

## Project proposal

Project title	<input type="text" value="Treatment for gonorrhoea infections causing newborn blindness."/>	
First Supervisor	Dr <input type="text" value=""/> <input type="button" value="v"/>	<input type="text" value="Lori Snyder"/>
Second Supervisor	<input type="text" value="Prof Raid Alany"/>	
School	<input type="text" value="Life Sciences"/> <input type="button" value="v"/>	
Other member of supervisory team (no more than three KU supervisors in total)	<input type="text"/>	
Specific requirements beyond 2:1 degree	<input type="text"/>	

### Project summary (max 4,000 characters)

#### MSc by Research

*Neisseria gonorrhoeae* is a world-wide health threat that is on the rise, even in developed countries. Gonorrhoea infection does not induce protective immunity, can be asymptomatic in 80% of women and 20% of men, and contributes to increased infection and transmission of HIV. It also causes blindness in newborns, gonococcal arthritis, and fallopian tube scarring leading to infertility. In 2010, the World Health Organization issued a warning concerning untreatable fully antibiotic resistant gonorrhoea. Vaccination has been impossible, therefore alternative treatments are needed.

The goal of the project is to develop nucleic acid-based therapies to combat gonorrhoea infections of the eye. In the first stage, short sequences complementary to known essential genes will be investigated for their ability to inactivate the essential genes and kill the bacteria. In the second stage, the small non-coding RNAs of *N. gonorrhoeae* will be identified and their suitability as targets investigated.

Bovine corneal explants will be used as models of the newborn eye infection, ophthalmia neonatorum, which arises as a result of passage through an infected birth canal. Using this model, different formulations of the nucleic acids can be tested. This proposal aims to improve human health as well as advancing the frontiers of science.

#### Relevant references:

Ohnishi, M., T. Saika, S. Hoshina, K. Iwasaku, S. Nakayama, H. Watanabe, and J. Kitawaki. 2011. Ceftriaxone-resistant *Neisseria gonorrhoeae*, Japan. *Emerg Infect Dis* 17:148-9.

Hagman, K. E., W. Pan, B. G. Spratt, J. T. Balthazar, R. C. Judd, and W. M. Shafer. 1995. Resistance of *Neisseria gonorrhoeae* to antimicrobial hydrophobic agents is modulated by the *mtrRCDE* efflux system. *Microbiology* 141 ( Pt 3):611-22.

Laga, M., A. Meheus, and P. Piot. 1989. Epidemiology and control of gonococcal ophthalmia neonatorum. *Bull World Health Organ* 67:471-7.