Research Community Organisms in their Environment

Results of Survey on the impact of the Kostiç c.s. amendment on NHP research at BPRC

Steering committee Research Community 'Organisms in their Environment', July 23rd 2025

Background

The Biomedical Primate Research Centre (BPRC) receives annually 12.5 million euro from the government. The non-human primate (NHP) research at BPRC focuses on life-threatening and disabling diseases like AIDS, tuberculosis, COVID-19, hepatitis, Parkinson's and Alzheimer's.

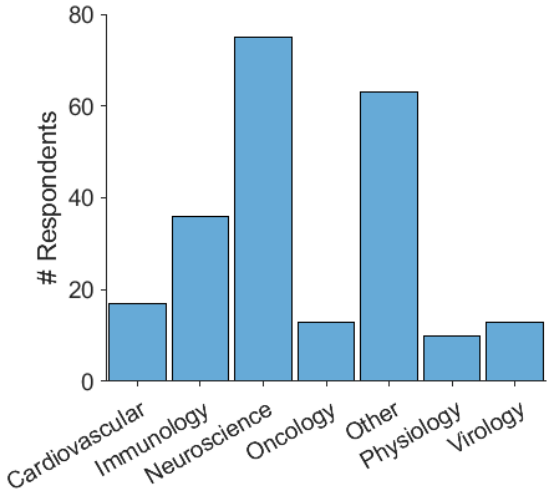
In April 2025 it was decided – based on an independent report of the committee Bijker – that the number of experiments with non-human primates (NHPs) can stay as it currently is (150 per year). In July 2025, Kostiç c.s. proposed a phased reallocation of the Ministry of Education, Culture and Science (OCW) subsidy that the BPRC receives, involving a yearly increase in the portion of the annual budget to be spent on alternatives to animal research. By 2030, the entire subsidy would be allocated to alternatives, eliminating funds for primate research. While BPRC is allowed to obtain funding from other sources, an expected consequence is that BPRC will have too little budget to maintain the NHP colony and has to close its NHP facility. Despite the negative advice from the ministers of OCW and of Health, Welfare and Sport (VWS), the amendment passed Parliament with a 76-74 vote on July 3rd.

To approve the budget change, approval by senators from diverse Dutch political parties is required. The voting was planned for July 8th, but was delayed due to their request for written questions, which are to be answered by September 9th.

In response to these developments, the NWO Research Community "Organisms in their Environment", represented by Dr. Alexander Heimel (NIN, Amsterdam) and Prof.dr. Judith Homberg (Radboudumc, Nijmegen), was approached by NWO with the question if we can provide insight in the implications of approval of the amendment (and the budget) for science and scientists in the Netherlands. Accordingly, we developed a questionnaire to ask members of our community of Dutch life scientists about the implications of the amendment for their own research and for biomedical research in the Netherlands more generally, and their expectations regarding the development of alternative methods. The questionnaire was sent out on July 14th at 11.30, and the deadline for responding was July 17th 18.00.

