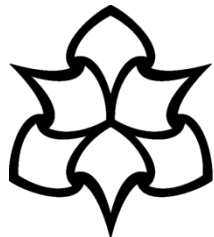


# Mixed Cultures: Developing Skills in Microbiology Undergraduates using Art and Literature

Joanna Verran

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**Manchester  
Metropolitan  
University**



@JoVerran



- Teaching
- Laboratory- based research
- Public engagement
- Education and science communication research outputs
  
- Students skills development
  - Year 1, 2 and project work year 3
  
- Opportunities
- Your own career development

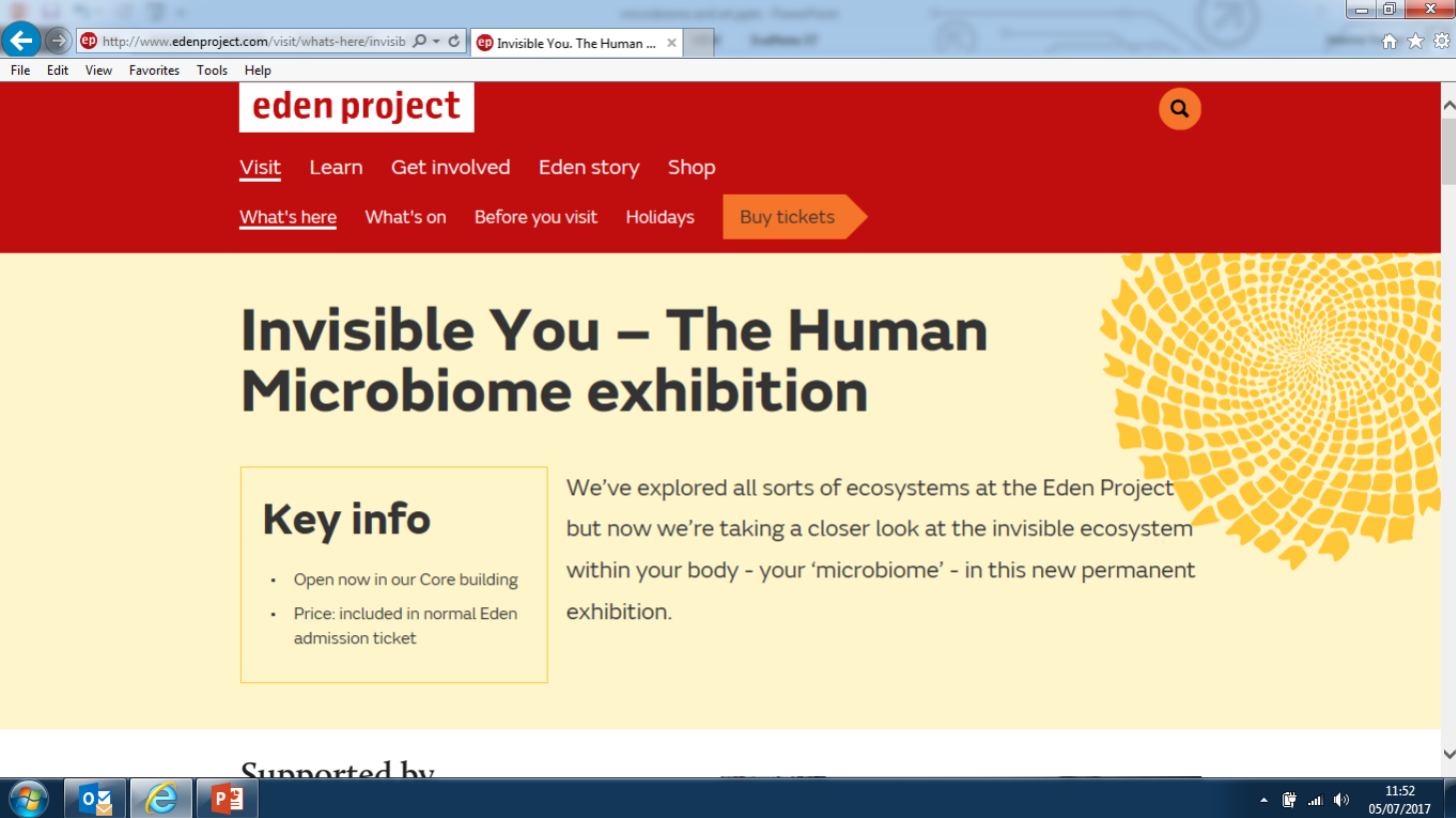
# Microbiology and Art Lecture

Deterioration of art

Beauty of microorganisms

Microorganisms in art

Microbiology and art collaborations



Artists working with microorganisms and microbiologists include:  
Ana Dumitriu, Mell Fisher, Sarah Craske, Heather Barnett

# Assignment

- Consider an output that links microbiology and art
- Discuss your idea with the tutor
- Identify what you will submit
- Negotiate assessment criteria
- Submit your output





**'Aspergillus'**  
by Natasha Khan  
School of Biology, Chemistry & Health Science  
First prizewinner in the 2006  
Microbiology & Art Competition  
Sponsored by Leica Microsystems





Jennie Hutchinson



Rehana Akhtar, Stacey Goulden



Iqra Ali



Siobhan Webb, Anthony  
Clayton, Mark Worrall



Jessica Murray





Exhibitions, calendars,  
publications, postcards, awards

Enthusiasm, inspiration, extension

# Microbiology and Literature

[www2.mmu.ac.uk/engage/what-we-do/bad-bugs-bookclub/](http://www2.mmu.ac.uk/engage/what-we-do/bad-bugs-bookclub/)

