleven Translocation (TET)-family demethylases have added a new dimension to dynamic regulation of 5-methylcytosine (5mC) and thus, inheritable and somatic gene silencing. The interest in hematology was particularly stimulated by the recent discovery of TET2 mutations in myeloid malignancies which were proven to be leukemogenic in murine knockout models. The TET-family enzymes are Fe(II), 2-oxoglutarate-dependent oxygenases and catalyze demethylation of 5mC by iterative oxidation reactions. In the last decade results from numerous studies have established a key role for these enzymes in epigenetic transcriptional regulation in eukaryotes primarily by hydroxylation reactions. The TET catalyzed hydroxylation and dehydration reactions in the mammalian system exemplify the diversity of oxidation reactions catalyzed by Fe(II), 2-oxoglutarate-dependent oxygenases and suggest an existence of other types of oxidation reactions catalyzed by these enzymes in the eukaryotes which are so far only documented in prokaryotes. Here, we will describe development of a convenient bacterial expression system and assay for the activity of TET2 dioxygenase.

Biography

Mridul Mukherji has completed his PhD from Oxford University, UK and Postdoctoral studies from the Scripps Research Institute, USA. He works at the University of Missouri at the rank of an Associate Professor. He has published more than 30 papers in reputed journals and serves as an Editorial Board Member of 4 international journals.

mukherjim@umkc.edu

Notes: