

Ministère de l'Enseignement supérieur et
de la Recherche
A l'attention de Monsieur Claude Meisch,
Ministre de l'Enseignement supérieur et de
la Recherche
18-20, Montée de la Pétrusse
L-2935 Luxembourg

Strassen, le 13 juin 2023

Objet : Prise de position du LIH suite au rapport final d'évaluation INTERFACE


Ref. : GB/UN/fh/20230613/22171595

Monsieur le Ministre,

En réponse à votre courrier daté du 8 mars dernier, nous avons le plaisir de vous faire parvenir en annexe la prise de position du LIH suite au rapport final d'évaluation par INTERFACE.

Nous tenons également à vous remercier pour l'excellente collaboration entre le LIH, vos services et la société INTERFACE ce qui a certainement grandement contribué à la qualité de ce rapport.

Restant à votre entière disposition pour toute information complémentaire que vous pourriez nécessiter, nous vous prions d'agréer, Monsieur le Ministre, l'assurance de notre très haute considération.


Prof Ulf Nehrbass
Directeur Général


Dr. Gregor Baertz
Président du Conseil d'administration

Annexe :

- Prise de position du LIH suite au rapport final d'évaluation INTERFACE



LUXEMBOURG
INSTITUTE
OF HEALTH

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LIH's response to the
findings of the Interface
evaluation report of 6th
March 2023

Preamble

The quadrennial evaluation mandated by the Ministry of Higher Education and Research (MESR) has now become a key milestone in the life of our institution. This comprehensive analysis, generally gives an accurate picture of the Luxembourg Institute of Health (LIH). In particular, it shows its evolution during the evaluation period, and its positioning within Luxembourg and in the international research ecosystem. The findings are relevant, and are carefully considered by the entire institutional community.

The 2022 evaluation carried out by the Interface Policy Studies and Research Consulting (Interface) was similar as the previous editions, and carried out in a transparent and constructive manner. LIH is overall pleased with the conclusions and recommendations drawn up by the group of external experts. Overall, the various evaluation reports paint a positive picture of the Luxembourg Institute of Health (LIH) and its research departments, in terms of both organisation and their activities and impact. In the following pages, we would highlight the main strengths of LIH as stated in the Interface Report, and refer to the recommendations proposed therein to mitigate the weaknesses identified.

LIH's winning vision and strategy make the Institute a top player in the national and European biomedical research arena

By highlighting the excellent evolution and position of LIH and its research departments, the Interface Report confirms the relevance and coherence of the strategic choices made by the LIH and the efficiency of the important structural changes made during the last years. The experts show that this approach has allowed LIH to focus our research areas, to adapt our strategy and mission to activities at the interface between fundamental research and applied/translational research. In this regard, the recent development of LIH is seen as positive by the Interface experts who recognise that LIH has implemented past recommendations by putting in place appropriate measures to fulfil its missions as defined by the government authorities. The Interface experts note that LIH's ambition to anchor translational research in Luxembourg has clearly demonstrated its worth during the COVID-19 pandemic. The Institute proved capable of providing a strong contribution from its research teams, and of providing the necessary integrated support to researchers and clinicians, notably through its Translational Medicine Operations Hub (TMOH) and Transversal Translational Medicine (TTM) units. Experts recognise that LIH's lead role in managing the pandemic has been essential in emphasising its core vision of addressing public health needs. The communication culture at LIH and within the research departments was seen as strong, open and positive. It has proven successful in raising public's awareness and creating a high profile.

The organisation of LIH and the research departments is generally appreciated, and the governance of the institution, both internal and external, is seen as successful. In particular, the Scientific Steering Committee (SSC) and the Translational Steering Committee (TSC), created during the last period, are recognised as important and well-accepted structures to support research projects and guide researchers. The experts underline LIH's staff as being highly qualified and motivated, which contributed to the overall employee's satisfaction. The good organisation of the research departments is highlighted, and the adequacy and state-of-the-art nature of the infrastructure and equipment is generally recognised. The quality of the leadership and management capacity of the research departments is underlined, as well as the very good supportive atmosphere in the teams. The external experts note that the interactions between the research groups of LIH have intensified, and that the cooperation with other Luxembourg Institutes (LIs) and with the University of Luxembourg (UL) works well, with an appropriate division of labour. The implementation of joint initiatives

between LIH and its national partners (e.g. CARES research group with LISER, dual-affiliation positions) is evaluated very positively, and is seen as an innovative approach to exchange expertise and create synergies.