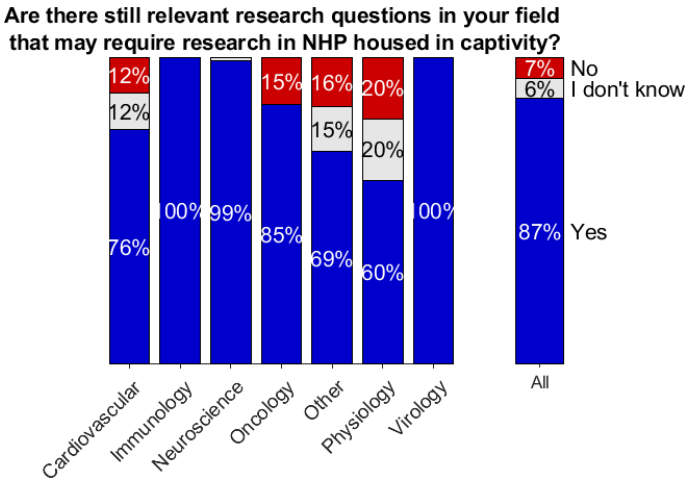
Respondents

The survey was sent to all members of the NWO Life science Research community 'Organisms in their Environment', who were free to forward the email. We therefore did not have control over who received the questionnaire. Entries required a unique academic email-address. The respondents came from many fields of the life sciences domain. There were 227 responses, out of which 22 (10%) do research with NHP (not necessarily at BPRC; one respondent used a BPRC-email address). The largest group identified themselves as neuroscientists. When grouping results by research field, we grouped all fields who had less than 10 respondents into 'Other'. The group of 'Other' consists of respondents with a background in ecology, animal behavior, laboratory animal science, microbiology, environmental science, animal welfare, preclinical imaging, veterinary education, hepatology, clinical genetics, biotechnology, toxicology, hematology, cell biology, nephrology, and agro science. The nature of the respondents suggests that the people who took the time to respond do not represent a balanced sample across all life scientists, but the opinions spanned the full spectrum.

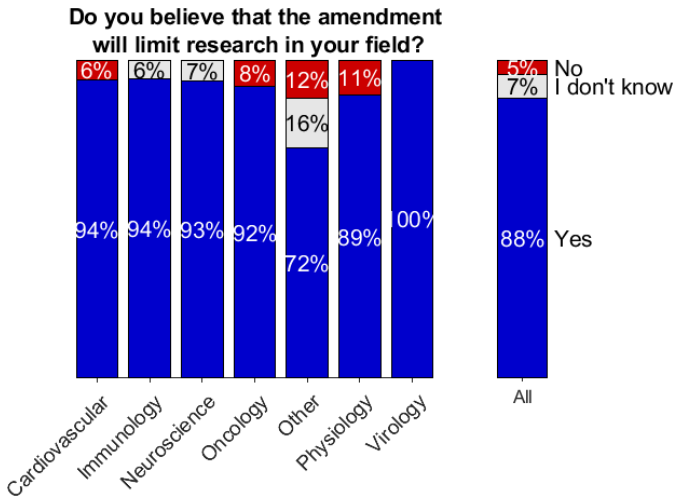


Relevance of NHP research

1. We first asked if there are still relevant research questions in the field of the respondents that may require research with NHPs that are housed in captivity. About 87% of the researchers indicated that there are still relevant research questions that may require NHPs. This is slightly research field dependent. Among respondents working in the field of immunology, virology and neuroscience there is a nearly universal belief that some relevant questions still require NHPs, while this is somewhat less among respondents working in the domain of cardiovascular research, oncology, physiology and 'other'.



2. Next, we asked the respondents if they believe that the amendment would limit research in their research field. Given the numbers shown above, in response to the first question, it is not surprising that almost 90% of all responding scientists believe that a closure of the NHP facility will limit research in their field. In virology, this belief is shared by all responders.



Effects of NHP facility closure

3. Our third question was what the consequences of the closure of the BPRC would be for the respondents.

Specific effects on own research

Below is a structured summary list of the answers. The word 'hinders' is chosen below to indicate negative effects of the closure, but the effects that are described in the original answers range from delays to complete prevention. Some respondents did not answer the question, and some answered fitted in multiple categories, so the number of responses does not add up to 227. The numbers give a concise impression of what answers were given but should not be taken as a fair representation of the opinions across all life scientists, or even across the sample of respondents. This was an open question, so people wrote what came to mind when they filled out the survey.

Negative effects (210x)

Translation failure (181x)

- Hinders translation between pre-clinical research and human applications (31x)
- Hinders development of treatments and medicine (44x) for e.g. brain disorders (9x) (such as depression and dementia, neurodegenerative diseases (2x), Parkinson's disease (2x), Multiple Sclerosis), motor diseases (4x), blindness, inflammatory diseases (4x), infectious diseases (3x), (such as HIV (2x), malaria (3x)), cancer (4x), tuberculosis (2x), coagulation, mitochondrial diseases, auto-immune diseases, endometriosis.
- Hinders development of immunotherapy (3x)
- Hinders development of gene therapy (3x), for e.g. brain diseases

- Hinders development of vaccines (12x), for e.g. HIV
- Hinders development of medical devices for treatment or diagnosis (5x) for e.g. blindness, deafness, neurological diseases, epilepsy (2x), Parkinson's disease, motor disorders
- Hinders development of drug delivery methods (2x), e.g. for brain injury
- Hinders development of medical tracers (2x), e.g. for neurodegenerative diseases
- Hinders development of neurotechnology and non-invasive tools for brain diagnostics
- Hinders development of transplantation treatment
- Hinders insight into normal body function (18x), e.g. brain function (8x), (such as neural basis of cognition (5x)), mucosal immunology, reproductive system (2x), physiology, immunology (2x), neuroimmunology (2x) and toxicology.
- Leads to more unforeseen casualties in phase 1 human trials (2x)
- Hinders translation to animal care and welfare (2x)

