

Celebrities and Science 2011

From fashion to fad-diets, medicine to super foods, and the environment to allergies, at Sense About Science we continue to monitor the science claims made each year by the influential and the famous. Scientists and members of the public send in claims – about products, lifestyle choices and campaigns – that appear to make little scientific sense. We ask experts to respond so that celebrities can see where they went wrong and we can encourage public discussion about sound science.

WHAT'S NEW IN THE 2011 REVIEW?

This year we have noticed a strange difficulty with understanding the sea! US political commentator **Bill O'Reilly** claimed we have no understanding of how the tides work, while reality TV's **Snooki Polizzi** put forward her own theory for why the sea is salty (too much whale sperm). Amongst the many short-cuts to better health, supplements proved especially popular; with **Suzi Quatro** stopping all illnesses by taking colon cleanser, and **Simon Cowell** preferring his vitamins drip-fed.

Meanwhile last year's must-have gadget – the hologram-embedded silicone (Power Balance) bracelet spotted on the wrists of **David Beckham** and **Kate Middleton** – has fallen out of favour. Power Balance was publicly taken to task for its marketing claims and though still on sale in the UK, celebrity endorsements have declined. **Kate Middleton** (now the Duchess of Cambridge) appears this year in our 'has potential' section. Boosting bodily functions also appears to have fallen out of fashion in 2011 compared with the postbag we had on this in 2010.

Although we have come across some familiar and persistent problems – detox diets and 'chemical free' claims – fewer famous figures fell into these traps this year. Have celebrities finally got the detox message? Everyone except **Gwyneth Paltrow** it seems...

It's tempting to dismiss celebrity comments on science and health, but their views travel far and wide and, once uttered, a celebrity cancer prevention idea or environmental claim is hard to reverse. At

a time when celebrities dominate the public realm, the pressure for sound science and evidence must keep pace. That is why we ask people in the public eye to contact us before making statements. With now over 5000 scientists and hundreds of specialist organisations willing to offer free advice, help really is just a phone call away.

And to improve the outlook for 2012, we have distilled our scientists' responses into easy-to-remember pointers for celebrity commentators.

Four new lessons from 2011:

- **Supplement what?** Your body does a good job of taking in everything you need to stay healthy. If you seriously suspect a deficiency, it should be diagnosed and properly treated.
- **There's a lot of well established science about our environment...** So understanding the sea can be a source of wonder rather than confusion.
- **A correlation isn't the same as a cause...** 'A' following 'B' doesn't mean that 'A' was caused by 'B' – it may be a coincidence, or 'A' and 'B' may both be caused by something else.
- **It is easy to prevent a condition that did not exist in the first place...** but this is often the result of wishful thinking, not the short-cut to good health you tried at the time.

And this year two regular tips taken up by celebrities who got it right:

- **If it's too good to be true... it probably is.**
- **Detox is a marketing myth:** our body does it without pricey potions and detox diets.

Celebrities and agents, remember – all it takes is a phone call for a bit of confidential science advice.

Check the facts. Call Sense About Science on

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A problem with the sea?

US reality TV personality **Nicole ‘Snooki’ Polizzi** said: **“I don’t really like the beach. I hate sharks, and the water’s all whale sperm. That’s why the ocean’s salty.”**¹

Dr Simon Boxall, oceanographer:



Snooki – it would take a lot of whale sperm to make the sea that salty! The salt in the sea comes from many millions of years of water flowing over rocks and minerals. It slowly dissolves them leading to the ‘salty’

nature of the seas – it’s not just salt but every material on the planet including gold. Salt water actually keeps our oceans free from many human pathogens (microorganisms that cause disease) – so why not give the beach another try and get back in the water?

Bill O’Reilly, US TV host and political commentator: **“In my opinion – alright? Tide goes in, tide goes out. Never a miscommunication. You can’t explain that. You can’t explain why the tide goes in.”**²

Dr Chris Lintott, astrophysicist and co-presenter of *The Sky at Night*:



I’m happy to take up Bill’s challenge – it’s simply the pull of the Moon’s gravity on the Earth that produces the tides. The Earth’s solid surface is stretched by the Moon’s pull, but the oceans are free to move more

dramatically, producing the familiar two tides a day. Nothing too complicated about that, although it did take Isaac Newton’s theories to get the explanation clear.

Celebrity psychic **Derek Acorah** predicted: **“There will be massive, cataclysmic changes next year. It will be between spring and summer and it will hit around Ireland, and then spread to Central America – Chile and Peru will also be hurt. The weather will go haywire. It will be like going back into the ice**

age. The south coast will be hit, but not as far as London.”³

Professor Liz Morris, glaciologist:



Sorry Derek! Being so certain gives you away. Real long-range forecasts only give the relative probability of possible outcomes. Our capacity to predict extreme weather events six months ahead is limited, because we

cannot specify the current weather exactly and because of the chaotic behaviour of the atmosphere. Yes, there could be a severe snow storm next April – but what is the probability?

Short cuts to good health?