The screenshot shows a web browser window displaying the 'Bad bugs bookclub' page. The browser's address bar shows the URL <http://www2.mmu.ac.uk/engage/what-we-do/bad-bi>. The website has a dark header with the text 'Engage: Public Engagement in Science and Engineering'. Below this is a navigation menu with links: 'Who we are', 'What we do', 'Events', 'Outreach', and 'Study with us'. The main content area features a large image of two people, a woman and a man, looking at a screen. Overlaid on the image is the text 'Public Engagement in Science and Engineering • What we do • Bad bugs bookclub' and 'Bad bugs bookclub'. Below the image, there is a sidebar with a 'What we do' section containing links for 'Podcasts', 'Bad bugs bookclub', and 'Scibar'. The main text area describes the club's aim: 'The aim of the Bad Bugs Book Club is to get people interested in science, specifically microbiology, by reading books (novels) in which infectious disease forms some part of the story.' It also mentions that they try to associate books with other activities to widen interest and broaden impact, and that the club comprises both microbiologists and members of the general public.

Engage: Public Engagement in Science and Engineering

Who we are What we do Events Outreach Study with us

Public Engagement in Science and Engineering • What we do • Bad bugs bookclub

## Bad bugs bookclub

**What we do**

- Podcasts
- Bad bugs bookclub**
- Scibar

The aim of the Bad Bugs Book Club is to get people interested in science, specifically microbiology, by reading books (novels) in which infectious disease forms some part of the story.