Movement of NHP to other countries (21x)

- Leads to the transfer pre-clinical and compulsory research abroad (14x)
- Leads to the need to obtain animals from a foreign source (2x)
- Leads to increased dependence on other countries (1x)
- Leads to a reduction in animal welfare when research moves abroad (2x)
- Leads to movement a loss of key collaborators, either because they move abroad or because they would leave academia (1x)
- Hinders development of refinement of animal studies (1x)

Losses for the Netherlands (4x)

- Leads to loss of knowledge and research infrastructure from The Netherlands (2x)
- Leads to the need to leave science (1x)
- Reduces the position of Dutch neuroscience (1x)

Ethics conflict (4x)

- Sets a precedent for limiting scientific research by parliament (4x)

Positive effects (3x)

- Facilitates animal-free research (2x)
- Stimulates research to human-relevant science (1x)

Effects on biomedical research in the Netherlands

4. Next, we asked respondents to describe what the consequences of the closure of the BPRC would be for biomedical research in the Netherlands. We categorized the answers and counted the number of responses in the different categories. For each category we provide examples of answers and how often the type of answer was given. Notably, some answers of respondents fell into more than one category, and some respondents did not answer the question, so the number of responses does not necessarily add up to 227.

Direct negative effects on research field (9x)

- Will ultimately lead to the loss of biomedical research in the Netherlands, with major economic consequences (9x)
- Signals that a small group of politicians can determine what is being investigated (3x)

Other major negative effects (145x)

- Leads to removal of a crucial element in biomedical research that is essential for translation of treatments or medical devices to patients, with damage to patient's health (98x)
- Leads to significant slowing of progress in biomedical research and chronic illnesses (MS, rheumatoid arthritis, Alzheimer's, Parkinson) and infectious diseases (HIV, tuberculosis, malaria, hepatitis) (6x)
- Leads to slowing of development of brain implants for e.g. Parkinson patients (3x)
- Leads to loss of innovation in the Netherlands (6x)
- Leads to major loss of knowledge and expertise in the Netherlands, amongst others for pandemic preparedness and drug development (20x)
- Science will be affected because funding is taken away before alternatives are available (7x)
- Prevents training and certification in NHP research(1x)
- Leads to more unforeseen casualties in phase 1 human studies (1x)

Loss of autonomy (21x)

- Netherlands will lose its frontrunner position in unique models and lose its international position in biomedical research (6x)
- Puts NL behind in research compared to competitors abroad (14x)
- Restricts academic freedom (1x)

Research moves abroad (36x)

- Research will move to countries where ethics standards are at a lower level (7x)
- Researchers and their research will move abroad, Netherlands becomes less attractive for international researchers (24 x)
- The Netherlands will become dependent on other countries in case of new disease outbreaks or safety issues (3x)
- Leads to a brain drain for the interpretation of data obtained with these models elsewhere (1x)

Minimal impact (3x)

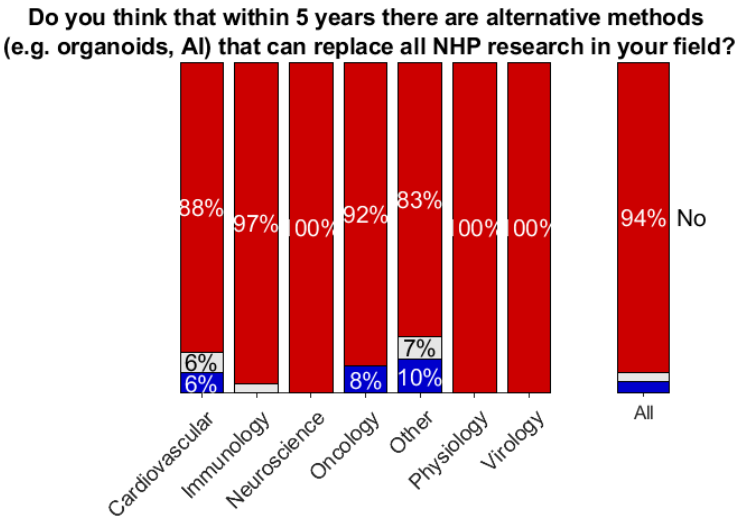
- NHP can be replaced (2x)
- No effect (1x)