On the financial level, the initiatives implemented by LIH after Technopolis Evaluation in 2018, have been favourably received by the panel of experts, in particular with respect to the significant budgetary allocations made from LIH's own funds to strategic investments, or the introduction of the group based budgets (GBB). The experts underline that, through this instrument allowing the ex-ante communication of the resources available at the beginning of the year to the Principal Investigators (PIs), the institution has succeeded in introducing clarity and visibility as well as autonomy and flexibility in the management of budgets by the team leaders.

It is with great satisfaction and pride that LIH sees its results and impact recognised in the Interface reports. The experts note that LIH has a very good to exceptional research performance, both in terms of quality and quantity, with publications in high-level international journals. The bibliometric analysis indicates that LIH has the strongest performance compared to the other LIs, and that its Field-Weighted Citation Impact (FWCI) is above the average value of comparable institutions in the same research fields, which illustrates its successful publication activity. The Institute's work is highly recognised and cited by the scientific community. Furthermore, the experts point out that LIH has a clear impact on the economy of Luxembourg, and an increased societal impact based on the strategic translational orientation followed in recent years. The innovative character of the research departments such as the Department of Cancer Research (DoCR) and the Department of Precision Health (DoPH) is underlined, as is the good organisation and quality of the environment offered to doctoral students. Although the establishment of the TMOH and TTM is very recent, the auditors highlight several positive aspects of their activities. The TMOH offers excellent integrated services that are highly appreciated by the users. The clinical research projects managed by the TTM are success stories that should serve as examples for future initiatives.

Our roadmap for consolidating achievements and moving forward

In their evaluation reports, the Interface panel of experts identifies some weaknesses facing LIH and its research departments, and makes recommendations for addressing them in the future. LIH recognises the relevance of most of these findings and recommendations, which are aligned with its new strategy. The Institute will strive to integrate them to the best of its abilities in its future developments. Corrective actions have already started prior to Interface's audit report. Further measures are already planned in the 2022-2025 multi-annual agreement signed with MESR, and others will be added in order to best meet the objectives defined. This roadmap is detailed in the following paragraphs.

Positioning and strategy

Legal framework

One of the main concerns expressed by the Interface expert panel relates to the national framework in which LIH operates, which would not be conducive to the full development of translational research activities. Based on their observations and analysis, the experts recommend that LIH should advocate for a national

framework to foster the execution and application of biomedical research at national and transnational level (Rec1_LIH¹ ; Rec3_DoPH; Rec5_TMOH/TTM). In particular, the following two objectives are highlighted:

- **Adaptation of the legal framework regarding research consents and interoperable and accessible electronic health records for research.** It is recommended that LIH and its units raise awareness of their research capacity, and promote the potential of longitudinal population studies to become a reality.
- **IBBL develop a vision to become a national infrastructure** that benefits the population through large-scale genetic and epidemiological sample collection and analysis activities. Furthermore, it is proposed that IBBL, with a national biobank status, forms the basis for the characterisation of the genetic heterogeneity of the Luxembourg population, enabling the introduction of personalised medicine, including secondary prevention of diseases and adverse drug reactions in the coming years.

