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Letter

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G protein-coupled receptor P2Y5 and its ligand LPA are involved in maintenance of human hair growth

Sandra M Pasternack¹, Ivar von Kügelgen², Khalid Al Aboud³, Young-Ae Lee^{4,5}, Franz Rüschenendorf⁵, Katrin Voss⁶, Axel M Hillmer⁷, Gerhard J Molderings², Thomas Franz⁸, Alfredo Ramirez^{9,10,11}, Peter Nürnberg^{11,12}, Markus M Nöthen^{1,7} & Regina C Betz¹

Hypotrichosis simplex is a group of nonsyndromic human alopecias. We mapped an autosomal recessive form of this disorder to chromosome 13q14.11–13q21.33, and identified homozygous truncating mutations in *P2RY5*, which encodes an orphan G protein-coupled receptor. Furthermore, we identified oleoyl-L- α -lysophosphatidic acid (LPA), a bioactive lipid, as a ligand for P2Y5 in reporter gene and radioligand binding experiments. Homology and studies of signaling transduction pathways suggest that P2Y5 is a member of a subgroup of LPA receptors, which also includes LPA4 and LPA5. Our study is the first to implicate a G protein-coupled receptor as essential for and specific to the maintenance of human hair growth. This finding may provide opportunities for new therapeutic approaches to the treatment of hair loss in humans.

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