

ROUNDTABLE DISCUSSION REPORT - OCTOBER 4TH 2024 Maison de la Recherche (Paris VII)

NON-ANIMAL RESEARCH : HOW TO RAISE AWARENESS AMONG DIFFERENT AUDIENCES ?



Key takeaways from the discussion

- The roundtable brought together a variety of players to discuss the communication issues surrounding New Approach Methodologies (NAMs).
- The use of the acronym NAMs was debated, highlighting the challenges of understanding it raises, both for scientists and the general public, due to its technical nature and the diversity of interpretations.
- The debate explored the ethical and scientific aspects of non-animal alternative methods and their potential to replace animal testing, while highlighting the need to develop robust validation standards.
- An observation on the general public's lack of scientific knowledge steered the discussion towards the importance of scientific education from the earliest age and rigorous popularization.
- It was recommended to use concrete examples to explain complex concepts, and to invest in varied and accessible communication channels, including social networks, in order to reach a wider and more diverse audience.
- The role of media, the private sector and public decision-makers was discussed, all identified as key players in the effective dissemination of scientific information and in raising awareness of non-animal research methods.
- The roundtable highlighted the need for a collaborative and proactive approach to restoring trust in science and encouraging a better understanding of advances in ethical and predictive research.



Reflection on New Approach Methodologies (NAMs) terminologies

The roundtable began with a discussion of the relevance of the acronym NAMs, particularly in scientific communication and among the general public.

This acronym, which stands for New Approach Methods/Methodologies¹, is in common use in certain circles (notably toxicology insiders and institutions²), but raises challenges for effective communication, not least because of its technical nature and the diversity of interpretations (New Approach Methodologies, Non-Animal Methods, or New Alternatives Methods).³

Au sein de la communauté scientifique

One of the points underlined is that the acronym NAMs covers a wide spectrum of methods, including *in vitro* and *in silico* models, but also in some cases approaches using living organisms such as zebrafish larvae or invertebrates such as the *C.Elegans* worm, which are exempt from regulations governing the use of animals for scientific purposes.

This acronym seems to be little used in the day-to-day practice of researchers, who tend to prefer more specific terms such as "*in vitro* models" or "alternative methods".

Thus, the term NAMs appears to be more of an institutional concept, used at a macro level by experts, but ill-suited to day-to-day communication within laboratories.

In addition to these introductory remarks, there was also a discussion on the terms "alternative" and "new approaches" used to describe and group together methods that do not use animals.

While specifying that the term "*alternatives*" in French carries a connotation of counter-culture that can be negative in comparison with the English use of the same word, it was noted that "alternatives" often implies a notion of total replacement of animals, whereas the development of new approaches sometimes aims to complement, rather than completely replace, the use of animals. To a certain extent, therefore, this term may seem reductive, especially as, depending on one's point of view, it may also implicitly convey a value judgment about traditional methods using animals.

The term "new methods" might be more inclusive, but it does not openly exclude the use of methods involving animals.

With the general public

Technical acronyms and specialist terminology can be confusing, not only for professionals but also for the general public.

¹ https://www.fda.gov/food/toxicology-research/new-approach-methods-nams

² The US Environmental Protection Agency (EPA) began using the term "NAMs" in 2016, after the Frank R. Lautenberg Chemical Safety Act amended the Toxic Substances Control Act (TSCA).

³ https://contemporarysciences.org/new-acronym-mayhem-why-we-need-a-consistent-definition-of-nams/



To communicate effectively about NAMs to the general public, it was recommended to use simple definitions, even if they are not totally exhaustive. Beyond the acronym NAMs, certain terms, such as "organoid", may be misleading for the general public because of their connotation or complexity. It is therefore suggested that priority should be given to explanations using concrete examples to demystify these concepts and make them more accessible. This will ensure a minimum level of understanding that is sufficient for the majority of the public. A gradual step-by-step approach is therefore to be favored to ensure communication that is faithful to scientific realities while remaining accessible and avoiding unfounded promises.

