CLAIMS

1. A hybridoma with a depository number of CGMCC No.4783.

2. A monoclonal antibody secreted by said hybridoma of claim 1.

3. An antibody mimetic polypeptide with function of recognizing and binding to cyanobacteria, said antibody mimetic polypeptide being an antigen-binding fragment of said monoclonal antibody of claim 2, or a small molecular polypeptide that is designed on the basis of functional regions of said antigen-binding fragment and artificially expressed and isolated.

4. The antibody mimetic polypeptide according to claim 3, its amino acid sequence sets forth in SEQ ID NO. 3.

5. A gene encoding the antibody mimetic polypeptide of claim 3 or 4.

6. The gene according to claim 5, its nucleotide sequence sets forth in SEQ ID NO.2.

7. A anti-cyanobacteria recombinant antibody polypeptide, constructed by operably and linearly connecting said antibody mimetic polypeptide with function of recognizing and binding to cyanobacteria of claim 3 or 4 to the C-terminus of colicin polypeptide, said colicin is selected from colicin E1, Ia, Ib, A, B or N.

8. The anti-cyanobacteria recombinant antibody polypeptide according to claim 7, its amino acid sequence sets forth in SEQ ID NO.7.

9. A gene encoding the anti-cyanobacteria recombinant antibody polypeptide of claim 7 or 8.

10. The gene according to claim 9, its nucleotide sequence sets forth in SEQ ID NO.6.

11. A recombinant expression vector comprising the gene encoding the anti-cyanobacteria recombinant antibody polypeptide of claim 7 or 8.

12. A method of preparing the anti-cyanobacteria recombinant polypeptide of claim 7 or 8, comprising steps of: transforming the gene encoding the anti-cyanobacteria recombinant antibody polypeptide into an *E. coli* expression system, cultivating the transformed *E. coli*, and separating the polypeptide expressed by *E. coli*.

13. Application of said anti-cyanobacteria recombinant antibody polypeptide of claim 7 or 8 on control water eutrophication.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A hybridoma with a depository number of CGMCC No.4783.

2. A monoclonal antibody secreted by said hybridoma of claim 1.

3. An antibody mimetic polypeptide with the function of recognizing and binding to cyanobacteria, wherein the antibody mimetic polypeptide is an antigen-binding fragment of the monoclonal antibody of claim 2, or a small molecular polypeptide that is designed on the basis of functional regions of said antigen-binding fragment and wherein the antibody mimetic polypeptide is artificially expressed and isolated.

4. The antibody mimetic polypeptide according to claim 3 which has the amino acid sequence set forth in SEQ ID NO. 3.

5. A gene encoding the antibody mimetic polypeptide of claim 3 or claim 4.

6. The gene according to claim 5, which has the nucleotide sequence set forth in SEQ ID NO.2.

7. An anti-cyanobacteria recombinant antibody polypeptide, constructed by operably and linearly connecting the antibody mimetic polypeptide with the function of recognizing and binding to cyanobacteria of claim 3 or claim 4 to the C-terminus of colicin polypeptide, wherein said colicin is selected from colicin E1, Ia, Ib, A, B or N.

8. The anti-cyanobacteria recombinant antibody polypeptide according to claim 7 has the amino acid sequence set forth in SEQ ID NO.7.

9. A gene encoding the anti-cyanobacteria recombinant antibody polypeptide according to claim 7 or claim 8.

10. The gene according to claim 9 which has the nucleotide sequence set forth in SEQ ID NO.6.

11. A recombinant expression vector comprising the gene encoding the anti-cyanobacteria recombinant antibody polypeptide according to claim 9 or claim 10.

12. A method of preparing the anti-cyanobacteria recombinant polypeptide of claim 7 or claim 8, the metal comprising the steps of: transforming the gene encoding the anti-cyanobacteria recombinant antibody polypeptide into an *E. coli* expression system; cultivating the transformed *E. coli*; and separating the polypeptide expressed by *E. coli*.

13. Use of the anti-cyanobacteria recombinant antibody polypeptide of claim 7 or claim 8 on control water eutrophication.