

**Do FADS genotypes enhance our knowledge about fatty acid related phenotypes?  
Review article.**

<sup>a</sup>Eva Lattka, <sup>a</sup>Thomas Illig, <sup>a</sup>Joachim Heinrich, <sup>b</sup>Berthold Koletzko.

<sup>a</sup>Institute of Epidemiology, Helmholtz Zentrum Munchen, German Research Center for Environmental Health, Neuherberg, Germany; <sup>b</sup>Department of Pediatrics, Dr von Hauner Children's Hospital, Ludwig-Maximilians University of Munich, Lindwurmstr. 4, 80337 Muenchen, Germany

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Several physiological processes, such as visual and cognitive development in early life, are dependent on the availability of long-chain polyunsaturated fatty acids (LC-PUFAs). Furthermore, the concentration of LC-PUFAs in phospholipids has been associated with numerous complex diseases like cardiovascular disease, atopic disease and metabolic syndrome. The level and composition of LC-PUFAs in the human body is mainly dependent on their dietary intake or on the intake of fatty acid precursors, which are endogenously elongated and desaturated to physiologically active LC-PUFAs. The delta-5 and delta-6 desaturase are the most important enzymes in this reaction cascade. In the last few years, several studies have reported an association between single nucleotide polymorphisms (SNPs) in the two desaturase encoding genes (FADS1 and FADS2) and the concentration of omega-6 and omega-3 fatty acids. This shows that beside nutrition, genetic factors play an important role in the regulation of LC-PUFAs as well. This review focuses on current knowledge of the impact of FADS genotypes on LC-PUFA and lipid metabolism and discusses their influence on infant intellectual development, neurological conditions, metabolic disease as well as cardiovascular disease.