Participant #4
Field: Earth Sciences
Rank: PhD Student

Q: Why did you decide to become a scientist?
A: You want one reason? The real reason. When I did my A levels I did geology, geography, and maths, and I had to make the decision which one of those to pursue at university. It was a simple case of I didn't want to do maths, because I wasn't going to be the best. In my class at college I was only maybe 20th of the year. Geography is a waste of time, you'll never get anything done with it. And geology was the one left out and it seemed the most interesting. And went on and it was really interesting. Then I ran into [NAME] and he seduced me to the dark side of paleontology, and I became a paleontologist. And then I decided to do a master's in biology to get the biology side of paleontology. The idea of a 9 to 5 job was rubbish. I like the idea that I'm free to do what I want and explore.

Q: How would you describe what scientist is?
A: There are two different types, I reckon. There are people who think scientifically and then there are practicing academic scientists. Academic scientists are like me and my colleagues who get paid to publish papers and do science, do core research. Then science itself is a way of thinking, creativity without bounds. So, that's what we do, except we transcribe that into word form and publish on it. But pretty much anyone can be a scientist. So, even social scientists count as scientists. It's a way of thinking and developing ideas and putting it them into practice.

Q: So, you think scientists are creative and curious?
A: Mhm. You kind of have to be these days. It also helps to have a grounding in history, so you can look back through time and see how your field has developed, and what the unanswered questions are, and the gaps in our knowledge. And by exploring those you that's how become a scientist.
Q; You just said explore. Do you think scientists are explorers?
A; Mhm. It depends, yeah. There are many different types. You can have data explorers, field explorers, laboratory based explorers. It's about finding things to do with your data and ideas.

Q: What drives you to do your work?
A: I get paid for it. [laughs] The stuff I'm doing no one has really ever looked at it before, so I guess I'm working on the cusp of palaeontology these days. What will be known as the big data

era of paleo. [Identifying information about research.] We're really pushing the boundaries of what we know about the history of life on Earth.
Q: Do you think scientists push boundaries?
A: Yeah, everyday. Even just yesterday there was something published on something very similar to what we've been working on. It's not crossing over too much though---thank god! Every published article is pushing our boundaries to some degree. Everything should be designed to build on everything we know.

Q: When you decide to publish in a journal what criteria do you look for?
A: Things I don't care about are: the impact factor. It helps if the journal is known within the community, because you obviously want people within your community to be reading your research. It's the prime reason we publish to reach that audience. The speed is good. Cheap and fast. So, the things authors actually need are rapid publication, broad dissemination, and cheap publication. Getting all of those --- anything else is superfluous. Impacts factors, ridiculously long review times, typesetting --- all that stuff is a waste of time and money. And if they are going to be charging extra for that kind of services then I think they should be ignored. Open Access, obviously, they either have to be a hybrid or fully Open Access journal. I'm not too fond of hybrid journals.
Q: Why are you not fond of hybrid journals?
A: The APC they charge is not based on the services they provide, but on the amount of revenue they assume they'll lose by not charging subscriptions for that particular article. And recently it's been demonstrated that most hybrid journals are published are actually "double dipping" by taking the APCs for these articles but not lowering subscription costs accordingly. I think that's ethically disgusting for publishers to be doing that and they should be shamed and legally investigated for it. It's horrible practice. On the plus side you get to keep the name of the journal associated with your research, which is a good thing. The prestige still counts, so if you can have an Open Access publication in a journal with a high impact or high prestige then it still counts and it's still useful for that at the moment.

Q: You recently submitted an article to Nature with your colleagues, how does it make you feel then?
A: I'm fine with it, because Nature are actually one of the good guys when it comes to this, I think. Despite the charges which they levy for communications, they automatically self-archive the author manuscript of your version on PubMed within 6 months, I believe, after you've had your article accepted. It's still fairly Open Access-y. Pretty much everyone in academia submits their final versions to academia.edu or research gate or their own websites

anyways, so there's no reason we can't make almost full Open Access without actually being explicitly Open Access.
Q: Is the high impact a large draw to publish in Nature for you?
A: Not for me. But it is in my university. My supervisor is the primary author for it and he gets assessed on this stuff, I assume. We've all heard stories about the impact factor mania drives quite bad practice more broadly within academia and typically at [participant's university]. My colleagues are certainly all addicted to it. They refuse to submit to IF 4 or less, which is ridiculous. It [impact factor] doesn't bother me at all. If I'm going to be assessed by it then fine, but I will still make the case that there's more to an article than the impact factor journal.

