Lithuania: Research Assessment Exercise
Panel B1: Other Biomedical sciences
Lithuania: Research Assessment Exercise

Panel B1: Other Biomedical sciences

MOSTA, March 2015
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Introduction

Background
The overall objective of the research assessment exercise of the Lithuanian Higher Education and Research Institutions was:

To provide the Lithuanian public, policy-makers and decision-makers and the academic community with the most objective picture possible of the excellence and competitiveness of Lithuanian science in comparison with the global practice in the respective area of science.

The assessment produced evidence based analytical material that carefully and in details analyses the research excellence and competitiveness of Lithuanian research, combining its socioeconomic impact and the capacity of its research institutions. This material provides evidence for research policy making at different levels as well as enabling the research institutions involved in the process to gain a significant impetus for improving their activities. The research assessment was directed at institutions that were Higher Education institutions and their constituent faculties/departments/research groups or State research institutes.

Altogether nine panels were appointed to perform the evaluation. This document is the report of Panel B1: Other Biomedical sciences.

Scope of Panel B1: Other Biomedical sciences
The Panel was asked to evaluate research in Other Biomedical sciences in 6 Units of Assessment (UoA) using the following criteria: research quality, economic and social impact, infrastructure, research management and development potential and to score each Unit on a five point scale, namely, ranging from outstanding [5] to poor [1]. The overall objective was to benchmark research in Lithuania against international research in the respective research field.

Material on which the assessment was based
Each Unit participating in the evaluation provided the Panel with a self-assessment report for the years 2009 - 2013. The self-assessment report contained the following categories:

1. General information about the unit of assessment (UoA)
2. Human resources
3. Research output
4. Doctoral training
5. National and international collaboration
6. Other scientific and social activities
7. SWOT analysis
8. Funding

The self-assessment also included a list of best publications which were sent to the panellists. The panel also had access to a bibliometric analysis including information on citations and international co-authors.

The evaluation by the Panel was based on the self-assessment reports prepared by the Units of Assessment themselves, bibliometrics based on the data from the Scopus database, publicly available information via the websites of the research institutions as well as site visits and meetings with the representatives of the Units of Assessment. The Panel and the organisers of the assessment exercise do not take any responsibility for the quality and accuracy of the information submitted by the individual Units of Assessment.
**Assessment procedure**

Experts from Panel B1 visited Lithuania on February 2 – 6, 2015 and during this period they made site-visits to all UoA. The final Panel B1 assessments were based on both, the self-assessment report and evidence gathered during site visits. At least two Panel members were present at each visit. Each self-assessment report was read in details by at least two Panel members and then discussed by the whole Panel on at least two occasions, namely, before and after the Panel visits to the Units.

**Institutions involved**

Panel B1 was asked to evaluate 6 UoA within 5 institutions. The scientific disciplines of these institutions include Ecology and Environmental, Botany, Biology. The institutions were as follows:

**Universities**

1. Šiauliai University
2. Vytautas Magnus University
3. Vilnius University
4. Klaipėda University

**Research Institutes**

1. Nature Research Centre
Assessment of the Unit
VMU Biomedical sciences, Vytautas Magnus University

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<th>Name of the UoA</th>
<th>VMU Biomedical sciences</th>
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<td>Total no. FTE researchers</td>
<td>13,35</td>
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<td>Composition of the Unit of Assessment (UoA)</td>
<td>Faculty of Natural Sciences</td>
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Quality of the research performance and Impact on the scientific research discipline of the UoA

- The economic and social impact of the research in Lithuania: 4
- The physical infrastructure of the UoA: 5
- Research management (including career development and human resource management) of the UoA: 4
- The development potential of the UoA: 4

OVERALL SCORE: 4

Overall Score

The overall score (4) reflects the excellent infrastructural background of the UoA, the flexibility and openness of the research management and the nice future perspectives related to attractiveness to the society (including prospective students). International visibility could still be higher and the self-confidence of the researchers must be improved by management (trying to play leading roles in consortia, for example). Also, more research could be published in higher-quality journals. Development will be a condition of how successful will it be to keep the best young researchers in this good infrastructural and management atmosphere.

Quality of the research performance and Impact on the scientific research discipline of the UoA

The research topics in all of the main fields of activities are very actual and well chosen. The attitude towards multidisciplinary research is all right, a mass of research is really bridging disciplinary boundaries (e.g. in molecular ecology). Given how interesting research areas are studied and given also the high level of...
research (e.g. the biophysics lab is highly specialised and internationally recognised in electroporation methodology and mechanisms analysis, the collections of genetic resources of local and non-traditional berry plants are unique in East Europe), the research performance of the Unit can make an impact on the discipline. The overall number (80) and quality of publications are quite good, but the quality of the targeted journals could be even better and this way also the number of citations could be increased. International collaborations are nice and intense, also well-funded. Membership in journal editorial boards and international committees must be improved for visibility and networking. The cluster structure seems to ensure an excellent, adaptable research environment. The total number of PhD degrees awarded in 2011-2013 (8) is good compared to the present number of Professors, Associated Professors, Chief Researchers and Senior Researchers (9.4 FTE).

The economic and social impact of the research in Lithuania

Dissemination activity is increasing and this is an important step towards attracting young people and industrial funding. Among others, the regular participation at the Researchers’ Night programme is something excellent and often under-evaluated in most other institutions. Considering the number of leading researchers (9.4 FTE), much higher impact cannot be expected. The Unit’s interactions with non-academics (i.e. business, policy-makers including Ministry of Environment, and the public) are at a level that is expected of recognised academic institutions, but the level of collaboration with other research institutions/universities could be higher. The Unit could be better organised from a gender equality viewpoint, strengthening the career development of female scientists.

The physical infrastructure of the UoA

Excellent modern equipment is available, and equipment clearly does not seem to be a limiting factor. Based also on international standards, it is outstanding: visiting scientists could find all infrastructural background they would need for research. Avoiding over-specialisation is good, also in terms of facilities. The equipment is in good condition and also the experimental and computing facilities are excellent. The library support seems to be very good. This is crucial for maintaining flexibility and, especially, for the multidisciplinary character of the research attitude. However, the restricted access to Web of Science is a great problem and must be solved. The size of the technical staff seems to be appropriate (21.1 FTE), based on the structure of the personnel, even if it is claimed that hypothetical extra-funding could be used for increasing the number of technicians. In fact, the overly high proportion of administrative and technical staff in relation to R&D staff (ca 60-70%) seems to be odd.

