



Photo: Getty Images

Stockholm Life Science Conference 2021

Reframing life science for better health and a sustainable future

Conference report
25 May 2021





Photo: Erik Flyg

The COVID-19 pandemic has highlighted the urgent need for deepened collaboration and collective engagement throughout the life science sector.

Thanks to the joint commitment of our academic, healthcare, industry, funding, political and societal partners, tremendous progress has been made on multiple fronts in mitigating the pandemic’s effects. However, more work remains if we are to improve societal resilience and create a universal preparedness for health.

Sweden’s national and regional life science strategies provide valuable direction for improving health and quality of life, ensuring economic prosperity, advancing the country as a leading knowledge nation, and achieving the 2030 Agenda for Sustainable Development.

In order for these strategies to achieve their full potential, the entire life science sector must come together to share what has been learned during the pandemic, fill the knowledge gaps that have been revealed, contribute to “building back better,” and create the conditions needed for healthy life today and long into the future.

Research, innovation, education, dialogue, and cross-sectoral collaboration are needed now more than ever.

The goal of the *2021 Stockholm Life Science Conference: Reframing Life Science Post-Pandemic* was to re-examine the current and future role of the sector and explore an expanded vision for life science that includes prevention of ill-health, implementation of evidence-based knowledge, accountability for joint action, and “a universal preparedness for health” that draws upon multiple sectors and disciplines.

It was my great pleasure to host this digital event in collaboration with my fellow Stockholm Trio university presidents Sigbritt Karlsson (KTH) and Astrid Söderbergh Widding (Stockholm University), along with Region Stockholm County Mayor Iréne Svenonius and dean of KI Campus South Maria Eriksdotter.

This report provides a snapshot of conference discussions and conclusions. The *Executive Summary* (pp. 4-5) highlights crosscutting themes and key outcomes from the day. *Life science is global* (p. 7) summarizes Minister Ibrahim Baylan’s insightful remarks. *Challenges in life science collaboration* (pp. 8-9) captures the morning panel’s views on the collective hurdles and successes during the pandemic’s early phases. *Global health implications of life science collaboration and innovation* (pp. 10-11) describes key points from a unique conversation between senior representatives from the African Union, World Health Organization and Karolinska Institutet, and *Solutions for life science collaboration and impact* (pp. 12-13) captures suggested actions life science actors may take to implement lessons learned during the pandemic. The final section summarizes conclusions from the conference’s four deep-dives into *industry and innovation, research collaboration, data usage and implementation, and public trust* (pp. 15-18).

While no report can capture the full depth of these complex discussions, I hope this summary provides inspiration and direction for our collective work ahead.

Ole Petter Ottersen
President, Karolinska Institutet



Sigbritt Karlsson,
KTH



Astrid Söderbergh
Widding,
Stockholm University



Iréne Svenonius,
Region Stockholm



Maria Eriksdotter,
KI South campus



Ole Petter Ottersen,
Karolinska Institutet

EXECUTIVE SUMMARY

Reframing life science to build back better and fairer

What are the lessons learned during the current COVID-19 pandemic and what are the primary hurdles that must be overcome to attain equitable and sustainable health? These were the focal points of the 2021 Stockholm Life Science Conference that took place on the 25th of May. Three areas identified as key prerequisites for future innovation were collaboration, communication, and accessibility to data.

The three largest universities in Stockholm – KTH, KI and SU – have formed the Stockholm Trio to strengthen their collective impact, profile, and cooperation. The alliance aims to make better use of the potential of the three universities' common academic environments and deepen their interaction in a variety of areas, including life science.

Sigbritt Karlsson, President of KTH, spoke about the link between life science and technology, calling it “the clearest example we have of interdisciplinary work today” and underscored the importance of this current and future collaboration.

“If you remove any one pillar, for example, engineering, humanities, social science, or medicine,” she said, “we will not have efficient and good solutions needed for the future.”

Stockholm University President Astrid Söderbergh Widding agreed. “We need to develop new educational programs together in life sciences across disciplinary boundaries,” she said. “One of our most important tasks is to prepare our students for new challenges – today and tomorrow.”

KI President Ole Petter Ottersen remarked, “Of course we have the medical perspective, but we also need to have the social sciences, humanities, and technological perspectives in order to build better solutions. This way I am sure we can be better prepared before the next crisis hits.”

1. Collaboration – the heart of life science

Collaboration is at the very heart of life science. The pandemic has also shown that working together is an essential path to success during challenging times.

To achieve equitable health and a sustainable society, actors within the life science sector must take responsibility for the health and wellbeing of people globally. The benefits of medical research and innovation must be available to all. There is no equity in health when curable diseases, such as malaria, tuberculosis, and other tropical diseases, still affect people in poorer countries, a point noted by KI professor Eleni Aklillu, who discussed the importance of universal preparedness for health with Ole Petter Ottersen.