Q: After you complete your PhD, and postdoc, and are trying to get a position at a university, do you think you'll need high impact factor publications to get hired?
A; Yes. I think it will certainly play a role. But if I ever get to -- I haven't applied to postdocs yet -- but I imagine my approach would be to be as holistic as possible in describing how my research has been used. So, I've actually only got three published papers at the moment. A lot in review. There's things like altmetric, which are pretty good for demonstrating how broadly your research has been disseminated online and various other metrics.

Q: Why do you think other metrics, such as altmetrics, are good?
A: Because they capture an aspect of the post-publication process that wasn't captured. It's a measure of how much wider society is discussing your research based on that article alone, which is kind of cool. It's not perfect. It's a new field.

Q: What do you the role of Open Access is for science?
A: I think you can make a very strong ethical case that facts should not be the property of commercial publishers and that knowledge equality is something we should have as an equal human right. Open Access gives that. Alternatives don't. Therefore publishing behind a paywall is sort of unethical but kind of not our fault at the moment, because it's the way the system works. For society it's all about promoting knowledge equality and having free access and equal access to the facts and knowledge generated by specifically publicly funded research. Industry funded research is a whole new kettle of fish, and as a paleontologist, I'm not particularly qualified to comment on that because we don't have any industry ties
But for science there are many studies that have shown that if you publish your research Open Access and your data openly as well alongside of it, you get an increase citation. It's good for the research itself. It's obviously good for researchers because that means they have access to

the research and can build upon it and re-use it for their own work. It's particularly great for researchers in developing countries. [University] pays what 5 million every year, and if you're in a developing country your library simply can't afford that. So making it Open Access breaks down those barriers and means we can all re-use the products of the research.

Q: At one point you blogged ["identifying quote"], could you describe that more?
A: One of the coolest things of what science is, is that it should be both repeatable and reproducible. And by that the methods and the data should be sufficient, so that anyone can take your research and repeat the methods and produce the same results. If your research doesn't fulfil that criteria then it isn't really research. You could falsify it. By not making data available, you're not opening up your research.

Q: Do you feel your value as an academic scientist is dependent on your publications and citations?
A: Yes. Publications to a degree are your academic currency. My very first paper was published in PeerJ. I was really happy when it came out. It was my first peer-reviewed publication. I was an actual scientist then. I was with some colleagues after that and several of them were like, 'Well, it doesn't really count, does it? Because the journal doesn't have an Impact Factor.' And the pressure you feel as you get kicked in the "nads" by the hammer of science was pretty shit. You've just spent many, many months working on this stuff and you're told it doesn't count, because it doesn't have some arbitrary label attached to it. To a degree we are definitely assessed by our publications, but it is changing very slowly. People actually still read papers and say, "Hey, that was a great paper" and that's as useful as any metric really. But scientists also have this habit that needs to be a little bit more. We know how good our research is before we submit it. We know if our results are good. We know if our methods are strong. We know if it is going to produce an interesting story. And based on these assumptions, we submit our research to the higher impact factor journals based on that. And so to a degree impact factor do capture an essence of quality, but not what people think. So, they capture an underlying quality. I can't really speak to other fields, but I certainly know that if my colleagues produce a piece of research that they don't feel is particularly sexy they will submit it to a lower impact factor journal, but if they think their results are really food and they have some great figures they'll certainly shoot for something higher, because why not? Because at the moment "the system" rewards that kind of behavior.

Q: How do you think you can change that kind of system and culture?