Research management (including career development and human resource management) of the UoA

Quite flexible employment principles (e.g. depending on actual research interests) are excellent and also very positive for the future. The cluster system is a good human research management tool. Teaching and training loads are tolerable, according to the discussions. The high number of enrolled PhD students (31) indicates a good management performance. More and more students and postdocs can join the research activities. The Unit has a clearly defined and concrete research management strategy (also long-term) which adheres to the University Strategy 2012-2020 and the national Smart Specialisation Strategy. Research plans have been structured by research clusters within the university and this is an excellent idea (goal-orientation if flexible but good research lines are well-maintained and supported). The training of early-career scientists is enhanced by an action programme consisting of six steps, and there is an attempt to find an optimal balance among young and experienced scientists within the research groups. Short-term planning seems to be well thought-out too, with regular meetings within clusters. Such meetings concern also regular publishing plans. There is coherence within the State and university strategies when it comes to favouring small and flexible
research groups. The proportion of international funding could be higher. It should be imperative to submit PhD theses in English.

The development potential of the UoA

Maintaining the flexibility and adaptability of research priorities is very good and promising. Human resources are well-managed, especially concerning the involvement of the younger researchers, and this is the key to future success. Using more funding for research (improving the salary conditions of R&D personnel and perhaps opening new positions in cutting-edge fields) and less for administration would be essential. In particular, it would be important to share the teaching load more equally among the staff. The Unit has a potential to attract high-level doctoral students and scientists from abroad, but right now this potential is underused. It would be important to attract many more foreign visitors (not necessarily Western Europe or US), not only supporting the mobility of the local researchers (this could also be increased). Attracting a diversity of funds is successful and should be maintained, especially if the level of support from the State remains to be so low. Support from industry is very low, some developments would be welcome here. It is expected that over the next 5-10 years this Unit will achieve an excellent level of scientific quality and influence and will become a highly regarded partner in international collaboration projects and networks (just like a strong competitor). Research is done in many modern and attractive fields (population genetics, biophysics and biotechnology, developmental neurosciences, environmental sciences): this may indicate important social impact and also major potential contributions to the discipline. The capability of the scientific environment to support the chosen research exists and the Unit has the ability to initiate new research directions. The Unit’s future vision and plans have been established precisely. The Unit realistically assesses its strengths and weaknesses, opportunities and threats, and there is a plan to manage such factors.

Conclusions and recommendations

The excellent infrastructure, the cluster structure and the good management of young scientists project very nice perspectives to this Unit. International visibility could be better and more ambitious: researchers should play larger role in participating at international applications (also as leaders) and they should be more ambitious, submitting their research output to better scientific journals. Many more foreign scientists should be invited to experience the infrastructural environment and establish longer-term collaborations in a more symmetrical way. It would be important to keep a balance between the development of the infrastructure and the staff: presently, the capacity of some equipments cannot be fully used because of the lack of personnel.
Institute of Ecology, Nature Research Centre

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<tr>
<th>Name of the UoA</th>
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<td>Total no. FTE researchers</td>
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<td>Composition of the Unit of Assessment (UoA)</td>
<td>Laboratory of Avian Ecology; Laboratory of Chemical and Behavioural Ecology; Laboratory of Ecology and Physiology of Hydrobionts; Laboratory of Entomology; Laboratory of Evolutionary Ecology of Hydrobionts; Laboratory of Genotoxicology; Laboratory of Mammalian Ecology; Laboratory of Marine Ecology; Laboratory of Molecular Ecology; P. B. Šivickis Laboratory of Parasitology</td>
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**Quality of the research performance and Impact on the scientific research discipline of the UoA**

- Quality of the research performance and Impact on the scientific research discipline of the UoA: 3
- The economic and social impact of the research in Lithuania: 4
- The physical infrastructure of the UoA: 3
- Research management (including career development and human resource management) of the UoA: 2
- The development potential of the UoA: 2

**OVERALL SCORE** 3

**Overall score**

The overall score (3) is the consequence of the weak integration of otherwise good researcher lines, the poor visibility of strategic planning, the ad-hoc and unpredictable recruitment of students and young colleagues, the nice international collaborations (with some great publications and societal impact) and a heterogeneous quality of physical infrastructure. Management and recruitment issues suggest poor developmental potential for the Unit.

**Quality of the research performance and Impact on the scientific research discipline of the UoA**

The quality of the research output ranges from highly visible excellent studies with large impact (e.g., research to malaria and fisheries) to less visible research lines. The number of international-level
publications is high (154) and several of them have been published in good journals, but the performance of some labs could be better (e.g. the mammal zoology group). In many of the best publications, the unit members are not senior authors, and the best publication list is dominated by a few labs (e.g. the ornithology group). The best labs do make an impact on the international scientific life (in the fields of ornithology, invasion biology, parasitology). Some of the research is narrowly scoped (e.g., Asian insect fauna): potential crosstalk could help the integration among groups and the efficiency of the unit. There are a large number of international collaborations (86), in some cases involving the best teams in the field (e.g. Zürich, Taiwan, Turku, Wisconsin). There is evidence of multiple international visits of unit members, although not all researchers have apparently been active. There is a somewhat limited number of incoming visits (9 different persons). Only 7 persons have given presentations at international meetings during the past five years, and only a few researchers serve the community as editors of truly international journals (Zoology and Ecology being the best one). The Unit has organised several broad international meetings (5), mostly in Lithuania, but also participated in organisation of a malaria meeting in Australia. In general, this unit of assessment has internal potential for a good standard of quality in terms of originality and importance. This is recognised especially through extensive international research collaboration and scientific meetings and visits. The total number of PhD degrees awarded in 2011-2013 is four which is low compared to the high annual FTEs of Chief Researchers and Senior Researchers (38,2), and the number of PhD students involved in the Unit’s activities. Some PhD theses are being written in English (2 out of 12), this is comparatively good in the country (but could be an even better ratio).

The economic and social impact of the research in Lithuania

The Unit's societal impact is recognised through: a) contracts with 19 enterprises, b) development of ecotourism in the region, c) environmental education of local communities, d) significant contribution to the local economic development and e) contributions to the protection of aquatic organisms and birds, and thus development of sustainable industries and practices (like solving problems related to birds killed on electric wires). In addition to the high level of basic research evident in several teams (ornithology, parasitology), the members of the Unit are very active in numerous national bodies (Lithuanian Hydrobiology Society, Ministry of Environment, Invasive Species Council etc.) and they have disseminated the research outputs among various stakeholders from public to private sectors and provided consulting and applied research to private companies and public sector (fisheries, avian fauna, invasive species etc.). The Unit has also provided input to the Lithuanian EXPO pavilion. Given that the research carried out by the Unit is mainly basic, the overall applied science and consulting outputs are very good. Study of amber is of special national significance. The Unit could perform better from a gender equality perspective.

