

some, such as that showing simple DNA replication, are clearly intended for a different, general audience. Indeed, the voiceover indicates the DVD makers' recognition of the replication clip's shortcomings – the DNA molecules consist simply of bases with no sugar-phosphate backbones. Some of the other explanations are disappointing, such as that of DNA microarrays, which really leaves the viewer none the wiser.

The principal feature of the *DNA interactive* DVD is its interviews with scientists who were and are at the forefront of molecular genetics. Where else could you find Francis Crick, James Watson, Maurice Wilkins, François Jacob, Benno Müller-Hill, Sydney Brenner, Paul Berg, Wally Gilbert, Herb Boyer, Stanley Cohen, Kary Mullis, Alec Jeffreys, Svante Pääbo and the other creators of molecular genetics talking about their work? It is a shame that the DVD was not produced five or ten years ago, before several of the pioneers of molecular biology had died.

Be warned that many of the DVD's 200 clips are little more than short 'sound bites', and that to be used effectively in an educational context, they would require supporting materials. Fortunately, the producers have realised this: there is a complementary website at the Dolan DNA Learning Center which presents a great deal of additional, highly valuable, educational material.

Details

PAL, Region 2 version
Dolan DNA Learning Center
Windfall Digital, London, UK
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Sponsors

The *DNA interactive* project was funded mainly by the Howard Hughes Medical Institute. Additional funding came from the Alfred P. Sloan

Foundation, Channel 4 television and the University of North Carolina, Chapel Hill.

Ordering

The PAL DVD with English commentary may be ordered direct from Windfall Digital, 1 Underwood Row, London N1 7LZ, UK:
www.windfalldigital.com

An NTSC, Region 1 DVD with an American voice-over is also available to educational institutions at a discounted price, directly from the Dolan DNA Learning Center: www.dnai.org

Information on *DNA – The story of the pioneers who changed the world* can be found on the Windfall Films Ltd website: www.windfallfilms.com

Note that a Region 1 DVD may not play on some European DVD players, or may require that you reset the region on your computer's DVD player. Often the region coding can only be changed a limited number of times, after which it is necessary to wipe the computer's hard drive. It is therefore advisable to purchase a DVD with the correct region setting (1 = USA; 2 = Europe).

Resources

The complementary website at the Dolan DNA Learning Center can be found at www.dnai.org. Registration is required to access teachers' resources.



The Elements of Murder: A History of Poison

by John Emsley

Reviewed by Tim Harrison,
University of Bristol, UK

When is a chemistry textbook not a chemistry textbook? The answer to this riddle is *The Elements of Murder: A History of Poison*. Most people would think that a book about the toxicity of the elements arsenic, antimony, mercury, lead and thallium would be fairly heavy going, but this book reads more like a novel than a chemistry text.

The book gives a great deal of information on the history of the use of these materials, the concentrations of toxic metals in the human body and in a variety of foods, and the effects of these elements on the body. However, this book is much more than that. John Emsley's work is full of the interesting snippets of information that would switch on the most disinterested of school students on the last lesson on a sunny Friday afternoon. It is a 'must read' for any chemistry teacher who wants to enthuse and excite his or her students and is not afraid to stray from the more orthodox chemistry curriculum.

Included throughout are many nuggets of information that would

be a delight for school students. For example, in the Middle Ages, antimony was used as a cure for constipation. Swallowing 'perpetual pills' (small balls of antimony) irritated the gut sufficiently to expel its contents. The balls of antimony were recovered from the excrement, washed and reused. As Emsley reports, the balls were passed down through generations! Another and more recent story refers to a common chemical that students are used to handling in school practicals: copper sulphate. The authors relates the story of three Canadian teenage girls who stole some copper sulphate from their school and decided to murder a classmate by adding it to a blue drink. Fortunately, their attempt was unsuccessful, mainly because seven girls (including two of the poisoners!) shared the drink and were treated at their local hospital. The girls were brought to trial in 2003. Another interesting anecdote relates to the authenticity of a batch of fake Scotch whisky. A comparison of levels of trace metals in the fake and the genuine whisky did not provide the necessary evidence. However, a thorough examination of the foil bottle caps gave the game away: the caps on the fake whisky contained over four times as much antimony as those on the genuine article.

Although several of the examples of poisoning may be known to many science teachers, such as mercury poisoning of fishermen's families around Minamata Bay in Japan, or the arsenic content of Napoleon's hair, there are many other interesting stories in *The Elements of Murder*. Included amongst these are the arsenic eaters of the Styrian Alps in Austria: the men ate arsenic trioxide like salt to improve their breathing at high altitudes, and their wives ate it to become more desirably plump and to give them rosy cheeks. In another example, Emsley describes how antimony hit the headlines in the 1990s in

the UK, when it was linked with sudden infant death syndrome (SIDS). It was proposed that the antimony oxide added to foam mattresses in cots as a fire-retardant was being converted to the gas stibine by the fungus *Scopulariopsis brevicaulus*, and that stibine was a major cause of SIDS. This was subsequently proved to be wrong.

Taking a look back in history, Emsley examines the role of these five elements in the madness of Isaac Newton, the strange death of King Charles II, the deaths of Mozart, Beethoven and Handel, and the poisoning of Pope Clement II, as well as the use of thallium by Saddam Hussein. Whole chapters are dedicated to the more famous poisoners in UK history such as Graham Young, Florence Maybrick and George Chapman.

The poisonous nature of some of the other elements in the Periodic Table is also discussed: the final chapter deals briefly, but informatively, with barium, beryllium, cadmium, chromium, copper, nickel, potassium, selenium, sodium, tellurium and tin.

The glossary adds a little more depth to the science behind the poisons, while the bibliography, sorted by element, gives plenty of direction to those who wish to pursue their research further.

The author, John Emsley, spent 20 years as a researcher and lecturer in chemistry before becoming a freelance Science Writer in Residence at Imperial College, London, and then at the University of Cambridge, UK. He won the Science Book prize for his *Consumer's Good Chemical Guide: A Jargon-Free Guide to the Chemicals of Everyday Life* in 1995 and was awarded the German Chemical Society's Writer's Award in 2002.

Other books written or co-written by Emsley include:

- Emsley J (2004) *Vanity, Vitality, and Virility: The Science behind the Products You Love to Buy*.

Oxford, UK: Oxford University Press

- Emsley J (2003) *The Elements* (Oxford Chemistry Guides). Oxford, UK: Oxford University Press
- Emsley J (2000) *The 13th Element: The Sordid Tale of Murder, Fire, and Phosphorus*. New York, NY, USA: John Wiley & Sons
- Emsley J (2000) *The Shocking History of Phosphorus: A Biography of the Devil's Element*. London, UK: Macmillan
- Emsley J (1998) *Molecules at an Exhibition: Portraits of Intriguing Materials in Everyday Life*. Oxford, UK: Oxford University Press
- Emsley J, Fell P (1999) *Was It Something You Ate? Food Intolerance, What Causes It and How to Avoid It*. Oxford, UK: Oxford University Press

Details

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