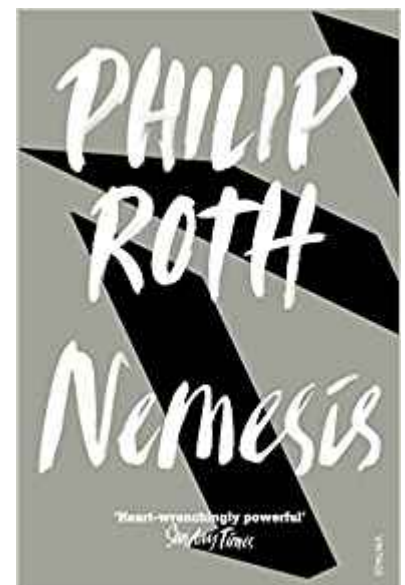
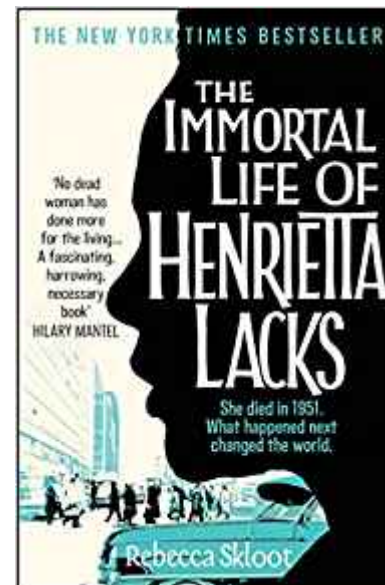
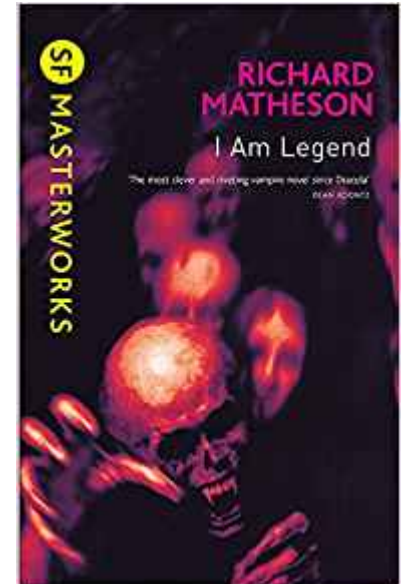
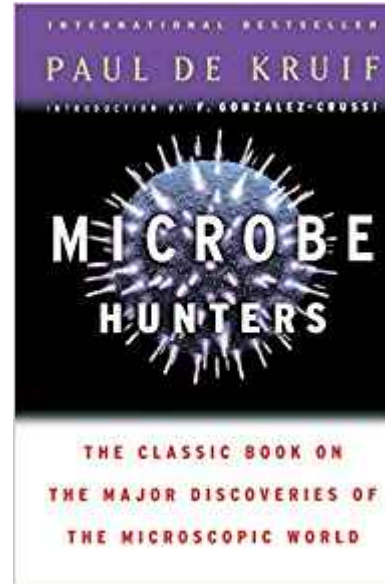
We also try to associate books, with some other activity or event, to widen interest and to broaden impact. Our bookclub comprises both microbiologists and members of the general public. We felt that this would encourage some discussion on the science – accuracy, impact etc – as well as about the book.

More than 50 novels since 2009; reading guides and meeting reports on website



# BMS Bookclub

- Tutorials, year 2
- Formative
- Discursive
- Lots of students
- Learning
- Not all engaged
- Suggestions for re-run





# World AIDS Day

- Community quilt project, tv documentary screening
  - *Dorian* by Will Self
  - student project (AIDS Sutra)
- Launch of SGM HIV booklet
  - *Dracula* by Bram Stoker
- AIDS Quilt/Banner exhibition at Manchester People's History Museum
  - *28 stories of AIDS in Africa* by Stephanie Nolen
- Banner presented to Terrence Higgins Trust, London
- MSI Saturday Science 'the very small world of viruses'
- Graphic novel. *Second Avenue Caper* by Joyce Brabner



# World Malaria Day

- Malaria Migrations, microbiology, and music
- Student art
- WHO research project
- *Calcutta Chromosome* by Amitav Ghosh