TV personality **Simon Cowell** described his drip-fed intravenous cocktail of vitamins C, B12 and magnesium, part of his bid to look and feel younger and healthier: **“It’s an incredibly warm feeling... You feel all the vitamins going through you. It’s very calming.”**⁴

Ursula Arens, dietitian, British Dietetic Association:



Simon, unless you have a vitamin deficiency, what you eat in food will provide you with the vitamins you need. The absorption of vitamins is very efficient so – apart from people who are very ill or have particular gut problems –

nearly all of what you eat is taken up by your body. If you are worried about not getting enough vitamins from food, and cannot change your diet, then vitamin supplements are a simple way to give you reassurance. However, my advice to you Simon, if you need a warm, calming feeling? A nice cup of tea!

SUPPLEMENT WHAT?

- Your body does a good job of taking in everything you need to stay healthy. If you seriously suspect a deficiency, it should be diagnosed and properly treated.

Suzi Quatro, American singer-songwriter told the *Daily Mail*: “I used to get a lot of sore throats and then one of my sisters told me that all illnesses start in the colon. I started taking a daily colon cleanser powder mixed with fresh juice every morning and it made an enormous difference. I’ve been doing it for 20 years.”⁵

Dr Melita Gordon, consultant gastroenterologist:



As a gastroenterologist, I agree that the colon is very important in some diseases, but it certainly is not the cause of all illnesses Suzi! Sore throats do not come from your colon; they are caused by viruses that come in

through your nose and mouth. Taking ‘colon cleansers’ has no beneficial effect on your throat (or on your colon). You have probably been noticing a placebo effect, or an effect from other things you do to avoid throat infections, like avoiding infective contacts or washing your hands.

IT IS EASY TO PREVENT A CONDITION THAT DID NOT EXIST IN THE FIRST PLACE

- ... but this is often the result of wishful thinking, not the short-cut to good health you tried at the time.

American actress and musician **Juliette Lewis** told the *Guardian*: “On a purely nutritional level, coconut water is pretty much the most hydrating thing you can drink, and much better than man-made sports drinks.”⁶

Ann Ashworth, sports dietitian:



In fact, Juliette, coconut water has about half the amount of carbohydrate but also a different balance of salts than a typical sports drink, and so could be less hydrating.

Jane Griffin, sports dietician:



If fluid losses are low then simple plain water, plus the water that you get from food, will rehydrate you perfectly well. When fluid losses increase, such as when you work out in the gym or play sport, then a sports drink can help replace fluid but also put back lost sodium – sweat is salty!

The fashion for ‘boosting your immune system’ is declining but we’re still seeing it...

Jordan Crane, professional Rugby Union player at Leicester Tigers told journalists: “I always keep a bag of Brazil nuts in my car – they are packed with protein for energy and selenium, a good immune booster.”⁷

Dr Andrew Wadge, Chief Scientist, Food Standards Agency:



There are no such things as super-foods, just super diets. Jordan is right that Brazil nuts are high in selenium. If you have a real deficiency this is a good way to supplement your intake. But, for anyone else, taking more of a nutrient than you need isn’t necessary or a good thing.

Tamara Ecclestone, TV personality, explained: “I have acupuncture to boost my immune system every month or so. It really works and makes me feel good.”⁸

Professor Peter Lachmann, immunologist:



Our immune systems are formidably complicated. There are ways to enhance different types of immune response – though acupuncture is not one of them – such as injecting molecules taken from bacteria (lipopolysaccharides)

that enhance immune responses in general. Any non-specific enhancement of immune responses can make you feel better only if something is wrong in the first place.

A mixed picture on vaccines

Is it too much to expect celebrities to talk sense about science when politicians – with expert advisers and researchers on hand – make unfounded claims?

Michelle Bachman, member of the US House of Representatives and Republican Presidential Candidate, told journalists: **“There’s a woman who came up crying to me tonight after the debate. She said her daughter was given the [HPV] vaccine. She told me her daughter suffered mental retardation as a result. There are very dangerous consequences.”**⁹

Professor Sean Kehoe, gynaecological oncologist:



There is no evidence that the HPV vaccine causes mental retardation or that there are dangerous consequences. The evidence that cervical cancer causes deaths, however, is unquestionable. The

vaccination programme in the UK is forecast to save 400 lives each year in the UK.

Once misconceptions enter public debates this can lead others, including celebrities, to think there are doubts about the evidence. **Kyle Richards**, star of *Real Housewives of Beverly Hills*, when asked about the HPV vaccine, said: **“I have four daughters, I am very wary of that to be honest... I am waiting until it has been out there a little bit longer. It makes me nervous, but I am waiting until we know more about it.”**¹⁰

Fortunately another celebrity came to the rescue... Supermodel **Christy Turlington** said: **“I was also fearful as a new mom but as a student of public health, I understand the evidence-based research now.”**¹¹

Featuring again

Gisele Bündchen, Brazilian fashion model, shared her views on sunscreen: **“I cannot put this poison on my skin... I do not use anything synthetic.”**¹²

Gary Moss, pharmaceutical scientist:



Which poison Gisele? Cosmetic products – including sunscreens – are regulated and are tested extensively before they are allowed onto the market. Testing applies to both final products and individual ingredients. You might be surprised that you use a wide variety of synthetic materials in many aspects of your life: ‘synthetic’ does not automatically mean bad, just as ‘natural’ does not automatically mean safe or beneficial.

