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# miR-141 suppresses proliferation and motility of gastric cancer cells by targeting HDGF

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**Abstract** miR-141 belongs to the miR-200 family, and has been found to be associated with numerous human malignancies; however, its role in gastric cancer (GC) has not been examined in detail. Here, we validated that miR-141 was decreased in GC tissues and cell lines. Forced expression of miR-141 significantly repressed GC cell proliferation and colony formation. Furthermore, miR-141 suppressed in vitro migration and invasion of GC cells. Hepatoma-derived growth factor (HDGF) was confirmed to be a direct target of miR-141 in GC cells. The suppressive effects of miR-141 on GC cell proliferation, colony formation, in vitro migration, and invasion were partially mediated by suppressing HDGF expression. Moreover, the expression of HDGF was negatively correlated with miR-141 in GC tissues. Our data suggest that miR-141 might be associated and plays essential role in GC progression.

**Keywords** miR-141 · Gastric cancer · HDGF · Proliferation · Migration · Invasion

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## Introduction

Gastric cancer (GC) is one of the most frequent cancers and the second most frequent malignancy of cancer-related death worldwide, especially in East Asia. Approximately 1 million new patients have been diagnosed with GC worldwide each year, accounting for nearly 10 % of all cancer-related death and claiming approximately 700,000 lives annually [1]. GC is a complex genetic disease, and several genes, including oncogenes or tumor suppressors related to the initiation and progression of GC, have been identified [2, 3]. But the common molecular mechanisms of GC remain to be elucidated.

Recently, increasing evidence suggests that a new class of RNAs, known as microRNAs (miRNAs), could regulate various target genes, including oncogenes and tumor suppressor [4, 5]. miRNAs are small noncoding RNAs, which bind to the complimentary motifs in the 3′-untranslated region (3′-UTR) of target mRNA, leading to target mRNA degradation or translational suppression [6]. miRNAs play critical roles in the regulation of biological and pathological processes, such as cell proliferation, migration, invasion, and apoptosis [7]. miRNAs involved in the progression of GC have been widely explored [8, 9]. Many studies have identified a variety of miRNAs aberrantly expressed in GC [10]. Among them, miR-141 was significantly decreased [11]. However, the detailed role of miR-141 in GC is still poorly understood.

In the present study, we validated that miR-141 was substantially decreased and forced expression of miR-141 significantly inhibited proliferation, migration, and invasion of GC cells. Furthermore, we found that miR-141 directly targeted HDGF (hepatoma-derived growth factor, a potential oncogene), and HDGF overexpression could partially attenuate the suppressive effect of miR-141 in GC

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