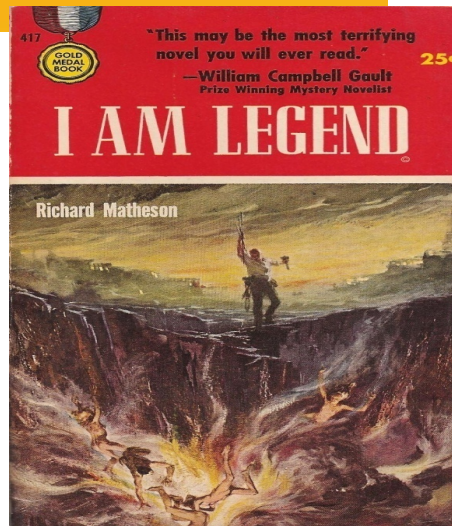
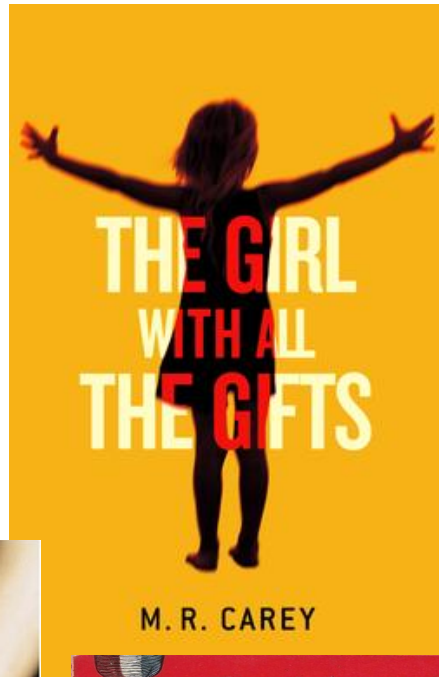
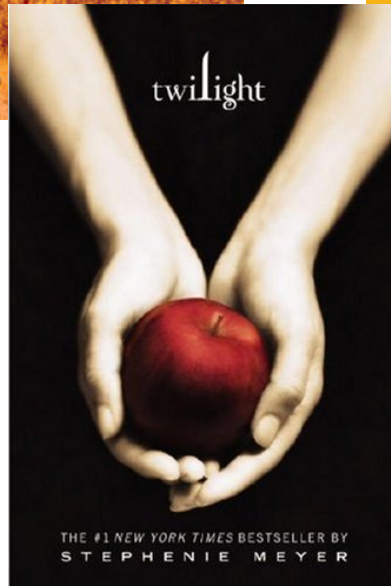
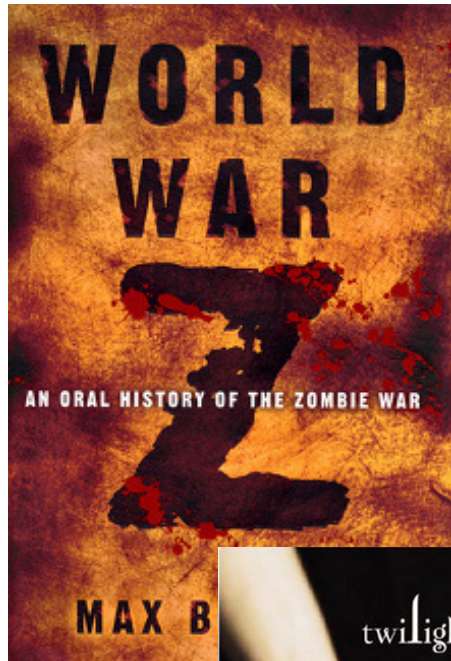