LIH fully shares the analysis and concerns expressed by Interface, and also believes that an evolution of the legal framework to favour translational research activities is highly desirable. Based on our long-term experience in the field, we consider that the recommendations proposed are very ambitious and that a solution can only be found in the medium or long term. This is a subject that does not depend solely on LIH, but involves many stakeholders and touches on many different aspects, legal, ethical and budgetary, among others. LIH is committed to contributing to a more favourable framework in liaison with policy makers and other stakeholders. The translational research programmes that LIH is currently implementing, such as Clinnova, will undoubtedly help to highlight the actual needs. An Ethical, Legal and Social Implications (ELSI) working group has been set up as part of the Clinnova programme. It will provide direct guidance to researchers, advice on legal and ethical issues (GDPR compliant protocols, management of informed consent, etc). In addition, it will identify and discuss specific problems encountered with regard to ethical or legal challenges in these large translational programmes. In this context, discussions with the CNER and the newly established Luxembourg national data services (LNDS) are already ongoing on the topics of secondary use of data, data exchange, and data security. Furthermore, LIH would be very interested in developing large population, longitudinal and genetic studies, as it is aware of the high impact of such studies. However, we know the significant cost of implementing them, which requires a strong commitment from all stakeholders to provide funds. LIH has a long experience in setting up cohorts on a smaller scale (Oriscav, COVID-19) which it is available for use regarding more ambitious projects. In this respect, the collection of tumour samples foreseen in the National Cancer Plan, in which LIH is actively involved, could serve as a case study.

Research strategy positioning

Among the recommendations, it is proposed that the strategy and activities of some of LIH's departments should evolve:

a) DOPH

In particular, it is recommended that DoPH should develop a research strategy that includes more public health activities with particular regard to vulnerable groups, based on the development of innovative tools

¹ The recommendations made in the various Interface evaluation reports are listed in abbreviated form with the following nomenclature: Recommendation number_Report type (CRPs, LIH, Department).

for public health research, and a well-defined role in surveillance and monitoring, including registries (Rec1_DoPH).

LIH agrees with the above recommendation, which is in line with initiatives recently implemented by the department. This is particularly true for the new teams of Dr. G. Fagherazzi (Deep Digital Phenotyping Unit), Dr. J. Klucken (FNR PEARL Fellow, Digital Medicine Unit), Dr. S. Pilleron (FNR ATTRACT Fellow, Ageing, Cancer, and Disparities Research Unit), and Dr. C. Backes (Scientific Director of the National Registry of Cancer, Cancer epidemiology Unit). These teams are developing research themes that are fully in line with Interface's expectations.

b) TMOH

It is also suggested that the strategic mission of the TMOH should be revised by including all types of clinical research, whether translational or not. According to the Interface Report, this would be an important step in making support for clinical research more visible to hospital clinicians as well as to the community (Rec1_TMOH/TTM).

LIH takes note of this recommendation, and wishes to emphasise that it is fully in favour of increased participation by the TMOH in hospital clinical research activities. However, the Institute believes that it is important that these activities take place within a well-defined collaborative framework, guaranteeing the quality of the research undertaken (scientific relevance, feasibility, governance) as well as the financial balance of the projects. Another important aspect to consider is the management of the TMOH capacity, which must remain available for the LIH's strategic research projects and of our partners, as well as the choice of clinical research topics which should not be far from LIH's strategic axes. Negotiating framework agreements with our hospital partners would therefore be necessary, and conceivable in light of agreements recently reached in the context of research programmes or the establishment of common infrastructures (such as Luxembourg Clinical and Translational Research Center, LCTR).

c) Regular evaluation and positioning of research groups

Finally, the Interface experts note that, although an increasing number of teams at LIH are positioned at the interface between different types of research, some remain anchored to a curiosity-inspired lab-research. They propose to introduce a regular evaluation of the positioning between basic and applied research based on the so-called Ruttan's concept, which would allow to adapt the activities to the expectations regarding applied research (Rec1_CRPs).

The introduction of a regular evaluation of the positioning between basic and applied research at LIH is feasible and would be both informative and beneficial. This could be integrated into the existing scientific review procedures and tools that allow LIH to have a complete and detailed view of the teams' research activities at all times. However, we believe that the use of this analysis as a governance tool should be very cautious. It will be important to see it as a tool to assist decision-making rather than as a means of strict control. Preserving the balance between basic and applied research and respecting the autonomy of researchers seem to us to be essential elements for fostering innovation and scientific advancement within the LIH.