Actress **Gwyneth Paltrow**, wrote on her blog *Goop*: **“I have gooped about Dr Alejandro Junger’s Clean program before because it gave me such spectacular results; it is really just the thing if you are in need of a good detox – wanting some mental clarity and to drop a few pounds... Here’s to a happy liver and an amazing 2011!”**¹³

Dr Christian Jessen, GP and TV presenter:



Gwyneth... We all try to start the New Year with good intentions for a healthy lifestyle, but a detox plan isn’t your answer if you really want to feel better. Your body has its own fantastic detox system already in place in the shape of your liver and kidneys. Much better to drink plenty of water, eat a balanced diet, get plenty of sleep, and let your body do what it does best!

DETOX IS A MARKETING MYTH

- Our body does it without pricey potions and detox diets.

And beware the science behind second-hand information...

...as **Christian Louboutin**, French footwear designer found when talking to a fellow party guest: **“She said that what is sexual in a high heel is the arch of the foot, because it is exactly the position of a woman’s foot when she orgasms. So putting your foot in a heel, you are putting yourself in a possibly orgasmic situation.”**¹⁴

Professor Kevan Wylie, consultant in sexual medicine:



It is important to differentiate causality from effect. A woman’s foot may be in this position during orgasm, but that does not mean that putting her foot into this position under other circumstances will result in orgasm.

Has potential

Kate Middleton, asked about allergies, said: **“I’m actually allergic to horses, but the more time one spends with them the less allergic you become.”**¹⁵

Dr Pamela Ewan, Allergy Department, Addenbrookes Hospital:



Kate could be right. It depends on just how allergic you are! Mild allergy to animals can get less with regular exposure because some sort of ‘tolerance’ occurs: this may work like the treatment ‘desensitisation’, where cells that regulate or damp down the allergic antibody responses are induced. But gaps are bad – the best example is allergy to cats but this can occasionally happen with horses; when students return home, massive sneezing and streaming occurs. If the allergy is more severe, re-exposure usually makes it worse, and I would then recommend seeing an allergist. Love also leads to playing down symptoms!

Debra Stephenson, actress, comedian and impressionist: **“With arnica, the bruises took much less time to disappear. Now I use it on the kids all the time.”**¹⁶

Professor Edzard Ernst, complementary medicine:



Debra, arnica comes in two different forms, homeopathic and herbal. The homeopathic version is typically so dilute that it contains no active molecules, and the trial data thus confirm that it is a pure placebo. Herbal arnica preparations, on the other hand, do contain active substances and might actually work – but only as a cream applied topically; taken internally, arnica is toxic.

Pippa Middleton shared her beauty tips for glossy hair – rinsing in cold water: **“It closes the pores and gives it a lift and shine – it really works.”**¹⁷

Dr Frauke Neuser, beauty and grooming senior scientist, Procter & Gamble, said:



Hairs don’t contain ‘pores’ as such. The outer layer of the hair shaft can be thought of as tiny ‘scales’. If these are flat and sleek then the hair will look shinier as the light reflects off the hair more. If these ‘scales’ are not smooth the surface of the hair is roughened and so that reflectance, and hence the shine, is compromised. However, rinsing with water – whether hot or cold – doesn’t close or smoothen the cuticles.

A CORRELATION ISN’T THE SAME AS A CAUSE...

- ‘A’ following ‘B’ doesn’t mean that ‘A’ was caused by ‘B’ – it may be a coincidence, or ‘A’ and ‘B’ may both be caused by something else.

Talking sense

Camilla, Duchess of Cornwall, commented on the potentially damaging consequences of dieting: **“A whole generation of young women could be affected. What particularly concerns me is the rise of osteoporosis in young people and its link with eating disorders.”**¹⁸

Sian Porter, dietitian, British Dietetic Association:



During childhood and early adulthood bones develop their strength. Therefore, it is very important to strengthen bones in the first 30 years of life to ‘stockpile’ calcium and other minerals. Following a restrictive diet, particularly cutting out food groups like dairy without substitution, can put your bone health at risk. As President of the National Osteoporosis Society, Her Royal Highness is clearly well informed about diet and bone health. Unfortunately this is not the case with many celebrities who give advice based on their personal opinions rather than being evidence-based, or recycle poor advice given to them by unqualified self-styled ‘gurus’.

Checking the science does a greater service to the people you influence...

Lucy Jones, dietitian and TV presenter:



Celebrity comments can be a real mixed bag; when celebrities say things they have great power to influence people’s actions, and with this comes some responsibility.

...and to the effectiveness of your own efforts...

Actress Helen Mirren: “what makes you lose weight – not eating”.¹⁹

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