"The acronym means that we're only talking to experts, and if we want to try and reach a wider audience in the future, I think it's important to have something other than just specialist language, and I think the acronym is the essence of that". Dr Stéphanie Descroix

Generally speaking, the terminology used for NAMs and alternative methods is still fraught with ambiguity and confusion, even in the scientific sphere. The diversity of interpretations, particularly between the different players - institutional, regulatory, industry and scientific poses a problem. For example, in the cosmetics industry, the acronym NAMs is little known and a more explicit terminology is required to ensure better understanding. There should be ongoing reflection on the terms used to define and communicate about these new approach methodologies.

Clarity in scientific communication is essential. It must be simple and clear, but it must also be nuanced, particularly so as not to convey false ideas or unrealistic hopes. For example, it is inaccurate to claim that alternative methods are already ready to replace animal experimentation entirely. However, it is essential to recognise and communicate more about the advances made so far with these new methods and technologies.

Whether for researchers, industries or the general public, it is important to agree on understandable and appropriate terms, and even to develop terminologies, so that they reflect scientific advances while remaining comprehensible to all, in particular to promote a better understanding of the work of scientists and more ethical and predictive research methods.

Relevance and purpose(s) of models

The debate then turned to the ethical issues surrounding animal experimentation and the relevance of alternative non-animal models for biomedical research. One point of discussion was the question of the purpose of developing these models, i.e. replacing animals in research and/or improving the predictivity of results for human health.



The predictivity argument has highlighted certain reservations about the idea that alternative methods, in particular the use of human cells, would necessarily/systematically be more reliable than animal experimentation.

Based on the need for discernment and dialogue between stakeholders and the importance of developing models that better reflect human physiology while reducing the use of animals, this discussion raised the key point of the need to develop robust standards for validating new models based on data from the species concerned.

Education, communication and popularisation of science

In order to develop a relevant approach to raising public awareness, an initial assessment was made of the general public's knowledge of science and the scientific method.

Scientific education and confidence in science

It appears that the general public's knowledge of scientific subjects and alternative methods to animal testing is limited, creating an initial gap between some members of the public and scientific content.

On the subject of new non-animal research methods, this can also have an impact on expectations, positions, particularly in terms of ethics, and understanding of scientific and technological advances.

Scientific education, from the earliest age, was thus highlighted as a fundamental necessity and part of the long-term solution that falls within the remit of the French government. At the same time, collaboration with existing educational programmes implemented by associations or initiatives such as the introduction of modules on new methods, ethics and scientific integrity from a very early age, also appear to be prospects that should be further encouraged and deployed by the authorities.

The significant gap that can be observed in France today between public perceptions and knowledge and scientific reality presents a definite challenge that it is important to address.

At the same time, the public may be reticent and/or harbour fantasies about complex, even sensitive subjects such as the use of animals in research or artificial intelligence, while many people are still largely unaware of the existence of new methods that do not involve the use of animals; a lack of knowledge that hinders informed reflection.

The growing confusion between scientific fact and belief has been amplified by the rise of social networking, and was also exacerbated during the Covid-19 pandemic, a period when science struggled to get clear messages across, leaving room for contradictory information and damaging misinformation, further widening the gap between science and the public in terms of trust and knowledge.

In France today, but also in many other countries, there is a real challenge to re-establish a relationship of trust and open debate between science and society.



Involving the public and the challenges of popularising science

The difficulty of popularising science lies in the need to simplify concepts without betraying their accuracy.

Using concrete examples to explain abstract concepts such as organs-on-a-chip is necessary not only to anchor explanations in 'real-life' cases that can be understood by a non-specialist audience, but also to limit fantasies and fears.

Initiatives to popularise science in collaboration with journalists and teachers or researchers, for example through the use of comic strips, could be developed to make information more accessible, democratise science and reach a wider audience, including those who are far away from science.

