

Standing up for Science 2

The nuts and bolts

This guide is for... early career scientists, engineers, medics and others who want to promote good science and fight misinformation.

Introduction

"Did you see that article?"

"Well did you see the guy they interviewed on TV? I don't know how someone can get so much wrong in a few sentences."

How many conversations have you had like this about a science story? How often have you done something about it?

It is easy to get frustrated when you see science being misrepresented and even easier to do nothing about it. But when miracle cures and dodgy science claims are publicised, it is vital that scientists and engineers speak publicly too. So, as early career researchers, what can you do?

The Voice of Young Science (VoYS) programme, set up by Sense About Science* helps early career researchers who want to stand up for science in public – from hunting down the evidence behind product claims to correcting misinformation in all kinds of media.

We support each other by sharing our experiences through the VoYS online forum. In this guide we've captured some of our experiences and the different ways you can stand up for science.

No matter who you are, what your background is or how much experience you have, there are always things you can do to raise the standard of science in public.



Alice Tuff is the VoYS Coordinator and Development Officer for Sense About Science.



Maria Cruz has a PhD in astrophysics and is a member of VoYS. She is now working for Science magazine.

*Sense About Science is a charity to promote good science and evidence for the public.

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Further information: full quotes, profiles of interviewees and information about VoYS projects and workshops can be found at www.senseaboutscience.org/VoYS.

Responding to articles in the press



"I always read the letters page in *New Scientist* and wish we had letters like it. Writing a letter usually gets you more column inches than giving a reporter a quote – and the letters page is probably the best-read page in any publication. Also being the voice of logic in the *Madshire Herald* is a great way to raise the profile of your institution." **Chris Benfield, Yorkshire Post**

Andrew Russell:

"I wrote to *The Guardian* in response to an interview with Nigel Lawson 'on the overblown fears of climate change'. My letter was published and lots of people got in touch with me afterwards to support my point. It is important to me to correct bad climate science and engage with people who are sceptical about climate change – merely dismissing them as having nothing worth saying allows them to take the moral high ground."



Andrew is a researcher in weather and climate.

TIPS from Tom Whipple, *The Times*

The Times receives an average of 600 letters a day – of which only 18-20 will get published. Improve your chances of publication by:

1. Being brief – never write more than 150 words and don't send attachments.
2. Sending your letter the same day the article appeared or the moment will pass.
3. Reading the letters page and being familiar with the personality of the paper.
4. Being entertaining – people often make the same argument so if you have specialist knowledge or an interesting angle concentrate on that.
5. Showing your credentials in your sign off – check with your institution before you include its name.
6. Don't be disheartened – remember the odds and keep trying.

Maria Cruz:

"Most articles now appear in the newspaper's online version too. These often have comment boxes where you can put your views across. You may not get the same space or profile for your correction or criticism of misinformation, but getting it out there increases the possibility of someone in the future looking up the issue and getting your points."



"Sometimes a letter will lead to being contacted by journalists and others following up the story. I do that, especially when I'm trying to find someone in Devon to talk about radiation at short notice." **Leonor Sierra, Sense About Science.**

Further information: a list of addresses and emails for letters to national newspapers can be found at www.senseaboutscience.org/voys.

Writing to MPs and attending public meetings

Frances Downey on writing a letter to her MP:

"My MP signed an Early Day Motion* supporting NHS funding for homeopathic hospitals. I wrote to her explaining the lack of evidence for homeopathy and how most of her constituents rely on evidence-based medicine. I encouraged friends to do the same. In her reply she said that she signed it because some of her constituents had written to her about the benefits of homeopathy. It is important to make MPs aware that we notice and care if their statements lack evidence, and that early career researchers are their constituents too."



Frances is doing a PhD in Raman spectroscopy.

*Early Day Motions are formal motions submitted for debate in the House of Commons. However, few are actually debated. Instead, they are used by MPs to draw attention to events and causes.