Shift to alternatives (2x)

- Will release budget for the development of alternatives (1x)
- Allows refinement of some research to other animal models, e.g. pigs (1x)

Alternatives

5. Currently, NHP research, or any animal research, can only be done if there are no alternative methods available. This is set in law and is evaluated by two ethics (DEC and CCD) and an animal welfare committee (IvD) for each study. No license for animal experiments will be provided if alternative methods are available for the specific research questions of researchers. Since the amendment entails that an increasing proportion of the budget that BPRC receives is spent on the development of alternative methods, until in 2030 the full budget is spent on alternative methods, our fifth question was about alternative methods. Specifically, we asked the respondents if they think that within 5 years there will be alternative methods that can replace all NHP research in their field. Alternative methods refer to non-animal methods that can address the same research questions as those that are currently answered using NHP research. Several researchers indicated that they considered the non-animal methods as complementary methods. This means that the methods do not answer the same research questions as answered using NHP research, but other questions and thereby provide complementary information. Our yes/no/I do not know question on this topic indicated that there is no shared optimism that there will be new NHP-free methods available within the next five years. Nonetheless, there are differences in the optimism between fields. Not a single respondent in the fields of neuroscience, immunology, physiology and virology believes that alternative methods will become available. In some other fields, there is a bit more optimism that NHP research will no longer be required within 5 years, but in no field more than 10% of the responders believe that new methods can replace NHP research by 2030.



Foreseen developments in alternative methods replacing NHP research in the coming 5 years

To dive into more depth regarding alternative methods, we asked the respondents "which developments do you foresee in alternative methods replacing NHP research in the coming 5 years?" We categorized the answers and provide examples for each category. Again, some answers fell into more than one category, and some respondents did not answer the question, so the number of responses does not necessarily add up to 227. The possibilities for replacement are field dependent, which possibly contributed to variable answers.

No replacement of NHP research is possible (129x)

- Alternative methods will never be able to replace the complexity of the human body (50x) during disease (2x), and physiological (3x), multi-organ (2x), ageing (1x), cancer (2x), (auto)immune (11x), vaccine (1x), infection (1x), brain, behavior and cognition (22x) and brain-computer (1x) research.
- Alternative methods need to be validated, which requires NHP (animal) research (4x)
- Alternative methods have limitations, and therefore never can fully replace NHP research (11x)
- We cannot model what we do not understand (1x)
- There are overestimations about capabilities of alternative methods (3x)
- There are no alternatives that regulatory agencies accept (1x)
- All major break throughs in medicines (vaccines, insulin for diabetes, antibiotics, transplantation, cancer immunotherapy, surgery, blood transfusion, heart-lung machine, gene therapy) involved animal experiments. Alternative methods (cell lines, organoids, and computer models) have not yet delivered medical breakthroughs and it is uncertain if they ever will (1x)
- Alternative methods replacing NHP and animal experiments is an illusion that blocks medical progress (2x)
- Are we going to skip safety tests in NHP (4x)?
- NHP research is last step before testing drugs/vaccines in patients, when NHP is lost this needs to be done abroad (2x), where ethics are less standardized (1x)
- A lot of money goes into alternative methods, but they cannot replace animal work (1x)
- "We need to be honest and explain to the general public that not all animal experiments can be replaced with alternative methods, certainly not within 5 years" (1x)
- "nobody wants to do animal experiments, let alone NHP experiments, if there are alternative approaches" (1x).

Alternative methods are complementary to NHP research, but do not replace it (26x)

- Alternative methods are complementary but do not answer the same research questions as NHP research does (24x)
- Efforts should be made to keep scientists up to date regarding developments of alternative methods, so that the methods can be applied when possible. Still, it will not be able to replace all NHP research (2x)

Partial replacement of NHP research is possible (34x)

- Human tissue (1x), co-culture models (2x), organoid research (13x), AI-based models (1x) human big data usage (1x), controlled clinical trials (2x), lab on a chip (2x), xenotransplanted brain cells (1x), human brain biopsies (1x) will enable some research which is currently done with primates, but cannot replace all NHP research.
- In certain cases, organoids may replace NHP research (e.g. for toxicology research). However, interactions between organs (gut-brain, reproduction) cannot be mimicked by organoids (7x)
- Pre-screening methods will be advanced (1x)
- There are developments at FDA, NIH and the EC roadmap to phasing out animal research for chemical safety assessments (2x)