Human resources

a) Attractiveness of LIH

In their reports, the Interface experts note that LIH needs to recruit more staff with highly qualified profiles, but positioned in employment sectors in high demand (in particular experts in AI, bioinformatics and biostatistics, public health researchers, scientists with hybrid profiles between epidemiology and data science, medical researchers). The experts recommend that LIH reinforces its attractiveness and implements an adequate human resources strategy allowing the recruitment of qualified collaborators in highly competitive job markets (Rec4_LIH; Rec4_DoCR; Rec6_DoPH; Rec5_DII).

The recruitment needs are well known to LIH, and the necessary profiles are identified. LIH's HR department and, in particular, its dedicated recruitment team work hard to attract the most competitive candidates. They are having great difficulty in attracting specialists in the fields mentioned by the Interface experts, where demand is high and/or offer is low. Added to this is the decline in the attractiveness of Luxembourg due to the high cost of living, housing and mobility problems which LIH has no control.

Faced with this situation, we have taken numerous actions in recent years to strengthen our international visibility and diversify the communication channels used to disseminate our job offers by integrating professional networks and contacts of our researchers. Our teams regularly participate in job forums or international scientific meetings where they meet potential candidates.

We are also working to strengthen our attractiveness by continuously improving the conditions offered to our employees. It is worth noting that a new Collective Labour Agreement (CLA) has been recently concluded with the staff delegation and the OGBL trade union. This CLA includes a series of new benefits in addition to those already acquired (general salary increase in addition to a targeted increase on the salaries of postdocs which are now aligned with those practised by other LIs, greater flexibility in teleworking conditions, increase in value of lunch vouchers).

LIH has set up specific procedures, including individualised career plans, which allow young researchers from the institute to access senior investigator positions. In addition, we favour the use of competitive funding programmes (FNR PEARL or ATTRACT, EU ERC or ERA chairs) to recruit PIs, which guarantee the excellence of the candidates while providing the necessary resources for their installation and development. Recruitment of staff in the fields of artificial intelligence and information technology is increasingly difficult and discussions are underway at Board level on how to make these positions more attractive. In addition, we aim to forge strategic alliances with artificial intelligence and information technology centres in neighbouring regions in order to offer joint positions, exchanges of personnel and know-how. In this context, LIH will intensify its cooperation with the DFKI Saarbrücken. If the recruitment needs are undeniable, LIH must however ensure that it respects the institutional commitments made in the multi-year framework agreement signed with MESR, which limit staff growth during the period 2022-2025. It must also take into consideration the limits imposed by the lack of functional workspace as highlighted by the Interface experts in their reports.

b) Career development policy

Another area for improvement suggested by Interface is the implementation of an active career development policy, especially for doctoral students and young researchers (Rec3_CRPs). It is recommended to clarify career prospects and opportunities, both within and outside the institution. On a related note, it is proposed that LIH further develops its links with universities, in particular with UL, to facilitate tenure-track and dual-affiliation positions (Rec8_LIH; Rec8_DII).

The subject of career development for young researchers is of great interest to LIH. We are already involved in numerous working groups involving our internal partners (staff delegation, coordination council) and external partners (research institutes, UL, FNR) which are preparing future initiatives at different levels (Framework Agreement on Research, FNR Working Group on Research Culture, internal procedures at LIH) with objectives along the lines desired by the Interface experts. In this context, we should mention the desire to develop mentoring within our institutions. The UL has just initiated a pilot project that we are following with great interest for a possible implementation at LIH. Better information and preparation of our young researchers on internal and external job opportunities is a very relevant recommendation for which we are committed to taking concrete measures in the framework of the training programmes organised by the Institute. In this respect, it should be noted that the CLA recently signed provides for a significant increase in the institutional budget allocated to individual training, which should help to improve the skills of our junior staff. The diversification of job opportunities through joint positions with other institutions is also quite relevant, and it is a practice we already implemented with UL, LISER and LNS. Its further development through the creation of so-called LI Research Fellows is part of the commitments signed by the 3LIUs partners of the Research Luxembourg group in the 2022-2025 multiannual agreements.

c) Gender and Inclusion awareness

The Interface expert panel recommends improving gender awareness and inclusion with the aim of achieving a better balance between men and women in supervisory positions (Rec6_DII).