TIPS for writing to your MP

1. You can contact any MP by letter or email, including the Prime Minister.
2. Find out about your MP and their views at www.theyworkforyou.com or check *Hansard*, the daily report of parliamentary debates: www.parliament.uk/publications/hansard.cfm.
3. Most of the time you will get a boring letter of reply from your MP. You might consider copying your letter to the local newspaper (you should put this on the letter sent to the MP so they are aware), which does help to get a response from the MP and might end up getting further publicity for your concerns.



"A scientist needs to have the courage and integrity to stand up for science even if that means taking an unpopular stand. In debates be prepared to wade into controversy and do not be afraid to challenge senior figures if you think they are not right."

Michael Baum, Professor Emeritus of Surgery and visiting Professor of Medical Humanities at UCL.



Johnny is a researcher in systems biology.

Johnny Kelsey on attending a public meeting:

"I attended a meeting held by Barnet Primary Care Trust on funding homeopathic treatments as I wanted to make sure that the case for evidence-based medicine was made.

I explained that in randomised, double-blind trials homeopathy has been shown only to have a placebo effect. I also challenged false claims made by some others in the audience, asking them to provide the evidence, which they couldn't do."

Further information: anyone can attend meetings of their county council (details can be found on their website) including meetings of the full council, the cabinet and its committees. Primary Care Trusts and other organisations occasionally hold public meetings.

Using the local media



"Local papers are hungry for stories but you need to find a relevant angle, such as research at a local university or on a local issue. For instance if you are speaking at a Café Scientifique event see whether the local paper can cover it. Your message can then reach thousands not just the people who attend."

Simon Singh, author and science journalist.

Nicola Powles-Glover on writing for *The Oxford Times* monthly column **Science Matters:**

"I had to find a subject which was local, interesting to the general public and related to my scientific research. It was hard to explain concepts without 'dumbing down' the science, especially when '150 words' means '150 words', and that's before the sub editors cut it!"

Talking about science was the fun part. I looked at my research from a real world situation and asked myself questions scientists rarely ask – why is this important to everybody? Why does it matter?"



Nicola is a research scientist in early development.



Alex Waddington, Media Relations Officer at the University of Manchester, on how a press officer can help:

"Many press officers are former journalists and are here to help you - so don't hesitate to get in touch. We can help you prepare for interviews, write press releases, distribute them to journalists, handle follow up interest and facilitate media training. We can also help when negative stories come along, giving you professional advice on handling difficult issues."

Tom Wells on being interviewed for radio:

"A radio journalist wanted to speak to a scientist surrounded by 'sciencey' noises for a kids' programme on the science of sound. I was initially hesitant but felt it was an opportunity to speak enthusiastically about a career in research to a younger audience."

I met the journalist before the interview which gave him a chance to understand my work, and me the opportunity to check the language I was going to be using – we even arranged a few sound bites! It was a great experience."



Tom is doing a PhD in biodegradable plastics and sustainable chemistry.

For tips on what to do when a journalist calls, see *Standing up for Science - a guide to the media* available to download at www.senseaboutscience.org/VoYS

Further information: Café Scientifique, www.cafescientifique.org, is a national scheme for debating science issues.

Writing articles



"A key part of the research councils' mission is to encourage dialogue between scientists and the public. At its simplest, our research is paid for by the taxpayer and we expect our scientists to develop and use their communication skills as part of their work." **Simon Wilde, Public Affairs and External Communications Manager, Medical Research Council**

Anne Corbett on writing for *The Times Body & Soul* weekend supplement:

"After winning the MRC/Guardian science writing competition I got in touch with a journalist from *The Times* who I'd met at a VoYS media workshop. She organised a fortnight's work experience at *The Times* where I learned the ins and outs of newspaper journalism and gained some fantastic contacts. I still write freelance for them and for Nature Network London. It's a great opportunity to talk about science that matters and to engage people.

My advice is simply to put yourself out there. Look around for ideas, enter competitions and don't be afraid to approach editors. It helps to develop quite a thick skin too – most ideas don't make it, and editors can be particularly ruthless!"



Anne is doing a PhD in molecular microbiology and infection.

