



It's that time of the year when Sense About Science reviews what celebrities have said about science and medicine, from detox and special diets to chemicals, MMR and radiation. This year the 'celebs' file at Sense About Science was still looking rather full, but it does also contain some examples of sensible points and our call log shows that there have also been more requests for help to consult scientists and check facts. So we were interested to see who still hadn't got the message. The review notes some of the successes, responds to new mistakes and reiterates the message that help is only a phone call away.

Compiled by Leonor Sierra, Sense About Science, with help from volunteers Julia Wilson and Oliver Fenwick. Publication date: 27th December 2008.

Background

This is the third year of Sense About Science's celebrity audit. At the end of 2006, in a leaflet called *Sense about... Science for Celebrities*, scientists told celebrities: "before making scientific claims, check your facts – all it takes is a phone call." It provided a phone number for celebrities to call so that Sense About Science could connect them with the scientists willing to offer help.

Over 2007 we received clippings from scientists and members of the public about celebrity claims. In December 2007, we reviewed progress in Chemistry, Physics, Earth Science, Nutrition, Medicine and Recreation. We found that beauty and health media appeared to be much more questioning of scientific and medical claims. We noted two extremes: some people in the public eye were committed to promoting good science but others openly promoted pseudoscience.

*Science for Celebrities*¹ are some of Sense About Science's most popular publications. Copies have been distributed to celebrity haunts and promoted to management agencies and publishers and have been used in science briefings to beauty and lifestyle publications. The leaflets are repeatedly requested and downloaded from our website and have been reported on (and in some cases emulated) worldwide.

¹ www.senseaboutscience.org.uk/index.php/site/project/132/

Celebrities and Science

Review 2008

General Observations

- **UK celebrities are outperforming their international counterparts.** This year we received fewer examples of UK celebrities getting the science wrong! For the first time we've contrasted UK celebrities with their international counterparts.
- **Access to good information for UK celebrities continues.** Celebrities seem to be seeking out the science and showing more self-consciousness about the scientific and medical claims they make. Sense About Science receives more requests for help, research institutes are getting requests for visits and UK medical charities, patient groups and scientific institutions are doing well at briefing their famous ambassadors. Lifestyle writers are questioning rather than simply reporting quasi-scientific claims by the rich and famous.
- **The subjects that are coming up have changed.** In the past two audits, comments about products or food being 'chemical free' were the most common misconceptions made but it seems that chemicals are now better understood. However, we did find lots of references to the effectiveness of "detox" products. Another new topic this year is genetic testing. Many medics and scientists have been really disappointed that international celebrities have resurrected inaccurate claims about the MMR vaccine.
- **Political celebrities?** We are never quite sure who we should categorise as a celebrity;

should we include politicians? We have decided to include an example where politicians joined a celebrity's campaign, as the US presidential candidates did. By contrast, the UK's political leaders largely restricted their celebrity pursuits to comments on "Strictly Come Dancing"...

Subjects Covered

- **Medicine and Health:** a mixed bag this year with some celebs doing great work for their cause (Carrie Grant, Amanda Peet) whilst others have attended 'spit' parties (Ivanka Trump).
- **Research:** a subject not normally covered by celebrities, so the record is mostly good, despite the efforts of a vice-presidential candidate.
- **Psychiatry:** it's a difficult subject but that hasn't stopped Tom Cruise wading in.
- **Chemicals and Detox:** overall progress has been made with the one notable exception being detox, which remains a popular subject for celebrities.
- **Nutrition and Food Production:** some good effort made but not all has been successful. Lifestyle guru Carole Caplin scores a hat trick being mentioned in the celebrity audit for the third year running.
- **Mathematics:** avoided by many but not by Mariah Carey who borrows from Einstein, with mixed results.

MEDICINE AND HEALTH

This has been a large growth area for comments this year. On the whole, UK celebrities have done pretty well, exemplified by **Carrie Grant**, celebrity vocal coach, raising the profile of Crohn's Disease without abandoning the science:

“There are so many therapies available [for Crohn's Disease] but none of them are going to cure you.”

On the difficult issue of the placebo effect, **Suzi Walker**, spoke out to raise awareness about ME and how being “desperate for a cure” led her to spend thousands of pounds on “treatments that were useless”:

“Sometimes I was convinced I felt better, but that was just the placebo effect because weeks later my symptoms still hadn't improved.”

The writer Jilly Cooper also had a stab at explaining why alternative treatments might work: **“if you believe in them, then they work”**.

