Interview: Dr. Catherine Larue – CEO, Luxembourg Institute of Health (LIH)



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The CEO of LIH

, Dr Catherine Larue, reveals how LIH's mission is to translate research knowledge into clinical applications; how since 2008, Luxembourg has made personalized healthcare a priority area, particularly for cancer patients; and why Luxembourg has all the ingredients to be considered amongst the leading life sciences countries in the world, but needs to focus more on developing the number of SMEs in the area of biomedical research.

What have been your key priorities since you assumed the leadership of the Luxembourg Institute of Health (LIH) nine months ago?

LIH's mission is to translate research knowledge into clinical applications. We have two key goals in this regard: first, improving healthcare, ensuring that our citizens receive better treatment in the future than they do today; and second, to build on the country's vision of personalized healthcare. LIH is structured into three dedicated departments: Oncology, Infection & Immunity and Population Health.

Given the excellence of our ongoing research in prestigious publications, such as in *Nature, Cell* and *The Lancet*, my number one priority, over the last nine months, has been to ensure that we have the people and the budget to fulfil our mandate. LIH's key objectives are stated in our performance contract over a four year period. They include key performance indicators covering

numerous topics, such as the number of publications, the number of patents filed, the number of public-private partnerships etc.

Our quality audit, which took place a couple of weeks ago and involved both research units and administration departments has also been a team challenge in 2016.

This year, LIH marked the first anniversary of the merger of the biomedical research institute (CRP-Santé) and the research infrastructure and biobanking service provider, Integrated BioBank Luxembourg (IBBL), within LIH. How has your role and mandate evolved, following this new structure?

In 2012, I was appointed CEO of IBBL, a not-for-profit and independent biobank designed to facilitate medical research in Luxembourg. Over the last three years, we developed the visibility of IBBL through major achievements.

The 2015 merger under a novel structure (LIH) reflects the willingness of the government to reinforce the national research centers by creating synergies among researchers and technologies, enabling quick adaptation within this fast-evolving sector.

I took over the general management of LIH starting from January 1st, 2016. Having previously spent three years as CEO of IBBL, I believe I am in an ideal position to identify synergies (principally in joint administrative functions) between IBBL and LIH.

As the CEO of LIH, my role is to draw and implement the overarching strategy for the different research departments. We are also involved in preparing key collaboration agreements with prestigious and complementary international institutions that match our excellence areas.

Can you expand upon the role of the different departments within the LIH?

We have three main research areas.

First, oncology, an area where we have a particularly high level of expertise with 65 people working on cancer research that will have a strong impact on reducing the cancer burden within the Luxembourg population and beyond. Oncology department was instrumental in the development of the Luxembourg Plan Cancer 2014-2018.

[Featured_in]

Our second department (75 people), Population Health, is composed of six different research units, all contributing to the public health of the country. It is an interdisciplinary research center focusing

on epidemiology and public health research across a wide range of areas including cardio-metabolic diseases, sport medicine, human bio-monitoring, health economics and clinical investigations. The national cancer register is driven by our teams.

Our third area, Infection and Immunity (70 people), is a clinical-translational research center acting to understand the complex immune mechanisms of infectious and inflammatory disease processes and cancer.

All those departments host specific technological platforms to serve their strategy but also combine their talents by closely working together.

Both you personally and LIH have been heavily involved in the roll out of Luxembourg's first ever national Cancer Plan. This plan started in 2014 and is due to conclude in 2018. How do you evaluate the progress made so far?

We have made a tremendous amount of progress already. The overarching mission of Plan Cancer is to improve the quality of healthcare of patients with cancer. Among the 10 main goals set in this cancer plan, one focuses on the development of a national strategy for cancer research by regrouping all of the Luxembourg actors in oncology. We managed to gather researchers, clinicians, pathologists, epidemiologists and representatives from patient associations to write this plan and coordinate our efforts around a common strategy.

