

CISBIC Project Meeting 5 Sub-project 4 - Mycobacteria

Brian Robertson



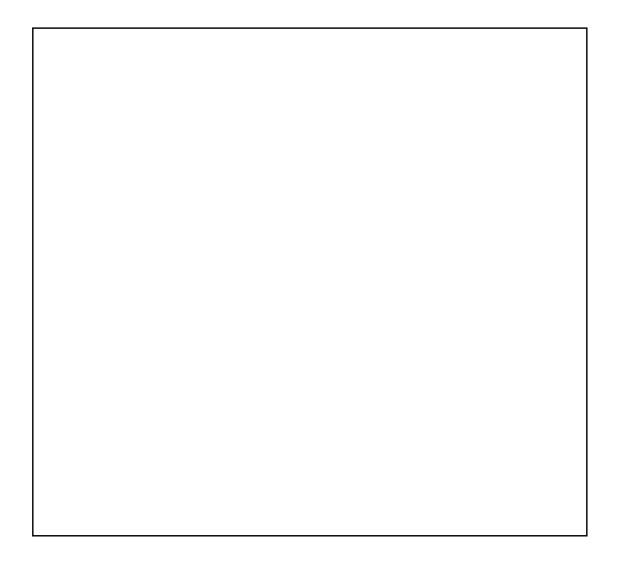






Overview - Sub-project 4

- Coordinate the work done on mycobacteria as part of CISBIC
 - Reference to original application
 - New areas of work that mesh with ongoing work CISBIC collaborators





Sub-project 4 - Mycobacteria

- Modelling the glycome use ONDEX to accelerate generation of background knowledge database in ProLog for use in Machine Learning
 - In original application as part of Sub-project 1
 - Progress to date
 - Potential for future project



Subproject 4 - Mycobacteria

- Veterinary Laboratories Agency (VLA) key collaborator for M. bovis
- Model immune response in cattle infected with *M. bovis*, then drug treated and re-challenged with a different strain
- Investigate treatment strategies determine factors that improve outcome
 - El-Khairi, Ingram (CISBIC), Hewinson, Vordermeier (VLA)
 - ODE model of T cell population dynamics during infection extended to include innate immunity, some cytokines and drug treatment
 - · Will be tested using data on levels of drug detected



Subproject 4 - Mycobacteria

- Metabolomics analysis of impact of *M. bovis* on metabonomic profiles of infected cows – biomarkers of disease?
 - Barton (CISBIC), Vordermeier (VLA)
- · Original NMR and MS analysis on small set of urine samples
 - · Outcome?
- Sample set extended to include further samples of urine and serum
 - Laboratory Infected, Naturally Infected, Immunized, "clear" (control) animals
 - NMR acquisition complete end September 2009.
 - · Possibility to add this data to that for the immune modeling



Subproject 4 - Mycobacteria

- Possible future projects
- Modelling the response of *M. bovis* infected cattle to PE/PPE peptide antigens (time course cytokine data available)
 - El-Khairi & Sampson (CISBIC), Hewinson, Vordermeier (VLA)
- "Integrated Functional Characterization of PPE-MPTR proteins of Mycobacterium tuberculosis." Project grant submitted to BBSRC
- Robertson, Sampson (Department of Microbiology), and Moon (CISBIC)
- Includes modeling the complex temporal pattern of the immune response to a large group of TB genes