More than 5 years will be needed to develop alternative methods (15x)

- It will likely take decades before full replacement would be possible (14x)
- Replacement options are developing too slow to fully replace NHP research (1x)

Optimism about development of alternative methods (7x)

- Alternative methods can be developed If more funding becomes available (4x)
- Better organoids, organs on a chip and in silico models are on their way (1x)
- Solutions are needed to build a multi-organ-on-a-chip including circulatory system (1x)
- There will probably be advancements (1x)

Shift to using other animal models (3x)

- There will be developments of more humanized mice and use of other large animals (1x)
- Studies will need to be done earlier in human (2x)

Funding

6. We furthermore asked the respondents if NWO should continue to fund NHP research and if NWO should look for methods to support NHP research in the Netherlands. The respondents indicated that they strongly favor continued funding of NHP research by NWO. To the question, should NWO continue funding NHP research through their grant schemes 95% responded yes, and 93% of the respondents think that NWO should look for methods to support NHP research. Something important that we did not mention in the questionnaire, because we did not know it, is that BPRC scientists are currently not eligible to apply for NWO funding.

Other comments

7. Lastly, we gave the respondents the opportunity to leave any additional thoughts they wanted to share. Nearly a hundred respondents took the opportunity to add comments. It is not possible to easily summarize them and not useful to list them all here. All comments can be accessed at https://osf.io/myd67/. We present a selection of comments. In the selection, we tried to highlight points that are not already made elsewhere in this document and are relevant to this issue. The comments have sometimes been edited for brevity. The views expressed are those of the respondents, not necessarily those of the report editors.

- *As a scientific community we are critical about the use of animals for research. Animal research is highly regulated, with a strong emphasis on 'Reduce, Refine and Replace'. Furthermore, research projects are critically reviewed before being funded. Only when deemed strictly necessary and acceptable by expert reviewers and legislators NHP research is allowed.*
- *A scientific advisory committee should be installed at government level so that parliament can get support to make balanced decisions.*
- *Closing BPRC makes it difficult to justify using new vaccines, medicines and medical technologies that were developed using NHP experiments outside Europe, where living conditions of NHPs are worse.*
- *The amendment is an example of Not-In-My-Backyard: we want the benefits of NHP research, but do not want it done here.*
- *This vote was taken despite a recent well-balanced decision by the minister and without any consultation of experts in the area of NHP research or of bioresearch expert members of the KNAW. This means ignoring a KNAW report (2014) and the recent Bijker report and bypassing the universities and NWO. The amendment is not based on scientific arguments.*
- *The consistent level of financial uncertainty leads to a decreasing likelihood of proper investments being made in developing, renewing and expanding animal units, which are crucial for refinement of animal welfare.*
- *Most important is that scientific and medicine development are not national activities but international. As such the current guidelines worldwide and in the Netherlands request sometimes safety studies in NHP. If these will be performed in other countries we have no control in the wellness of the animals.*
- *Within the European Union, different countries contribute in complimentary, and often unique, ways to the European Research Area (ERA) and thus the continent's overall capacity to address major societal challenges. This collective capacity is vital for European preparedness, especially when other global actors (notably the US) are stepping back from their traditional leading role. Because of its size and expertise, the BPRC NHP facility is an essential part of the EU landscape and in addition to any impact loss of funding might have on a national level, it would cause irreparable harm to European preparedness.*