Juliet Stevens, medical student:

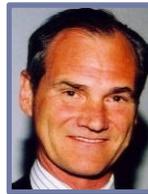
*“What Jilly Cooper is referring to is the placebo effect - a noticed improvement after treatment - which is not due to the content of the treatment itself, but rather to the **experience** of taking a treatment one expects to work. This is a perfect example of how our thoughts and beliefs can have a real impact on physical symptoms. However, the benefits of placebo are rarely permanent, as Suzi Walker has clearly explained above. Her explanation's hard to improve on!”*



CANCER

Cancer charities, amongst others, are doing a good job of getting across what does or doesn't cause cancer. However in an interview this year, **Kelly Osbourne**, talking about her mother's view on cancer as well as her own, said:

“Because of her history of colon cancer she is absolutely convinced the Pill caused the disease. I don't have a microwave in my house for the same reason”



Prof John Guillebaud, family planning and reproductive health, UCL:

“Research has shown there is a link between the pill and colon cancer – but it's good news not bad! The pill REDUCES the risk by more than half. But since the protection is not total, some people who take the pill may still get this cancer. Sharon Osbourne must have been, unfortunately, one of the women who despite the pill still get it.”



Dr Paddy Regan, physicist, University of Surrey:

“Microwave ovens produce low frequency electromagnetic waves, which cause the water molecules in the food to vibrate, heating the food. Although the use of microwave ovens can alter the nutritional value of some foods if the food is overcooked, when used correctly 'cooking in a microwave is not dangerous and won't cause cancer' (as stated by Cancer Research UK).”

HEALTH TESTING

We have seen a rise in the popularity of genetic testing, and DIY health testing in general this year². But the Americans seem to be taking it one step further... At a celebrity 'spit party', hosted by 23andMe, a company co-founded by **Anne Wojcicki**, wife of Sergey Brin (one of the Google founders) \$400 genetic tests were offered that claimed to give information on 95 genetic markers, from hair colour, to propensity to back pain, obesity or MS. Though they warn that some genetic markers have **“high-quality but limited scientific evidence”** they do add that these

² See our guide *Making Sense of Testing* on www.senseaboutscience.org.uk/index.php/site/project/232

markers “**may – if confirmed – affect your odds of having or developing a trait, condition or disease**”. The 23andMe website says “**it’s fun to learn about your own genome**”.



Mike Hallworth, clinical scientist

“Genetic testing is not fun if it makes you think you’re likely to develop a devastating disease or gives you false reassurance. Very often, the evidence

linking genetics to individual outcomes simply isn’t good enough yet. And ‘high quality but limited scientific evidence’ is a bit like ‘a definite maybe’ – a contradiction in terms!”

One of the people present at the ‘spit’ party was **Ivanka Trump** who, after having her DNA tested, said: “**I have a very low chance of becoming obese. That makes me exceedingly happy.**”



Claire Haworth, geneticist, King’s College London

“Ivanka is right that genes are important for obesity; however, the DNA test that 23andMe offer only

looks at one particular gene associated with obesity risk. There are some other genes we already know about that contribute towards obesity and there might be even more we don’t know about yet. Also, it’s not all in the genes – our lifestyle is equally important, and so is the interplay between genes and environments.”

MMR AND AUTISM

Staying Stateside, this year has seen a resurrection of claims about vaccines being the cause of autism. Andrew Wakefield, the campaigning doctor whose medical credibility was compromised by the lack of evidence for his theory that MMR was linked to autism, has attracted celebrity support from couple **Jenny McCarthy** and **Jim Carrey**. Jenny McCarthy has spoken out about the rise in autism, but appears to confuse association with causation: “**Isn’t it ironic in 1983 there were**

10 shots and now there’s 36 and the rise of autism has happened in the same time.”



Prof Adam Finn, Paediatrician, University of Bristol

“Ms McCarthy, it can appear that two things are linked when in actuality they are not. A lot of things have changed between 1983 and now - why blame vaccines and not, say, the rise in popularity of pizza amongst children?”

Jenny McCarthy went on to say: “**Parents’ anecdotal information IS scientific information.**”

Prof Adam Finn: “Yes, parents’ anecdotal information is indeed scientific information – but it is only useful for generating theories, not for proving them.”

On the campaign trail, both Obama and McCain responded to the stories about vaccines by similarly highlighting an increase in autism:

Barack Obama: “**We’ve seen just a skyrocketing autism rate.**”

John McCain: “**It’s indisputable that (autism) is on the rise among children, the question is what’s causing it.**”



Dr Michael Fitzpatrick, GP

“The presidential candidates are correct in that there is an apparent increase in the number of cases of autism. However, authoritative studies confirm that the apparent rise is attributable to increased public and professional awareness of the condition and to widening definitions of autistic spectrum disorders.”

