

REPORT

Report on participation of the ICMR International Fellow (ICMR-IF) in Training/Research abroad.

1. Name and designation of ICMR-IF : **Prof: Jagdeep Kaur**
2. Address : Department of Biotechnology,
Panjab University, Sector 14,
Chandigarh.
3. Frontline area of research in which : Infectious Diseases
Training was carried out :
4. Name & address of Professor and host institute : Dr.Sharon Kendall
The Royal Veterinary College
Department of Pathology and
Pathogen Biology
Royal College
Street Camden London
5. Duration of fellowship : 15 days
6. Highlights of work conducted :
 - i). Technique/expertise acquired : Annexure I
 - ii). Research results including any papers, : Nil
prepared/submitted for publication
 - iii). The proposed utilization of the experience : Annexure I
in India

Signature of ICMR-IF

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Annexure 1

Mycobacterium tuberculosis is a slow growing organism. It takes nearly 3-4 weeks to grow. Therefore construction of knockout in the foreign lab was not possible. During my visit we discussed optimisation of the technique **for construction of knockouts in Mycobacterium by ligation independent cloning** which involves several steps.

- a. Primers were designed for two mycobacterium genes for **ligation independent cloning**. To ensure the successful amplification of upstream and downstream regions of genes the trouble shootings were discussed with the help of work already done in Dr Sharon's lab.
- b. Detail methodology for Construction of delivery construct in suicide vector was discussed specially how to choose these vectors. Dr Sharon agreed to send me the vectors.
- c. A very crucial step of UV irradiation of DNA and Electroporation of Mycobacteria was demonstrated
- d. The points to be taken care during screening of mutants were discussed in detail. Mutants were shown at different time point of growth.
- e. Additionally we discussed bioinformatics methods for genome comparison (ACT, Artemis) and I tried to use these programmes for analysis of genes I am already working on.

The proposed utilization of the experience in India:

Our laboratory is already working in the field of mycobacterium lipases. There are currently three projects running in the lab funded by DBT, CSIR and ICMR which includes the cloning, expression and characterization of some mycobacterium lipases. Besides the biochemical and biophysical characterization, the expression of these genes in different stress conditions has been investigated. Few lipases were expressed during in dormant stage. These lipases might be supporting the organism to survive during. To further support our hypothesis deletion mutant of these genes are required. The present work on mycobacterium lipases would be greatly advanced by the ability to knock these genes out in Mycobacteria and to perform phenotypic analysis on the resulting mutant(s). The results of these studies would add to the evidence for the role of these enzymes during dormancy. Based on this training I have ordered primers for the construction of two lipase genes and initiated work for construction of knockouts in *M tuberculosis* H37Ra.