The physical infrastructure of the UoA

The infrastructure of the Unit seems to be very good, in good condition and well used in everyday research activity. There is a number of modern sophisticated instruments and lab platforms (microscopy platforms, GC systems, thermal cyclers, ABI Genetic Analyzer, ecotoxicology platforms) as well as relevant databases. So, the physical infrastructure fulfils the needs of basic and advanced ecological research and is comparable to recognised ecological institutions in Europe. Among five listed databases/databanks only two are available to outside users and opening of these resources to outside users is encouraged, potentially against a fee. These databases can also be seen as a way of attracting collaboration. The administrative and technical personnel are undersised.

Research management (including career development and human resource management) of the UoA

The Unit carries out both basic and applied research ranging from blood parasites to large mammals, and there is a certain lack of coordination of activities among the labs. The strategy of the management is not
clear and not really well integrated, it is basically a list of different lab activities. We cannot really speak of goal orientation, but also the freedom of the management is not huge here, because of the poor economic conditions. There seems to exist a certain redundancy between the insect taxonomy and insect ecology groups, the invasion group and the fish ecology group and the population genetics group and the parasitology group. There is no clear strategy of how to attract young researchers. The output of PhD theses has dramatically declined in recent years (the number of PhD students enrolled [14] is great but the success level is very small). Apparently many researchers work only part time (FTE is consistently about 50% of the number of persons). There has been a trend of reduction of scientific staff from 2011-2014, especially as regard to senior researchers (31, 28, 24 FTE). The fact that new strategic goals will be set after completing the current programmes does not indicate a careful management plan. It is also rather clear that not all the laboratories follow the overall strategy. Some research leaders seem to adhere more strictly to the general plans than others which has both positive and negative consequences. While the role of individual researchers certainly is crucial in implementing the strategic plans, there is also a need for a clear and hierarchic research management. There seems to be also a certain conflict between the strategies of the state and the Unit: the latter has policies and practices that promote the integration of early-career researches into the scientific community, e.g. there is a policy to give them partial responsibilities within bigger projects. Finally, there is some decrease in international funding. There seems to be a certain conflict among the national targets for basic research institutions and the research carried out by some labs. In fact, some researchers expressed the opinion that the Centre should be part of the Ministry of Environment to better fulfill the national targets. The bureaucratic load on researchers should be decreased and put on the administrative personnel. PhD students (affiliated to Vilnius University) have some competitive disadvantage compared to the PhD students located at the University.

**The development potential of the UoA**

There is a clear need for more internal collaboration among the labs of the Unit and also for a clear strategy to attract young people. Given the modern high quality research infrastructure, the Unit has a potential to become a major player in several new fields in addition to malaria research, but this would require a clear research strategy, specialisation and concentration of resources. The Unit as a whole would need a more strongly integrated research strategy to make a further step towards internationally highly competitive research scene (the self-evaluating SWOT-analysis is quite precise). Even if this is achieved, there is a danger that when the lack of inflow of young researchers is not solved, the full developmental potential will not be realised (the career progression is weak). More postdocs and a higher level of successful PhD students are needed. In addition, clearly more competitive funding, especially international support on well-chosen topics, is required to solve the problem of underfunded research positions. While some of the laboratories are highly innovative (e.g. ornithology, insect ecology, invasion biology), many of the laboratories are rather mediocre in their visions (e.g. mammal zoology, insect taxonomy). The Unit has solid international research collaboration with more than 39 universities from 21 countries and 37 research institutes from 17 countries, this is promising (the level of mobility is also fair). The critical mass for successful research is available at this unit, the infrastructure is also not a limiting factor but integration of activities should be improved. The development potential of the Unit is possibly attenuated by the lack of strong overall coordination of the individual laboratories and research interests. A tighter coherence of efforts and focusing on the strongest research programmes would probably enhance the possibilities for future success of the Unit.

**Conclusions and recommendations**

This Centre has some excellent researchers and they are active in several interesting research areas. Also, they have nice international collaborations, visibility and publication performance. The research infrastructure also generally corresponds to international standards. Yet, there is almost nothing like research strategy, the individual scientists seem to have mostly ad-hoc planning for the future. The recruitment in
terms of attracted students is unpredictable, and the poor management of young researchers’ careers and lack of any higher-level vision and strategy constitute the major stumbleblocks for a promising developmental trajectory of the Unit. The Unit should find new ways how to invest in the new generation. Also from this point of view, it would be nice to have solid but somewhat adaptable plans for the future: large-scale vision on integrative efforts and long-term collaborations. Within the capacities of the infrastructural background, there is a wide range of options here.
### Institute of Botany, Nature Research Centre

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<td>Nature Research Centre</td>
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<td>Total no. FTE researchers</td>
<td>75.9</td>
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**Composition of the Unit of Assessment (UoA)**
- Laboratory of Algology and Microbial Ecology
- Laboratory of Aquatic Ecotoxicology
- Laboratory of Biodeterioration Research
- Laboratory of Economic Botany
- Laboratory of Flora and Geobotany
- Laboratory of Genetics
- Laboratory of Mycology
- Laboratory of Phytopathogenic Microorganisms
- Laboratory of Plant Physiology
- Laboratory of Plant Viruses

#### Quality of the research performance and impact on the scientific research discipline of the UoA

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<th>Quality of the research performance and impact on the scientific research discipline of the UoA</th>
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<tr>
<td>The physical infrastructure of the UoA</td>
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<tr>
<td>Research management (including career development and human resource management) of the UoA</td>
<td>2</td>
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<tr>
<td>The development potential of the UoA</td>
<td>3</td>
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**OVERALL SCORE**

| OVERALL SCORE | 3 |

### Overall score

The overall score (3) reflects the low international visibility, poor publication record and moderate societal impact of the Unit. There are difficulties with attracting good students and managing the recruitment of the next generation, this reduces the developmental potential of the Unit. Not too many activities are of highest interest for the society, however, it is clear that the herbarium is important for the international scientific community. Scientifically speaking, only a few labs are internationally recognised. There is no clear management strategy and vision. As a consequence, also the developmental capacity is limited.
Quality of the research performance and impact on the scientific research discipline of the UoA

