

## Characterization of a new mammalian enzyme: a deoxynucleoside 5'-monophosphate *N*-glycosidase

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RCL is a c-Myc target with tumorigenic potential. Genome annotation predicted that RCL belonged to the *N*-deoxyribosyltransferase family. However, its putative relationship to this class of enzymes did not lead to its precise biochemical function. The purified native or N-terminal His-tagged recombinant rat RCL protein expressed in *Escherichia coli* exhibits the same enzyme activity, deoxynucleoside 5'-monophosphate *N*-glycosidase, never before described. dGMP appears to be the best substrate. RCL opens a new route in the nucleotide catabolic pathways by cleaving the *N*-glycosidic bond of deoxynucleoside 5'-monophosphates to yield two reaction products, deoxyribose 5-phosphate and purine or pyrimidine base. Biochemical studies show marked differences in the terms of the structure and catalytic mechanism between RCL and of its closest enzyme family neighbor, *N*-deoxyribosyltransferase. The reaction products of this novel enzyme activity have been implicated in purine or pyrimidine salvage, glycolysis, and angiogenesis, and hence are all highly relevant for tumorigenesis.

Ghiorghi YK, Zeller KI, Dang CV, Kaminski PA. The c-Myc target gene Rcl (C6orf108) encodes a novel enzyme, deoxynucleoside 5'-monophosphate *N*-glycosidase. *J Biol Chem.* 2007 282(11): 8150-6