- *We have recently seen what being dependent on big tech does to the autonomy of our institutions and government. Do we want the same for neurotech?*
- *It's an illusion that animal-free models can replace the NHP work completely, let alone at such a short time-scale. This amendment either does not understand the reality of biomedical research or uses the development of alternatives as an excuse to end NHP research altogether for ideological reasons. As such, it's either misinformed, actively spreading misinformation, or both.*
- *Most fundamental questions about the brain cannot be answered in brain organoids, as they do not represent the adult brain, they do not perform computations, they do not have awareness, attention, emotions, etc. If they would, they would be as ethically challenging as current work with experimental animals. It is also impossible to discover and verify novel fundamental insights with only computer models.*
- *As a neuroscientist who worked with NHPs in the past I can say that all researchers and animal care takers who work with them care deeply about their wellbeing. We would not want to continue if there were alternatives. But we choose to do this research having a strong conviction that a few, carefully designed and tightly monitored experiments with NHPs can help thousands and sometimes millions of people.*
- *We need to focus on systematic reviews to show what works and what not. Just believing/stating that NHP/animal studies are useful for life-threatening diseases is not scientific. Failure rate of animal studies for Alzheimer's Disease is >99%, meaning animal studies should be stopped now for that purpose. Moreover, we have seen a tremendous scientific development in alternatives in the past decades, which makes it possible to make the transition, which is also already ongoing on the regulatory level. We should invest in alternatives as they become better and faster and lead to more human-relevant science.*
- *Most animal models are not predictive, because we do not understand the molecular causes of human diseases. Once we understand the molecular causes of human disease, there's no need for animal models anymore.*
- *Efforts should focus on creating platforms and methods for scientists to select the most appropriate biomedical model available.*
- *I advocate stimulation of animal-free alternatives such as organoid research and development of organ-on-chip technology, but on top of funding for animal research, not instead of.*
- *I think replacement and alternatives for some experiments in NHP will become available in the next 5 years. However, the current development is like throwing away old shoes before new ones are bought.*
- *In my field, IPSC-based models are replacing experiments previously done with animals (rodents in our case). However, that does not mean that ALL animal research can be halted. For some questions we still need animal research, and in some cases an NHP model. If we can do it differently, we must and we do so. We do not enjoy causing grief to laboratory animals and make sure their sacrifices do not go in vain.*

- *What would improve translation to the clinic is to translate disease progression studies, rather than disease prevention studies to the clinic. Patients in the clinic already have the disease. Prevention is easier and a different process than disease regression. One of the reasons clinical trials fail is that they are not based on true animal progression studies.*
- *Please think about the children and patients with severe diseases that depend on proper research for treatment development.*
- *If you want to reduce and replace animal testing, we should consider making human testing easier, better accessible and cheaper in the EU.*

Conclusions from the Survey

In this report we presented the answers of respondents as we received them, as much as possible independent of our own opinion on NHP research. For full transparency of the answers, the questionnaire and all responses are openly available (see below).

While we invite readers to draw own conclusions from the information that we summarized, the responses indicate that a large majority of respondents think that NHP research still addresses important research questions in their field, that the amendment limits research in their own field and has major negative effects on biomedical research in the Netherlands and that replacement of NHP within 5 years will not be feasible. There are views indicating that with further development of alternative methods NHP research could be partially replaced. However, full replacement in 5 years and on the longer term does not seem to be a realistic scenario according to most respondents, including those using alternative methods. There is the opinion that it is important to invest in the development of alternative methods, but that NHP research should not already be stopped before the alternatives are available. In addition, it is mentioned that no one wants to do NHP research, but NHPs are used because alternative methods for the research questions addressed at BPRC do not exist. According to a significant number of respondents, NHP research is an essential element in the chain of biomedical research from fundamental research to clinical implementation through it is high translational value, at least in the domains of neurological disorders, virology and infectious diseases. Taking away this element may affect other fundamental biomedical research (in these domains) as the translational step to humans cannot be made. Several respondents also fear that the (frontrunner) position of the Netherlands in international NHP research will be lost and that as NHP research moves to other countries, we no longer have ways to care about and improve NHP welfare. In conclusion, while the Survey does not necessarily capture the view of the full field of life sciences and there are different opinions among scientists, nearly all the respondents have the opinion that the amendment has negative effects on biomedical research in the Netherlands. The most important negative effect for biomedical research in the Netherlands that was mentioned by respondents is the removal of a crucial element in biomedical research that is essential for translation of treatments or medical devices to patients. Yet, there are also a few respondents that expect positive effects of the amendment.

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Data availability

The questionnaire and all the responses can be viewed at https://osf.io/myd67/

About the Research Community “Organisms in their Environment”

The Research Community “Organisms in their Environment” links scientists across the Netherlands studying the interactions between organisms and their environment and provides them a common platform. The research community provides solicited and unsolicited advice to the NWO Table Life sciences and the board of the NWO Science domain on NWO policy. NWO provides administrative services for the research community. To become a member, register via www.organismsintheirenvironment.nl