ABSTRACT

The present invention provides a shuttle vector for a microorganism of the genus Bifidobacterium (BM) and Escherichia coli having a wide host range and a large copy number in BM and capable of highly expressing a desired protein when used as an expression vector; an expression vector capable of expressing a desired gene in BM by use of the shuttle vector; BM transformed with the expression vector; and an antitumor agent comprising the BM as an active ingredient. It comprises a pTB6-derived region portion comprising a replication origin (oriV)-repB region of pTB6 but not comprising MembB, MobA, OrfI, and oriT regions of pTB6 and an Escherichia coli-derived plasmid portion comprising a replication origin (oriC) region of Escherichia coli but having deleted DNA encoding an N-terminal region of an ampicillin resistance gene (ampR) expression product β-lactamase, and constitute a shuttle vector for Escherichia coli with a BM having an average copy number of 6 to 30.