



# Working with Scientific Literature

## Teacher's Guide





## Working with Scientific Literature

**Developed by:** Dr. Mark Bowler (University of St. Andrews) Alaina Macri (Royal Zoological Society of Scotland) and Dee McCarthy (ASAB)

This pack provides a stimulating way of learning about scientific journal articles and highlights the difference between **'research'** and **'review' papers** (it relates to the new Scottish Advanced Higher Investigative Biology Unit 3, please see our Living 'Links' to Scottish Curriculum document for the relevant connections).

It is suggested that students start by watching a silent video (below) showing an unusual behaviour in capuchin monkeys; 'anointing'. There are various hypothetical explanations for this behavior.

**Silent video of behaviour (1:58min)** - <http://vimeo.com/48287363> or <http://www.living-links.org/resources/materials-for-teachers/primate-self-medication-lesson-pack/>

Students will first form their own ideas about why the capuchins behave in this way. Then they will be given a real published scientific **'research'** paper (with a summary to guide them) describing an experiment on one aspect of the behaviour. Students will discuss whether this research demonstrates what the function of the behaviour is. Students will then read a published scientific **'review'** paper (with a summary to guide them) that describes a historical body of research and evidence on the subject. Students will then discuss the difference between the two types of paper and how each presents evidence for various hypotheses.

On our website you will be able to download the following pieces of literature;

### Research Article 1

Valderrama, X., Robinson, J.G., Attygalle, A., and Eisner, T. (2000). Seasonal anointment with millipedes in a wild primate: a chemical defense against insects? *Journal of Chemical Ecology*, Vol. 26, No. 12, 2781-2790.

### Research Article 2 – Short Communication

Weldon, P.J., Aldrich, J.R., Klum, J.A., Oliver, J.E. and Debboun, M. (2003) Benzoquinones from millipedes deter mosquitos and elicit self-anointing in capuchin monkeys (*Cebus spp.*) *Naturwissenschaften*, 90:301-304.

### Review Article

Lynch, J.W., Matthews, L., Boyette, A.H., MacFarlan, S.J., Phillips, K.A., Falotico, T, et al. (2011) Anointing Variation Across Wild Capuchin Populations: A Review of Material Preferences, Bout Frequency and Anointing Sociality in *Cebus* and *Sapajus*. *American Journal of Primatology* 73:1-16.



The popular media often report the findings of new studies out of the context of the larger body of research. In part two of this pack, students will critically examine a short video 'documentary' and a newspaper report that interprets some of the ideas on capuchin anointing for a general audience. They should also gather recent reports of scientific studies from newspapers, TV and internet news sites. They will then discuss how scientific ideas, hypotheses and findings are (and how they *should* be) reported in the popular media.

**Newspaper article** - <http://www.nytimes.com/2000/12/05/science/for-monkeys-a-millipede-a-day-keeps-mosquitoes-away.html?pagewanted=all&src=pm>

**Mini-documentary (2:29min)** - <http://vimeo.com/48287364> or <http://www.living-links.org/resources/materials-for-teachers/primate-self-medication-lesson-pack/>