



RESEARCH EVALUATION FOR DEVELOPMENT 2019 EXPERT PANEL REPORT

Sahlgrenska Academy

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Introductory Remarks

According to the instructions the primary purpose of the evaluation was to analyse preconditions, infrastructures and processes that form premises for high-impact research. The panel strived to identify strong and productive research milieus but also aspects of research environments that require development or reorganisation. In particular concerning structures that appeared functionally

inadequate the panel has made recommendations to support procedures of improvements and strategic decisions.

The report is based on information presented in the self-evaluation document and on discussions during the site visit at Sahlgrenska Academy, April 4th 2019. The faculty was represented by:

Agneta Holmäng, Dean

Henrik Hagberg, Pro-Dean

Eric Hanse, Vice-Dean for Premises and Infrastructure

Lena Carlsson-Ekander, Vice-Dean for Research

Ann Wennerberg, Vice-Dean for Internationalisation

Anna Karlsson-Bengtsson, Vice-Dean for Postgraduate Studies

Per Karlsson, member of the Sahlgrenska University Hospital leadership.

Panellists:

Gunnar Andersson

Leif Andersson, chair

Vibeke Baelum

Anna-Karin Dykes

Hans Hultborn

Jan Nilsson

Report: Observations and Analysis

Section A – Background and Research Standing

A1. Background

Sahlgrenska Academy (SA) is the largest faculty of the University of Gothenburg (UGOT) and consists of six institutes; the Institutes of Odontology, Health and Care Sciences (IHCS), Biomedicine, Neuroscience and Physiology, Medicine, Clinical Sciences, and a Core Facilities unit. SA also includes about 20 research centres, each one hosted by an institute. They form centres of excellence and are formed by researchers with common scientific interests. The Faculty Board, assembled according to the Rules of Procedures given by the Vice-Chancellor's office 2017-12-06, is the highest

decision-making body responsible for education, research and collaboration with regional external actors in the field of health sciences.

SA is led by a Dean and a Pro-Dean. The Dean reports directly to the Vice-Chancellor of UGOT. Seven councils, (for Research, Postgraduate Studies, Education, Premises and Infrastructure, Internationalisation, Recruitment of Teachers, and Research Ethics) prepare matters for the Dean. The councils, except for Research Ethics and Recruitment of Teachers, are led by a Vice-Dean. The general organisation of SA is traditional and apparently well-functioning. Since creative research and education is carried out on department/institute levels, an important task for the faculty organisation is to facilitate open and efficient bi-directional communication between the leadership and the research units.

A2. Research standing

Many research groups at SA have gained an international reputation for research of highest quality. One of the main roles of the faculty leadership is to organise optimal conditions for research and education. SA also has a leading position in negotiations for the establishment of national and international research networks and consortia.

SA strives to support and deepen the translational research dimension by fully utilising new technologies, and through collaboration with other disciplines to facilitate discovery of disease mechanisms, development of treatments and implementation of new solutions in clinical settings.

The close partnership between SA, Sahlgrenska University Hospital, the Regional Health Service providers (Region Västra Götaland), including access to biobanks and large data bases, offers preconditions for ground-breaking research.

For more detailed comments on the diversified research conducted at SA the panel refers to the reports concerning individual institutes at SA.

Section B – Leadership

B1. Leadership

B1.1 Faculty leadership

During the site visit, the panel got a general impression of an estimable academic culture prevailing at SA. The leadership, headed by Dean Agneta Holmäng, is committed to the success of the faculty by focusing its efforts on building and maintaining academic environments of high quality. The leadership also actively facilitates the establishment of regional, national and international research networks. There are continuous and productive discussions between the Council of Departmental Chairs and the Faculty Board and meetings with external collaboration partners to discuss how to find new approaches to further strengthen research.

The initiatives taken by the leadership for sharing expertise with external partners as visiting / guest professors and adjunct professors diversifies the available scientific expertise in support of strategic decision-making.

The panel noticed that the bi-directional communication with UGOT management appeared sub-optimal. Furthermore, the interaction between the faculty and its institutes during the recruitment process could be improved. The faculty could also be more proactive in terms of identifying new funding opportunities.