TIPS How to pitch and write articles from Richard Van Noorden, *Chemistry World*

Pitching:

1. What is new about your feature? Why would the publication's audience want to read it? Who is your target audience – scientists or the general public?
2. Why should you write this feature? Magazines and newspapers often prefer journalists to do the writing. Do you have inside contacts or an angle no-one else has covered? Can you show good writing skills?
3. Be short and snappy – put together the idea in two sentences, an outline of the article, who you will be talking to and 200 words of pre-prepared writing.
4. Don't give up! If your idea is interesting, relevant, and well-expressed you will be remembered. Make sure you get feedback and next time you may succeed.

Further information: where can I get started? Most universities have a student newspaper or magazine run by the student union. Professional and learned societies have member publications and newsletters. Check their websites for the editor's details. But if it's a problem in public debate or a passion you want to share, think about how to reach some of that public – there are thousands more publications than the national newspapers!

Writing:

1. Plan what you're going to write before you begin.
2. Most features have a 'soft' introduction: a hook or anecdote to draw the reader in, followed by a carefully constructed order of points. A spider diagram is a useful way to get your points in order.
3. Get stuck in – it is easier to edit something that you've written badly than to stare at a blank page.
4. Mix quotes and explanations to keep the reader going. Great quotes and pictures are essential for an interesting feature.

Blogs and podcasts



"Science communication and public engagement now relies heavily on new media: interactive websites with podcasts and blogs and forums, social networking sites such as Facebook and virtual worlds like Second Life."

Lucy Harper, Society for Applied Microbiology & Lucy Goodchild, Society for General Microbiology.

Frank Swain on how to set up a blog:

"I set up SciencePunk.com in 2005 to voice my frustration with the way pseudoscience was reported in the media. It clocked over two million hits in the first year and I have tried to counteract some of the misleading claims I have come across.

There are no rules to writing online, but the best way to build up a readership is to keep articles short and interesting and write often.

Any number of sites will give you free web space – Blogger and Wordpress are two good examples. If you want your own site, you'll need to register the name (£1 – £10) and purchase some space on a host (£5 – £20 per year)."



Frank is the creator
& editor of
www.sciencepunk.com



"The Biochemical Society has recently started a science policy blog 'The Sciblog' which not only ensures we are keeping our members up to date with the latest developments, but also helps us to see upcoming issues."

Rebecca Smith, Biochemical Society

Debbie Wake on setting up Dr Pod:

"I set up Dr Pod's Healthcast to present medical research and news to the public without the usual media hype. I didn't tell my peers about it but they found out through reviews in the *BMJ* and national newspapers. They were excited about Dr Pod and some even contributed to it. Following its success, I was invited to write a regular column in *The Scotsman*. Both are great vehicles to communicating good science to the public.

People have a short attention span so keep the items concise, interesting and even humorous! A single voice becomes dull so find a co-host or intersperse with interviews, guest items or music. Promote your podcast by making sure you are listed on search engines and podcast directories including iTunes (all free), and don't underestimate word of mouth – tell people!"



Debbie is a hospital based medical doctor and scientific researcher in Endocrinology, Diabetes and General medicine.



Lucy Harper and Lucy Goodchild
co-host Micropod, a podcast
about Microbiology.

Lucy Harper and Lucy Goodchild on putting together a podcast:

"We meet once a month to record the bulk of each episode in a morning and then edit the podcast in the afternoon. We choose topics that fit in with the time of year or recent news headlines. We used to script the entire episode, but recently we've been using an outline to make it sound more natural. We started out with a Dictaphone and free editing software but since then we've progressed to using professional microphones."

TIPS Being interviewed for podcast/radio from Tom Sheldon, VoYS

Forget bending the ears of your family and friends about string theory. This is your chance to talk to hundreds or thousands of interested people about something you know better than almost all of them and to correct anything misleading.

1. Stick to what you know. But remember, it's ok to speculate intelligently and cautiously. Don't be afraid to say you don't know.
2. Write down three key points and build your argument around these. Don't feel you have to answer the questions exactly – make the points you want to.
3. Try to have examples or analogies and keep them jargon free.
4. Show your enthusiasm. If you are not excited why should the listener be?
5. You WILL think afterwards that you wished you said something different or better. Accept it – everyone feels like that and it will get better the more you do it.