The research output of the Unit is quite heterogeneous. It extends from very good (publications in leading journals in the field) to somewhat moderate levels of outputs of some labs (taxonomy, dispersal studies), while some fields mentioned in the Unit profile (e.g., forestry, chemistry, agronomy) are essentially not visible. The number of international publications (56) is low. The scientific publications are published in low or average-level journals, and there is limited evidence of submission to the very best journals in the field. Also, the best papers (e.g., New Phytol.) are multi-authored collaborations, and the contributions of unit members to these research outputs have been hard to assess. Research performance is of relatively low efficiency. Collaboration, also at international level, could dramatically increase the efficiency of scientific productivity. Younger researchers, especially if trained partly abroad, could bring novel methods and insights. The research fields may be too diverse, considering the capacity of the institute. With a smaller staff it is not easy to maintain high-quality research in all fields, so specialisation and focusing could be welcome here. The existing international collaborations are quite narrowly focused, some more multidisciplinary elements would be welcome, for improving novelty, efficiency, international visibility, attractiveness to the young people and appeal for the society. Several colleagues serve scientific journals as editors but these are mainly national or country-specific ones with relatively low circulation. There are several good international collaborators (e.g., University of Birmingham, University of Torino) and the researchers have been quite active in visiting other teams abroad (14 persons have stayed abroad during the assessment period, e.g., in Brussels and Rostock), and the unit has been very active in COST projects. However, there is still room for improving internationalisation. The number of incoming visits is very limited (6 persons). Only 2 oral presentations have been made at international meetings. Two PhD theses out of 7 have been prepared in English, this is above the national average but could still be much higher.

The economic and social impact of the research in Lithuania

Developing and maintaining the collections and monitoring activities are important services for the nation and also at a regional scale. The performance in popularising activities and media coverage seem to decrease (from 39 in 2009 down to 19 in 2013) and, as a consequence, social impact is likely to decrease. Several research lines are potentially connected to industrial applications but it does not seem to attract well-funded collaborations. This is not a good signal also for attracting more public and industrial money. The Unit has been involved in several consulting and applied science projects in the fields of microbiology, biological invasions and biodiversity that have been funded by both public and private sectors. Several of the unit members are involved in important national bodies (Standing Committee on National Plant Genetic Resources, Red Data Book Commission etc.). The Unit is maintaining important biodiversity databanks and collections.

The physical infrastructure of the UoA

Laboratory equipment is all right, probably this is not the limiting factor for the development of the Unit. In some cases, of course, new instruments might be needed (e.g., plant physiology), but also the existing instrumentation park should be enough for higher scientific performance. The technical personnel is more like a limiting factor here, even if there has been a continuous increase in their ratio in the personnel structure (20, 25, 35 FTE). There are large collections of plants, algae, cyanobacteria, fungi and yeast mutants. The panel felt that in addition to modern equipment, replacement of amortised furniture is also relevant to create a modern atmosphere and attract younger people. The herbarium is placed in a very nicely reconstructed part of the building. The databases (like the vegetation database) are easily accessible for both national and foreign scientists.
Research management (including career development and human resource management) of the UoA

Few available positions and relatively low salaries cause a decrease in personnel and poor recruitment possibilities. It should be very important to focus more on attracting good students, on the support of younger researchers (e.g. postdocs) and to use very strict quality control criteria for the competition for the jobs also at the senior level. Administration should be made more professional, even if this needs some new positions. The bureaucratic load cannot be put on the shoulders of the researchers alone. There is a certain lack of coordination and integration of unit activities and the overall research strategy lacks a clear focus. Some activities (e.g., K2 killer system) seem to be far from botany, although yeast genetics seems to be one of the strongest research topics in the Unit and could form an area of specialisation in the future in the Nature Research Centre. The number of PhD students enrolled in 2013 (8) is quite good but the success level in terms of the number of theses defended is very small. It is surprising that very few PhD students were willing to prepare their thesis in English (based on our conversation with them, during the visit). Apparently many researchers work only part time (FTE is some 60-70% of the number of persons). The use of the nice research infrastructure should be optimised, division of labour and sharing facilities would be strategically important goals. Looking for opportunities for international collaboration is imperative.

The development potential of the UoA

A key for future development seems to be to maintain the quality of the staff, considering the bad salary conditions and the problems with recruiting young people. Until this problem is solved, the developmental potential remains lower. International visibility (travelling, networking, publications) would be essential to improve, at the moment it is limited and reduces the chance for major development (as well as the chances to participate in major international collaborations or being a strong competitor). Most researchers do not think internationally, the awareness of the global scientific environment should be increased and especially the younger colleagues must be better conditioned to this atmosphere. Local and regional focus can be maintained in terms of collections and expertise but international collaboration is critical in terms of methodology and keeping quality standards. Improving this part and preferring more attractive research topics could enhance the developmental potential of the unit. It would be also essential to successfully apply for international funding, given that the state-level resources are not predictable and not automatically guaranteed. Many researchers work part-time and not all seem to be internationally competitive. Given the good experimental basis, the Unit’s international visibility may increase in the future (it is clearly possible to open new research areas). Presently, only a few labs are able to make an impact on the discipline (e.g. the yeast lab). However, this would require increasing the ratio of young researchers, increasing efforts for international networking and writing joint applications, enhanced integration and collaboration within the Unit. The SWOT analysis pointed to the most important problems correctly but it is rather weak in overviewing the opportunities.

Conclusions and recommendations

The Unit is of heterogeneous quality, both in terms of research areas and in terms of research quality. Its international visibility is rather low and the strategic vision is poor. International visibility (mobility, fund-raising) and publication performance must be dramatically increased, it is suitable only for one or two labs (e.g. the yeast lab). The research infrastructure does not seem to be a key limiting factor. Preparation of PhD theses in English is strongly recommended. Ambitious students and young researchers should be organised around the most successful labs and must be seriously involved in international research activity, in terms of both mobility and joint applications. It does not seem to be realistic that all labs can manage their recruitment and safe support. Thus, given the limitations of support and personnel, maybe there could be some careful selection and not all research lines should be maintained. Also the labs providing services of national and
regional importance should be forced to collaborate and increase their productivity. The management should have clear visions and plans, they should be strict with the implementation.
Faculty of Natural Sciences - BIO, Vilnius University

Name of the UoA: Faculty of Natural Sciences – BIO
Name of institution being assessed: Vilnius University
Total no. FTE researchers: 49.03
Composition of the Unit of Assessment (UoA): Department of Botany and Genetics; Department of Microbiology and Biotechnology; Department of Zoology; Center for Ecology and Environmental Research; Department of Biochemistry and Molecular Biology; Department of Neurobiology and Biophysics; Botanical Garden

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<tbody>
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<td>The development potential of the UoA</td>
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<td>OVERALL SCORE</td>
<td>3</td>
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**Overall score**

The overall score (3) is the result of the contrast between the quite good development potential and the relatively poor management of the unit. The physical infrastructure and the research environment are good enough for increasing scientific performance and international visibility. The students are interested in this university and it is recognised by the society. Yet, the management could have more ambitious plans and a more complete vision on the future.