They have both also linked the MMR vaccine with autism:

Barack Obama: “**Some people are suspicious that it’s connected to the vaccines. This person included. The science**

right now is inconclusive, but we have to research it.”

John McCain: “There’s strong evidence that indicates it’s got to do with a preservative in vaccines.”

Dr Michael Fitzpatrick, GP: “Though the causes of autism remain obscure, exhaustive researches have failed to substantiate any link to vaccines or any preservatives in it.”

It’s not all bad news, American actress **Amanda Peet** succinctly stated the status of the evidence: “Fourteen studies have been conducted (both here in the US and abroad), and these tests are reproducible; no matter where they are administered, or who is funding them, the conclusion is the same: there is no association between autism and vaccines.”

RESEARCH

The US Presidential Campaign highlighted the benefits and costs of doing scientific research. **Sarah Palin** at a rally about Congress spending said:

“Sometimes these dollars go to projects that have little or nothing to do with the public good. Things like fruit fly research in Paris, France. I kid you not.”



Prof Ellen Solomon, geneticist, King’s College London

“Sarah, it might sound strange to research fruit flies (aka *Drosophila*) but they are one of the major tools in

our understanding of genes, and therefore biology, as humans share, very roughly, 50 percent of their genes with fruit flies. They have been used internationally for more than a century to understand how genes work, which has implications in, for example, understanding the ageing process.”

PSYCHIATRY

Tom Cruise hit the headlines again this year when an old video of his views about psychiatry was leaked: “Psychiatry doesn’t work. [...] When you study the effects it’s a crime against humanity.”



Harriet Ball, psychiatric research, King’s College London

“Although psychiatry doesn’t have all the answers yet, a range of treatments can reduce suffering, including drugs for depression and schizophrenia and “talking treatments” such as Cognitive Behavioural Therapy. Just like in other medical specialties, patients are offered those treatments shown to be effective.”



Prof Simon Wessely, psychiatrist, King’s College London

“The real crime against humanity continues to be the enduring misery caused by the major mental illnesses across the globe, and the continuing lack of resources devoted to supporting those afflicted and their families and to improving our currently inadequate treatments.”

CHEMICALS AND DETOX

In the UK, there haven’t been as many comments about chemicals as in other years. It appears the phrase “chemical free” is going out of fashion, as people realise there’s no such thing. However, ‘natural’ as shorthand for ‘better for you’ is still in use...

In America, **Julianne Moore** is endorsing “Natural Seal”, a symbol that the company Burt’s Bees will give to products that contain at least 95% ‘natural’ ingredients. She is worried about using products that are not ‘natural’: “with personal care, it’s harder to know what the best choices are because many products out there say they’re natural but contain

chemicals that I've learned to avoid." She believes that by sticking to products with the "Natural Seal" she will be better off as she will know that they are really 95% natural.

Dr John Emsley, chemist



"Julianne, 'natural' chemicals aren't automatically safer than man-made ones. In fact, man-made chemicals used in consumer products are often much safer because they have been thoroughly tested. Something which is naturally sourced may well include a mixture of things that are capable of causing an adverse reaction."

Detox diets and products remain popular despite a lack of evidence that they work; **Oprah Winfrey** and **Kate Moss** are just two of celebs who have apparently joined the detox diet bandwagon in recent months. **Demi Moore** has though taken the most extreme approach using **"highly trained medical leeches"** (N.B. not your run-of-the mill swamp leeches...) to 'detoxify' her blood. In her own words:

"They have a little enzyme...and when they are biting down on you it gets released in your blood and generally you bleed for quite a bit – and your health is optimized... It detoxifies your blood."



Dr Daniella Muallem, biophysicist

"Demi, for something to be detoxifying it should remove toxins. Blood is not a toxin. Even if your blood does contain toxins, simply removing a little bit of it isn't going to do any good."



Prof Sir Colin Berry, pathologist

"Leeches use heparin (an enzyme) – just like doctors – only they don't know how much they inject. If you

want to lose some blood, be a donor – you can help another even while you feel you're helping yourself."

NUTRITION AND FOOD PRODUCTION

The charity Mind has been encouraging people with mental health problems to take up the "Mind Meal", which has been devised by nutritional therapist **Amanda Geary** of The Food and Mood Project.

Nigella Lawson supports the initiative: **"the Mind Meal is an excellent idea – good, simple food that can help you to feel different about life."**



Catherine Collins, dietitian

"Nigella, you're right that food can positively influence mood - but promoting specialist allergy foods and expensive ingredients as 'good, simple food' is both a wasted opportunity to promote healthy eating, and an unnecessary expense for those on limited income."

