

## CLAIMS

1. A panel for non-invasively characterizing endometriosis in a biological sample of a subject, the panel comprising polypeptide markers Apolipoprotein A1 (ApoA1),  $\beta$ 2-microglobulin (B2M), Cancer Antigen 125 (CA125), Transferrin (TRF), Transthyretin (TT)/Prealbumin (PREA), Human Epididymis Protein 4 (HE4), Follicle Stimulating Hormone (FSH), and one of the following markers: Chemokine 4 (CCL4, MIP-1 $\beta$ ), Immunoglobulin M (IgM), Luteinizing Hormone (LH), Macrophage Derived Chemokine (MDC, CCL22), and Progesterone (P4) or polynucleotides encoding such markers, wherein the markers are bound to a capture molecule.
2. The panel of claim 1, wherein the capture molecule is bound to a substrate.
3. A panel of capture molecules, wherein each capture molecule binds a biomarker of claim 1.
4. The panel of any one of claims 1-3, wherein the capture molecule is an antibody.
5. The panel of any one of claims 1-3, wherein the capture molecule is a polynucleotide.
6. Use of a gonadotropin-releasing hormone (GnRH) antagonist or a GnRH agonist in the preparation of a medicament for the treatment of endometriosis in a selected subject, wherein the subject is selected by characterizing a biological sample of the subject with the panel of claim 1 and selecting the subject when the subject is detected as having an alteration in the level of a biomarker of the panel, relative to a reference.
7. The use of claim 6, further comprising characterizing the age of the subject.
8. The use of any one of claims 6-7, further comprising characterizing the subject as pre-menopausal or post-menopausal.
9. The use of any one of claims 6-8, wherein the GnRH antagonist is elagolix, abarelix, cetrorelix, degarelix, ganirelix, or relugolix.

10. The use of any one of claims 6-9, wherein the GnRH antagonist is elagolix.
11. The use of any one of claims 6-10, wherein the GnRH agonist is goserelin, leuprolide, nafarelin, buserelin, gonadorelin, histrelin, or triptorelin.
12. The use of any one of claims 6-11, wherein an increase in the level of one or more of said markers distinguishes endometriosis from non-endometriosis.
13. The use of any one of claims 6-12, wherein a decrease in the level of one or more of said markers distinguishes endometriosis from non-endometriosis.
14. The use of any one of claims 6-13, wherein the reference is a corresponding biological sample derived from a healthy subject.
15. The use of any one of claims 6-14, wherein the reference is derived from the same subject at an earlier point in time.
16. The use of any one of claims 6-15, wherein the characterizing step is an immunoassay or affinity capture.
17. The use of claim 16, wherein the immunoassay comprises affinity capture assay, immunometric assay, heterogeneous chemiluminescence immunometric assay, homogeneous chemiluminescence immunometric assay, ELISA, western blotting, radioimmunoassay, magnetic immunoassay, real-time immunoquantitative PCR (iqPCR) and SERS label free assay.
18. The use of any one of claims 6-17, wherein the biological sample is a biological fluid selected from the group consisting of blood, blood serum, and plasma.
19. The use of any of claims 6-18, wherein the characterizing is carried out in a plate, chip, beads, microfluidic platform, membrane, planar microarray, or suspension array.
20. The use of any of claims 6-19, wherein the characterizing detects a CA125 glycoform.

21. A kit for detecting endometriosis in a biological sample, the kit comprising a set of capture molecules each of which specifically binds a marker of claim 1.