Further information: other blogs and online media to look out for include: The Guardian blogs and podcast www.guardian.co.uk/science/blog, The Badscience portal, www.badscienceblogs.net, Improbable Science www.dcsience.net, The Naked Scientists podcast www.thenakedscientists.com, SEED magazine science blogs www.scienceblogs.com, Dr Pod www.drpod.co.uk, The James Randi Educational Foundation www.randi.org, Quackometer www.quackometer.net.

Evidence hunting: investigating product claims



"In October 2007 VoYS members fed up with misleading product claims decided to contact product manufacturers to hunt for the evidence behind them. In every case the companies were unable to provide any and most were shocked to be questioned. VoYS released their conversations in the dossier There Goes the Science Bit... which was reported across the world. It also contained our statement of intent to take responsibility for questioning pseudoscientific claims and an invitation for others to join us." **Alice Tuff, VoYS Co ordinator, Sense About Science.**

Harriet Ball:

"Nestle Ski yoghurts were marketed with claims that they can 'optimise the release of energy from our diet'. I contacted Nestle Ski and asked for the evidence they had to support this. They were unable to give me any. It made me realise the extent to which marketing uses science-sounding language to sell their products. After *There Goes the Science Bit...* came out it was great to see people coming around to the opinion that it is unacceptable to make claims without good evidence to back them up."



Harriet is a researcher in psychiatry and genetics.

TIPS Calling companies from Jennifer Lardge, VoYS

1. Read the company's website and look up the meaning (scientific or otherwise) of any words used in the marketing that you don't understand.
2. Prepare a list of questions as these types of conversations often get sidetracked.
3. Ask to speak to someone who is able to explain the science; it's not fair to expect a customer services representative to know about gut bacteria or radiation.
4. If you don't understand ask for further explanation. Keep asking and re-posing the question if you don't feel you're getting an answer. Don't be patronising or rude.
5. Find out who you're speaking to and take good notes, including a time and date. If they offer to send information agree when and get a direct phone number so you can chase them up!

Further information: the easiest way to investigate the evidence behind a product claim is to call the company. You can record the calls using a Dictaphone to make sure your information is accurate. If you decide to release any of the information be careful about the legalities. You can contact the VoYS network for more information.

Jennifer Lardge:

"After my experience with *There Goes the Science Bit...* when a friend told me that Marks & Spencer had started to sell 'MRSA resistant' pyjamas, I decided to look into the claims and find out whether there was any evidence behind them. When I got through to the right person I was told a trial was underway but not yet complete. I am keeping an eye out for the trial results and will keep pursuing it – many people going into hospital are concerned about MRSA but they deserve to know the evidence behind these claims."



Jennifer is doing a PhD in Nanotechnology.



Alice is the VoYS Co-ordinator and development officer for Sense About Science.

Alice Tuff on reporting misleading product claims:

"There are regulatory agencies that can report misleading product claims to, such as the Advertising Standards Authority and the Office of Fair Trading but their remits tend to be much narrower than most people realise, the number of cases they take up is small and the timeframe long. With websites there are also grey areas of responsibility because it depends on where they are registered.

By questioning the companies directly we can make them aware that people out there care about the evidence."



"Remember with many misleading claims, lazy statements, exaggerated information and hyped remedies, they do it because nobody is on their case or telling them different." **Maria Cruz, VoYS.**

To report a misleading broadcast or print advert you can contact the Advertising Standards Authority www.asa.org.uk.

For misleading claims on websites, shop window displays, or in-store advertising contact your local trading standards authority www.tradingstandards.gov.uk.

Working with Sense About Science



"Sense About Science is concerned with promoting good science and evidence for public benefit, using the help and expertise of over 3,000 scientists. Our early career researchers are a huge part of this, contributing to publications on misinformation and controversial topics and responding to requests from community groups, journalists, TV and radio. And they've pioneered many myth-busting activities."

Leonor Sierra, Scientific Liaison, Sense About Science.