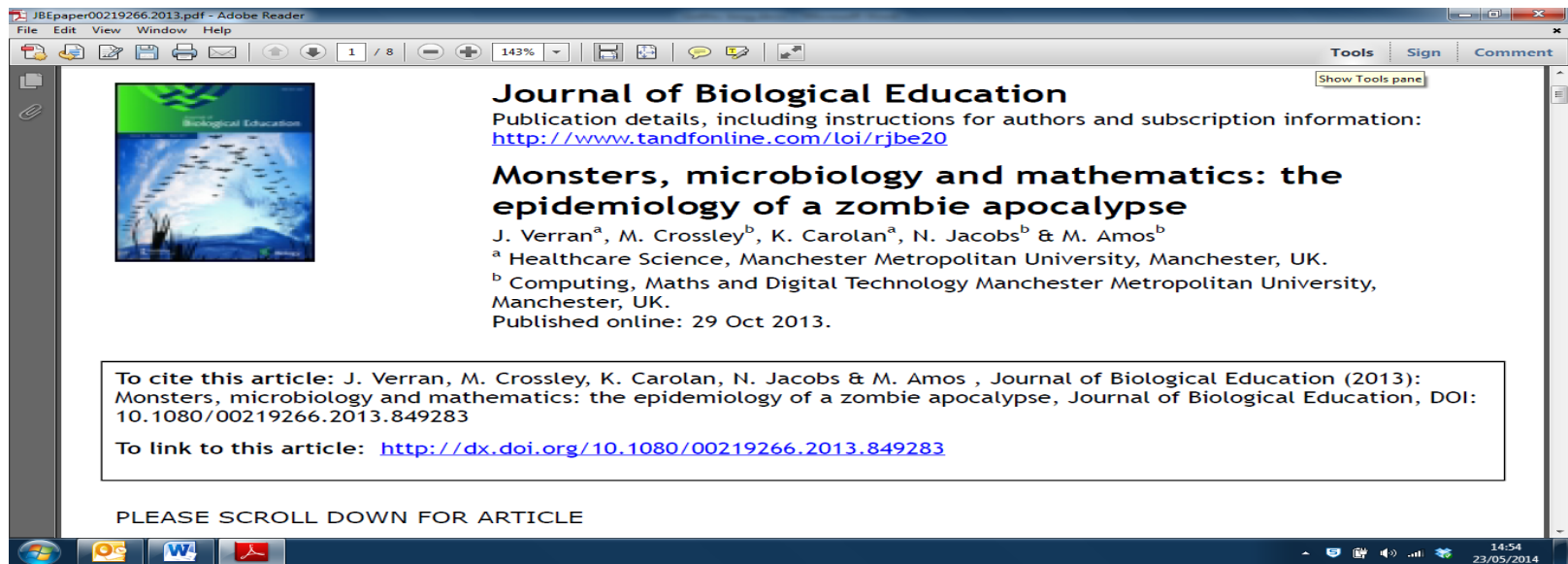
Emily Robertson



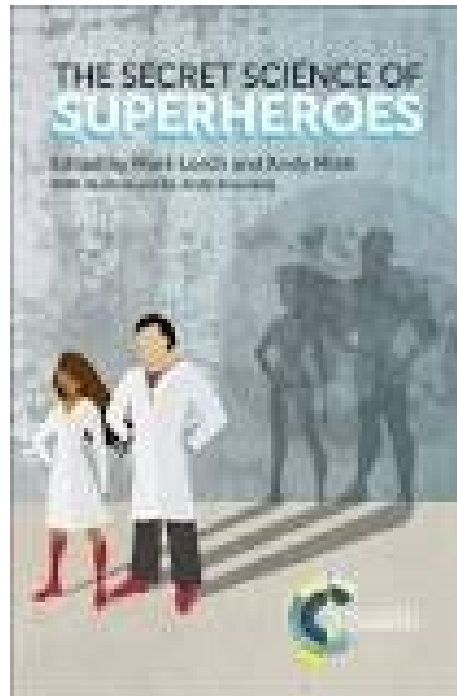
# Zombies, vampires and werewolves



- Typically pandemic
- Compare epidemiology with existing infectious disease
- Many novels, including:
  - Dracula
  - Twilight
  - Warm Bodies
  - The Strain



SimZombie!





## ANOTHER DIMENSION

# Emerging Infectious Literatures and the Zombie Condition

Joanna Verran,<sup>1</sup> Xavier Aldana Reyes<sup>1</sup>

The book club format has enabled expert and nonexpert exploration of infection and epidemiology as encountered in popular literature. This exploration reveals that fiction focusing on apocalyptic disease often uses the zombie as embodiment of infection, as well as an exemplar of current knowledge on emerging disease.

The Bad Bugs Book Club (<https://www2.mmu.ac.uk/engage/what-we-do/bad-bugs-bookclub/>) was established in 2009 (1). This reading group meets every 2 months to discuss works of literary fiction from any genre that features infectious disease. The aim of these meetings is to engage scientists and non-scientists in discussions about

discussions, particularly for books that they have suggested. The meeting leader prepares questions before the meeting to guide discussion and publishes them online on the book club's website after the meeting, but usually conversation does not require prompting. Meeting reports are also posted online, enabling themes to be identified across books and genres, as well as establishing a rich, freely accessible resource that has informed much of the content of this article.

