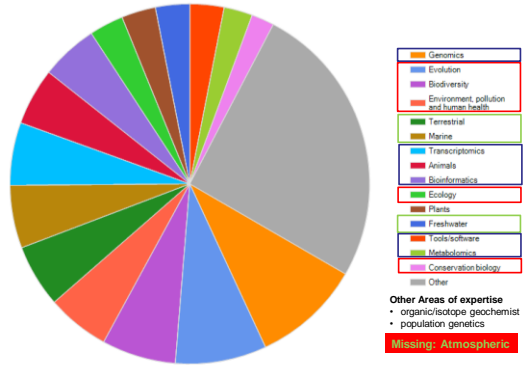


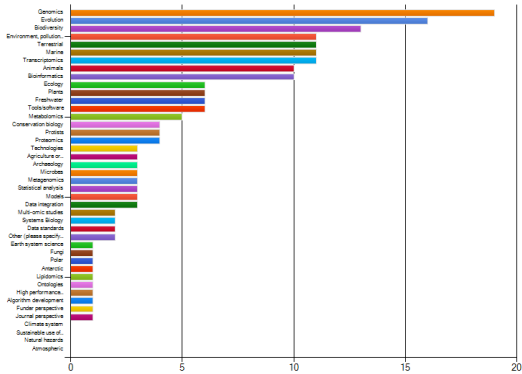
# Community Survey

Dr Peter Kille

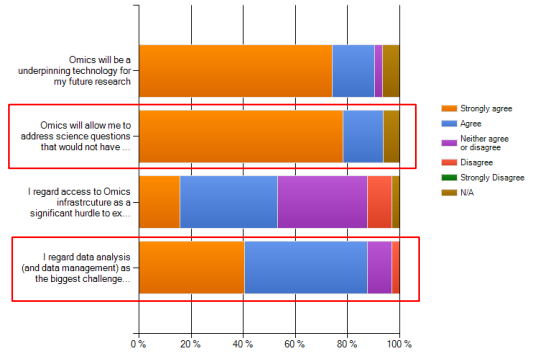
## Community Representation



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**Q1. What are the opportunities and challenges you see for Environmental Omics? Consider the technological, bioinformatics or data issues unique to Environmental Omics in your response to the following statements.**

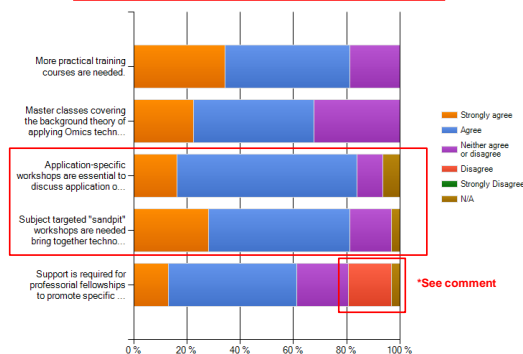


**Q1. What are the opportunities and challenges you see for Environmental Omics? Consider the technological, bioinformatics or data issues unique to Environmental Omics in your response to the following statements.**

- As always, asking the right questions is the biggest challenge. This partly depends on **understanding what is possible, and what is becoming possible**.
- Current omics technologies offered through NBAF are impressive, but several omics approaches are still not represented. e.g. proteomics, lipidomics.
- Quality control / Quality Assurance, Precision, repeatability and bias for results in Environmental Omics need to be comparable to chemical analysis.
- Data management and analysis is an issue, but also there is the training of **"proper" biologists who the OMICS people need to work with** to ensure the best and most appropriate experiments are carried out and whether the right questions being asked. We also need to **engage with mathematical disciplines and leverage their skills at statistical analysis and network analysis**.

Re: facilities: **I think there is a slight disconnect with what the Facilities want to do and what the community wants them to do** e.g. why do applications have to be peer-reviewed for pay as you go? Can they deliver the capacity/experimental advice that the community wants.

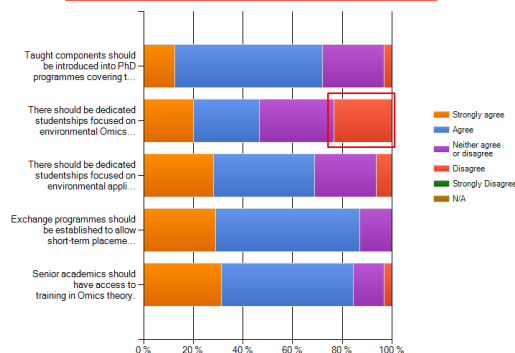
**Q2. Horizon Scanning, Knowledge Exchange and Methods of keeping NERC researchers at the cutting-edge. Please state whether you agree or disagree with the following statements.**



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- \*Fellowships for users are more important than fellowships for technology specialists.
- One recommendation to NERC could be to ring fence funds for training in omics technologies and bioinformatics.
- Cross councils workshops? especially with the medics, who tend to lead the technological advances? which we can then take advantage of?