Recommendations

- Facilitate contacts between research leaders by creating meeting arenas and supportive research platforms.
- Arrange workshops and seminars with invited distinguished national and international researchers.
- Initiate and organise fundraising activities with a focus on young researchers.

B1.2 University level leadership

The university level provides and maintains infrastructure and larger core facilities to support research at SA. The research also benefits from administrative support of some financial matters, including the Grants and Innovation Office for large external grants from e.g. ERC and NIH. The university is firm in negotiations with external stakeholders and is a strong partner in interactions with external actors like Chalmers University of Technology and industry. Decisions at the university level promote transdisciplinary research dependent on collaboration between several faculties.

The decisions made at university level, albeit in the best interest of most faculties, do not always meet the special requirements of SA. With its multifaceted interactions with the Sahlgrenska University Hospital and Region Västra Götaland, SA represents in many respects a special situation that may not always be fully perceived at the university leadership level.

Given that SA contributes to almost half of the UGOT research income it is disproportionately under-represented at the University Management Council. There are unnecessary overlapping activities between the university level and the SA administrative bodies in the management of research, education and infrastructure.

Recommendations

- More strategic decision-making power should be delegated from the university-level to SA since most decisions should be taken as close as possible to the operational level.
- A clearer definition of how administrative tasks should be shared between University and Faculty levels.
- Measures should be taken to generally advance the dialogue between the managements of UGOT and SA.

B2. Recruitment

Recruitment of creative and devoted scientists is decisive for the success of a research environment. Major efforts should therefore be focused on the recruitment procedures.

In addition to solid funding, an open and collaborative academic atmosphere with flexible access to high-standard core facilities are strong assets for recruitment of researchers. There are scientifically outstanding research groups at SA, both pre-clinical and clinical, that offer frontline research environments. Since SA is responsible for professional education in medicine, odontology and healthcare sciences, a comprehensive coverage of the teaching competence must be ensured. This may complicate recruitment procedures and limit the possibilities for international recruitments.

The panel appreciated several commendatory features in the recruitment practice. These include financial support in the form of start-up grants for researchers recruited at different stages of their careers. These increase the attractiveness of positions and promote rapid establishment in a new research environment. The support for visiting professors to stimulate time-limited exchange of highly qualified researchers is a commendable arrangement.

Following the recommendations from RED10, SA has increased external recruitment. The favouring of young PIs with international research experience is commendable. In comparison with domestically trained researchers, they have frequently acquired more diversified scientific experience and contribute to international networking through their established contacts.

The panel also recognised some inadequacies in the recruitment practice. The appointment procedures for professor/senior scientist positions are too tedious. This may at its worst lead to loss of initially interested applicants to competing research environments.

Despite improvements following the recommendations in RED10, there is still overrepresentation of local recruitments.

Recommendations

- Postdoctoral and higher research positions should primarily be filled by international calls.
- Measures should be taken to speed up recruitment processes including the preselection of applicants by a search committee.
- Internal promotion of senior lecturers to professors should be avoided or used only in exceptional situations since it lowers mobility and may result in scientific inbreeding.

B3. Career structure

From the individual's point of view SA offers well-structured and foreseeable career paths: two years in a postdoctoral position within two years post-PhD degree, advancement to associate senior lecturer within five years after dissertation with a right to be evaluated for promotion to senior lecturer and eventually professor. This arrangement, corresponding to tenure-track employment, secures a permanent job at an early stage for young researchers.

There are however serious in-built problems with the outlined career paths. These are ultimately due to the fact that top-science is not a "democratic" business. Its meritocratic and competitive nature is frequently in conflict with the social security of an individual researcher.

Early permanent employment of still relatively inexperienced researchers on a limited number of available positions congeals the research environment by retarding mobility and scientific renewal. Senior positions that could be used to engage excellent external researchers may be blocked by less qualified internal candidates.

