Interfaces, **T**raitements, **O**rganisation et **Dy**namique des **S**ystèmes
Université Paris Diderot – CNRS UMR 7086
Bâtiment Lavoisier
15 rue Jean Antoine de Baïf, 75205 Paris Cedex 13

A novel antibacterial compound with antibiotic effect in *Chlamydia* infected mice

Åsa Gylfe
MD, PhD, Assistant Professor
Department of Clinical Microbiology, Umeå University, Umeå, Sweden
The Laboratory for Molecular Infection Medicine Sweden (MIMS)
Umeå Centre for Microbial Research (UCMR)

Novel antibiotic targets are important for combating infections. *Chlamydia trachomatis* is a significant human pathogen with limited antibiotic treatment options. We have developed methods for high content screening (1-2) and identified several classes of novel *Chlamydia* inhibitors (1-9). One class, the acylated sulfonamides was shown to inhibit *Chlamydia* fatty acid synthesis (FAS II) (10), an interesting target for novel antibiotics. Currently we have investigated the efficacy of this compound class *in vivo*. Drug profiling of the acylated sulfonamides including chemical and metabolic stability in liver microsomes predicted good drug-like properties. Pharmacokinetics in mice showed high exposure after parenteral administration of one compound ME0619. Mice vaginally infected with *C. trachomatis* were thereafter treated by intraperitoneal injections for 7 days. ME0619-treatment was effective with significantly more mice clearing the infection during treatment compared to sulfamethoxazole antibiotic or vehicle. Our data show that ME0619 was effective for treatment of vaginal *C. trachomatis* infection *in vivo* and validates fatty acid synthesis as an interesting antibiotic target in *Chlamydia*.

1. Front Microbiol 2018:9:3151.
2. Antimicrob Agents Chemother. 2014:58(5):2968-71.
3. Eur J Med Chem 2018:143:1077-1089.
4. J Med Chem. 2017:60(22):9393-9399.
5. Eur J Med Chem 2015:101:595-603.
6. PLoS ONE 2014:9(12):e115115.
7. J Bacteriol. 2014:196(16):2989-3001.
8. Bioorg Med Chem Lett. 2012:22(10):3550-3.
9. Proc Natl Acad Sci U.S.A. 2006:103(39):14566-71.
10. Antimicrob Agents Chemother. 2017:22;61(10). pii: e00716-17.