ebiom+

Comprehensive endometrial microbiome analysis to support fertility care

MEDICOVER GENETICS

ENDOMETRIAL MICROBIOME AND INFERTILITY

The endometrial microbiome has been linked to cases of unexplained infertility, implantation failure, and recurrent miscarriages. An imbalance in the microbial composition or an infection of the uterine lining may contribute to these issues.[1-4]

ebiom analysis assesses the bacteria in the endometrial flora

Advances in microbiological diagnostics have reshaped our understanding of the normal flora in the female genital tract. The idea that the lower genital tract, colonized by lactobacilli, is completely separate from a sterile upper genital tract sealed off by the cervix is no longer accurate. The endometrial mucosa is at least temporarily colonized by bacteria. A microbiome dominated by Lactobacillus (> 80% lactobacilli) is considered the normal state.[2] Imbalances in the endometrial flora can affect fertility care.[1-3, 5]

ebiomCE analysis identifies sexually transmitted pathogens with high sensitivity

Chronic endometritis (CE) is a persistent inflammation of the endometrial lining, often linked to recurrent implantation failure and recurrent pregnancy loss.[6] While it may be asymptomatic, it can also present with chronic lower abdominal pain, dyspareunia, abnormal vaginal bleeding, or discharge. Accurate diagnosis of the infection is essential for receiving targeted treatment.

ebiom+ analysis combines ebiom with ebiomCE for a complete diagnostic picture

A comprehensive assessment of the endometrial microbiome identifies normal conditions, dysbiosis (abnormal colonization), and potential pathogens to recommend personalized treatments and improve fertility care.

WHO COULD **BENEFIT** FROM THIS TEST?

- Women who have difficulty conceiving
- Patients undergoing fertility treatment
- Patients experiencing embryo implantation failure during IVF
- Patients who experience recurrent miscarriage
- Patients with unexplained infertility

WHY **RECOMMEND** THE TESTS?

Results can help:

- Identify beneficial and harmful bacteria in the endometrial microbiome for precise diagnoses (including pathogenic bacteria associated with CE)
- Detect microbiome imbalances linked to embryo implantation failure and infertility
- Guide targeted use of probiotics or antibiotics for better patient care
- Improve fertility care

[1]*Haahr et al. 2016, PMID: 26911864;* [2]*Moreno et al. 2016, PMID: 27717732;* [3]*Moreno et al. 2017, PMID: 28602480;* [4]*Moreno et al. 2022, PMID: 34980280;*
[5]*Reschini et al. 2022, PMID: 35589752;* [6]*Park et al. 2016, PMID: 28090456*

OVERVIEW OF THE TEST

ebiom+	**Combines ebiom with ebiomCE for a comprehensive assessment of the endometrial microbiome**
ebiomCE	Identifies sexually transmitted pathogens with high sensitivity to accurately diagnose and choose the right treatment for chronic endometritis Technology: real-time multiplex Polymerase Chain Reaction (PCR)
ebiom	Assesses the bacteria in the endometrial flora to identify potential imbalances Technology: Next generation sequencing (NGS)

Results are typically available within 10-12 days.

RESULTS AND **INTERPRETATION**

ebiom+ analysis (includes ebiom and ebiomCE)

Lactobacillus spp. > 80%, no significant presence of pathogenic bacteria associated with CE	*Lactobacillus* spp. < 80% and other non-pathogenic bacteria	No bacteria detected indicating a "sterile" endometrial microbiome	*Lactobacillus* spp. < 80% and pathogenic bacteria related to infertility and / or CE
No treatment	Probiotics only, no antibiotics		Consider antibiotics, see below

Evaluate the effectiveness of the treatment at least one week after discontinuing probiotic or antibiotic therapy

Detecting all types of bacteria in the endometrium, including: *Atopobium*, *Bifidobacterium*, *Chlamydia*, *Chryseobacterium*, *Gardnerella*, *Haemophilus*, *Klebsiella*, *Neisseria*, *Staphylococcus*, *Streptococcus*

Pathogenic bacteria associated with CE: *Chlamydia trachomatis*, *Mycoplasma genitalium*, *Mycoplasma hominis*, *Neisseria gonorrhoeae*, *Streptococcus spp.*, *Ureaplasma parvum*, *Ureaplasma urealyticum*

TREATMENT RECOMMENDATIONS

PROBIOTIC TREATMENT

The most important lactobacilli for maintaining a healthy vaginal flora and supporting fertility are *Lactobacillus crispatus* and *Lactobacillus gasseri*, followed by *Lactobacillus jensenii* and *Lactobacillus rhamnosus*. These bacteria contribute to the body's defense against pathogenic microorganisms through various mechanisms, including the production of H_2O_2, providing an additional layer of protection alongside the immune system.

