**How do fungi cause disease?**

Fungal infections vary from mild, irritating nail and skin infections through to serious, in some cases life-threatening cases. You may have had athlete’s foot (*tinea pedis*) or fungal skin infections elsewhere on your skin (commonly called ringworm).

**Question** – what causes athlete’s foot and if your GP wanted to confirm this was the cause, what sample could they send to the laboratory?

Discoloured nails, which are often dark or black, may grow thick and ridged due to infection with *Candida* or the ‘dermatophyte moulds’ – *derm = skin*, as in dermatologists, and ‘phyte’ means ‘like or loves’. These are all **superficial** fungal infections of dead keratinised tissues and tend to be annoying and disfiguring rather than really serious. They do not invade any deeper tissues but can hang around for a long time and be difficult to treat. Sometimes they don’t clear up with creams or lotion, and a patient might have to take antifungal tablets. See below for how some of these work.

**Question - do some yeasts cause deeper infections?**

Occasionally, when people injure themselves, a yeast may be implanted deeper into the body and cause what we call a ‘subcutaneous’ or ‘under the skin’ infection. Vets and people who work with animals may be bitten by an animal which has fungi in its mouth, or farmers and gardeners may prick themselves on a thorn or a plant. The fungi may establish an infection and multiply, so the person may develop a lump or a nodule where the injury was. Occasionally the yeast may spread in the lymphatic system.

**Activity** – find out about the rare **dimorphic** fungus called *Sporothrix* which causes a mould to grow on roses. What might happen if somebody pricks their finger on a mouldy rose? How does this fungus invade the body and what happens when it spreads? Look at the CDC website for information ([http://www.cdc.gov/fungal/diseases/sporotrichosis/](http://www.cdc.gov/fungal/diseases/sporotrichosis/)).
Some fungi can cause even deeper or ‘systemic’ infections which either stay in the site of entry (such as infections of the lungs through inhaling Aspergillus spores as discussed above) or spread all around the body (especially if the immune system isn’t functioning correctly).

**Question: By which other routes can fungi enter the body?**

Hint: Think about people in hospital who have a breach in their skin or mucosa, such as urinary catheter into their bladder or an intravenous line or ‘drip’. Think about the sinuses (air spaces behind the cheeks and forehead)…”