**Quality of the research performance and impact on the scientific research discipline of the UoA**

National and international collaboration activity is excellent, both formally and informally. From the perspective of the broader scientific community, the work of the Unit is recognised in the fields of autophagy, molecular ecology, human molecular genetics, psycho-neuro-endocrinology and biological...
crystallography. The quality of publications could be generally better (but see also some great exceptions, like Nature), the best papers are multi-authored papers (e.g. in Autophagy). The number of international papers (96) and their citation counts (1093) are reasonable, but it still seems that many academic staff members are essentially inactive in publishing (out of a total of 97 FTEs for personnel involved in research at some level). Membership in societies and editorial boards is poor at the international level: strengthening this feature would be highly profitable for increasing collaboration and networking possibilities. The total number of PhD degrees awarded in 2011-2013 (30) is good compared to the annual FTEs of Professors, Associated Professors, Chief Researchers and Senior Researchers (49).

The economic and social impact of the research in Lithuania

The strong link between research and teaching is for sure important in the long term. Popularising activity and media appearance could have higher priority: currently this shows a decreasing trend (from 42 in 2010 down to 23 in 2013). This is something negative, especially in a university involved in education. Stronger link to the civil society has many advantages, both short-term and long-term (recruitment, attractiveness, business partnership). The Unit's experts are presented as preferred experts in some ethical, environmental and legal questions (e.g. GMO-related issues) and they give statements, public lectures and interviews. The Unit could perform better from a gender equality viewpoint.

The physical infrastructure of the UoA

In general, the research facilities are all right and do not limit high-quality research performance. Both the physical condition and the appropriateness of equipment are good for the research purposes. The barcoding facility is a great achievement, making highest quality research and international collaboration possible. So, the Unit seems to be able to provide an internationally competitive laboratory environment. The Unit pays attention to the lack of equipment maintenance funding after projects have been finished. It is of high priority to keep the infrastructure functional beyond the lifespan of individual projects, especially as this Unit plays a central role in the Lithuanian academic environment. The volume of technical staff (97 FTE) seems to equal the volume of researchers and faculty (100) FTE which might be related to the operation of specific advanced instrumentation but is unusual for an academic university. The overly large financial commitments to non-academic staff might limit the inflow of the next generation of academics. The Unit's infrastructure is poorly available to outside users that is not totally acceptable when public funding is used for setting up the facilities. Some important databases are hosted at this unit (e.g. the ECPGR Ribes and Rubus Database); some of these are available for external researchers only with special permissions.

Research management (including career development and human resource management) of the UoA

There is a tendency towards employing younger staff but this could be faster. Helping students and foreign visitors are both essential for international visibility and building a robust basis for future research. There is a very poor record of attraction of foreign visitors (4 persons) and international funding (nothing from international R&D programmes and 19 000 EUR from foreign industrial sector). In order to improve international visibility (publication, visitors, funding), some coordinated action could be implemented, something like a strategic plan for international relationships. Instead, it seems to be the academics who define the research disciplines and they are responsible for the quality of the activities. There is a beneficial connection between research activities and teaching given at the university, according to the general academic ideal. The teaching load is generally acceptable for the personnel involved. The main funding for research comes from external sources and this makes it necessary for the researchers to be actively engaged in the search for funding. A support service for acquiring external funding has been established. Plans corresponding to tenure-track thinking are being developed and promising students are engaged in research at an early stage. There is no shared plan for publishing but there is an understanding that publication quality
and quantity is crucial in attracting project funding to the Unit. It is possible that the new infrastructure attracts more students and foreign visitors. Diversification seems to be prioritised over specialisation, which might be a good strategy in the present research environment, although over longer term it carries the risk of lacking a critical mass. This latter point is especially relevant given that multiple Lithuanian institutions carry out research in similar directions. PhD students are ambitious and could be brave enough to lead their own research project but administratively this is not possible. Much more PhD theses should be submitted in English (now it is 8 out of 66).

**The development potential of the UoA**

The modern techniques used, for example in the botanical garden unit, open a nice perspective for future research. A key issue could be the support for foreign visitors. This is an excellent investment and future collaborations and networking can be highly profitable (especially given that most support today comes from the state but this may not be sustainable on the long term). The ability of researchers to participate in international scientific work exists and the Unit has some ability to increase funding that is awarded on a competitive basis, this is very promising. The Unit’s future vision and plans should be established more precisely (also the SWOT analysis was rather general and vague). The research environment is good enough for supporting the present research activities and also provides opportunities for widening the possibilities. Although there are a very large number of researchers, the Unit’s international research collaboration network is rather narrow (while being attractive for local students and researchers). New areas and research directions could be targeted and having more intense contacts with the international scientific community could help a lot in finding novel possibilities. Especially awkward is the low capacity to attract foreign visitors and international funding. The management should be more strict and careful about these considerations.

**Conclusions and recommendations**

This Unit could become very attractive with more and more young researchers and an excellent infrastructure. The autonomy of researchers is relatively good, but some strategic planning would still improve the future perspectives. The number of foreign visitors must be dramatically increased, this would be highly beneficial for the students, but also for building international collaborations and writing joint grant applications. The infrastructure is adequate for realising all these purposes. A vision of the management could help long-term planning, presently the short-term ideas of individual researchers determine the priorities and dominate the research life. Preparation of PhD theses in English is strongly recommended. New research directions should be tested in international collaborations, especially because the students are open-minded and flexible enough to quickly follow the new trends in science.
ŠU Biomedical and Agricultural Sciences, Šiauliai University

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<tr>
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<td>Department of Environmental Research; Botanic Garden; Biological Research Center</td>
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**Quality of the research performance and impact on the scientific research discipline of the UoA**

- The economic and social impact of the research in Lithuania: 3
- The physical infrastructure of the UoA: 2
- Research management (including career development and human resource management) of the UoA: 2
- The development potential of the UoA: 2

**OVERALL SCORE**: 2

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**Overall score**

The overall score (2) reflects a generally poor performance from most viewpoints and some promising research lines. This unit is very small, with weak and isolated research labs, poor international visibility and a low level of publication record. The strongest side is the couple of research areas that are beneficial for the society.

