Frequently Asked Questions

1. How much will MODS cost me?

Material costs are $3 per sample, taking into account the need for repeat processing of contaminated cultures and based on the inoculation of 5 samples per 24-well plate. Using labour costs in Peru the per sample cost for a laboratory processing 5000 samples per year is approximately $3.30. Capital set-up costs depend upon existing infrastructure.

2. What equipment is needed to do MODS and where can I get it?

A fridge/freezer is needed to store broth and antibiotic stock solutions; a vortex aids the sputum decontamination process; a biosecure centrifuge for sputum concentration (which need not be refrigerated if it is large enough to be only required for one or two runs per day); an incubator (which need not be CO_2 enriched) for culture; an inverted light microscope to read MODS plates – this is the item most commonly lacking in implementing laboratories; an autoclave to sterilize media and PBS and decontaminate discarded culture materials; a balance to weigh isoniazid, rifampicin and NALC; a 4-channel multipipette.

3. Where can I buy a MODS kit?

You can't. Or at least not yet. Developmental work and preliminary experiments are underway in collaboration with PATH to explore the possibility of a MODS kit in the future.

4. Where can I get the laboratory materials that I need?

Because we are asked this question a lot we have included information on laboratory suppliers (catalogue numbers etc.) in the user guide. However, there may be other more suitable suppliers in your region. The quality of the reagents is obviously very important and good growth of the positive controls in the assay is essential to demonstrate that the procured media support growth of *M tuberculosis*.

5. I'm worried about the safety of liquid culture – should I be?

No, we don't think so. See the detailed discussion of this issue under **Biosafety and MODS**. There is no need for level III biosafety; level II is completely adequate.

6. What training do I need to do MODS?

Our favourite anecdote involves Girum Shiferaw who wrote from Ethiopia requesting the MODS SOP a few years ago. The next thing that we knew, he was presenting the results of his work at the Annual Conference of the International Union Against TB and Lung Disease! Prior to this we had perceived that at least one week of on site training was needed (preferably two) to learn the basic preparatory steps and the pattern recognition that is integral to detection of *M tuberculosis.* Whilst we still think that this is optimal and are working towards establishing a network of MODS training laboratories in Africa and Asia, it is clear that it is not essential for everyone (see Girum's paper in the bibliography).

7. How do I know if MODS is working in my hands? What quality control is there?

This is described in the **QA FAQs** and the **User Guide**. The key is to follow the quality assurance (QA) plan – without QA the MODS results should not be used for clinical care.

Briefly, internal quality controls are designed to assure that (1) the media mix (Middlebrook 7H9, OADC and PANTA) supports mycobacterial growth, (2) the rifampicin and isoniazid wells contain the correct concentration of active drug to distinguish between susceptible and resistant *M tuberculosis*, and (3) that cross-contamination is detected.

8. I still have more questions – where can I get further technical assistance?

You can email us at modsperu@gmail.org and we will be pleased to try to help.