IBBL was also involved in "diagnostic" area, together with its partner the National Laboratory of Health (LNS – Laboratoire National de Santé), particularly its pathology department, for improving the diagnostic tools around cancer detection.

LIH strives simultaneously to become an international thought leader in the field of biomedical and translational research; act as premier supplier of public health information nationally; promote personalized medicine; and position itself as a critical partner for higher education. How do you practically go about managing such objectives?

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While each department has its own goals and strategy, my goal is to set this overall vision, with the help of LIH executive committee.

The implementation of personalized healthcare is not merely a focus area for LIH, but is a hallmark of the country. The key for the patient is to receive the right drug, at the right moment, and at the

correct dosage: this is Personalized Medicine. Since 2008, Luxembourg has made personalized healthcare a priority area, particularly for cancer patients, as recognized by the European Commission. To ensure that a more personalized healthcare system becomes a reality, we must be visible at the European level by being part of H2020 or IMI consortia for instance, or by acting as advisor or evaluator within European Commission. Our research through all departments is combined with a vision of translational research and personalized healthcare as clinicians are deeply consulted and involved.

Then indeed you need to make it a reality for the patients themselves (through Plan cancer for instance). While LIH might appear as a small organization, by uniting all the actors around the biomedical research landscape in Luxembourg, we can together make a much bigger contribution to personalized medicine. We are already setting up the standards for next generation healthcare.

Today 71 percent of LIH's funding derives directly from the Ministry of Health. Do you have any plans to diversify your revenue stream in the years ahead?

Our current reliance on public funding is not a weakness. It is proof of the government's commitment to support research in the country, which is essential. The government has a role in giving a strong signal that it is willing to support creative innovations, an area where the private sector is often more reluctant to get involved. We do aim to focus on other possible areas of funding, by being more engaged in National and European funding initiatives, and by increasing the number of our public-private partnerships.

In the area of population health, we already have a number of partnerships with pharmaceutical companies that seek advice regarding the organization of their clinical studies. A number of companies are also interested in our cardiovascular diseases or sport medicine research units, including for example Decathlon, one of the world's largest sporting goods retailers.

Throughout your career, you have worked for big pharma and diagnostic companies, as well as a specialized bio pharma company, Genfit in France. How have such experiences helped to prepare you for your role as CEO of LIH?

I spent four years conducting public research for my PhD at Inserm (Institut national de la santé et de la recherche médicale). Given that I then spent over 20 years with private industry, moving back into public research 4 years ago was certainly a cultural stretch but I was ready for such transition. However, long before working in public research, I was interested in creating a relationship between the public and private sectors. Both sectors ultimately want the same thing, ie to create value, but have different ways of achieving it and do not have the same language

sometimes. I know exactly what is needed to foster the communication between those two apparent silos. We need to create bridges that don't exist yet. This is where my prior experience is particularly useful.

What do you see as being some of the main challenges facing the Luxembourg life sciences sector, over the coming years?

We need more clinician researchers, providing a link between scientific research and clinical practice, helping to get treatments to patients as fast as possible. Given the country's focus on personalized medicine, we also need to improve our capabilities in the area of big data where our excellence is recognized. We need to be better at storing and managing such data. Both within Luxembourg, and Europe as a whole, there is room for improvement in this area.

We will also need to consider whether Luxembourg needs its own medical school; whether it will be cost efficient given the number of students here. Beyond the number of students in Luxembourg, we should also promote areas where Luxembourg is strong and re-known (security, ICT…).

Luxembourg does not have enough SMEs in the area of biomedical research. We need to attract more of them. The country has almost all the ingredients to be amongst the leading life sciences countries in the world, but we do need to focus more on developing our biotech sector. Luxembourg is blessed with many good people, and we should not be shy in expressing our desire to strive for excellence, which requires excellent collaborators. LIH recently advertised 18 PhD positions in our Department of Oncology, and another 16 in our Department of Infection and Immunity, and we received over 800 applications. This tells you all you need to know about the attractiveness of Luxembourg's life sciences sector.

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