

CISBIC Project Meeting 5

Sub-project 4 - Mycobacteria

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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

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- 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

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- **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