**Quality of the research performance and impact on the scientific research discipline of the UoA**

The research output of the Unit ranges from truly internationally visible (aerobiology) to internationally non-competitive (Biological Research Centre) and basically internationally not visible (Botanical Garden) research lines. The number of international papers (9) and their citation count (80) are extremely low, even if considering the number of researchers (12 FTE). In fact, most of the best papers come from the aerobiology team. Out of the 20 best papers provided, a single researcher is a co-author of 11 papers. The level of internationalisation is also low (there have been only 3 research visits to Latvia during the past 5 years and
no incoming visits). Several foreign institutions have been involved in joint publications, mainly as the result of large research consortia in EU projects, but it is unclear which are the most important partners. Only one oral presentation has been made at an international conference held in Lithuania. Some of the unit members serve the community as editors of journals, but these are only national. Several unit members are active in international scientific societies (e.g. European Aerobiology Society). The strength of the Unit is not in scientific research but in more practical work. The total number of PhD degrees awarded in 2011-2013 is zero which is a poor indicator.

**The economic and social impact of the research in Lithuania**

The Unit has relatively strong local societal impact, especially in the field of agricultural and animal keeping practices. It contributes to the development of sustainable agricultural and animal keeping practices, and to the protection of the Lithuanian environment against invasive species. The Unit's research in aerobiology is important for the wellbeing of allergic people and the Unit's data is used in pollen forecasts on a European scale. The Unit has been active in providing applied research and consulting service to public and private sector, although in the case of landscape architecture contracts, the Unit seems to compete with the private sector (e.g. in sustainable development solutions for small communities). Several of the unit members are involved in important state bodies (Bioethics Committee, Standards Board etc.). The Unit has got extensive support from Latvian-Lithuanian cross-boundary projects and as such is a flagship of collaboration between these two countries. Apparently, studies on osteochondrosis and pig breeds are potentially important for Lithuania, but there is no major output here, except for small market-oriented research projects. The Unit could perform better from a gender equality viewpoint.

**The physical infrastructure of the UoA**

The Unit has a huge pollen databank and collection of slides of pollen samples that clearly constitute an invaluable resource (also the pollen allergy database). The Unit also has a small herbarium, this is not particularly useful for neither the scientific community nor the society. The existence of these collections and databanks is appreciated and all of them are quite easily accessible for external researchers and the public. Molecular biology infrastructure of the Biological Research Centre has been recently updated, but there is lack of manpower to operate the facility. The condition of the infrastructure is not excellent, and local or international collaboration could make it more efficiently used and organised. The ratio of the technical personnel is quite high (4,3 out of 14,15 FTEs).

**Research management (including career development and human resource management) of the UoA**

The structure and the performance of the Unit are heterogeneous, and the degree of focusing is different among the components. While the aerobiology part of the Department of Environmental Research is very focused, the rest of the activities of the department are too broad. Aerobiology has a long-term research plan, but the strategic research planning seems to be missing in the case of others (as well as any serious human research management). It is unclear how the Unit operates as a whole because there seems to be little interaction among different teams. The relatively small resources are mainly concentrated on two strategic areas: pollen/allergen research and pig breeding research. However, the latter line of research lacks critical mass, although the experimental basis is good. There is also plenty of evidence of good short-term planning. Researchers do have individual plans, and this is clearly outstanding. Attracting young scientists is a major difficulty for the management. There have been only two PhD theses defended and currently only 3 PhD students are involved in the activities of the Unit. Given that there are 6 professors in the Unit, this is too few. Students should be encouraged to submit their theses in English (both of the 2 submitted in Lithuanian). On the positive side, the mobility of early-career scientists is encouraged within the ERASMUS programme and bilateral agreements with Asian universities. The Latvian project brings grant money but does not result
in visible publications. There is a policy encouraging high quality of scientific papers instead of high quantity, this is great. It is unclear how the lab and office space is allocated among the teams within the Unit, i.e. whether this is driven by historical reasons or merit, current achievements and research strategy of the Unit. The best-equipped lab of Biological Research Centre is located outside the main campus, this is disadvantageous from the viewpoint of team building and interdisciplinary thinking, especially in such a small unit.

**The development potential of the UoA**

The potential for aerobiology is very high, but for other teams in the Unit, there is an urgent need for more internationalisation, including mobility as well as involvement in international projects and programs. For instance, invasive species biology is represented at the level of only one COST project. There is a clear need to improve the influx of young researchers and to dramatically increase international visibility. Also, efforts are needed to increase the success in obtaining competitive research funding. Right now the Unit seems to rely too strongly on Lithuanian-Latvian cross-boundary collaborative projects. There is a plan to develop socio-economic research, but it is not clear how this will fit into the overall strategy of the Unit, and whether this is a right path to take when there is a certain underperformance in several teams of the Unit. One promising strength of the Unit is its highly-motivated team of relatively young researchers, this may help to maintain the current research activities but probably this is not enough to become more visible and becoming a strong competitor and good collaborator in the international research arena. This increases flexibility and the ability to open new research directions. Specialization of the Unit on a couple of research themes (aerobiology and animal breeding) has been and will be necessary for the success and even survival of the Unit. It is clear that the Unit will need an increase of the number of researchers to guarantee an attractive working and studying environment with a critical mass of research. The researchers are motivated and relatively ambitious but at the same time they lack self-confidence to a certain degree. It is important to include the Unit as an equal partner in the development of the university network in Lithuania.

**Conclusions and recommendations**

The Unit is small and poorly performing but quite ambitious and open-minded. A couple of research lines are highly productive while the rest is not really visible. A critical mass of students and researchers should be reached. Then, the ambition of the researchers could bring its fruits. Clearly, enhancement of international visibility and even more research performance is urgently needed. The network of partners should be diversified, having also more national collaborations, while maintaining the Latvian partnership, of course. Since the Unit does not belong to the „valleys“, more attention will be needed to develop and maintain the infrastructural background, or, as an alternative, more strategic planning will be needed to build collaborations with institutions in the Valleys. Preparation of PhD theses in English should be strongly recommended.
Joint Unit of Marine and Technological Sciences, Klaipeda University

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| Quality of the research performance and impact on the scientific research discipline of the UoA | 4 |
| The economic and social impact of the research in Lithuania | 4 |
| The physical infrastructure of the UoA | 5 |
| Research management (including career development and human resource management) of the UoA | 4 |
| The development potential of the UoA | 4 |

OVERALL SCORE 4

Overall score

The overall score (4) of the Unit reflects internationally recognised expertise and research output, an excellent infrastructural background, public awareness of the activities and a promising management of students and young researchers.