Celebrity interest in organic food appears to have declined this year; people seem more interested in getting good produce and having a balanced diet. (Although **Sadie Frost** is reported to have said that she doesn't eat "dirty" (non-organic) food.)

Delia Smith was very sensible on the subject:

"I stick to teaching people to cook. [...] I can't get into politics of food and it's no good asking me because I don't have the knowledge and I don't have the background."

Delia wasn't quite so good on obesity: **"That's what causes obesity. It's addiction. After six weeks (without sugar), everything will taste sweet... because you will have got your palate back to what nature created. We could cure the nation if we cut down sugar addiction."**



Lisa Miles, senior nutrition scientist, British Nutrition Foundation

“Delia, you’ll never get rid of sugar from the diet, nor would you want to, as you consume sugars naturally in many foods such as fruit and milk, which provide us with important nutrients. Also, the causes of obesity are much more complex. Although you’re right, in so far as that if you have too many foods/drinks with high levels of added sugar, it can upset the balance of a healthy diet.”

Celebrity farmer **Jimmy Doherty** was involved in a documentary aired earlier this year called “Jimmy’s GM Food Fight”. It looked into the different issues raised about GM crops, including crop production in Africa. He concluded: **“On balance, I’d say we don’t really need the GM crops we have at the moment. [...] But I don’t think that we should turn our backs on GM either.”** In this case, it’s not any particular comment he made that we feel worth noting, but his approach to the subject that was open-minded and curious, essential in the scientific method.

On a not so positive note, we have a celebrity who is being mentioned for the third year in a row. In 2007, scientists responded to **Carole Caplin**’s comment on the importance of keeping the lymph system clear and unclogged, which isn’t anatomically or physiologically meaningful. Last year she campaigned against an EU directive that wanted to ensure mineral and vitamin supplements were sold at safe levels. This year she, as well as **Sir Cliff Richard** and **Gloria Hunniford** have spoken out against a Cochrane Collaboration review on antioxidants and mortality.

Carole Caplin: **“It must be obvious to everyone who hasn’t got a vested interest in supplements that this review is absolute rubbish, it contains fundamental flaws. It is only common sense that our bodies need**

regular supplies of essential nutrients for growth and maintenance.”



Dr Ben Goldacre, author of “Bad Science”

“This was a thorough, independent, transparent, and systematic review of every trial ever performed on these vitamin pills - the experiences of over a hundred thousand participants - and it found that overall, these pills may do harm. Carole should understand that research can often produce results which challenge our preconceptions: that is why science is more interesting than just following your nose.”

MATHEMATICS

It’s unusual to hear celebrities talking about maths, but science sells and Einstein’s famous equation $E=mc^2$ is so famous that it even makes a cool album title. **Mariah Carey** explained her choice of an equation as her latest album title by clarifying that it stood for **“emancipation equals Mariah Carey times two”**.

Dr David Leslie, mathematician



“Unfortunately, Mariah has misread the algebra. The two in the equation means c squared, not mc multiplied by two. The correct reading of the equation is $E=mcc$, so perhaps Mariah’s re-interpretation should have been “Emancipation equals Mariah Carey Carey”? I would have been very happy to chat with her and check it out before she went to print.”

FINAL WORD

While there has been considerable improvement this year in the way that UK celebrities approach science and medicine, the files are still too full of examples of pseudo-scientific claims. We don't expect people to know everything about science; the problem comes when they don't consider checking it or asking a few questions before they speak out. With the internet and 24-hour news media, celebrities' misleading claims travel widely. They add disproportionately to the stock of misinformation that we all then have to wade through to make sense of a subject. A little checking goes a long way.

What next?

- **Keep sending the examples.** We will be reviewing progress 12 months from now and we encourage you to keep on sending in examples of people in the public eye misusing or abusing science. Remember, we are most interested in examples that are either likely to mislead the public, or that provide a good opportunity to respond to a claim on a subject in the public interest.
- **Give us your opinion.** Is there a case for comparing how celebrities pseudoscience with that of political leaders? Send us your views, and the evidence!
- **Offer help.** Finally, if you're a scientist and would like to help celebrities and others, get in touch and join our database of over 3000 supporting scientists who offer their time freely to ensure there is good science in public discussion.

For all the above please contact Dr Leonor Sierra lsierra@senseaboutscience.org/ 020 7478 4380.

Check the facts. Call Sense About Science on

 020 7478 4380

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