DNA-binding protein using PPR motif, and use thereof

Abstract

The object of the present invention is to, by analyzing PPR proteins that act to bind to DNA with a prediction that RNA recognition rules of PPR motifs can also be used for recognition of DNA, find a PPR protein showing such a characteristic. According to the present invention, it was revealed that, with a protein that can bind in a DNA base-selective manner or a DNA base sequence-specific manner, which contains one or more, preferably 2 to 30, more preferably 5 to 25, most preferably 9 to 15, of PPR motifs having a structure of the following formula 1 (wherein, in the formula 1, Helix A is a part that can form an α-helix structure; X does not exist, or is a part consisting of 1 to 9 amino acids; Helix B is a part that can form an α-helix structure; and L is a part consisting of 2 to 7 amino acids), and having a specific combination of amino acids corresponding to a DNA base or DNA base sequence as amino acids of three positions of No. 1 A.A., No. 4 A.A., in Helix A of the formula 1 and No. "ii" (-2) A.A. contained in L of the formula 1, the aforementioned object could be achieved.

(Helix A)-X-(Helix B)-L (Formula 1)