Quality of the research performance and Impact on the scientific research discipline of the UoA

The Unit has a fairly multidisciplinary, diverse research activity. The number of publications is nice (220 international papers) but the quality could be higher: in the best multi-authored papers, the Unit researchers are often not senior authors. This makes it hard to judge the contribution of Unit staff in these papers. Considering the expertise of researchers (invasion biology, ecosystem services, coastal biology, fuel research), sometimes also the best journals can be targeted. Physics, engineering and mathematics form the bulk of the volume of the Unit research community but only a minority of high-quality papers have been published in these fields. International collaboration has a specific regional (Baltic) focus, this is all right,
and there is a variety of geographically more distant partners as well. Presently, the research strategy follows the highest international standards and the latest trends (e.g. blue growth, green shipping). The proportion of PhD theses submitted in English is excellent (16 out of 25) but could grow even more. There are several good international collaborations in place, but clearly the international networking could be extended. Only 14 persons have had significant research stays abroad, and only 4 foreign scientists have visited the unit. There have been 17 international presentations by only 7 persons, and even among these, 6 conferences have been held in Lithuania. On the other hand, there is evidence of some foreign researchers appointed to research positions in the Unit, this is exceptional in the country. Some of the unit members are serving the community as editors of internationally highly visible scientific journals (e.g. Physical Oceanography, Oceanologia etc.) and scientific societies. The level of international funding is outstanding (e.g. Eureka).

The economic and social impact of the research in Lithuania

The Unit takes important roles in various policy bodies but the link to the civil society could be improved, especially because of the local and regional importance of the work (applied research on novel biofuels, ship engineering, coastal science, maritime transport). The Unit also provides applied research and consulting services in the fields of biological invasions and environmental quality and assessment. Media/public appearance and popularising activity are very poor (19 in 2013), this is not understandable and can be a problem on a long term (both recruitment and funding can be influenced negatively). Spin-off companies (e.g. Omega Technology) budding from this Unit are clear indicators of economic and societal importance and a strong applied side of research activity. Several members of the Unit are involved in national boards of Ministries of Environment and Agriculture. The part of the funding coming from national industry is quite significant (22%). They actively contributed, in Lithuania and in the Baltic Sea region, to implementing prototypes of equipment.

The physical infrastructure of the UoA

The research facilities (equipment, vessel) are excellent and do not limit the performance of scientific research and teaching activities. Hopefully, this can partly balance the negative effects of brain drain. The equipment is easily available for external users and the students. The size of the technical staff (25 out of 213 FTEs) is correct or could even be higher, given the profile of the unit. The library and the publication databases also seem to be accessible and ready to use in everyday research. This kind of openness and accessibility is especially important as many research areas are of local and regional importance. They have access to major international bibliography at the library. The "integrated science, study and research centre" is certainly a major asset of synergy and this is functioning well in this Unit, there is a nice symbiosis between high-quality research and teaching.

Research management (including career development and human resource management) of the UoA

The numbers of most staff categories show a declining trend in time (e.g. for junior researchers, 11 FTE in 2011, 9 FTE in 2012 and 7 FTE in 2013). However, special attention is paid to recruitment of students and younger researchers, and it seems that graduate and undergraduate students are actively participating in the activities of the Unit. This is a good long-term strategy that surely will pay off in the future. The negative trend in staff numbers has been somewhat compensated by the project "Lithuanian Maritime..." allowed recruiting 130 researchers, some of them apparently early-career scientists. This is an excellent achievement. The number of non-scientific staff, especially administrative staff, seems to be very high (42 FTE, some 20%), out of proportion compared with academic staff. The level of mobility is fine but the number of foreign visitors must still be increased (4 persons). The fund-raising activity is excellent, especially in terms of relatively short-term grants. Long-term funding must be improved in order to add more stability and predictability (like career perspectives for students), but not limiting the flexibility of research. The research
activity of the Unit is very heterogeneous (ranging from invasive species biology to ship engineering) and it is ultimately not clear why the Unit positions itself in the field of biomedicine. In fact, the Unit evaluates that its key field is ecology and environment, but most text in the self-evaluation report concerning research strategy pertains engineering. There seems to be no strategy with ecological research that is the key contributor to the very best international-level research. It seems that the overall research strategic planning is good with approval of research programmes by the University senate and regular monitoring of progress. Efforts have been initiated in order to hire foreign researchers (for longer term).

**The development potential of UoA**

The internationally recognised staff can be important for future collaborations, networking and, finally, for successful fund raising. The Unit is known in the scientific community and the scientific output makes it a strong competitor and reliable cooperative partner. International and industry-based support is already fine and this is very important, given the unpredictability of national money. The diversity of researchers and research interests is a key to future success, especially if the strategic plan is flexible enough and can adaptively follow the international research trends (not forgetting the well-established research lines of regional interest and importance, of course). Given the excellent research facilities and infrastructure, strong stream of international funding, the good choice of research areas and interest of the public and private sector in the applied research outputs, the developmental potential of the Unit is very good. However, additional efforts are needed to enhance the international visibility and the quality of publications by engineering and physics teams and increase the success rate of PhD studies. The Unit seems to be able to initiate new research directions (excellent infrastructure and expertise) but it is not really needed, the range of research lines is already quite diverse. The structure of research support is satisfactory and the diversity of grants suggests a high developmental potential.

**Conclusions and recommendations**

The Unit is a strong international player with great expertise and excellent research infrastructure. The management of young researchers is also great. Better international visibility and higher-quality publications and stronger integration among individual lines of research would improve even more their performance. Research must be driven by international scientific trends also in the future, instead of governmental, more bureaucratic and rigid planning (with lower priorities for multidisciplinary research, for example). If these standards are kept, research performance will be even more increased. It would be important to manage this process in all disciplines and make the research output more homogeneous among different disciplines. Increasing visibility in the society would be recommended, today it is a very important issue and it can bring its fruits in terms of recruitment and industrial partnerships.
Summary of the Institutional Assessments

Research quality

In general, the quality of research is quite heterogeneous: some laboratories work at the highest international level, while the majority of research groups are not visible internationally. Isolation and a large number of low quality publications are typical. Clearly, better networking could result in higher-quality publications, and the number of papers could even decrease without any problem. The critical mass of researchers exist in several institutes but the salary levels do not guarantee that this is sustainable on the long term. Because of this unpredictability, the best performing researchers must work in a flexible and adaptive network of national and international collaborations. In fact, the highest performance is shown by labs where the institutional structure is less rigid. In such a flexible structure, the critical mass is not as important as in a more rigid system.