So going out and finding audiences "where they are" (railway stations, festivals, etc.), getting researchers out of their laboratories while offering the public(s) a concrete view of scientific methods seems to be a point in the equation that should not be overlooked.

This strategy would make it possible to start conversations with people who would not spontaneously come to find out more at traditional science events, such as the *Fête de la Science*, which could help to dispel misunderstandings about the nature and aims of research.

The role of media

Alongside the lack of scientific education, **the low level of exposure of scientific methods in the media**, with a few exceptions, makes it difficult to gain a fair and realistic understanding of research advances and objectives. Media play a key role in disseminating scientific information. However, their coverage of research-related subjects remains limited, with a tendency to focus on sensational announcements.

Given the challenge of managing the expectations and beliefs of the public, the tendency to 'oversell' scientific advances, particularly in the media, can not only provoke and feed fantasies, but also lead to disappointment and disillusionment, which is all the more damaging in the field of health.

Research is an uncertain and constantly evolving process, and caution and transparency are therefore recommended both to journalists and to all those communicating on these issues.

Multiple audiences and channels

The identification of audiences is key here and appears relevant, depending for example on sensitivity to scientific subjects, interest in reliable sources, but also age. Age can be a decisive factor in the choice of communication channels. Social networks now play a major role in the dissemination of information. It is therefore important, if not essential, to invest more in these 'new' channels, such as TikTok or Instagram.



However, while these channels have their advantages, they also have their constraints, particularly in terms of formats, which have to be short and punchy, risking compromising the complexity of scientific messages.

Given that this cannot be left to the scientists themselves, it was suggested that communication on social networks could be entrusted to professionals trained in the popularisation of science, capable of making complex concepts accessible without distorting them; this potentially represents new skills and know-how.

The growing role of scientific influencers was also highlighted, although there are still very few of them in France at the moment.

Communication and education in the French PEPR MED-OOC project

The integration of communication and education in the French PEPR MED-OOC project was discussed. The exploratory Priority Research Programme and Equipment (PEPR) MED-OOC is part of a field with great potential for innovation in personalised medicine, public health, pharmacological research and clinical trials: organs and organoids on a chip⁴. At present, the project is focusing mainly on methodological developments and targeted lines of research.

The discussion raised the need for scientists themselves to be supported and trained in new technologies and scientific fields that are fundamentally cross-disciplinary, involving bioengineering, artificial intelligence, microfluidics, the study of sensors and data analysis.

Calls for projects within this PEPR should make it possible to broaden the scientific community. The aim here would be to offer education and training for researchers rather than popularisation for the general public. Scientific communication activities should also be developed.

The private sector

The role of the private sector in science communication was also discussed. Although corporate communication is mainly motivated by commercial objectives, their contribution to science popularisation could be enriched by a corporate social responsibility (CSR) approach based on transparency.

Start-ups, in particular, have been identified as having great potential for inspiring and mobilising young people around science, due to their dynamic and innovative image; these structures are more flexible and closer to the public (especially young people), in contrast to large industrial groups whose image is often perceived as more rigid and conservative.

"We talk a lot about public research, but I also wonder whether the private sector, industry, doesn't also have a role to play, even if the issues are different. [...] As start-ups, we don't have the reflex to say to ourselves that we too may have a role to play in communication in the broad sense of the term, which is not necessarily limited to a business context.

Dr Luigi Formicola

⁴ https://www.cea.fr/drf/Pages/Actualites/Vie-de-la-DRF/2024/selection-pepr-exploratoire-medooc.aspx



The role of public decision-makers

Finally, this identification of audiences highlights the need to raise awareness among political decision-makers, who are often far from the world of science. Unlike other countries such as the UK, **France also suffers from a lack of scientific culture among decision-makers**. Work and dialogue with ministries, parliamentarians and elected representatives at other levels would appear to be relevant, and could lead to more concrete and stronger political support for science in general, but also more specifically for new scientific methods that use alternatives to animals to support advances in biomedical research and toxicological testing for global health.

