

Effects of Tet-induced Oxidation Products of 5-Methylcytosine on Dnmt1- and DNMT3a-mediated Cytosine Methylation

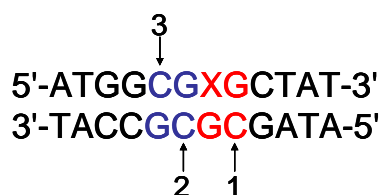
Debin Ji,^a Krystal Lin,^b Jikui Song,^b and Yinsheng Wang*,^a

^a Department of Chemistry, University of California, Riverside, CA 92521, USA

^b Department of Biochemistry, University of California, Riverside, CA 92521, USA

ABSTRACT

We investigated systematically the effects of Tet-induced oxidation products of 5-methylcytosine (5mC) on Dnmt1- and DNMT3a-mediated cytosine methylation in synthetic duplex DNA. We found that the replacement of 5mC at CpG site with a 5-hydroxymethylcytosine, 5-formylcytosine, 5-carboxylcytosine or 5-hydroxymethyluracil resulted in altered methylation of cytosine at both the opposite and the neighboring CpG sites. Our results provided important new knowledge about the implications of the 5-methylcytosine oxidation products in maintenance cytosine methylation.



X= 5mC, 5hmC, 5fC, 5caC, 5hmU