Our findings, based on the reports accessible from the book club's website, show that fiction content in epidemiologic narratives is often influenced by epidemiologic outbreaks, authors absorbing and recasting what have been

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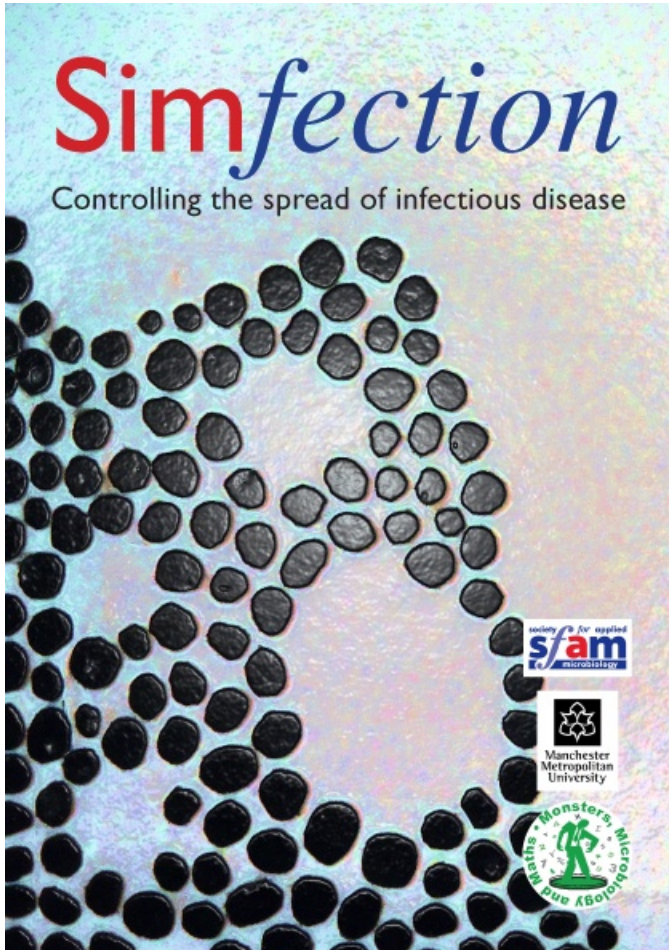
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# Manchester Children's Book Festival



- Two epidemics/books
  - Charlie Higson series
  - *Code Orange* by C.Cooney
- Consider how the two diseases are controlled using Simzombie and Simfection
- Simfection developed as learning resource
- Evaluated as vaccine-hesitancy intervention

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Journal of Biological Education

ISSN: 0021-9266 (Print) 2157-6009 (Online) Journal homepage: <http://www.tandfonline.com/loi/rjbe20>

## SimFection: a digital resource for vaccination education

K. Carolan, J. Verran, M. Amos, M. Crossley, J. Redfern, N. V. Louttit

To cite this article: K. Carolan, J. Verran, M. Amos, M. Crossley, J. Redfern, N. V. Louttit (2018): SimFection: a digital resource for vaccination education, Journal of Biological Education

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PLOS ONE

RESEARCH ARTICLE

## Impact of educational interventions on adolescent attitudes and knowledge regarding vaccination: A pilot study

Kate Carolan<sup>1</sup>, Joanna Verran<sup>2</sup>, Matthew Crossley<sup>1</sup>, James Redfern<sup>2</sup>, Nicola Whitton<sup>3</sup>, Martyn Amos<sup>1\*</sup>

<sup>1</sup> School of Computing, Mathematics and Digital Technology, Manchester Metropolitan University, Manchester, United Kingdom, <sup>2</sup> School of Healthcare Science, Manchester Metropolitan University, Manchester, United Kingdom, <sup>3</sup> Faculty of Education, Manchester Metropolitan University, Manchester, United Kingdom

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Abstract

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ISSN: 0021-9266 (Print) 2157-6009 (Online) Journal homepage: <http://www.tandfonline.com/loi/rjbe20>

## Refreshing the public appetite for 'good bacteria': menus made by microbes

Joanna Verran, James Redfern, Haleh Moravej & Yvonne Adebola

**To cite this article:** Joanna Verran, James Redfern, Haleh Moravej & Yvonne Adebola (2018): Refreshing the public appetite for 'good bacteria': menus made by microbes, Journal of Biological Education, DOI: [10.1080/00219266.2017.1420678](https://doi.org/10.1080/00219266.2017.1420678)