The most vulnerable need access to more and better treatments. It is also imperative to address poverty and hunger and to build greater global solidarity. Eleni Aklillu and Ole Petter Ottersen agreed that this has become even clearer in the face of the pandemic. As Ibrahim Baylan, Minister for Business, Industry and Innovation, said during his remarks, “Through helping each other, we will inevitably help ourselves in the long run.”

In terms of global collaboration, it is important to understand that guidelines and treatments produced in western countries cannot always be immediately applied in all regions or countries due to differences, for example, in genetics, environment, nutrition and infrastructure. To save more lives, guidelines may need to be studied and modified to fit local requirements. In the same way, medicines must be tested in different countries and with a wide variety of populations, and even personalized when possible. We also need to take into account the effects of pollution, sanitation, and water quality. Joint commitment is key.

Conference moderator Nina Rawal posed the question, “We can do more but we don’t – what needs to be done?”

“We need better implementation of knowledge,” said Eleni Aklillu, and “we need to work across disciplines,” added Ole Petter Ottersen.

An essential collaboration within life science is the one between industry and academia.

“The core of life science is technology and the health sector. The goal is to prolong and improve human life, and for that we need innovation and research, interaction and cooperation,” concluded Iréne Svenonius, County Mayor of Region Stockholm.

2. Communication, dialogue and trust

During the acute phase of the COVID-19 pandemic, several disciplines were able to gather strength, build new teams, quickly adapt, and change focus. This was essential, for example, when it came to research, producing medicines, developing methods of analysis, and creating new laboratory environments.

“The fact that we were able to start clinical analysis and develop new analytical methods as fast as we did, and with a high level of quality, was based on years of building trust within multidisciplinary areas,” highlighted Sophia Hober (KTH).

“In the current pandemic, it has been both a step-by-step learning process and science in real time. To accomplish learning and a relevant real-time response, dialogue and trust must be in place. And now, during the pandemic, we have further established dialogue and trust,” concluded Anna Sandström (AstraZeneca).

Another reflection regarding communication and trust was introduced by Åsa Kristoferson Hedlund, chair of the Swedish COVID Association, who represented the important patient perspective. In her experience, physicians and scientists do not see the full impact of long-term illness following COVID-19, and sometimes this is not even acknowledged.

“Today we do not know what long-term-COVID is, other than a number of complications. In order to learn about them, patients need to be taken seriously, and both physicians and scientists need to be interested in building objective knowledge. We need diagnoses before treatment, and in order to achieve that we need multidisciplinary clinics.”

3. Digitalisation and accessibility to health data

“Now we know we can do so much more,” said Anna Sandström of AstraZeneca, and gave examples of factors that are essential to future success: digital tools, analytics, collecting and sharing data, clear responsibilities and mandates and shortening timelines.

Proper access to current data is needed to monitor and improve the quality of health and to make health and social care services more effective and equitable across the world. Throughout the conference, accessibility to health data was raised as an important component in reframing life science. Data is needed to collect and provide evidence, to shorten timelines, and to spare the next generation from some of today’s health challenges.

KI professor Lars Engstrand said he would like to make use of all the unique registers available in Sweden and link them to biological samples in order to answer a wide range of questions such as, Who will develop more severe COVID-19 and who will have milder symptoms? What kind of long-term consequences will there be?

“We need security in biobanking as well as large-scale biobanking. This needs to be prepared before the next pandemic.”

Several speakers mentioned accessibility to data as an important component in reframing life science and making health more effective. They also described hurdles that must be overcome, including the organization of Swedish healthcare, which is divided into 21 regions. Each region has its own healthcare system, so when taking into account legislative barriers, broadband capacity and other limiting factors, sharing data becomes difficult.

Hans Möller, CEO of Karolinska Institutet Holding AB, talked about the concept of open innovation, which has been used in the technology industry for many years. It involves sharing information not only between the academic, industrial and public sectors, but also between competitors, making it easier to develop new solutions to big challenges.



Ole Petter Ottersen (KI) and Iréne Svenonius (Region Stockholm)



Photos: Erik Cronberg

IBRAHIM BAYLAN

Swedish Minister for Business,
Industry and Innovation

Life science is global

"The pandemic has shown us all that there is no 'us' and 'them' - we need to stand together," said Ibrahim Baylan, Sweden's Minister for Business, Industry and Innovation.

Ibrahim Baylan described how Sweden's national life sciences strategy has been helpful during the global pandemic.

"In a pandemic, the focus is on saving lives and managing the immediate effects of the disease. The pandemic has clearly illustrated the importance of life science and the need for close collaboration with all actors. The pandemic has also, in a very brutal way, shown us just how interconnected we are in the world and how much we have to gain by cooperating. Through helping each other, we will inevitably help ourselves in the long run."

