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### CHARACTERIZING THE VAGINAL MICROBIOME IN PATIENTS ATTEMPTING TO CONCEIVE FOR OVER 12 MONTHS: A REAL-WORLD, METAGENOMIC COHORT STUDY

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**Title:**

CHARACTERIZING THE VAGINAL MICROBIOME IN PATIENTS ATTEMPTING TO CONCEIVE FOR OVER 12 MONTHS: A REAL-WORLD, METAGENOMIC COHORT STUDY

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**Preferred Presentation Type:**

Oral or Poster

**Study Type:**

Cross Sectional Study

**Category - Subcategory(ies):**

**Pre-Clinical & Basic Research:** Reproductive Biology

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**ACCME Disclosure**

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**Did this abstract require approval by a local Institutional Review Board (IRB) or equivalent?**

This abstract has been approved by a local Institutional Review Board (IRB) or equivalent.

**Not applying for an award****Abstract Text:****OBJECTIVE:**

The vaginal microbiome (VMB) plays a critical role in reproductive health; however, its composition remains widely uncharacterized in patients with prolonged attempts at conception. This study assesses the VMB in a cohort of individuals who have been trying to conceive for over 12 months.

**MATERIALS AND METHODS:**

This retrospective cohort study included patients who sought VMB testing from March-April 2025, reporting attempts to conceive for  $\geq 12$  months. Participants provided self-collected vaginal swabs, which underwent next-generation metagenomic sequencing to quantify microbial composition. Additionally,

participants completed a health history questionnaire capturing information on vaginal symptoms, demographics, and reproductive history. Descriptive summaries were used to present participant characteristics and questionnaire responses.

## RESULTS:

A total of 260 participants were included. The mean age was 31.1 (range: 24-52), and the mean BMI was 26.3 (range: 16-45). Most participants identified as White (n=212, 82.5%), followed by Hispanic (11.2%), Black (4.7%), and Asian (3.9%) individuals. Nearly half of participants (n=123, 47.8%) reported a history of infertility, and 62.3% (n=160) reported at least one prior pregnancy. At the time of sampling, 45% (n=116) were diagnosed as having bacterial vaginosis (BV). Among participants who self-reported AMH levels (n=91), the median AMH level was 2.8 ng/mL, with 29.7% (n=27) reporting levels below AMH <1.0ng/mL.

VMB analysis revealed that most participants (n=236, 91%) had *Lactobacillus*-dominant profiles with a mean relative abundance (RA) of 66%. Disruptive species were also common with *Gardnerella* detected in 76% (n=196) of participants (mean RA: 19.8%), *Prevotella* in 30% (n=77) (mean RA: 3.0%), and *Fannyhessea* in 23% (n=58) (mean RA: 2.0%). The mean Shannon diversity index across the cohort was 1.4.

## CONCLUSIONS:

Even in *Lactobacillus*-dominant, asymptomatic profiles, low-level opportunistic anaerobes like *Gardnerella*, *Prevotella*, and *Fannyhessea* were common, suggesting that subclinical dysbiosis may influence conception. These findings highlight the need for further investigation into the contribution of specific microbial communities to reproductive potential. Ongoing gene-level analyses aim to evaluate the virulence factors and biofilm-forming capabilities of these organisms in the context of fertility.

## IMPACT STATEMENT:

This large, real-world study links the vaginal microbiome to conception challenges, revealing microbial biomarkers that may inform early fertility care.

### First Author

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Within the past 2 years, have you or your spouse/partner had any potential COI?

Yes

Organization Name	Relationship Type	Who has this Relationship?	
Evvy	Full-Time Company Employee Relationship Began - Monday, January 10, 2022 Relationship Ended -	Self	

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Yes

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### Seventh Author

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Biographical Sketch Jensen Reckhow is a PGY-3 Resident in Obstetrics and Gynecology at Mayo Clinic. She completed her BS in Environmental Engineering and MPH at Yale University. She conducted translational immunology research at NIH for two years prior to attending Ben Gurion University in Israel for medical school. This is her first time attending and presenting at ASRM and she is looking forward to learning from this passionate and inspiring community.

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No

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Biographical Sketch Early success, marked by his first publication in CELL at Harvard Medical School, inspired Joseph to continue his research endeavors in reproductive endocrinology and infertility. Joseph has been with Reproductive Medicine Associates of New York since 2011. Joseph has authored over 400 peer-reviewed abstracts & manuscripts. Passionate about development, he cultivates relationship with investors & entrepreneurs to advance reproductive endocrinology & infertility care.

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No

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 Yes

Organization Name	Relationship Type	Who has this Relationship?
Progyny	Company Officer Relationship Began - Friday, August 25, 2017 Relationship Ended - Thursday, June 1, 2023 Paid Consultant Relationship Began - Relationship Ended - Direct Stockholder Relationship Began - Friday, August 25, 2017 Relationship Ended - Friday, November 1, 2024	Self

Signature: Alan B Copperman

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