LIH is strongly committed to gender equality issues. The institute carries out regular quantitative and qualitative monitoring of gender-related HR data, and is therefore fully aware of its weaknesses in this area. The gender imbalance in supervisory functions is indeed a problem that we want to address. With this in mind, LIH has recently put in place a gender equality plan that provides for a wide range of measures to promote parity at all levels of activity (recruitment, promotion, evaluation, etc). This plan includes awareness-raising actions for all employees and measures to promote women's access to managerial positions. We are optimistic that it will help to improve the situation, while being fully aware that it is a long-term cultural change.

Financial resources

Interface recommends improving the distribution of the block grant by allocating a dedicated strategic budget to departments and creating an incentive programme through an internal competition for research project ideas (Rec2_CRPs; Rec5_LIH; Rec3_DoPH; Rec4_DoPH; Rec7_DII). Indeed, the experts believe that departments need a dedicated strategic budget allowing them to make investments in infrastructure and staff in order to serve their strategic vision and to facilitate decision making based on closer exchanges with IPs. It is also recommended that internal decision-making processes regarding budgetary decisions be made transparent at all levels of LIH and its departments (Rec7_LIH; Rec7_DII).

The GBB policy was introduced after the 2018 quadrennial evaluation, and is considered positive in the interface review. The key element of the GBB is to give freedom to research groups, and allow them to conduct high-risk, high-reward research. The GBB system, with its ability to roll over remaining annual funds, allows groups to build up strategic reserves that can be used for strategic investment at group and departmental level. Budget discussions normally take place in a timely manner at the level of the Executive Board (Execom), departments and individual research groups. Circumstantial delays in communication may

have occurred in the recent past, and are related to the complex budgetary situation that arose following the COVID-19 pandemic and the inflationary crisis.

LIH has allocated institutional budgets for cross-cutting activities (e.g. for the NCTCR), which allows to federate intra- and inter-institutional research efforts and to obtain co-funding from other parties (e.g. FNR, Charities, etc). Last year, LIH allocated strategic funds to departments to support the development of departmental strategies when presented to the management. In addition, LIH also promotes the allocation of strategic funds to support interdepartmental activities that further the institutional strategy. An internal funding programme called Institutional Translational REsearch Project IDEation (INTREPID) has just been launched with a budget of EUR 1 million. The programme aims to support one or more new translational and collaborative research projects, and should encourage the creation of synergies around the translational workflow implemented at LIH (Clinnova, NCTCR, ORISCAV, PrediCOVID, COVALUX, NCER-PD, etc.) in priority disease areas (rheumatoid arthritis, inflammatory bowel disease, Parkinson's disease, multiple sclerosis, cancer and COVID19) and research topics (digital health, preventive medicine, clinical research, precision health).

Interface experts recommend diversifying funding and increasing the share of third-party funding (Rec6_LIH; Rec7_DoPH). To this end, it is suggested that research departments should increase their participation in competitive European research programmes, and obtain appropriate administrative support for this. They should seek to intensify their international collaborations and participation in joint project applications (Rec8_LIH). Furthermore, Interface recommends that doctoral school funding programmes such as PRIDE should be given priority over individual doctoral student funding, especially at DoPH (Rec8_DoPH). Finally, it is suggested that the TTM/TMOH could attract more industrial studies to help finance LIH activities through revenues. The unit should increase the share of large projects supported to improve its efficiency. (Rec4_TMOH/TTM).

LIH has adopted a voluntary policy for several years to encourage its researchers to participate more in competitive European research funding programmes. It has also set up an expert team dedicated to European funding which identifies calls for proposals of interest to LIH scientific community, and actively assists applicants in the preparation and submission of project proposals. The Science Office is also involved in the administrative management of European projects coordinated by the Institute. These measures are successful as shown by LIH's European funding figures:

- In the period 2014-2017, LIH teams were involved in 45 European project proposals, of which 12 were selected only as partners.
- In the period 2018-2021, the number of participation in European projects has doubled (91), with a number of projects selected for funding that has tripled (36), including 6 projects directly coordinated by the Institute.
- From the beginning of 2022 to May 2023, 38 project submissions including 5 proposals as coordinators were made. Eight projects including two as coordinators have already been selected for funding by the European Commission.