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FEMS Microbiology Letters, 362, 2015, fnv020

doi: 10.1093/femsle/fnv020  
Advance Access Publication Date: 14 February 2015  
Research Letter

OXFORD FEMS JOURNALS investing in science

RESEARCH LETTER – Professional Development

**Developing microbiological learning materials for schools: best practice**

James Redfern<sup>1</sup>, Daniel Burdass<sup>2</sup> and Joanna Verran<sup>1,\*</sup>

<sup>1</sup>School of Research, Enterprise and Innovation, Manchester Metropolitan University, Chester Street, Manchester, M1 5GD, UK and <sup>2</sup>Society for General Microbiology, Charles Darwin House, 12 Roger Street, WC 1N 2JU, UK

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Journal of Biological Education

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<http://www.tandfonline.com/loi/rjbe20>

**Transforming a school learning exercise into a public engagement event: 'The Good, the Bad and The Algae'**

James Redfern<sup>a</sup>, Daniel Burdass<sup>b</sup> & Joanna Verran<sup>a</sup>

<sup>a</sup> School of Healthcare Science, Manchester Metropolitan University, UK.  
<sup>b</sup> Society for General Microbiology, Reading, UK.  
Published online: 03 Jun 2013.

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Forum: Science & Society



## Practical microbiology in schools: a survey of UK teachers

James Redfern<sup>1</sup>, Daniel Burdass<sup>2</sup>, and Joanna Verran<sup>1</sup>

<sup>1</sup>School of Healthcare Science, Manchester Metropolitan University, Manchester, UK  
<sup>2</sup>Society for General Microbiology, London, UK

**A survey of secondary school teachers investigated practical microbiology in the classroom. The results were heartening (practical microbiology was common), but concerns were expressed regarding equipment, time, cost, and expertise. Microbiologists should engage more with school education to support teachers and maintain the health of microbiology for future generations.**

Microbiology has a century-long tradition of commitment to science education [1], relying heavily on practical activity in its teaching. Since the introduction of the National Curriculum in the UK in 1988, the content of microbiology in schools has undergone some changes and additions. For example, the Education Act 1996 highlighted the need for education on HIV/AIDS and sexually transmitted infection, with a more recent push to include PCR. Despite this, practical activity in schools is in decline for a variety of reasons (cost, time, curriculum issues, class size) [2]. Some have even suggested that microbiology as a subject is undergoing a change in direction, from the 'classical' techniques to a more molecular focus, and is potentially losing

(SGM) ( $n = 96$ ). Of the respondents, 82% taught students aged 14–16 years, 77% taught 11–14-year-olds, and 42% taught only students older than 16 years. The sample was not restricted to any particular science specialism, and was likely to mainly comprise motivated teachers owing to the data collection routes. The survey focused on three areas:

- Are teachers carrying out practical microbiology activities in schools?
- What are the perceived limitations in delivering practical microbiology?
- To what extent is practical activity valued in teaching microbiology?

It was hoped that results would indicate how practicing microbiologists could help to ensure that microbiology in schools remained relevant, stimulating, and indeed present at all. The majority of respondents (77%) considered science practical activity in the classroom extremely valuable and 67% of respondents found practical activity valuable in the teaching of microbiology. Practical microbiology was utilised by 65.7% of teachers. The respondents provided

# Mixed Cultures: developing skills in microbiology undergraduates using art and literature

- For students:
- Important
- Useful
- Stimulating
- Educational
- Challenging
- Social
- For staff:
- Connections
- Collaborations
- Opportunities
- Outputs
- Rewarding
- Value
- Fun!



**MICROBIOLOGY**  
**SOCIETY**

- Thanks!
  - Colleagues
  - Collaborators
  - Students
  - Sponsors
- Microbiology Society 75<sup>th</sup>
- Bookclub 10<sup>th</sup>
- [j.verran@mmu.ac.uk](mailto:j.verran@mmu.ac.uk)