Daniella Muallem on being involved in the launch of "I've got nothing to lose by trying it" – a guide to weighing up claims about cures and treatments:

"I was interviewed for BBC radio and TV about my personal experiences with alternative health, to coincide with Sense About Science's release of a guide on how to evaluate medical claims about cures and treatments in the media and online. Although I was nervous at first, the media rarely reports on the much more common but 'boring' stories where alternative remedies don't work, so this was a great opportunity for me to give the other side of the story. Patients in desperate situations are the most vulnerable to exploitation and I felt it was important to help highlight a guide that will give them the ability to make informed decisions." *You can watch Daniella's interview at <http://news.bbc.co.uk/1/hi/health/7718997.stm>.*



Daniella is a post-doctoral researcher in biophysics.



Ian is a researcher in materials engineering.

Ian Mabbett on contributing to Science for Celebrities:

"My colleagues and I are often frustrated by the misrepresentation of science in the public eye. I wrote to Channel 4 to complain about claims made in the programme 'How toxic are you?' Sense About Science were already responding to the claims made by the presenter Sarah Beeny as part of their *Science for Celebrities* publication. I was quoted in it and this was picked up by national, regional, and international press. I hope in future programme makers will check their facts more thoroughly if only to avoid further embarrassment."



"VoYS is a great way to learn about the media in preparation for dealing with them later on in our careers and also to make us into more responsible scientists. Relevance to the public is important, and we should take time to relate our findings in a fair and understandable way."

Harriet Ball, VoYS

Juliet Stevens on being involved with *Making Sense of Testing*:

"It is easy to see how misleading reports about science damage attitudes towards the medical profession, and cultivate the use of unproven and potentially dangerous alternatives.

I wanted to address this so I decided to do an internship with Sense About Science. They were putting together *Making Sense of Testing*, which answers misconceptions about health testing using insights from experts.

It was great to see the impact when it was quoted across the media. It is now being used by patient groups, midwives, GPs and parliamentarians as a tool to help people to navigate through media stories on DIY health tests."



Juliet is a clinical medicine student.

Thank you

Maria and Alice would like to thank all the contributors and the following VoYS members: Harriet Ball, Rosemary Coates, Anne Corbett, Frances Downey, Elizabeth Gaskell, Johnny Kelsey, Jennifer Lardge, Ian Mabbett, Suzanne MacKenzie, Nicola Powles-Glover, Fiona Randell, Andrew Russell, Simon Shears, Tom Sheldon, Juliet Stevens, Frank Swain, Richard Van Noorden, Debbie Wake, Thomas Wells, Sarah Whitehead and Robin Wilkinson.

Join VoYS!

The VoYS network is constantly starting new projects and campaigns and there's plenty to do.

When you've worked with us you can access the VoYS forum, where you will find further examples of others' experiences (we could only fit a handful in this guide), people who can help or feed back on ideas and articles, and a group of friends dedicated to standing up for science in public. We also send alerts to VoYS members about Sense About Science projects, enquiries you might be able to help with and upcoming events.

Please contact Alice on **020 7478 4380** / **voys@senseaboutscience.org** or fill in the web form at: **www.senseaboutscience.org/support**

VoYS also runs Standing up for Science Media Workshops, check out www.senseaboutscience.org/voys for details (or let Alice know that you're interested!).

Voice of Young Science publications

All are available as free downloads from
www.senseaboutscience.org/voys



Standing up for Science:

A guide to the media for early career scientists



There Goes the Science Bit...:

A guide to standing up for science

Sense About Science publications

All are available as free downloads from www.senseaboutscience.org

Making Sense of Chemical Stories: A briefing document for the lifestyle sector on misconceptions about chemicals

Making Sense of the Weather and Climate: An introduction to forecasts and predictions of weather events and climate change

Making Sense of Testing: A guide to why scans and health tests for well people aren't always a good idea

Making Sense of Radiation: A guide to radiation and its health effects

"I don't know what to believe": Making sense of science stories

"I've got nothing to lose by trying it": A guide to weighing up claims about cures and treatments

Peer Review and the Acceptance of New Scientific Ideas

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