

# Dysregulated MicroRNA Expression in Irritable Bowel Syndrome

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Article: Association of the serotonin receptor 3E gene as a functional variant in the microRNA-510 target site with diarrhea predominant irritable bowel syndrome in Chinese women

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Irritable bowel syndrome (IBS) is one of the most common functional gastrointestinal (GI) disorders. The cause of IBS remains unknown and seems to be multifactorial. Several mechanisms, infection, food, and psychiatric factors have been suggested as possible etiologic links to the development of IBS<sup>1</sup> and also, there has been increasing evidence of a genetic contribution in IBS. IBS aggregates in families, and the concordance for monozygotic twins is almost twice as great as that for dizygotic twins.<sup>2</sup> Serotonin receptor type 3 (5-HT<sub>3</sub>) is an important neurotransmitter in the gut, and abnormal 5-HT<sub>3</sub> signaling has been implicated in a number of functional GI disorders, including IBS. In the current issue of this journal, Zhang et al<sup>3</sup> tried to determine the relationship of the polymorphism both to 5-HT<sub>3E</sub> expression in the intestine and to the occurrence of Chinese functional gastrointestinal disorders. They concluded that the single-nucleotide polymorphisms rs56109847 led to reduced microRNA (miRNA) binding and overexpression of the target gene in intestinal cells, thereby increasing diarrhea predominant IBS (IBS-D) risk in the Chinese Han population. The decreased expression of miRNA-510 might contribute to IBS-D. MicroRNAs are involved in the regulation of normal biological

functioning process such as cellular development, differentiation, proliferation, apoptosis, and metabolism. Therefore, dysregulation of miRNA can result in the development of human diseases, including GI disorders. A recent study has reported that microRNA-related expression regulation of a serotonin receptor gene with a cis-regulatory variant affected this regulation and appeared to be associated with female IBS-D<sup>4</sup> and miRNA-29a effects on intestinal membrane permeability through its regulation of glutamate-ammonia ligase gene.<sup>5</sup> The regulation of miRNA-510 on 5-HT<sub>3E</sub> expression and the possible association between 5-HT<sub>3E</sub> single nucleotide polymorphism rs56109847 and IBS-D are interesting findings of this study. However, the small sample size and study population that is restricted to women are the limitations of this study. And also, as in the analysis about a genetic polymorphism in the genetic encoding for activity of the serotonin transporter protein,<sup>6</sup> more investigations might be needed in the future for the confirmation of this relationship.

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