New molecular tool assesses vaginal microbiome health, diagnoses infections—fast

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A new microarray-based tool, called VaginArray, offers the potential to provide a fast, reliable and low-cost assessment of vaginal health and diagnoses of infections. The research is published ahead of print March 2, in *Antimicrobial Agents and Chemotherapy*, a journal of the American Society for Microbiology.

The VaginArray has 17 probe sets, each one specific for one of the most representative bacterial species inhabiting the vaginal ecosystem, including those associated with both healthy and unhealthy conditions. Each probe set is designed to be complementary to the "variable region" of the 16S rRNA gene of its target, and the match must be exact in order to register that it has detected the bacterium. The target bacteria can be quantified by measuring the fluorescence intensity produced by each probe set. The investigators chose the target species based on a survey of the literature.

"Our microarray could be used to study alterations of the vaginal ecology associated with gynecologic disorders and to assess the impact of therapeutic agents on the vaginal microbiota," said corresponding author Beatrice Vitali, Ph.D., professor in the Department of Pharmacy and Biotechnology, the University of Bologna, Italy.

Bacterial communities within the vagina protect it from unhealthy bacteria and otherwise help to maintain its health. Nonetheless, as in any

complex ecosystem, things can go awry.

Bacterial vaginosis is the most prevalent lower genital tract infection in women of reproductive age. The condition is associated with some obstetric and gynecologic maladies, including risk of chorioamnionitis, an infection of the amniotic fluid and the fetal membranes, preterm birth, and urinary tract infections, as well as with increased risk of sexually transmitted diseases.

Vaginosis is characterized by reduced numbers of the protective lactobacilli and greater abundance of strictly anaerobic bacteria, including *Gardnerella vaginalis , Atopobium vaginae, Mycoplasma hominis*, various species of *Prevotella* and others.

Bacterial vaginosis is usually treated with antibiotics such as clindamycin and metronidazole, but relapse is common and poorly understood; occurring in 15-30 percent of women within 1-3 months and in 50-70 percent within 6-12 months. Rifaximin, a broad spectrum antibiotic, has recently been proposed as a new therapeutic agent for the cure of bacterial vaginosis. Now by using the VaginArray, the current investigators have shown that this antibiotic actually reverses the changes in microbiome that are associated with vaginosis.

Provided by American Society for Microbiology

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