The annual consolidated European income of LIH is steadily increasing, reaching 2.2 million Euros in 2022. The European funding team within the Science Office has recently been strengthened to 4 FTEs, which should enable LIH to further enhance its EU fundraising performance. This increased support is helping to familiarise our researchers with European funding programmes, and we note an increased interest in international funding and a diversification of the types of project calls in which they participate.

In this respect, LIH has recently achieved great success in the FNR WEAVE INTER programmes with international teams and BRIDGES/HealthTech with industrial partners. The DoPH and DII, in collaboration with other actors in Luxembourg, are currently preparing dossiers for the creation of a Doctoral Training Unit to be submitted this autumn in the framework of the FNR PRIDE call for projects. In parallel, the TMOH/TTM teams are working to increase and diversify their collaborative, clinical and industrial activities, without compromising their ability to support internal projects or those of our national partners. In addition, the development of our relations with the public and charities is now an integral part of the activities of the Communication and Marketing team under the leadership of Mrs D. Hansen. Altogether, we are therefore confident that the Institute is on the right track to increase its share of external funding.

Infrastructure

Interface recommends establishing a robust long-term infrastructure plan in liaison with the MESR (Rec6_CRPs; Rec3_LIH; Rec1_DoCR). Ideally, all LIH departments should be located under one roof, and the biomedical research and hospital communities should be located on the same campus. In their reports, the Interface experts note that the DoCR should urgently receive a functional workspace (on site and mouse facility). They recommend that the IBBL automate certain biobanking procedures (Rec2_TMOH/TTM).

As the evaluation was conducted during the DoCR change of facilities, the need for functional and additional workspace was latent. The impact of the department's move is still being felt at present, with some facilities not yet fully functional (e.g. the animal house and BSL2+ laboratories). Although we are confident that the remaining problems will soon be solved, the DoCR move has demonstrated that infrastructure planning takes too long and does not take into account the changing needs between the starting point of the planning and the actual implementation of the project. This results in facilities that are too small or unsuited to current needs.

LIH is convinced that its research departments would benefit from being under one roof, which would promote collaboration between the groups and optimise the use of technological facilities. The institute clearly wants all life science and biomedical research to take place in close proximity on one campus. Plans for a joint building on the Belval campus by 2030 are under discussion and would offer proximity to other biomedical research players (UL, LIST, etc.).

Unfortunately, the space that is currently foreseen to be allocated to LIH would still be too small and not accommodate all LIH needs. In the meantime, LIH aims to maintain state-of-the-art technological resources through a high investment budget. A significant financial effort has recently been made for research infrastructure (e.g. mouse facility at HoBH in Esch) and strategic major equipment (e.g. upgrading of equipment for metabolomics, proteomics, cytometry, IBBL platforms). In addition, substantial investments are planned in projects such as Clinnova, which will be essential to develop the integrative IT infrastructures needed for an increasingly data-driven research effort.

Governance and organisation

Interface recommends the establishment of an external Scientific Advisory Board (SAB) to advise the Institute's management, its Board of Directors and its research departments on the development strategy, in particular that of the DoPH, which has not yet reached full maturity (Rec5_CRPs; Rec2_LIH; Rec2_DoPH).

LIH recognises that the recommendation is fully relevant. The Institute is currently working on building the SAB on the basis of an internal charter recently established. This charter foresees the integration of 2 to 3

international experts per department with relevant and, if possible, cross-cutting competencies (e.g. immuno-oncology, cancer epidemiology, big data and translational research). The aim is to form an efficient, gender-balanced and operational committee to advise LIH management and the departments on all strategic issues. One of the first tasks of the SAB will be the evaluation of the scientific positioning of the research groups by the end of 2023.

Interface recommends simplifying organisational structures wherever possible to make them clearer and more understandable to external stakeholders and the general public (Rec4_CRPs; Rec7_LIH, Rec3_TMOH/TTM).