Physicians and dentists with profound clinical knowledge in combination with solid scientific training are key actors in successful translational research. Well-structured and attractive career paths for clinical researchers are therefore of particular importance. The teaching assistant programme, with co-funding from the ALF system, is a commendable initiative for raising interest among medical students in a career as a clinical researcher. A similar amanuensis programme exists for dental, dental hygienist and dental technician students. The time-limited ALF career grants liberate clinicians for 50% research engagement but do not compensate for permanent positions as clinical researchers. There is also a need to ensure that faculty- and university indicators for research quality are relevant for the research conducted at IHCS.

Recommendations

- Implementation of strict, regular scientific evaluation by external assessors if researchers are enrolled in the postdoc-associate senior lecturer programme.
- Invent parallel tracks for underperforming researchers to liberate positions for new recruitments.
- Establish “core-researcher” positions for scientists not aiming at professorship but mastering special skills commonly needed in the research environments.
- Define more solid structures of career development for clinical researchers.

B4. Funding

The overall financial situation of SA is solid. Most of the governmental funding is allocated by the university based on historical data. In addition, a smaller proportion is distributed based on performance-based measures defined as ability to attract external grants and impact of publications. The high-quality research conducted at SA has enabled PIs to successfully compete for large external grants. Hence, 65% of the research is funded by external grants and 35% by governmental block grants.

SA has been able to increase the proportion of funding directly to the institutes. There is also an asset of accumulated funds to be used for smoothening of unforeseen fluctuations in external financial support.

The panel has noticed, however, that the future economic situation will be challenging as SA is continuously growing and employee numbers are increasing. In addition to direct funding for each faculty, part of the UGOT governmental funds is allocated to strategic research initiatives such as UGOT Challenges, the Wallenberg Centre for Molecular and Translational Medicine, and co-financing of infrastructure. The relatively short financial terms favour research on “secure” themes over long-term, high-risk, high-gain projects.

Recommendations

- Make strategic plans to prioritise investment on the faculty level.
- Improve cooperation between the SA management and the institute managements to create the most efficient spending of governmental funding.

B5. Feedback and evaluation

The panel learned that SA maintains a modest attitude towards feedback and evaluation of individual groups and individual researchers, for whom such a programme would seem mandatory. The limited feedback and evaluation that does exist, however, provides individual research groups with the freedom to make their own decisions regarding research priorities based on their own ideas and innovations, without top-down interference.

SA nonetheless runs continuous bibliometric follow-up of all scientific publications, total numbers of PhD exams and external grants. In particular, the ability to repeatedly secure major grants in international competition is considered a signature of scientific excellence.

With the limited formal feedback from SA to departments/institutes on research performance, it is difficult to identify and promote outstanding research groups and/or help research groups with specific needs. This is partially due to insufficient communication between individual research groups/departments/institutes and the SA leadership.

Recommendations

- Systematic support and coaching of research groups in writing applications for larger international grants.
- A more systematic follow-up by the faculty, together with each institute, could serve as a basis for important strategic decisions.
- Hiring of additional research advisors could help to identify excellent research groups and increase the capacity to support larger grant applications to EU, NIH and other international and national funding bodies.

Section C – Complete Academic Environment

C1. Collaboration

C1.1 Collaboration and networks within the University of Gothenburg, with other Swedish universities, and internationally

The panel found that SA is actively engaged in several national and international collaborative projects aimed at the maintenance and development of successful research and education. SA collaborates on the national level with all other national faculties of medicine and has a tradition of strong connection to Lund University. The rapid technological development in medicine makes the already well-established collaboration with Chalmers increasingly important, in particular concerning digital health and AI. In odontology, research collaboration in clinical areas is somewhat hampered by the different financial models (TUA or no-TUA) prevailing in the Swedish institutes of dentistry.

The Wallenberg Centre of Molecular and Translational Medicine (WCMTM) was established in 2015 as a joint venture financed by the Knut and Alice Wallenberg Foundation, UGOT, Region Västra Götaland and AstraZeneca. For reasons that have remained elusive to the panel, WCMTM is directly subordinated by the UOGT leadership and is not affiliated to SA, which with its identical research

activities and educational goals, would be a natural partner offering both intellectual and material synergy advantages.