A: We're really talking about changing the incentive structure. And that's based on the rewards for jobs and grants. As we know those things are increasingly rare to find, so we have to constantly be looking for shortcuts to assess people as more and more people get pumped into the pipeline. It becomes increasingly more difficult to take a more holistic or broader assessment of a researcher and their outputs. So, I don't think it's going to change anytime soon until we actually see governance, funding bodies, and assessment criteria shift in a manner that stops rewarding people for chasing arbitrary metrics that don't make sense. We need to align the incentive structures with openness rather than impact factors, etc. So, if you're doing public policy, discussing your research, outreach initiatives, public engagement, aligning those kind of activities which are undoubtedly more beneficial for research and society with the incentive structure to advance down the career pipeline. Until you align those kind of things you won't see a cultural shift. Because at the moment it's still very much a top down thing. As much as we want to rattle cages at the base and say "I hate Impact Factors," if we're still being assessed by it, then we have to conform to it. HEFCE, Research Councils, and the Wellcome Trust are doing great work in the UK. There are more sophisticated systems of analysis, but at the moment there is no one is really enforcing it. But if you don't enforce them, they aren't going to be conformed to.

Q: How does that make you feel as a PhD student knowing that's how you'll likely be measured throughout your career?
A: It makes me feel two things. One is to say goodbye to academia and move into publishing, science communication, freelance science writing or even policy work. The second is to stay within academia and try and disrupt as much as possible and encourage my colleagues as much as possible to adopt better practice when it comes to open research, because we all know academics hate being told what to do outside of academia. So, staying within academia is certainly a better option if you want to initial real change, I feel.

Q: Earlier you said when you published your first paper you were a real academic scientist now, is that how you really feel? That you aren't truly an academic scientist until you publish?
A: Oh, yeah, definitely. Most of my friends feel the same way. One of my close friends published his paper in PeerJ the other day and immediately on Facebook he was like, "Guys, I'm a real scientist now!" You have to have measurable outputs these days. It's definitely a quantity game. If you ever see a researcher give a talk in a public forum, the person introducing them will say, this is Dr. So-in-So they have 75 publications, 6 of them in Nature, 3 of them in Science. The people who often slam Impact Factors and metrics of any sort don't realize the alternatives are really difficult to even think of. Qualitative assessment of

researchers is impossible. If you have a job going and you have 500 applicants and each of them are 50 pages and you're a review committee of three people, yeah, good luck doing that, so you have to find shortcuts.

Q: Do you think it is possible for academia to change how academics are assessed and hired if qualitative assessments are too difficult to make?
A; There are certainly steps you could do towards that. For example, if I was going to submit for a postdoc, instead of saying can you list a CV of all your publications and their impact factors, can you submit your top five papers and how you feel they've impacted the scientific community and society. Like a little impact case study. The REF are already doing that in how they work.

Q: Have you been cited yet?
A: Once.
Q: How did that make you feel?
A: Well, it was a semi-self citation, so I'm still waiting on the moment for a real citation.
Q: Do you think that would have an impact for you?
A: Oh, yeah, definitely. When people start using your research scientifically that's always a good thing. That's why we publish.

Q: Do you feel that your supervisors and colleagues value you as an academic scientist based on your publications?
A: I've never asked them. Ask me that again in 6 months. At the moment, probably not, seeing as I haven't produced anything spectacular.
Q: Do you think your value as an academic will be dependent on publications and citations in 5 years?
A: Oh, yeah, definitely. It's your footprint. It's the mark you leave.
Q: Is the value placed on publications something you agree with?
A: Yes... depending on what aspect of the publication it is. If they say, we read your paper in X, and it was really good, and we liked your results and thoughts on this, then that's different than saying you got a publication in a high impact factor journal.

Q: What motivates you to want to publish Open Access?
A: Because it's the right thing to do.
Q: Do you think scientists are supposed to do "the right thing"?

A: We are publicly funded. We are generating knowledge not for ourselves, not for publishers certainly, we are doing it for the greater good, for society. If we publish it behind a paywall and no one can access it, if no one can access facts or knowledge, then we are failing at our task rather miserably. That's not to say that publication is the final endpoint of research.
Q: Do you think that science should be for the greater good then?
A: Yeah, of course it is. Just because, what is the alternative? Having it for your private good? People say that they own knowledge, they own facts, it's just my own personal opinion, but it's not right. We never know how things are going to be used in the future and by generating barriers to research we don't do good for anyone but ourselves and instead of thinking about the rewards we get for openness, we should also think about what we lose by being closed.