LIH recognises that the new structures put in place following the significant reorganisation in recent years may appear complex and subject of confusion. These legitimate concerns will be taken into account in the efforts of LIH to continuously optimise and better adapt its organisation and procedures, and to communicate them. In this context, it should be noted that the institute has carried out an extensive internal inventory of its organisation and administrative practices on the basis of lean management principles. This in-depth review, which was carried out over several months in 2022, allowed us to draw up a detailed roadmap of actions to be carried out in the coming months to make LIH organisation more efficient and easier to understand.

The Science Office has already been thoroughly restructured and given a central role in coordinating activities at the interface between research and administration. The Executive Committee and the Scientific Steering Committee are also under review to ensure that their decision-making processes are more transparent. These reorganisation efforts are assisted by LIH's communication service, which ensures the visibility of the organisation by internal and external stakeholders.

The Interface experts recommend that LIH takes steps to intensify translational activities and to foster the involvement of research departments (Rec2_LIH; Rec2_DoCR; Rec5_DoPH; Rec1_DII).

As described in the first part of this document, the development of translational research activities is driven by a strong commitment at LIH, and any areas of improvement are welcomed by us. In this context, we have undertaken a broad consultation with our researchers to identify with them the actions to implement in order to boost our translational activities. These discussions led to the creation of several working groups on themes that are perfectly in line with the concerns mentioned by Interface:

- I. Improving communication on translational structures and activities,
- II. Setting up procedures and tools to facilitate the involvement of research groups in translational research initiatives (e.g. data catalogue, access procedures, etc.),
- III. Harmonisation of data and analysis pipelines in the translational workflow,
- IV. Drafting of a synthesis document on the vision of the LIH concerning the development of translational research and an ambitious clinical research programme in Luxembourg in coordination with key interlocutors from the health sector.

The work of these groups is ongoing, and is regularly evaluated by LIH SSC. They should lead to concrete actions in the near future. In parallel, we have opened our teams and projects to clinical doctors, we participate in an increasing number of clinical projects initiated by clinicians, and are involved in the training of MD-PhDs. These are still limited initiatives, but LIH is keen to develop them in the future. In addition, we are strongly engaged with all relevant stakeholders (MESR, MOH, Social Security, FNR) in designing an

ambitious translational oncology research programme (NCTCR), which we are confident will have a major impact, similar to the Clinnova programme already underway.

External collaborations and service provision

In its evaluation reports, Interface makes several recommendations to further develop interactions with key external partners (policy makers, health actors, international collaborators, patients, clients, industry), and to better take into account their needs and perspectives (Rec8_LIH, Rec3_DII, Rec4_DII, Rec9_DoPH, Rec4_TMOH/TTM).

LIH takes good note of Interface's constructive recommendations, and states that it is determined to develop even more than today its networking and partnership efforts with all interlocutors, as it is aware that these external relations play a key role in the development of its activity. LIH's ability to bring together a large number of actors from different backgrounds around common objectives in an operational manner was illustrated by the associating role that the institute was able to play during the COVID-19 pandemic, but also by the success of the implementation of the Clinnova transnational programme or projects with industry. Initiatives have recently been launched at LIH to develop Patient and Public Involvement (PPI) in Research. A PPI action programme is currently underway in the field of oncology with the establishment of patients groups. These are trained to be active partners in all aspects of our research process. The launch of the PPI and patient advisory body is one significant step to include the patient's view point in our research and make communication and research process more accessible to patients and the public.

Impact

Interface recommends that LIH research departments connect better with the Technology Transfer Office, incubators and UL to better detect and transfer innovation, and should increase their participation in funding programmes targeted at transfer of innovation (Rec8_LIH, Rec5_DoCR).

The valorisation of our research results is a priority for LIH. Its Business Development Office (BDO) is continuously informed about the activities and results of the institute's research, and is in regular contact with the researchers in order to elaborate the best strategy for valorisation. The BDO also organises regular training sessions on the topics of intellectual property and commercialisation, in which all researchers are invited to participate.

Finally, LIH and the BDO are active partners in the setting up of the inter-institutional incubator for spin-offs and start-ups in the health-tech and med-tech sectors, which should see the first start-ups established in the coming months. With the development of our partnerships with industry in recently initiated projects, in particular BRIDGES, HealthTech and European projects, LIH is confident that it will have the opportunity to further valorise its research results.