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Olesya Pavlova, Sylvie Fraitag, Daniel Hohl

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5-hydroxymethylcytosine expression in proliferative nodules arising within congenital nevi allows differentiation from malignant melanoma.

Olesya Pavlova [1], Sylvie Fraitag [2], Daniel Hohl [1].

[1]Department of Dermatology and Venereology, University Hospital Centre (CHUV) and University of Lausanne (UNIL), Lausanne, Switzerland.

[2]Departments of Pathology, Necker-Enfants Malades Hospital, APHP, Paris Descartes – Sorbonne Paris Cité University, Institute Imagine, Paris, France.

Correspondence: Prof Dr med Daniel Hohl, Department of Dermatology and Venereology, University Hospital Centre (CHUV), Beaumont Hospital, BT-437, Avenue de Beaumont 29, CH-1011, Lausanne, Switzerland.

Phone: +41 21 314 0353; E-mail: daniel.hohl@chuv.ch

Running title: 5-hydroxymethylcytosine in proliferative nodules.

Key words: giant congenital nevus, proliferative nodules, melanoma, 5-hydroxymethylcytosine, epigenetic modifications.

Abbreviations: α-KG, α-ketoglutarate; 2HG, 2-hydroxyglutarate; 2OG, 2-oxoglutarate; 5-caC, 5-carboxycytosine; 5-fC, 5-formylcytosine; 5-hmC, 5-hydroxymethylcytosine; 5-mC, 5-methylcytosine; 5-MCDG, 5-methylcytosine DNA glycosylase; AID, activation-induced deaminase; APOBEC, apolipoprotein B editing complex; C, cytosine; CGIs, CpG islands; DNMT, DNA methyltransferase; FISH, fluorescence *in situ* hybridization; GADD45A, growth arrest and DNA-damage-inducible protein 45 alpha; GAPDH, glyceraldehyde-3-phosphate dehydrogenase; GCN, giant congenital nevus; H&E, hematoxylin and eosin; IDH -1, -2, isocitrate dehydrogenase -1, -2; qRT-PCR, quantitative real-time PCR; PN, proliferative nodule; PTEN, phosphatase and tensin homolog; TDG, G/T mismatch-specific thymine DNA glycosylase; TDG/BER, TDG-initiated base excision repair; TET, Ten-eleven translocation enzymes; TSG, tumor suppressor gene; SAM, S-adenosylmethionine.