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Methods for studying the bacterial urinary microbiome of non-menopausal women

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	Backgrou	IND	Objectives					
Next generation sec extended cultures (E (UM) ¹ . Nevertheless with healthy subjects	quencing technologies (NEC) have allowed the recent , there are still many un s or urinary tract infections	IGS) as well as the development of nt discovery of an Urinary Microbiota knowns regarding the UM associated s (UTIs) .	 Locally implement EC and NGS (Illumina and Nanopore) to describe female bacterial UM Identify urotype (dominant bacterial taxon) for each urine specimen Compare bacterial UM of patients with UTIs with that of healthy volunteers (HV) 					
Methods								
	Culture	MALDI TOF		EC vs Standard Culture (SC)				





- \rightarrow EPI2ME 16S Workflow
- → Database derived from **NCBI**

Results



SC EC

Figure 2 – Prevalence of species identified in standard culture (SC) and in extended culture (EC)

- Identification of 50 bacterial species with EC (30% anaerobic) compared to 17 with SC
- 4 bacterial taxa predominated, all Gram-positive : Staphylococcus (19%), Lactobacillus (16%), Streptococcus (11%) and Corynebacterium (11%)

Analysis of UM by NGS

Legend

Actinobacteria

P-1814

- Atopobium
- Bifidobacterium
- Corynebacterium
- Gardnerella
- Propionibacterium

Bacillota	Firmicutes
Dialister	Anaerococcus
Finegoldia	Enterococcus
Megasphaera	Lactobacillus
Pediococcus	Staphylococcus
Peptoniphilus	Streptococcus

Conclusions							
 Pseudomonas Serratia 	Others Unclassified	 For 5/9 samples : majority of unclassified reads at genus level by Nanopore while Escherichia identified by Illumina (boxed in red). However, predominance of Enterobacteriaceae for four of them (A, B, C and G) at the family level. 		 Major Urotypes UTI (4/9) : Escherichia HV (7/12) : Lactobacillus 			
Escherichia Bact	cteroïdetes Prevotella	Figure 4 – Relatives abundances of genera identified by Nanopore and Illumina for each sample in the UTI group	and EC				
Proteobacteria Fus Burkholderia I Enterobacter I	ISObacteria Fusobacterium Sneathia	$A^{IIIInnin^{3}}A^{Nanopore}B^{IIIInnin^{3}}B^{Nanopore}C^{IIIInnin^{3}}B^{Nanopore}D^{IIIInnin^{3}}D^{Nanopore}E^{IIIInnin^{3}}B^{Nanopore}D^{IIIInnin^{3}}D^{Nanopore}E^{IIIInnin^{3}}B^{Nanopore}C^{IIIInnin^{3}}D^{Nanopore}D^{IIIInnin^{3}}D^{Nanopore}E^{IIIInnin^{3}}D^{Nanopore}C^{IIIInnin^{3}}D^{Nanopore}D^{IIIInnin^{3}}D^{Nanopore}D^{IIIInnin^{3}}D^{Nanopore}D^{IIIInnin^{3}}D^{Nanopore}D^{IIIInnin^{3}}D^{Nanopore}D^{IIIInnin^{3}}D^{Nanopore}D^{IIIInnin^{3}}D^{Nanopore}D^{IIIInnin^{3}}D^{Nanopore}D^{IIIInnin^{3}}D^{Nanopore}D^{IIIInnin^{3}}D^{Nanopore}D^{IIIInnin^{3}}D^{Nanopore}D^{IIIInnin^{3}}D^{Nanopore}D^{IIIInnin^{3}}D^{Nanopore}D^{IIIInnin^{3}}D^{Nanopore}D^{IIIInnin^{3}}D^{Nanopore}D^{IIIIInnin^{3}}D^{Nanopore}D^{IIIIInnin^{3}}D^{Nanopore}D^{IIIIInnin^{3}}D^{Nanopore}D^{IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII$	concord Unclassi	antly by Illumina and EC in UTI cases an ified = discordant urotypes between Illu			





– Comparison of urotypes identified Figure nd HV. lumina

- EC improves detection of uropathogens compared to SC procedure¹. Both EC and NGS results showed a difference in the composition of the UM between HV and **UTI** patients. This study highlights a high occurrence of *Lactobacillus* in the female UM, as already reported².
- Nevertheless, these results must to be confirmed with a larger sample collection, and the analyses of the NGS data need to be further investigated, particularly by using other databases than those suggested by the manufacturers.

1. Price, Travis K., Tanaka Dune, Evann E. Hilt, Krystal J. Thomas-White, Stephanie Kliethermes, Cynthia Brincat, Linda Brubaker, Alan J. Wolfe, Elizabeth R. Mueller, and Paul C. Schreckenberger. "The Clinical Urine Culture: Enhanced Techniques Improve Detection of Clinically Relevant Microorganisms." Journal of Clinical Microbiology 54, no. 5 (May 2016): 1216–22 2. Ugarcina Perovic, Svetlana, Magdalena Ksiezarek, Joana Rocha, Elisabete Alves Cappelli, Márcia Sousa, Teresa Gonçalves Ribeiro, Filipa Grosso, and Luísa Peixe. "Urinary Microbiology Spectrum 10, no. 6 (December 21, 2022): e01308-22.

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