We need to catch up in terms of education, communication and the popularisation of science in general, and specifically for advances and innovative methods such as alternative approaches to animals.

The challenges for researchers and scientists are numerous, from choosing the right means of communication to the right approaches to popularising without distorting, all with the aim of restoring public confidence in science. The role of companies, specialist journalists and influencers also seems key to meeting these challenges. Transparency, education and concrete examples will be essential tools for communicating effectively about scientific research, its advances and developments.

In an attempt to meet these collective challenges, we need to put in place a global, cross-disciplinary and constructive strategy, as well as more proactive and diversified communication to raise public awareness of the issues involved in research and alternatives to animal experimentation; an approach that requires efforts from all players (decision-makers, researchers, educators, media, civil society).





Actors & challenges to raise awareness among the audiences



"Ultimately, it's a global issue, and that requires a fairly global approach, and when I say we, I mean us - researchers, research funders, research organisations, media, evaluators, and regulatory agencies - we all have a role to play in raising awareness and educating people". Dr Valérie Lemarchandel

Outlook

Examples of international initiatives were given to illustrate the importance of a strong commitment to promoting new non-animal methods. In the Netherlands, for example, a major public-private fund has been set up to support the transition to animal-free research⁵. In France, the MED-OOC project has received government funding to develop organs-on-a-chip, a promising example of alternatives to animal experimentation.

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https://www.uu.nl/en/news/dutch-national-growth-fund-invests-1245-million-in-transition-to-animal-free-in novation / https://site.cpbt.nl/



Overall, this roundtable fulfilled its objective of addressing the need of different approaches to raising public awareness of non-animal research. The rich and varied discussions highlighted the fact that the specific issue of non-animal methods is part of a more global challenge of educating, communicating and popularising science, research and the issues involved. Numerous avenues and approaches were mentioned and explored, but they do not constitute complete coverage of the subject.

We hope that the roundtable and this report will provide a good basis and motivation for further reflection and collaboration on this complex but crucial issue.

Acknowledgements

The Pro Anima Scientific Committee, which initiated this roundtable, would like to warmly thank the panellists Valérie Lemarchandel, Stéphanie Descroix and Luigi Formicola for their relevant and enriching participation in this discussion. We would also like to thank Athanassia Sotiropoulos for her role as moderator alongside our scientific manager Lilas Courtot. We thank the *Fondation pour la Recherche Médicale* (FRM), co-organiser of the event, and the *Maison de la Recherche* for their warm welcome. We would also like to thank the FC3R, PARC and ATC for supporting our Science & Dialogue panel discussion series, which includes this round table. Finally, we would like to thank the participants for coming along and contributing to the discussion by asking the panellists questions.

About the panellists

Dr Valérie Lemarchandel

Valérie Lemarchandel holds a doctorate in biology and is a research director at the CNRS. Between 1989 and 2006, she carried out research in haematology, embryonic development and molecular genetics. She was then in charge of scientific communication for 4 years within the management of the CNRS Institute of Biological Sciences. Since 2010, she has been Scientific Director of the Fondation pour la Recherche Médicale and a member of its Executive Board.

Dr Stéphanie Descroix

Stéphanie Descroix is currently Director of Research at the CNRS and head of the Macromolecules and Microsystems in Biology and Medicine research team at the Institut Curie Paris and the Institut Pierre Gilles De Gennes. Her team is world-renowned for the development of microfluidic devices and concepts (organ-on-a-chip) for fundamental biology, biophysics and the clinic, with a strong commitment to technology transfer in the field of medicine and life sciences. She is deputy director of the French national network on microfluidics (GDR MNF). She is the author of over 90 scientific publications and has participated in several highly selective European projects. In 2016, she successfully co-launched the microfluidics-based company Inorevia, which has received awards from several prestigious French and European institutions. More recently, Stéphanie has distinguished herself for her contribution to the MED-OOC project (Organs and organoids on chips), supported by CNRS, Inserm and CEA, which aims to develop a new generation of



organs and organoids on chips, capable of mimicking the physiology or pathology of the patient's organ, with the aim of using it for personalised medicine.

