Collapsin Response Mediator Protein-1: A Novel Invasion-Suppressor Gene

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Abstract

Numerous genetic changes are associated with metastasis of cancer cells. Previously, we used microarray to identify that collapsin response mediator protein-1 (CRMP-1) was involved in cancer invasion and metastasis. We further characterized that CRMP-1 was a novel invasion-suppression gene. Members of the CRMP gene family are intracellular phosphoproteins involved in the mediation of semaphorin induced F-actin depolymerization and growth cone collapse. The precise mechanism by which CRMP-I inhibits invasion is not yet clear. However, CRMP-1 transfected cells had fewer filopodia and less Matrigel-invasion abilities. A low expression of CRMP-I mRNA in lung cancer tissue was significantly associated with advanced disease, lymph node metastasis, early post-operative relapse, and shorter survival. In this article, we reviewed the functions of CRMPs and semaphorins and analyzed the structure and motifs of CRMP-1 by bioinformatics. As such, we hoped to shed further light on the mechanism by which CRMP-1 suppresses the invasion of cancer cells.