The effect of genetic variants in the FADS gene cluster is one of the first examples for gene-nutrition interactions that influence complex phenotypes

**Key insights**
This article presents results from recent gene-nutrition interaction studies, discusses the implications for child health, and gives an outlook how these associations might translate into clinical practice in the future.

**Current knowledge**
Recent genetic association studies show that in addition to nutritional influences, the genetic background is highly important for polyunsaturated fatty acid (PUFA) composition in human tissues. Polymorphisms in the FADS genes determine the efficiency how PUFAs are processed endogenously. Furthermore, FADS genotypes modulate the effect of nutrition on complex phenotypes such as cognition and asthma risk. So far, results are inconsistent regarding the direct association of FADS polymorphisms with atopic diseases.

**Practical implications**
A sufficient supply of PUFA does not necessarily translate into a beneficial effect because of such gene-nutrient interactions. Once the complex network of nutritional and genetic influences is understood, well-defined dietary recommendations might be possible for optimal child health.

**Recommended reading**