

# PREVALENCE AND ANATOMICAL DISTRIBUTION OF *MYCOPLASMA GENITALIUM* MACROLIDE RESISTANCE MARKERS FROM SUBJECTS ENROLLED IN A MULTI-CENTER US CLINICAL STUDY

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## BACKGROUND

*Mycoplasma genitalium* is the smallest prokaryote capable of self-replication, with a genome size of 580kb. Mgen is a sexually transmitted pathogen causing urethritis in men and implicated in vaginitis, cervicitis, pelvic inflammatory disease, and infertility in women. Azithromycin is the antibiotic most commonly used to treat Mgen infection. This study evaluated the prevalence and anatomical distribution of *Mycoplasma genitalium* 23s rRNA mutations (23s-MTs) associated with macrolide resistance among male and female subjects enrolled in a prospective multi-site US clinical study.

## METHODS

Aliquots from residual specimens previously obtained from symptomatic and asymptomatic men and women enrolled from 7 diverse US clinical sites, including obstetrics and gynecology, family planning, public health, and sexually transmitted disease clinics, were tested using a research-use only TMA assay for *Mycoplasma genitalium* (Hologic Inc.) on either the manual DTS System or automated TIGRIS DTS System. Samples positive for Mgen by TMA were evaluated by PCR or RT-PCR and Sanger sequencing of Mgen 23S ribosomal RNA to identify the presence of macrolide resistance mutations at position 2058 (A2058G, A2058C, A2058T) or position 2059 (A2059G).

## RESULTS

**Table 1. *M. genitalium* 23s rRNA mutation frequency in male and female urogenital samples.**

Subjects	Sample Type	23s rRNA Sequencing Result	23s rRNA Mutation Frequency, n/N (%)
Male	All Subjects		21/50 (42)
	Urethral Swab	16 WT, 12 MT, 1 WT+MT	13/29 (44.8)
	Male Urine	19 WT, 7 MT, 4 WT+MT	11/30 (36.7)
Female	All Subjects		65/128 (50.8)
	Vaginal Swab	24 WT, 18 MT, 8 WT+MT	26/50 (52)
	Female Urine	22 WT, 16MT, 3 WT+MT	19/41 (46.3)
	Thinprep LBC	25 WT, 20 MT, 3 WT+MT	23/48 (47.9)
	Endocervical Swab	28 WT, 13 MT, 4 WT+MT	17/45 (37.8)

WT, wild type; MT, 23s rRNA mutation at 2058/2059 positions (E.coli numbering)

**Table 2. Anatomical distribution of *M. genitalium* 23s rRNA phenotype in male urogenital samples**

23s rRNA Anatomic Site Agreement	Number of Subjects	Sample Type	
		Urethral Swab	Male Urine
Concordant	3	WT	WT
	1	WT/A2059G	WT/A2059G
	1	A2058G	A2058G
	1	A2058U	A2058U
Discordant	1	A2058U	WT
	1	A2059G	WT
	1	WT	WT/A2059G

WT, wild type; rRNA base position refers to E. coli 23s rRNA numbering

**Table 3. Anatomical distribution of *M. genitalium* 23S rRNA phenotype in female urogenital specimens.**

23s rRNA Anatomic Site Agreement	Number of Subjects	Sample Type			
		Vaginal Swab	Endocervical Swab	Female Urine	Liq. Pap
Concordant (n=23)	5	WT	WT		
	4		WT	WT	WT
	3			WT	WT
	2	A2058G			A2058G
	1	A2058G	A2058G		
	1			A2058C	A2058C
	1	A2059G			A2059G
	1	A2059G		A2059G	
	1	A2058G	A2058G	A2058G	
	1		WT	WT	
	1	WT		WT	WT
	1		WT		WT
	1	WT			WT
	Discordant (n=22)	3		WT	
2		WT		WT/A2059G	WT
1				A2058U	WT
1			A2058G	WT/A2058G	A2059G
1				WT	A2059G
1				A2058C	WT
1				WT	A2058G
1		A2059G	A2058G	A2058G	
1		A2059G	WT		
1			A2058G		A2058C
1			WT		A2058G
1		A2058G/A2059G		A2058G/A2059G	WT/A2059G
1	A2058G	A2059G		WT	
1		WT	WT	A2058G	
1			A2058G	A2059G	
1			WT	A2059G	
1	A2058G	WT			
1		WT/A2059G	A2059G	WT/A2059G	
1		A2058G	A2059G		

## CONCLUSIONS

- *M. genitalium* isolates harboring 23S rRNA-mediated macrolide resistance phenotypes were highly prevalent in this US cohort of male and female subjects.
- Vaginal swab and male urine samples detected the highest rate of 23S rRNA-mediated macrolide resistance phenotypes
- Half of the women and one-third of the men sampled yielded discordant 23s-rRNA sequence types in samples obtained from different anatomic locations.