## P08.06 LACTIC ACID ISOMERS DIFFERENTIALLY REDUCE *CHLAMYDIA TRACHOMATIS* INFECTION IN A PH DEPENDENT MANNER

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**Introduction** Epidemiological studies indicate that the vaginal microbiota can significantly impact the risk of acquiring sexually transmitted infections, including chlamydia. *Lactobacillus* spp. are the most common commensal bacteria in the healthy human vagina; they produce lactic acid to create an acidic environment with pH ranging between 3.5 and 4, thought to reduce vaginal colonisation by STI agents. However, not all species of *Lactobacillus* are believed to perform this function equally, and we hypothesised that species that produce low amounts or no D-lactic acid, while achieving low pH do not fully protect women.
**Methods** A 3D model of cervical epithelial cells (A2EN) developed in our lab was exposed to D(-), L(+) or a D/L racemic mixture of lactic acid at various concentrations to produce pH 7, 5.5 and 4 or to several *Lactobacillus* spp. conditioned media (LCM). Cells were infected with *C. trachomatis* serovar L2 for 48 h, stained and imaged by confocal microscopy. Analysis of the resultant IFUs was used to determine the number of infected host cells.
**Results** We observed a reduction of *Chlamydia trachomatis* infectivity in a pH dependent manner. Further, at pH 4, D(-) lactic acid afforded maximal protection compared to L(+) lactic acid. Interestingly, 50% infectivity is still observed with HCL at pH 4, indicating that pH alone is not responsible for this protection. Exposure of cells to conditioned media from the various *Lactobacillus* spp. showed that high D(-) lactic acid producing bacteria (*Lactobacillus* crispatus and *Lactobacillus* jensenii) afforded significantly greater protection against *C. trachomatis* than did *Lactobacillus* iners, which produces predominantly L (+) lactic acid.
**Conclusion** These results suggest a differential role for specific species of *Lactobacillus* in driving resistance to *C. trachomatis* infections and potentially other STIs. Lactic acid isomers production should be considered when developing *Lactobacillus* vaginal probiotics.
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## P08.07 *CHLAMYDIA TRACHOMATIS* CERVICAL INFECTION/ RECTAL DETECTION IN THE MACAQUE MODEL

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**Introduction** Experimentally induced cervical chlamydial infection in the macaque may naturally cross-infect rectal epithelial cells which are also prone to *Chlamydia trachomatis* (CT) infection. This would be a significant finding in the field of STI preventive strategies, particularly when products intended for vaginal use are assessed for efficacy. If cross-infection does occur, it will be important to specifically assess rectal secretions for evidence of infection in vaginal product efficacy studies.
**Methods** Twelve pigtailed macaques underwent direct cervical inoculation (1 mL *C. trachomatis* serovar E; 5E6IFU), followed by five weekly exams to detect infection in cervical and rectal secretions. Inoculant was delivered to the face of the cervix/vaginal fornix via 1 mL tuberculin syringe. Secretions were collected on dacron swabs. Chlamydial infection was detected at each site by culture and by nucleic acid amplification (NAAT: Aptima2) assays.
**Results** Ten of twelve macaques tested positive for cervical chlamydial infection by culture and NAAT assays. The other two were transiently positive (2 weeks, 1 week) by NAAT only. All but three animals had chlamydial rRNA amplified from rectal swabs on at least one occasion. Five animals remained NAAT positive in rectal secretions for three weeks or more. One of these macaques had replicating chlamydia cultured from a rectal swab (week 3 only), followed by a spike in culture positivity from her next cervical sample (week4).
**Conclusion** Experimental CT infection of the cervix indeed gave rise to chlamydia detection in rectal secretions in the majority of animals in this study. Culture positivity in cervical samples did not predict chlamydia detection in rectal samples. The paucity of culture positive results from rectal samples may be related to faecal contamination. Clearly it is advisable that rectal secretions be assessed for evidence of chlamydia in studies designed to assess prevention/treatment of cervical CT infections.
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## P08.08 EXPANDING THE MACAQUE MODEL OF *TRICHOMONAS VAGINALIS* INFECTION

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**Introduction** The pigtailed macaque model for trichomonal infection was used to compare *T. vaginalis* (TV) detection technologies, to describe infection status in younger versus older populations, and to test whether TV reinfection after antibiotic clearance is possible in this model.
**Methods** Thirty-six macaques received a single vaginal TV inoculation (ATCC 50148; ~6E5), followed by five weekly visits to document infection. Eighteen animals were 4–7 years old; eighteen were over 13 years old. Infection status was documented by culture (InPouchTV) and by NAAT (AptimaTV). Colposcopy was performed to assess tissue reaction to infection. Animals underwent antibiotic treatment (metronidazole) and test-of-cure. Five macaques from the younger cohort were later re-inoculated with the same TV strain and followed for three weeks to document reinfection.
**Results** All but one (older) animal were successfully infected after the initial vaginal challenge. Among 295 matched samples (culture/NAAT), 22 did not share confirmatory results. In this experimental setting, with weekly vaginal swabs providing a timeline of trichomonal presence in each animal, we can infer