Infrastructure

Thanks to the structural funds and the concept of the Valleys, major investments have resulted in excellent research infrastructure in most of the units. This is very important for future developments but it should be better balanced with the personnel: you can find excellent equipment in labs with minimal personnel, while in some other units the technical personnel seems to be oversized. Based on the infrastructure, Lithuanian institutes are competitive with other European universities and are ready to host foreign scientists in this respect. It is, however, unclear whether the high quality of Lithuanian infrastructure is known to foreign scientists and there should be an effort to advertise the recent positive developments in Lithuania.

Mobility

Increased mobility would be extremely useful for scientific development: the flow of ideas is important in both directions, locals should travel much more frequently abroad (visits, conferences) but also foreign colleagues should be attracted here for longer and longer stays. The general opinion collected during discussions at the units is that Western people do not come here because of the low salaries. This is surely true but colleagues from Eastern Europe or Asia could find themselves very well for the same or just a little bit higher salaries and this could serve equally well for creating an English-speaking, open atmosphere.

Career development

An organisation is dependent on its human resources and the best and most sustainable way to develop an organisation is to focus on the development of its staff and management. An organisation can be only as good as its personnel. The physical infrastructure questions have been addressed during the recent years and now it is time to invest in the personnel. This calls for mental investment in the form of lifelong education but also material investments in the form of e.g. higher salaries. Career development should start from the student phase. It is a pity that an evaluation of teaching and research has not been carried out simultaneously. Motivated teachers educate motivated and skilled future scientists. Internationalisation is crucial already during studies. Submitting the PhD theses in English should be imperative and this would not be against the national culture. This would be helpful for the career development of the students, and often this really needs more support than what is provided from the institutions. Also, the self-confidence of most institutions could be higher and this is supported by creating increased exchange within (European) mobility programmes. The gender balance and career development are not explicitly paid attention to at the units assessed and therefore it is recommended that both men and women are given truly equal chances to advance in their careers.
Management issues

The assessed units are typically participants in European projects but almost never act as leaders. This should be changed as there are several strongly performing units and laboratories. In some institutions there is a nice feedback between performance and career success (bonus money, more students, larger rooms for the successful ones) but sometimes it cannot be implemented for administrative reasons. Also, sometimes it is unclear whether the management want to help the already strong groups (as a kind of specialisation) or the weak ones (as maintaining diversity). A general trend in other countries is to support those who show the strongest potential. It is clear that while broadness needs to be maintained this cannot be implemented everywhere. The level of bureaucratic loads is typically acceptable. Research flexibility is sometimes excellent (e.g. cluster structure). There is a very high proportion of researchers working part-time, probably having more full-time researchers could contribute to a more stable and predictable research environment. The role of social interactions (e.g. hierarchy, respect) is tolerable and not too high. However, this area needs special attention when and if Lithuania has fully opened up for internationalisation, and well-educated and talented next-generation Lithuanian scientists later return from diaspora to their home institutions. The attitude of different units for/against this assessment was heterogeneous: most institutions prepared carefully the assessment, took it seriously and wait for the results. Some just did it as a must (with some parts even written in Lithuanian). In some cases it was unclear also for the local researchers who prepared the assessment and slightly disagreed with some part of it.

University network structure

In general, the number of universities in the country may be too high and the number of people with an academic education is fairly high, maybe even too high. Some fields are overemphasised (e.g. sociology) and some are underemphasised (e.g. environmental sciences). All in all, since many things are in transition and change (new equipments offering new techniques, departments translocated to new buildings, a high turnover of young researchers), it is necessary to wait a few years before making any dramatic conclusions. At the same time, specialisation is necessary with the university network and this kind developments should be encouraged by the state. A new evaluation assessing both university teaching and research should be carried out fairly soon, perhaps already after three years.

Briefly about the assessment process

The most important task for the evaluators was to find out in which way the unit is recognised (inter)nationally. This was the major fact on which we gave our marks. Sometime the leaders of some units managed to find those people, topics and fields that make the unit recognised and include them in the overall strategic management and in the long-term vision.

Units might be (inter)nationally recognised in two ways: (1) tradition, the value of very old experience, previous work and foundation (pioneers, museums, famous collections, databases) and (2) innovation the value of newly introduced topics that have a significant scientific, economic and/or social impact (introduction of new methods, hypotheses, theories, important books and papers). Both traditional and innovative points contribute to attracting visitors and increasing the budget.

As it has been shown, units might be recognised not only by the numbers and statistics (number of published papers, citation, indexes), but also by what is specifically done to make the unit recognised (special laboratories that give important services to science, technology, society etc.). In addition to the number of projects, the recognition is even more based on the quality and the scientific and societal impact of the projects. For successful universities it is of crucial importance to outline a strategy and to manage with priorities in such a way that supports those colleagues who make the unit recognised. Parameters of importance when recognising the most valuable colleagues include the number of international academics and stakeholders who know their work, the level of recognition of their work (short-term practical, e.g.
analytical services, or more fundamental, new hypotheses and theories), the number of attracted and hosted colleagues (visitors, students), the number of innovative and valuable projects of pioneer character, the number of meetings and conferences organised, the contribution to international activities and initiatives (leadership of international collaborations and associations) and teaching activities (supervision of PhD theses, uniqueness of teaching subjects).

In Biology, the berry plant genetics group (Vytautas Magnus University), the yeast genetics group (Gamtos Tyrimų Centras Institute of Botany) and human molecular genetics research (Vilnius University) are widely recognised. Crystallography and psycho-neuro-endocrinology (both at Vilnius University) are also quite strong, also internationally.

In Biophysics, some laboratories can compete at the highest international level (e.g. Vytautas Magnus university). The key to success here would be the dramatically increased international visibility.

Ecology and environmental sciences are generally not prioritised fields in the country but some areas are quite strong, including fisheries research (at Gamtos Tyrimų Centras Institute of Ecology and Klaipėda University) and spatial ecology (stork migration at Gamtos Tyrimų Centras Institute of Ecology, aerobiology at Siauliai University). Forestry and agro-ecology are relatively less competitive internationally. A much higher level of cooperation and integration could provide efficiency in the very fragmented research activities here.

Botany is best known for the research on yeast genetics (Gamtos Tyrimų Centras Institute of Botany), while traditional botanical research is less visible and competitive (e.g. the Siauliai University Botanical Garden).

Zoology has strong groups focusing on malaria and bird ecology (both at Gamtos Tyrimų Centras Institute of Ecology).