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Claims

1. A method of reducing the formation of post-surgery tissue adhesion in a subject
in need thereof by administering an adhesion barrier composition, the adhesion barrier
5 composition comprising:
 - a) sporopollenin; and
 - b) a biodegradable polymer;wherein the weight ratio of sporopollenin is about 1 wt/wt% to about 80 wt/wt% relative
to the total composition.
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2. A method of preventing the formation of tissue adhesion during or post-surgery
in a subject in need thereof by administering an adhesion barrier composition, the
adhesion barrier composition comprising:
 - a) sporopollenin; and
 - 15 b) a biodegradable polymer;wherein the weight ratio of sporopollenin is about 1 wt/wt% to about 80 wt/wt% relative
to the total composition.
3. An adhesion barrier composition for use in reducing the formation of post-
20 surgery tissue adhesion in a subject in need thereof, the adhesion barrier composition
comprising:
 - a) sporopollenin; and
 - b) a biodegradable polymer;wherein the weight ratio of sporopollenin is about 1 wt/wt% to about 80 wt/wt% relative
25 to the total composition.
4. An adhesion barrier composition for use in preventing the formation of tissue
adhesion during or post-surgery in a subject in need thereof, the adhesion barrier
composition comprising:
 - 30 a) sporopollenin; and
 - b) a biodegradable polymer;wherein the weight ratio of sporopollenin is about 1 wt/wt% to about 80 wt/wt% relative
to the total composition.
- 35 5. A use of an adhesion barrier composition in the manufacture of a medicament

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for reducing the formation of post-surgery tissue adhesion in a subject in need thereof, the adhesion barrier composition comprising:

- a) sporopollenin; and
- b) a biodegradable polymer;

5 wherein the weight ratio of sporopollenin is about 1 wt/wt% to about 80 wt/wt% relative to the total composition.

6. A use of an adhesion barrier composition in the manufacture of a medicament for preventing the formation of tissue adhesion during or post-surgery in a subject in
10 need thereof, the adhesion barrier composition comprising:

- a) sporopollenin; and
- b) a biodegradable polymer;

wherein the weight ratio of sporopollenin is about 1 wt/wt% to about 80 wt/wt% relative to the total composition.

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7. The method or use according to any one of claims 1 to 6, wherein the surgery is selected from peritoneal, pericardial, obstetric, gynaecological, neurosurgical, arthroscopic, orthopaedic, plastic, reconstructive, muscle or tendon surgery.

20 8. An adhesion barrier composition comprising:

- a) sporopollenin; and
- b) a biodegradable polymer;

wherein the weight ratio of sporopollenin is about 1 wt/wt% to about 80 wt/wt% relative to the total composition.

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9. The adhesion barrier composition according to claim 8, wherein the weight ratio of sporopollenin is about 20 wt/wt% to about 80 wt/wt% relative to the total composition.

30 10. The adhesion barrier composition according to claims 8 or 9, wherein the sporopollenin comprises a polymer having ester bonds, wherein the sporopollenin is characterised with having at least 2% of the ester bond hydrolysed.

11. The method, adhesion barrier composition, or use according to any one of claims
35 1 to 10, wherein the sporopollenin comprises a polymer having ether bonds, wherein

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the sporopollenin is characterised with having at least 2% of the ether bond hydrolysed.

12. The method, adhesion barrier composition, or use according to any one of claims 1 to 11, wherein the sporopollenin comprises a polymer having peptide bonds, wherein
5 at least 2% of the peptide bond is hydrolysed.

13. The method, adhesion barrier composition, or use according to any one of claims 1 to 12, wherein the sporopollenin comprises a lipid, wherein at least 2% of the lipid is saponificated.
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14. The method, adhesion barrier composition, or use according to any one of claims 1 to 13, wherein the sporopollenin is derived from a pollen, the pollen originating from a flowering plant of the genus *Baccharis*, *Helianthus* or *Camellia*, *Coreopsis*, *Callistephus*, *Dahlia*, *Solidago* or a combination thereof.
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15. The method, adhesion barrier composition, or use according to any one of claims 1 to 14, wherein the sporopollenin has a particle size of about 20 μm to about 50 μm .

16. The method, adhesion barrier composition, or use according to any one of claims
20 1 to 15, wherein the biodegradable polymer is selected from poly(glycolic) acid, polylactic acid, polydioxanone, polycaprolactone, calcium alginate, sodium hyalurate, hyaluronic acid or a combination thereof, and preferably polylactic acid (PLA).

17. The adhesion barrier composition according to any of claims 8 to 16, further
25 comprising a solvent.

18. The adhesion barrier composition according to claim 17, wherein the solvent is an aqueous medium.

30 19. The adhesion barrier composition according to any of claims 8 to 18, further comprising a lipid.

20. The adhesion barrier composition according to claim 19, wherein the lipid is selected from lauric acid, palmitic acid, α -linolenic acid, myristic acid, stearic acid, oleic
35 acid, linoleic acid, eicosenoic acid, glycerides or a combination thereof.

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21. The adhesion barrier composition according to any of claims 8 to 20, further comprising pollenkitt.
- 5 22. The adhesion barrier composition according to claim 21, wherein the pollenkitt is selected from an angiosperm.
23. The adhesion barrier composition according to any of claims 8 to 22, further comprising intine.
- 10 24. The adhesion barrier composition according to claim 23, wherein the intine is selected from polysaccharides, cellulose, hemicellulose and pectin, or a combination thereof.
- 15 25. The adhesion barrier composition according to any of claims 8 to 24, further comprising phenolic compound.
26. The adhesion barrier composition according to claim 25, wherein the phenolic compound is selected from gallic acid, caffeic acid, ferulic acid, p-coumaric, benzoic acid
- 20 or a combination thereof.
27. The adhesion barrier composition according to claims 25 or 26, wherein a weight ratio of the phenolic compound is at least 1 wt/wt% relative to the total composition.
- 25 28. The adhesion barrier composition according to any of claims 8 to 27, the adhesion barrier composition is capable of being completely resorbed after 6 months on application.
29. The adhesion barrier composition according to any of claims 8 to 28, wherein the
- 30 adhesion barrier composition is a film, gel or a liquid.
30. The adhesion barrier composition according to any of claims 8 to 29, wherein the adhesion barrier composition is an adhesion barrier film, the adhesion barrier film comprising:
- 35 a) a coating of sporopollenin; and

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b) a biodegradable polymer film having two surfaces;
wherein the weight ratio of sporopollenin is about 1 wt/wt% to about 80 wt/wt% relative
to the total composition; and
wherein sporopollenin coats at least one surface of the biodegradable polymer film.

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31. The adhesion barrier composition according to claim 30, wherein the
sporopollenin coats both surfaces of the biodegradable polymer film.

32. The adhesion barrier composition according to claims 30 or 31, wherein the
10 surface of the biodegradable polymer film is 100% covered by sporopollenin.

33. The adhesion barrier composition according to any of claims 30 to 32, wherein
the coating of sporopollenin has a thickness of about 50 μm to about 200 μm .

15 34. A method of fabricating an adhesion barrier composition, comprising:
a) dispersing a sporopollenin in or on a biodegradable polymer;
wherein the weight ratio of sporopollenin is about 10 wt/wt% to about 80 wt/wt%
relative to the total composition.

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