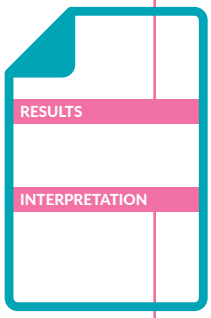
To support the natural flora of the female genital tract, supplements containing *L. crispatus*, *L. rhamnosus*, *L. acidophilus*, *L. gasseri*, and *L. fermentum* have been found effective in patients experiencing dysbiosis. Source: S2k Guideline on Bacterial Vaginosis, AWMF Registry Number 015-028

ANTIBIOTIC TREATMENT

Since susceptibility testing can't be performed using traditional methods (antibiogram) due to technical reasons, treatment recommendations follow established guidelines. For instance, bacterial species identified in relation to bacterial vaginosis can be treated with clindamycin or metronidazole, according to the S2k Guideline on Bacterial Vaginosis. If intracellular pathogens like *Chlamydia*, *Mycoplasma*, or *Ureaplasma* are detected, doxycycline is recommended.

WHAT ARE THE POSSIBLE **OUTCOMES** OF THE TESTS?

The report provides information about the bacterial composition of the endometrial microbiome. Here's an example.



EVALUATION OF LACTOBACILLUS

Percentage of Lactobacillus, e.g., 50% *Lactobacillus* spp.
The administration of probiotics should be considered.

EVALUATION OF OTHER BACTERIA

Percentage of other bacteria, e.g., 5% *Prevotella* spp.
To date, no advantages or disadvantages have been described for *Prevotella spp.* in connection with fertility treatment.

EVALUATION OF POTENTIAL PATHOGENIC BACTERIA

Percentage of pathogenic bacteria, e.g., 45% *Gardnerella* spp.
Any potential treatment should follow guideline recommendations.

Summary of the results and recommendations.
In this case: treatment with metronidazole and clindamycin would be based on the guidelines for bacterial vaginosis.

COMPREHENSIVE ENDOMETRIAL MICROBIOME ASSESSMENT

CLINICALLY VALIDATED INSIGHTS

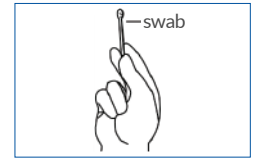
ACTIONABLE REPORTS

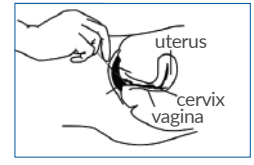
CERTIFIED GERMAN LABORATORY

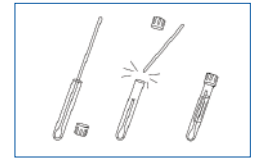
HOW TO **COLLECT** THE SAMPLE?

Endometrial swabs should be collected without contamination from vaginal flora:

1. The external cervical orifice should be disinfected with a suitable disinfectant before sampling and then cleaned with sterile saline solution. This area is not swabbed. Disinfection should ensure that no germs accidentally get deeper into the cervix and uterus.
2. Discard the disposable transfer pipette; it is not required for taking endometrial swabs.
3. Carefully remove the sterile swab from the protective foil. Do not touch the tip of the swab and do not put it down. Caution: The swab must NOT come into contact with the transport fluid before taking the sample.
4. Insert the white tip of the swab via the endocervical canal up to the uterine fundus. For the most accurate representation of the endometrial microbiome, make sure that the swab is inserted without contact to the vaginal flora and as little contact a possible with the cervical flora.
5. Gently rotate the swab for 15 to 30 seconds to take the sample.
6. Remove the swab carefully without contact (see above).
7. Handle the cap of the transport tube and the tube itself carefully to avoid contamination.
8. Open the cap of the tube and insert the swab into the tube so that the white tip is pointing downwards.
9. Carefully break off the end of the swab at the breaking-off point on the handle. Do this carefully to avoid splashing.
10. Attach sample identification to the transport tube.
11. Ensure the order form is fully completed electronically, including the patient's signature.







The swab collection process for both ebiom and ebiomCE analysis is identical. However, when ordering ebiom+, two swabs must be submitted to ensure precise and reliable analysis. All test results will be included in the final report.

HOW TO **ORDER**?

Recommend ebiom+ to your patient & order sample collection kit

Collect the sample(s) using the endometrial swab provided by **Medicover Genetics**

Send the sample(s) to **Medicover Genetics**

The sample(s) will be analyzed at **Medicover Genetics** laboratories

Results will be sent to you

MORE **QUESTIONS**?

If you have additional questions or concerns, please contact us at **info.genetics@medicover.com**

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