Numerous formal and at least bi-lateral collaboration agreements with international universities and research environments are listed. These agreements, with about 70 universities world-wide in total, require updating and renewal in order to confirm that they are active and in accordance with the strategic vision of UGOT and SA. Research courses in collaboration with other universities are infrequently organised and there are insufficient financial resources to support international PhD and postdoc exchange.

Recommendations

- Development of an external web page to reach potential international research students.
- Conduct continuous updating of real collaboration activities and perform cost-benefit evaluations of the different projects.

C1.2 Collaboration with external stakeholders

It is the impression of the panel that the collaboration between Sahlgrenska Academy, the Sahlgrenska Hospital, and other healthcare providers within the Västra Götaland Region, are well established and characterised by mutual trust and understanding of the needs of the respective parties. In spite of this, it is clear that the needs of the daily healthcare service often take priority over research. SA carries responsibility for establishing a more academic culture within the entire university healthcare system, and for engaging healthcare staff in research to promote the quality of care provided by their own clinical departments. This will also require significant changes in healthcare management beyond the responsibilities of the university. The panel recommend the faculty to engage in discussions with the Västra Götaland Region on how this can be achieved. Ideas of how this can be implemented can be found in the following proposal for a more structured approach to healthcare that uses research to improve the quality of clinical care: “*Kunskapslösningen*”, put forward by the Swedish Academy of Science and the Swedish Society of Physicians, and which can be downloaded at:

<https://www.sls.se/globalassets/sls/dokument/kunskapslosningen-2018.pdf>

SA has a strong tradition of collaboration with pharmaceutical companies and the Knut and Alice Wallenberg Foundation, which is an important co-founder of the Wallenberg Centre for Molecular and Translational Medicine. Many faculty members are also employed as clinicians at Sahlgrenska University Hospital or in public dental care through joint or adjunct positions. This facilitates a natural contact between SA and the surrounding society, which benefits high-quality clinical research. The coordination of these collaborations appears somewhat fragmented, however.

Recommendations

- Improved transparency of ongoing collaborations would aid strategic decisions and planning of faculty initiatives.

C2. Relevance and impact on society

C2.1 Management and support

There is likely to be an increasing demand for research on implementation in the years to come and this will most likely also lead to new funding possibilities. It is also an excellent area for collaboration with healthcare and more widely with society at large. As part of this work, it will also be important to increase the involvement of external stakeholders, such as patients and their relatives plus civil society in general, in order for researchers to make new knowledge available for the public in various forms.

Recommendations

- The support structure for innovation and technology transfer at the university level is fragmented and should be reorganised into a more user-friendly “one door” approach. SA should work to influence the university management in this direction.
- Since active communication with the surrounding society has a great impact on the attitudes and goodwill towards SA, and ultimately also on the general willingness to spend public resources, the establishment of a professional PR position should be considered.

C3. Research-teaching linkages

C3.1 Undergraduate and master’s education

The various curricula mainly aimed at professional competence appear well organised. The engagement of younger PIs in teaching facilitates early contact between undergraduate students and active researchers.

A challenge for continued quality and quantity of research conducted at both the Institute of Health and Care Sciences (IHCS) and the Institute of Odontology is the tension between the heavy demands of undergraduate education and the ability of staff to deliver on the research agenda. In the IHCS there is also a shortage of teachers with broad experience. Recruitment is mainly based on requirements for research projects in different departments. This can result in a narrower competence than is wanted or needed for teaching undergraduate and master’s students. The increased teaching burden since RED10 at both the IHCS and the Institute of Odontology has meant that even when external research funding is successfully procured, it is difficult to free protected time to deliver the research.

Recommendations

- The merit value of engaged teaching (based on feedback from the students) should be increased.
- Experienced professors and PIs should fulfil their teaching obligations.