The Swedish national life sciences strategy, which was presented in December 2019, contains eight priority areas and 30 objectives that Ibrahim Baylan still considers to represent the highest priorities.

"The experience of working with COVID-19 has provided further support for our national strategy in terms of relevance and timeliness. Many of the objectives are critical for our society to develop resilience to future health threats," said Ibrahim Baylan, who wants to advance Sweden as a leading knowledge nation.

Together with the entire life science sector, Ibrahim Baylan would like to lay a foundation for continued

progress, improve the health of the population, develop the healthcare system, and strengthen Sweden's economic prosperity.

"It has become evident that Sweden's life science industry is instrumental to society, both at home and on a global scale," he said.

When talking about the Region Stockholm life science strategy, he spoke of Stockholm as a vibrant and leading area for life sciences.

"I welcome and hope to have a close collaboration between national and regional levels. There is a lot to gain by close collaboration between different levels of government, but also with industry and science. My expectations for what Stockholm will achieve are pretty high, and I believe there is a bright future for the Swedish life science sector," said Ibrahim Baylan.

According to Ibrahim Baylan and the Swedish life science strategy, Sweden has great potential for success, such as world-class research and research infrastructure, a high-quality healthcare system, competitive industry, and world-leading innovation. The government is firmly committed to continuing to develop these areas of strength.

"If we continue to work together, we will be able to provide further fuel to the engine that already produces strong results. Work on the strategic objectives is progressing well and a great deal has already been accomplished," concluded Ibrahim Baylan.

CHALLENGES IN LIFE SCIENCE COLLABORATION: WHAT HAS THE PANDEMIC TAUGHT US?

Björn Zoëga, CEO, Karolinska University Hospital

Anna Sandström, Director of Science Policy and Relations Europe, Astra Zeneca

Åsa Kristoferson Hedlund, Chair, Swedish COVID Association

Hans-Gustaf Ljunggren, Professor, Karolinska Institutet

Sophia Hober, Professor, KTH Royal Institute of Technology Stockholm



Photo: Erik Cronberg

“Science in real time”

The panellists agreed that collaboration was crucial from the very beginning of the pandemic, and that engaging actors from numerous sectors and disciplines is still a key prerequisite for the work ahead. Important factors when conducting “science in real time” are dialogue and trust.

Fast action takes trust and communication

During the acute phase of the pandemic, several priority areas were established to generate momentum, build new teams, and quickly adapt and change focus.

“When dialogue and trust are already established,” said AstraZeneca’s Anna Sandström, “barriers are easier to break down and a quicker response to a crisis is made possible.”

KTH professor Sophia Hober described her efforts to help clinics produce diagnostic tools. Early on, there were no existing methods, so it was important to act swiftly. To this end, she highlighted the importance of universities’ accelerated decision-making processes, and the role played by various funding agencies, which made the efforts possible.

“If I were to choose something good from COVID, it would be the collaboration that appeared. Everyone made the necessary efforts to solve problems.”

KI professor Hans-Gustaf Ljunggren spoke of the research group he and his colleagues rapidly formed, consisting of physician scientists and experts within infectious diseases, intensive care, and microbiology, among other fields.

“We realised that we not only had to find out what anti-viral options and anti-inflammatory drugs were available to fight this new disease, but also how we could rapidly mobilise research and store clinical samples from patients for future research. We accomplished in two to three weeks what normally takes a year.”

Valuable experience and perspective were gained while conducting this type of emergency research, requiring them to continuously consider ethical issues, biosafety aspects, equipment needs, teamwork, and trust.

Another reflection regarding trust and communication was introduced by Åsa Kristoferson Hedlund, chair of the Swedish COVID Association, who represented the important patient perspective during the conference. In her experience, physicians and scientists have not seen the full impact of long-term illness after COVID-19, and sometimes this is not even acknowledged.

“Today we do not know exactly what long-term-COVID-19 is, other than knowing there are a number of complications. In order to learn about them, patients need to be taken seriously, and both physicians and scientists need to be interested in building objective knowledge. We need diagnoses before treatment, and in order to achieve that we need multidisciplinary clinics.”

Learning in real time

Björn Zoëga (CEO, Karolinska University Hospital), talked about how much knowledge physicians have gained so far, and that this pandemic has made Swedish physicians better. He also described how the hospital had been forced to reduce their administration, create new guidelines, and produce new information about recommended procedures. In working with COVID-19 patients, they detected a variety of weaknesses in the current system, including a lack of collaboration between countries.

Anna Sandström described how AstraZeneca began producing hand sanitizer, procured and donated face masks, and offered employees the opportunity to be volunteers in the healthcare sector. AstraZeneca also established its own microbiological lab to test employees for COVID-19 and keep them safe in the workplace. She called it a journey in “science in real time,” and that society has had to adapt to a step-by-step learning process. Important prerequisites for success, she believes, have been establishing an open

dialogue and fostering trust, which helped to facilitate a more agile response to the crisis.

