

A Teacher's Guide to

Key Stages for Fungi

The British Mycological Society's
materials for the classroom

Why fungal biology matters

This teaching pack has been produced to draw attention to the lack of fungal biology in the National Curriculum. We think this is important because questions to year 10 pupils (and many others) reveal their almost complete ignorance of these organisms. Ask an average group of year 10s if they think fungi are bacteria, plants or something different and the vast majority will choose bacteria and the rest plants. The right answer will be rarely, if ever, encountered.

Fungi are not bacteria, because fungi are eukaryotes which have the complex cell structures and abilities to make tissues and organs that we expect of higher organisms. But fungi are not plants, and are so different from plants that no amount of plant biology will give an adequate understanding of any fungus. Similarly, although more closely related, in molecular terms, to animals than to plants, fungi are not animals and a deficiency of fungal biology cannot be compensated by more zoology.

Awareness and understanding of fungi is a worthwhile educational goal, not least because we depend on fungi every day of our lives and fungi form what is arguably the largest kingdom of organisms on the planet. However, it's probably a more important consideration that the fact that they are practically ignored in the National Curriculum means that pupils are not being introduced to the full range of living things. Teaching biology this way is like trying to teach reading with only two-thirds of the alphabet.

Currently very little of either cell or fungal biology appears in any of the GCSE science specifications. Included in this package is an article that discusses the deficiencies in the curriculum specifications in UK primary and secondary schools in some detail and we will not repeat it here.

The bulk of the material in this package, though, is an assortment of learning resources designed for you to use in your teaching to do something about the situation. These ready-made (and classroom-tested) lessons and workshop sessions cover a range of fungal topics from cell structure and function, through biotechnology to health topics and plant growth and disease. The resources are in a number of accessible formats, so the content can be adapted to the needs of individual teachers and pupils, and targeted to different areas of the National Curriculum. They also include games and activities, aiming to increase knowledge and awareness of fungi in an active, entertaining, way and thereby maintain interest in biology as a science.

The British Mycological Society's materials for the classroom

The materials provided here have been designed for pupils in years 8 to 11 of secondary school. Earlier years are catered for by other BMS resources. We have tried to use a level of language and presentation that will suit this range of ages and the class sheets have all been well received in classroom tests. However, younger pupils may have a

little difficulty with the language, whereas older pupils may need more challenging activities. Teachers can easily adapt the materials (they are available as readily-edited word processor and PowerPoint files) to suit the age, level and capabilities of their own pupils. On the basis of classroom experience we would say that the ability of younger pupils to cope with scientific names and scientific phraseology should not be underestimated. A little help (particularly with pronunciation) and encouragement soon gets them 'talking the talk'!

The teaching resources offered here include:

- **Fungal Cells:** an integrated set of *brief* class sheets dealing with cells and cell biology, which ensure proper representation of both yeast and filamentous fungi, but also give a comprehensive summary of cells in all organisms (indexed as FC01-FC04).
- **World of Fungi:** a series of five ready-made KS4 lessons and classroom activities comprising an introductory *Welcome to the World of Fungi, Reproduction and Conservation, Favourite or Nastiest Fungus, Fungi and Industry and Fungi and Disease*. All of these lesson packages include a full set of class sheets for the pupils (indexed as WF01-WF05).
- **What's your Favourite Fungus?** An integrated series of class sheets telling 15 different stories about fungal biology that provides the basis for a 'What's your favourite fungus?' set of activities. They can be used in a variety of ways. We suggest that pupils investigate the stories and extract important points from them. As supporting resources there is a 'name-game' starter exercise, a pack of playing cards that mirror the class sheets and can be used to play a variety of games, and some display posters related to the class sheets (indexed as FF01-FF26).
- **Teacher's Guides:** what you are reading is the first in a set of helpful Guides which introduce you to the materials available here, provide academic backup to the topics covered and practical guidance on how to make best use of these materials (indexed as TG01-TG05). **NOTE** that TG05 contains advice about how and where to get **MORE INFORMATION** and advice about fungi.

Tried and Tested

All the materials and activities included in this handbook have been classroom tested with groups of pupils ranging from year 8 through to year 11 and these sessions were evaluated with our own quizzes and questionnaires. Some of the resources were used as an event during National Science Week 2005; the five fungal lessons have been trialled with a year 10 class at an inner city school in Manchester; parts of these resources have also been included in science workshops for schools at the Manchester Museum and most recently some of the materials were used at Summer School events for pupils from Liverpool, Rochdale and Manchester schools in the 'Excellence in Cities' programme. In all of these trials pupil feedback on the materials was collected; comments were positive and the pupils were interested and enthusiastic to be learning about a topic many had hardly touched upon before. Hopefully, this means that the materials are effective in delivering new information in an interesting way and you will also experience this positive response as your pupils enjoy learning about fungi and recognise the relevance of the knowledge to their everyday lives.