Dr Luigi Formicola

Luigi Formicola is the co-founder and Chief Operating Officer of ExAdEx-Innov, an innovative start-up with the ambition to revolutionise research into adipose tissue thanks to patented ex vivo models that faithfully reproduce human fat.

With a PhD in cell biology, he has over ten years' experience in research project management and technology transfer in the biotechnology sector, as well as in drug development. He has witnessed developments in preclinical research and the emergence of alternative solutions aimed at reducing the need for animal experimentation while improving the predictability of clinical trials.

About the moderators

Dr Athanassia Sotiropoulos

Athanassia Sotiropoulos is a research director at Inserm. She first became interested in cell signalling and then in understanding skeletal muscle plasticity. She develops her projects at the Institut Cochin (Inserm/CNRS/UdPC) in Paris. She has been director of the GIS FC3R since December 2021.

Dr Lilas Courtot

Lilas Courtot is Scientific Manager of the Pro Anima Committee, where she contributes her experience and knowledge to help promote and support new non-animal methods, by encouraging open and constructive dialogue between the various players. She holds an engineering degree in biochemistry from INSA Toulouse and a doctorate in oncology from the Université Paul Sabatier Toulouse III.

Quotes

NAMs acronym

"The acronym means that we're only talking to experts, and if we want to try and reach a wider audience in the future, I think it's important to have something other than just specialist language, and I think the acronym is the essence of that". **S. Descroix**

"The acronym in the definition used by the FDA, for example, or the regulatory agencies, is an approach, a methodology, which may also include animal models such as *zebrafish* or small vertebrates or insects. So there can still be confusion." **L. Formicola**

"For people in the animal experimentation community, alternative methods can be adjustments to protocols that reduce their severity. So there is ambiguity. That's why we could use *substitutive* instead in French. But this may be an ambiguity for specialists and not for the general public." **A. Sotiropoulos**



"We may not be completely inclusive, but I think we need to succeed in delivering a clear message. So we're going to need a relatively simple definition." **V. Lemarchandel**

Education, communication and popularising science

"Ultimately, it's a global issue, and that requires a fairly global approach, and when I say we, I mean us - researchers, research funders, research organisations, media, evaluators, and regulatory agencies - we all have a role to play in raising awareness and educating people". **V. Lemarchandel**

"At the moment there's a science festival, but it's taking place in places where science already exists. So maybe one of the things we can do is to go and find people where they are, in overground or underground stations [...] Maybe we need to go back and find people to bring them to us and not stay in our labs and wait for people to come." **S. Descroix**

"When we talk about alternatives, new approaches and artificial intelligence, people can be very wary." L. Formicola

"In France, another problem is that our politicians are not scientists, they are "*enarques*", most of them, or engineers, but not researchers, not scientists in the sense of scientific method [...] we need orchestrated actions to make science, scientific knowledge, something important". **A. Sotiropoulos**

"We talk a lot about public research, but I also wonder whether the private sector, industry, doesn't also have a role to play, even if the issues are different. [...] As start-ups, we don't have the reflex to say to ourselves that we too perhaps have a role to play in communication in the broadest sense of the term and for the general public, which is not necessarily limited to a business framework." L. Formicola

"Fear also comes from what we let people think. That's also our responsibility. But I think we'd do well to test our ways of telling stories to try and understand what fantasies or fears we do or don't generate, or how clear it is what we're explaining." **S. Descroix**

"It seems that we're far from being able to imagine the extent to which we don't know how people interpret what we're saying. And the idea Luigi mentioned of using concrete examples to explain what we're talking about and, above all, what it's used for, how it's used and to what end is interesting and important, because it explains the initial idea and the final idea. And that can also help to avoid losing people." L. Courtot

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