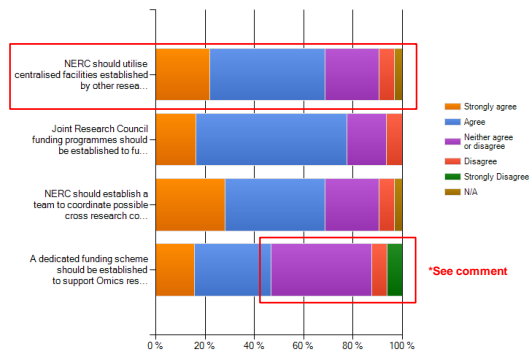
**Q3. With regard to needs for training and skills development required to support the use of Omics in environmental science, please state whether you agree or disagree with the following statements.**



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- Senior academics should be able to organise their own access.
- In regard to "Senior academics should have access to training in Omics theory" - it is more that they need "awareness training" of the opportunities that these technologies now enable.
- Exchange programmes for short-term -omics placements would need to consider **the FEC of instrument usage** - instrumentation intensive research does have real costs associated with it which can exclude potential users. Ways to fund 'taster' or exploratory work would really help to open up application of these technologies.
- The reason I've been luke warm on the studentships is that if NERC want this, they HAVE to provide more than the **£5k standard consumables to fund these**. At the moment, many places cannot afford an OMICS student as they have to massively subsidise the research, which is increasingly less possible. Which is crazy, as this is the next generation of scientists and will be more techno-savvy than their supervisors (probably).

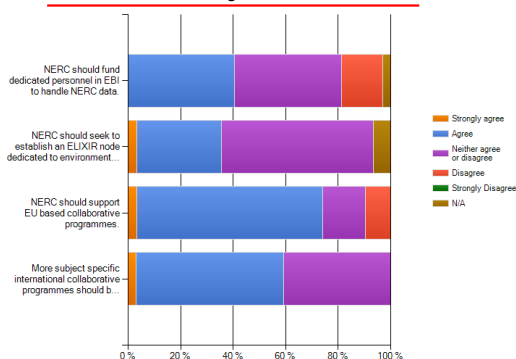
**Q4. How should NERC work most effectively with other UK Omics funders (including Research Councils, Charitable Trusts, and Industry) in supporting research, training and provision of facilities? Please state whether you agree or disagree with the following statements.**



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- Some of these mechanisms already exist within NERC.
- I am generally not in favour of directed funding and especially not in favour of directed funding driven by technology rather than science needs.
- Further 'omics' funding initiatives akin to the 'Environmental Genomics' and Post Genomics Proteomics' initiatives are needed.**
- ENVIRONMENTAL omics will require unique skills in some areas, such as extraction of biomolecules from unusual environmental samples, and hence a **generic RC facility is unlikely to have the skill base to support NERC researchers and science**. Some technologies will be applicable across different RCs however, so joint programmes could be implemented for cases where the science will not suffer.
- \*We really don't want to go down the co-funding mode, like the EU has, where you need a company on your grant. This is blue skies research.

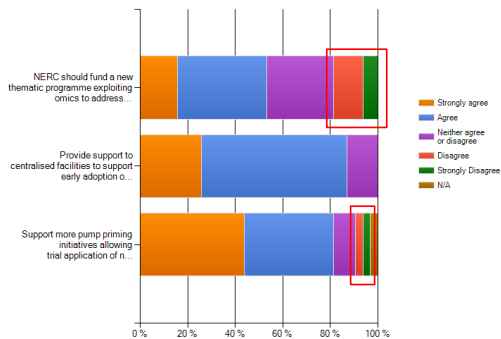
**Q5. The European and global Omics landscape and NERC potential for collaboration. Please state whether you agree or disagree with the following statements.**



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- Apart from infrastructure funding, concentration should be on question-driven programmes.

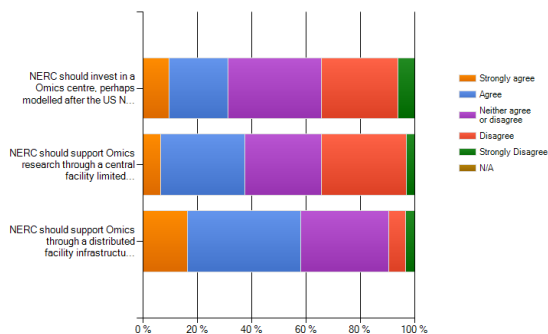
Q6. How do you think NERC can remain flexible and whilst taking advantage of emerging technologies and new applications of Omics techniques building a Competitive Edge in this rapidly changing landscape. To address this please state whether you agree or disagree with the following statements.