C3.2 Doctoral education

The panel appreciated that PhD education, with half-time assessment and mandatory courses, is generally well organised. SA offers PhD education in five major areas: Medical Science, Odontological Science, Health Care Science, Pharmaceutical Science and Basic Medical Science. The faculty’s 60 % funding of 21 pre-clinical full-time PhD positions annually makes them attractive positions, resulting in the recruitment of competent PhD students. The recruitment of collaboration/clinical PhD candidates within Region Västra Götaland healthcare is substantial and takes place on a continuous basis. Since these PhD students are frequently engaged in clinical training their PhD education is done part-time with financial support from ALF, FoU or research grants. SA

oversees graduate training of clinically affiliated PhD students. The “amanuensis programme” allows for some teaching activity and “summer research activity”, which gives PhD candidates the opportunity to get acquainted with research activities – and mentors – before their official registration as PhD students.

The panel noticed some dilemmas. Selection of PhD students is done by the researcher/supervisor who announces the position. This sometimes results in less successful recruitments that may cause problems in the supervisor-PhD student relationship. Combined with the increased costs for PhD education, these issues make supervisors reluctant to take on new PhD students, especially when the position is to be 100% financed by the supervisor’s external research grants. The non-competitive selection of collaboration PhD students sometimes leads to unengaged PhD students who do not finish their studies in time or at all.

When the economic situation in the healthcare system is pressing it impedes the possibility for collaboration PhD students to find time allocated for research education. A general problem is the declining interest in an academic career among clinical physicians and dentists.

Recommendations

- Strategic decisions at the faculty level should be taken regarding the total volume of future doctoral education. The emphasis should be on educating researchers rather than on producing PhDs.
- Develop a recruitment tool box to support supervisors when selecting applicants to PhD student positions.
- Introduction of a licentiate thesis as a part of the education may provide a natural exit for students who do not want to continue their education to a full PhD exam.
- The restriction put on universities by the government with regards to trial employment before full registration needs to be discussed on a national level.
- The allocated research time for collaboration PhD students, which is regulated by a mutual agreement between UGOT and Region Västra Götaland, needs continuous monitoring.
- A parallel track should be invented for PhD students who actually turn out to be unengaged.
- Establishment of a combined MD/PhD education track like e.g. at Karolinska Institute or at Helsinki University Medical Faculty, or the model employed at Oslo University, could be considered.

Section D – Academic Culture

D1. Academic culture

The panel appreciated the inclusive engagement of all personnel in academic activities via seminars and meetings, together with the translational interaction between SA, Sahlgrenska Hospital and the healthcare providers in the Västra Götaland region. SA hosts several centres of excellence that maintain an atmosphere of the highest scientific ambition levels, with internationally renowned scientists serving as models for younger researchers.

However, the thematically diversified activities lead to considerable variations in engagement in seminars and scientific meetings. The reluctance, in particular among younger investigators, to attend seminars that do not deal exactly with their own field of interest is a well-known phenomenon. PhD students and younger PIs, in particular, are not regularly engaged in seminars, which should be fundamental in flourishing academic environments. The declining interest and engagement in academic activities in the hospital is a challenge for SA. This was particularly evident in the larger institutes that cover departments from basic science to clinical science.

Recommendations

- Seminars given by highly qualified researchers are important components of general scientific education in particular for PhD students. Implementation of a system where PhD students collect credits for their exam by attending seminars would undoubtedly expand the audience.

D2. Publication strategy

SA encourages publication in both high-profile journals and in journals that publish high-quality research in specific subject areas, and prioritises quality over quantity. A combination of spearhead research and a broad range of research in different areas maintains a high standard of both teaching and clinical competence.

Based on an EU directive, the Swedish government has decided that Open Science should be implemented in Sweden by 2025. Open Science includes a number of different but overlapping areas such as open access to scientific information (both publications and research data); open educational resources; open source code; alternative ways to measure scientific influence; open peer review; and citizen science. SA needs to start working on a strategy for this transition.

