CLAIMS

1. A vaccine against an antigen comprising :

- an antigen bound to a polypeptide,

wherein the polypeptide :

- is heterologous to the antigen

~~- comprises at least two CXXC motifs, wherein C represents a cysteine residue and X any aminoacid residue, and~~

- is able to attach to epithelial cells of the gut and

-is a variable surface protein (VSP) or a fragment thereof comprising 5 to 70 CXXC motifs, wherein C represents a cysteine residue and X any amino acid residue.

2. The vaccine according to claim 1 for use in oral administration.

3. The vaccine according to claim 1 or 2 wherein the polypeptide is resistant to enzymatic and/or chemical degradation of the upper gastrointestinal tract.

~~4. The vaccine according to any of claims 1 to 3 wherein the polypeptide comprises 2 to 70 CXXC motifs.~~

~~5.~~4. The vaccine according to any of claims 1 to ~~4~~3 wherein the polypeptide comprises 5 to 30 CXXC motifs.

~~6.~~5. The vaccine according to any of claims 1 to ~~5~~4 wherein the polypeptide comprises 10 to 30 CXXC motifs.

~~7.~~6. The vaccine according to any of claims 1 to ~~5~~4 wherein the polypeptide comprises 10 to 14 CXXC motifs.

~~8.~~7. The vaccine according to any of claims 1 to ~~7~~6, wherein the polypeptide is a variable surface protein (VSP)~~, a VSP-like protein~~ of a microorganism selected from the group consisting of *Giardia*, *Tetrahymena*, *Paramecium* and *Entamoeba* species or a fragment thereof.

~~9.~~8. The vaccine according to claim ~~8~~7 wherein the microorganism is ~~selected in the group consisting of~~ *Giardia*~~, *Tetrahymena*, *Paramecium* and *Entamoeba*~~ species.

~~10.~~9. The vaccine according to any of claims 1 to 8~~claim 8 or 9~~ wherein the polypeptide is the extracellular domain of VSP or a fragment thereof.

10. The vaccine according to claim 9 wherein the polypeptide is the extracellular domain of VSP.

11. The vaccine according to any of claims 1 to 10, wherein the polypeptide is fused to said antigen.

12. The vaccine according to any of claims 1 to 10, wherein the polypeptide is bound to a vector particle containing said antigen.

13. The vaccine according to claim 12, wherein the vector particle is a viral particle, a viral-like particle (VLP) or a nanoparticle.

14. The vaccine according to claim 13, wherein the vector particle is a VLP displaying at its surface the polypeptide.

15. The vaccine according to claim 14, wherein the antigen is contained inside or on the surface of the VLP.

16. The vaccine according to claim 12, wherein the vector particle is a nanoparticule displaying at its surface the polypeptide and the heterologous antigen.

17. A pharmaceutical composition comprising at least the vaccine according to anyone of claims 1 to 16.

18. Use of :

an antigen bound to a polypeptide,

wherein the polypeptide :

- is heterologous to the antigen

~~- comprises at least two CXXC motifs, wherein C represents a cysteine residue and X any aminoacid residue, and~~

- is able to attach to epithelial cells of the gut, and

-is a variable surface protein (VSP) or a fragment thereof comprising 5 to 70 CXXC motifs, wherein C represents a cysteine residue and X any amino acid residue.

in the manufacture of a vaccine for raising an immune response against said heterologous antigen.

19. The use according to claim 18 wherein the vaccine is for oral administration.