



# Association between a functional variant in microRNA-27a and susceptibility to colorectal cancer in a Chinese Han population

Y. Cao<sup>1\*</sup>, J. Hu<sup>2\*</sup>, Y. Fang<sup>1</sup>, Q. Chen<sup>1</sup> and H. Li<sup>3</sup>

<sup>1</sup>Department of Central Laboratory,  
The Affiliated People's Hospital of Jiangsu University, Zhenjiang, China

<sup>2</sup>Department of Gastroenterology,  
Danyang People's Hospital of Jiangsu Province, Zhenjiang, China

<sup>3</sup>Department of Central Laboratory,  
The Affiliated Fourth Hospital of Jiangsu University, Zhenjiang, China

\*These authors contributed equally to this study.

Corresponding author: H. Li

E-mail: realnow@sina.cn

Genet. Mol. Res. 13 (3): 7420-7427 (2014)

Received June 26, 2013

Accepted December 17, 2013

Published September 12, 2014

DOI <http://dx.doi.org/10.4238/2014.September.12.8>

**ABSTRACT.** Polymorphisms in pri-, pre-, and mature-microRNAs (miRNAs) have been proposed to be associated with various human cancers. Common single nucleotide polymorphisms (SNPs) in miRNA genes can influence the maturation of miRNAs or miRNA-mediated transcriptional regulation. Through genotyping the rs895819 SNP in 254 colorectal cancer (CRC) patients and 238 healthy controls by polymerase chain reaction-restricted fragment length polymorphism, a case-control study was performed to investigate a possible association between a common A/G polymorphism (rs895819) within *hsa-mir-27a* and susceptibility to CRC in a Chinese Han population. In addition, after examining miR-27a expression levels in CRC tissues (N = 57) obtained from these CRC patients, we found that subjects with variant genotypes (AG+GG) had a significantly increased risk of developing

CRC compared to AA carriers (odds ratio (OR) = 1.619, 95% confidence interval (CI) = 1.129-2.322). The elevated risk was especially evident in older (age  $\geq$  60 years) and male subjects. Further functional analyses indicated that the relative expression of miR-27a was significantly greater in tumor tissues from GG patients or patients carrying at least one G allele than in those from AA patients. In conclusion, we provide the first evidence that an miR-27a polymorphism contributes to CRC susceptibility in the Chinese Han population by modulating mature miR-27a expression.

**Key words:** Colorectal cancer; MicroRNA-27a; Polymorphisms