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- These are all excellent suggestions.
- OK, the problem we have is that the **Facilities want to play with the novel technologies, whereas the users often just want a 454 run**. We have to define what we want from the Facilities and decent projects can be rejected because they are not using novel technologies.
- The problem with the Thematic programmes is that there is really **only 1 main biology theme (biodiversity)** and anything that comes out of the themes (the calls) are personality led (so fine if you want to work on tropical birds or oceanography): sorry is this too cynical? If there is a call: it should be **Blue skies, not theme led!**

Q7. Please provide your opinion of the role Omics should play in delivery of the wider NERC Strategy 'Next Generation Science for Planet Earth'. Please state whether you agree or disagree with the following statements about how NERC could support omics. To address this please state whether you agree or disagree with the following statements.



**Q7. Please provide your opinion of the role Omics should play in delivery of the wider NERC Strategy 'Next Generation Science for Planet Earth'. Please state whether you agree or disagree with the following statements about how NERC could support omics. To address this please state whether you agree or disagree with the following statements.**

- The options are a bit loaded. **A distributed facility could take on some NCEAS-like roles as well as providing technical support.**
- I think the current NERC distributed infrastructure is fine and these **nodes should be built upon rather than investing in one central facility** probably at the expense of the rest.
- There are **so many skill sets needed for a complete environmental omics centre** that it is hard to imagine being able to house this under one roof unless there is highly significant amount of funding.
- Due to the throughput needed, **a single centralised facility would not be sufficient.** Funding to access existing facilities would be more efficient and would offer much greater access.
- You get the best technical support when allow the provider to mix support and research. An OMICS centre would cost too much and the main advantage we have with environmental OMICS is the cross-disciplinary nature of the research across a wide range of environments and taxa: you would not get that in 1 institute.
- The danger of a single, centre that only does environmental 'omics is that it divorces it from human & agricultural work, which a feed a lot of techniques into env-omics. I think its critical that any such centre be part of a university to get the breadth of techniques. Whether this is a single centre or more than one is a moot point. Probably teaming up with another funder such as the MRC to provide >1 is better.

**Q8. What key action do you think should be incorporated into a Roadmap to deliver the short-term and long-term requirements to allow omics to deliver its full potential to the NERC community.**

- Maintain, or indeed enhance, funding to specifically target environmental "omics".
- See several comments above. Need smallish proof of concept or taster funding, as well as specific funding to allow both development of the technologies for specific NERC applications areas, and to enable users to access facilities to carry out NERC-remit work.
- Transition of research activities into operational routine use by endusers (agencies, industries, etc).
- More workshops to develop a sense of community, plus maybe a funding initiative from NERC and a recognition by NERC that this is an important area of science and requires specialist evaluation (which it usually does not get).
- Enabling is the key (after access to technology). Something that addresses this; a week or so residential course is an approach that has been extremely effective for the molecular evolution community over the past couple of decades. This would be enough time to develop basic coding skills that could then then mature within the researchers own environment.
- I think a training infrastructure is vital as well as coordination among NERC facilities. I am currently unsure why we have two facilities in Liverpool and Edinburgh, for example.
- Funded studentships with support for sequencing via NBAF.

**Q8. What key action do you think should be incorporated into a Roadmap to deliver the short-term and long-term requirements to allow omics to deliver its full potential to the NERC community.**

- Increase **bioinformatic** supports.
- Introduce more 'hands on' workshops for NERC PhD students including **analysis of large datasets.** Develop a 'user friendly' pipeline for application to environmental studies.
- Focus on **data analysis** challenges.
- The key things are that NERC scientists have access to the latest equipment and advice from some kind of NERC-focused organisation and that more young scientists with the skills to **handle the data** have the opportunities to develop careers, embedded in active NERC-facing research groups.
- Continue to invest in NERC 'omics' centres and associated technology development (e.g. bioinformatics), establish small 'omics' pump priming grants, and support a new 'omics' thematic programme.
- Knowledge exchange networks.
- Greater integration is required between existing omic facilities.
- Continued expansion of NBAF distributed facility to allow NERC researchers access to state-of-the-art technologies across the entire omics portfolio of approaches. e.g. huge opportunity to develop robust environmental proteomics approaches. Coupled with ring fenced funding for omics research to address key topics in NERC strategic plan.