

CLAIMS

1. A method comprising the steps of:

- (a) assessing an expression level of at least one protein, selected from Table 1, 2 or 3, wherein said at least one protein comprises Vitamin K-dependent protein S, in a sample from a subject, and
- (b) using the expression level to determine whether the subject has endometriosis.

2. A method according to claim 1 wherein the at least one protein is further comprises one or more proteins selected from the list comprising/consisting of: Beta-Ala-His dipeptidase, Apolipoprotein L1, Methanethiol oxidase, ~~Vitamin K-dependent protein S~~, von Willebrand factor, Plasminogen, Selenoprotein P, Protein disulfide-isomerase A6 ~~and~~, Inter-alpha-trypsin inhibitor heavy chain H3, L-lactate dehydrogenase A chain, Beta-2-glycoprotein 1, Afamin, Clusterin, Prothrombin, Hepatocyte growth factor activator, Endoplasmic reticulum chaperone BiP, Peroxiredoxin-2 and C4b binding protein alpha chain.

~~3. A method according to claim 1 or 2 wherein the at least one protein comprises a plurality of proteins.~~

~~4.3. A method according to claim 3 wherein the plurality of proteins comprises two, three, four or five proteins.~~

~~5. A method according to claim 1 wherein the at least one protein comprises Complement factor H-related protein 2, Beta-Ala-His dipeptidase, Sex hormone-binding globulin, Corticosteroid-binding globulin, Apolipoprotein L1, Catalase CAT, C4b-binding protein alpha chain, Carbonic anhydrase 2, Superoxide dismutase [Cu-Zn], Peroxiredoxin-1, Annexin A1, Methanethiol oxidase, Bisphosphoglycerate mutase, Profilin-1, Afamin, von Willebrand factor, L-lactate dehydrogenase A chain, Plasminogen, Selenoprotein P, Proteoglycan 4, Hyaluronan-binding protein 2 or Protein disulfide-isomerase A6.~~

~~6.4. A method according to any one of the preceding claims wherein step (a) comprises at least one of spectrometry such as mass spectrometry, surface enhanced Raman spectroscopy, flow cytometry, ELISA, protein arrays including~~

mass-sensing BioCD protein array, protein micro-arrays, quantum dots based detection, electrochemical immunoassay, gel electrophoresis, 9G DNA technology, nanoparticles including lanthanide chelates such as europium EuNPs and gold nanoparticles, immune-affinity mass spectrometry and immune capture mass spectrometry.

7.5. A method according to ~~claim 6~~ to any one of the preceding claims wherein step (a) comprises multiple reaction monitoring (MRM) mass spectrometry.

8.6. A method according to any one of the preceding claims wherein step (a) comprises assessing the expression level of the at least one protein by assessing the amount of a fragment or peptide of the at least one protein.

9.7. A method according to any one of the preceding claims wherein step (a) comprises quantifying the expression level of the at least one protein.

10.8. A method according to any one of the preceding claims wherein step (a) comprises quantifying the expression level of the at least one protein relative to the expression level of the at least one protein in a subject without endometriosis.

11.9. A method according to any one of the preceding claims wherein step (a) comprises labelling the at least one protein.

12.10. A method according to any one of the preceding claims wherein the sample comprises a biological sample and/or a sub-sample thereof.

13.11. A method according to claim ~~12~~ 10 wherein the biological sample is a body fluid such as blood, serum, plasma, urine, sweat, tears, saliva, sputum, or any combination or fraction thereof.

14.12. A method according to any one of the preceding claims wherein the sample comprises blood.

15.13. A method according to any one of the preceding claims wherein step (b) comprises comparing the expression level from step (a) with a reference value indicative of endometriosis.

~~16.14.~~ Use of at least one protein selected from Tables 1, 2, or 3, wherein said at least one protein comprises Vitamin K-dependent protein S, to determine whether a subject has endometriosis.

~~17.15.~~ A test comprising:

- (a) means for obtaining an expression level of at least one protein selected from Tables 1, 2 or 3, wherein said at least one protein comprises Vitamin K-dependent protein S, in a sample from a subject; and
- (b) means for processing the expression level generated in step (a) to determine whether the subject has endometriosis.

~~18.16.~~ A test according to claim ~~17~~15 comprising a spectrometer.

~~17.~~ A test according to claim 15 comprising a kit.

~~19.~~ A test according to claim 17 ~~comprising a kit.~~

~~20.18.~~ ~~A test according to claim 19~~ wherein the kit comprises a reagent for detecting the at least one protein.

~~21.19.~~ A test according to claim ~~19~~17 or ~~20~~18 wherein the kit comprises any one or more of the following: a detectable label, standards, sample buffer(s) and controls (positive and/or negative).

~~22.20.~~ Use of at least one protein, selected from Tables 1, 2 or 3, wherein said at least one protein comprises Vitamin K-dependent protein S, as a biomarker for endometriosis.

~~23.21.~~ A method of assessing an endometriosis intervention in a subject, the method comprising the steps of:

- (a) applying the intervention to the subject;
- (b) assessing an expression level of at least one protein selected from Tables 1, 2 or 3, wherein said at least one protein comprises Vitamin K-dependent protein S, in a sample from the subject; and

(c) using the expression level to determine the effect of the intervention on the subject.

~~24.22.~~ A method according to claim ~~23~~21 wherein the intervention is selected from the list comprising: hormone therapy, hormonal contraceptives, androgenic agents Gonadotropin-releasing hormone (Gn-RH) agonists and antagonists, progestin therapy, aromatase inhibitors and surgery, including laser surgery.

~~25.23.~~ Use of at least one protein selected from Tables 1, 2 or 3, wherein said at least one protein comprises Vitamin K-dependent protein S, as a target for a therapeutic agent for endometriosis.

24. A method comprising the steps of:

(a) assessing an expression level of at least one protein, selected from Table 1, 2 or 3, wherein said at least one protein comprises Inter-alpha-trypsin inhibitor heavy chain H3, in a sample from a subject, and

(b) using the expression level to determine whether the subject has endometriosis.

25. A method comprising the steps of:

(a) assessing an expression level of at least one protein, selected from Table 1, 2 or 3, wherein said at least one protein comprises L-lactate dehydrogenase A chain, in a sample from a subject, and

(b) using the expression level to determine whether the subject has endometriosis.