D3. Facilities and research infrastructure

Convenient access to well-functioning core facilities with up-to-date services and equipment is a strong advantage in competition for top researchers. SA should therefore put much attention on keeping the core facilities in excellent condition. Some core facility platforms are nodes in national infrastructure networks. The general competence level of the core facility personnel is high, e.g. two thirds of the staff at SAMBIO hold a PhD. The staff at the animal facility (EBM) are continuously enrolled on development and educational programmes. The utilisation of Core Facilities has been high over the last few years.

The panel identified some problems: There is limited coordination of smaller infrastructures at the research group level. There are also currently few possibilities for researchers to apply for small and medium-sized infrastructures. Not all of the current facilities meet today's needs. Some premises are non-functional and too small. At the EBM the rodent housing capacity is too low, with a yearly increased demand of ~10% for small animal facilities. There is a relative lack of research infrastructure specifically tailored to meet the particular needs of IHCS. This includes the wide variety of methodological expertise needed, as well as relevant, accessible and specific support from existing university-wide offices.

Although the qualification level of personnel is generally high at Core Facilities, there is no clear career plan for employees. This impedes recruitment of top-level staff and reduces the ability to retain highly-qualified personnel. While it is often possible to acquire funding for new equipment from

external sources, these funding agencies normally do not fund maintenance/service, leading to costs that are too high to be covered by user fees. The national SciLife lab facilities appear too Stockholm-centric.

Recommendations

- Develop career paths for Core Facilities personnel, in collaboration with University Management.
- Establish online real-time inventories of available equipment and instruments to coordinate collaboration and to increase the utilisation rates of local infrastructures.
- Negotiate long-term operational support from University Management for heavier core facilities.
- Focus on improving regional collaborations with external stakeholders like AstraZeneca to increase co-financing and co-utilisation of equipment/methods/facilities.
- EBM facility – and its rodent housing capacity – needs to be solved soon as it is very important for several projects and for external recruitment.
- SA building plans should be decided soon; uncertainty about the future location of the Institute of Odontology may halt all attempts to plan for the future.

D4. Transverse perspectives

D4.1 Equal opportunities and gender equality

The gender balance, at least among younger scientists, is good. The strategic initiatives taken to recruit younger researchers has resulted in an almost equal distribution between men and women. But there is still a male dominance among the professors.

Recommendations

- Documented experience, educational skill and scientific excellence, regardless of gender, should remain main criteria for recruitment of senior researchers.

D4.2 Internationalisation

Regarding internationalisation of young researchers, the panel recognises that changes in society and lifestyle have made mobility in its traditional sense less attractive. The panel encourages SA, as well as University Management, to find novel ways of encouraging mobility that vitalize science, for example by pursuing a postdoctoral fellowship in a different faculty or a different research field. Both the Sahlgrenska International Starting Grant programme and the postdoc programme are steps in this direction.

SA should ensure that young scientists are well informed about these programmes and assist in making them available for young scientists with more restricted budgets. SA should also stimulate the mobility of young scientists, for example by helping them to find postdoctoral positions in high-quality research groups outside of Sweden.

Recommendations

- Information regarding the extent of international exchange of students, as well as the international mobility of PhD students and postdoctoral researchers, should be kept up-to-date.
- More pertinent information is needed on the SA/UGOT website about PhD programmes available at SA, in order to improve international visibility.
- Simplify bureaucracy regarding international mobility to further increase internationalisation, in particular for students aiming for a double PhD degree.
- Reduce the barriers to internationalisation by arranging e.g. language courses and spouse programmes for incoming researchers.

Concluding Recommendations

The panel is left with the impression that SA is a well-managed faculty with a devoted leadership that stands for high-quality output of research and education. The operational environment – spanning large contact areas with Sahlgrenska University Hospital and Region Västra Götaland, including responsibility for the professional education of healthcare personnel – makes the situation of SA special in comparison to other faculties at UGOT. The ongoing decentralisation of healthcare services will also entail more challenges for translational research and education.

Since increasing bureaucracy is a general threat to translational research, the panel recommends that all possible measures should be taken to disentangle the access to biobanks, databases and patient materials.

Since the competition for public research resources is becoming even tougher, the panel recommends actively seeking greater collaboration with potential external research funders.