



EVOLUTION IN ACTION: PATHOGENS

Pathogens that threaten human health are constantly evolving to keep ahead of our defences. But we can now track these changes at the genetic level, even as they are happening. **8**



EDITORIAL

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Season's greetings from *Science in School*!

Midwinter may not be the best time of year to consider moving school science lessons outdoors. But in this issue, we hear from a teacher who has made a great success of the outdoor approach, despite being located within the Arctic Circle (page 42). Another teacher finds scope for exploring chemistry with supermarket produce (page 36). Using button mushrooms, you can demonstrate that purely natural foods contain plenty of identifiable 'chemical' substances – a quality often associated solely with synthetic ingredients.

Our investigation of the natural world continues with a look at something truly down-to-earth: soil. We encourage students and teachers to get their hands dirty in activities to discover the structure and composition of soil (page 29), while learning about the role this plays in the global (and European) problem of soil erosion. Another serious world problem comes under the spotlight in the second article in our evolution series (page 8). This features a remarkable experiment in which bacteria can be seen, in real time, developing resistance to high doses of antibiotics – all captured in dramatic video images.

On the more theoretical side, we consider some striking facts about the rarest of substances: antimatter (page 14). And at the microscopic level, we look at how the blood-brain barrier was first identified, and how understanding this unique structure is leading to new treatments for diseases such as multiple sclerosis (page 18).

Finally, some seasonal entertainment: we bring you the winning entries of our writing contest for young people, whom we asked to tell us about 'the strangest species on Earth' (page 23). They rose splendidly to the challenge, and we hope you enjoy reading these short pieces. And if you are a physics teacher whose class deserves something light-hearted at the end of term, try the tray-balancing game so students can learn about the physics of levers while they play (page 49).

We wish you all a good break, and a happy and healthy New Year. We look forward to seeing what new scientific developments 2018 brings, and to sharing these with you through *Science in School*.

Susan Watt

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