NOTES&THEORIES
DISPATCHES FROM THE SCIENCE DESK

A chance to meet real live scientists

The Royal Society's Summer Science Live Exhibition deftly manages to combine fun with the opportunity to meet scientists and chat about their work

A scientist at the Summer Science Live exhibition demonstrates EEG technology that can assess hearing difficulties in children too young to talk. Photograph: Royal Society

I'm staring at the exhibit list: "Improved Pump" (boring), "Large Map" (even more boring), "Barometers" (ok, vaguely interesting). Not exactly what I was expecting from the Royal Society's 2011 Summer Science Live Exhibition. Thankfully, I'm looking at the wrong poster. The no doubt thrilling "Large Map" exhibit was part of the Royal Society's 1863 Exhibition. Instead when I arrive I'm greeted, not by a large map, but by a medium-sized scientist. He's wearing a synthetic skull cap adorned with electrodes, conductive jelly oozing from his scalp.

And this is what Science Live is really about: meeting the scientists and seeing their research in action. The team from the UCL Ear Institute quickly explain how they use electroencephalography (EEG) to detect electrical activity in the brain. The EEG allows them to measure a patient's response to auditory stimuli, such as the word "dog", amid background noise.

"Live" is the name of the game and, sure enough, I look up at a real-time EEG readout. It twitches up and down as the skullcap-wearing scientist cheerfully explains the purpose of the research. By measuring responses under different conditions, the team can help

improve the positioning of cochlear implants and assess hearing difficulties in children too young to talk.

But something else has caught my eye. Across the room I can see a Scalextric track, complete with traffic lights, and can't resist. I wander over and ask the team from the University of Southampton about their research. Like a schoolboy, I'm trying to be polite as they explain "one of the most interesting problems in engineering": how to control traffic lights. I just want a go on the Scalextric.

At last I've got the controller in my hand. I'm the bright orange Nissan 350Z. Dr Simon Box is the white Ford Focus (gutted). We start zipping round the track and, joy of joys, the traffic lights change from red to green as we approach the first junction. Dr Box explains how a computer controls the lights to optimise traffic flow, even dealing with conflicts such as two cars approaching from different angles. Apparently this technology is already out there (given my experience with traffic lights I'm dubious) and, in the future, they hope to implement yet more sophisticated algorithms for controlling the flow of traffic.

Dr Box even convinces me that variable speed limits are a good idea. Still, I can't let him win me over entirely ... I ask if understanding the maths behind traffic jams is any consolation when he gets stuck on the M25? No, thought not.

Science Live isn't all non-stop fun (unless you spend all day on the Scalextric). These are real scientists presenting some of their latest research. Like some warped version of an 18th century cabinet of curiosities, the scientists are as much a part of the exhibition as the experiments. To that end, I make a beeline for the Interpreting Climate Predictions stand. Eager to hear something juicy, I ask Dr David Stainforth to give me his take on models of climate change. The response: "We know they are all wrong".

I splutter, fumbling for my notepad. What a scoop! A climate change denier at the Royal Society Summer Exhibition?

Of course not. Dr Stainforth goes on to make clear that climate change is real and that we need to cut greenhouse gas emissions in order to reduce its impact. His point is that, while all models predict an increase in mean global temperature, there is a lot of uncertainty surrounding the specifics. For instance, if atmospheric CO_2 doubles, how high should I build my seawall in Brighton, as opposed to Great Yarmouth? If atmospheric CO_2 triples, will I see mass migration from London to Madrid, or the other way around?

At this point I imagine George Monbiot, standing in the corner, nodding vigorously, or perhaps shaking his head in contempt. Either way, while Science Live is obviously entertaining, it is also a showcase for "open science". It's certainly refreshing to discuss the challenges of interpreting climate data with real scientists (a far cry from the University of East Anglia freedom of information debacle).

By the end of the day I've captured a (Beany Baby) fruit bat in the library and tried my hand at spotting bombs in an x-ray machine. But it's the scientists who are the real stars of the show. You can do the experiments and then chat with them.

Children in particular shouldn't be afraid to question conclusions and offer alternatives. Science Live is a great platform for the researchers of the future to learn this.