“We can do so much more together.”

When asked what they will take with them from the crisis and apply in the future, Björn Zoëga referred back to Åsa Kristoferson Hedlund’s call for multi-disciplinary clinics to treat patients with long-term-COVID. “We still have needs to solve and people who are acutely ill,” he said. “But we are creating new diagnostic units - it is a work in progress.”

Hans-Gustaf Ljunggren also acknowledged that society has not responded well to the needs of patients with long-term-COVID-19 and that it is a responsibility for the healthcare system.

Anna Sandström reflected on all that has been learned and the capacity that has been created: “Now we know we can do so much more.” She also offered examples of recent positive changes that should be incorporated into future work, including digital tools, analytics, data collection and sharing, and shortened timelines.

Panellists agreed that data accessibility was an ongoing priority. They also described obstacles to overcome, including the need to better integrate Sweden’s 21 healthcare regions and incorporate a greater national perspective. The panel also agreed that much work remains to be done, not least for patients suffering from the long-term consequences of COVID-19.



Photo: Erik Cronberg

GLOBAL HEALTH IMPLICATIONS OF LIFE SCIENCE COLLABORATION AND INNOVATION

John N. Nkengasong, Director, Africa Centres for Disease Control and Prevention
Carl Bildt, Co-Chair, European Council on Foreign Relations, WHO Special Envoy for the ACT-Accelerator
Anna Mia Ekström, Clinical professor in global infectious disease epidemiology, Karolinska Institutet

“No one is safe until everyone is safe.”

Carl Bildt, WHO Special Envoy for the ACT-Accelerator.



Photo: Erik Cronberg

We must work together

Vaccines and treatments are not available for everyone in the world and the consequences of the pandemic vary greatly depending on geography and socioeconomic factors. These are important problems that need to be solved if we are to defeat COVID-19 and build resilience for the future, panellists agreed.

“No one is safe until everyone is safe,” said Carl Bildt. As the new World Health Organization Special Envoy for the ACT-Accelerator (Access to COVID Treatment Accelerator), his responsibilities include facilitating the dialog and coordination needed to accelerate regional and national efforts. He is also working to lower barriers to the production and distribution of diagnostics, treatments, and vaccines, and to increase the dissemination of knowledge around related efforts, all of which require significant mobilisation and organisation. Countries must set aside disagreements and work together, he explained, adding that COVID-19 initiatives may even lead to a general strengthening of global health cooperation.

Pandemic-related lockdowns and restrictions have led to severe unintended consequences around the world, including extreme poverty, according to KI professor Anna Mia Ekström. For example, 168 million people were unable to attend school for over one year due

to school closures; many will never return and will instead will be forced into marriage or child labour. Furthermore, it is estimated that around 135 million additional people now suffer from extreme hunger and poverty, and that female genital mutilation, child abuse, and child deaths have increased due to cancelled prevention and health interventions. “We need to think outside the box. We need to build resilience beyond COVID,” said Anna Mia Ekström.

John N. Nkengasong (Director, Africa Centres for Disease Control and Prevention) agreed and said that we need to act much more quickly. That includes, of course, faster production of and access to vaccines. It is important to establish vaccine production in more regions, he added, as only one per cent of Africa’s vaccine supply is currently being produced on the African continent. To change this, John N. Nkengasong suggested reshaping the market so that African countries begin producing 60 per cent of their vaccine supply on the continent, with the support of knowledge-transfer and financing from western countries.

The speed of vaccination also needs to increase. In Africa, only five per cent of the population is vaccinated, compared to a goal of 60 per cent. The panel agreed that COVAX is part of the solution and is an important mechanism for securing vaccines for low-income countries.

“Rich countries must show solidarity. If one part of the world is unvaccinated, we cannot combat COVID,” said Anna Mia Ekström.

TAKING ACTION: SOLUTIONS FOR LIFE SCIENCE COLLABORATION AND IMPACT

Jeremy Farrar, Director, Wellcome Trust

Jenni Nordborg, National Coordinator, Swedish Office for Life Sciences

Peter Stenvinkel, Professor of Nephropathy, Karolinska Institutet

Malin Parkler, Global Commercial Lead for Patient and Healthcare Engagement, Pfizer

Mathias Uhlén, Professor of Microbiology, KTH

Staffan Ingvarsson, CEO, Stockholm Business Region

Stefan Swartling Peterson, Professor of Global Transformations for Health, Karolinska Institutet



Photo: Erik Cronberg

Global health is human health

The final panel focussed on the question, “What actions can life science actors take to implement what we have learned during the pandemic and create more equitable and sustainable health for all?”

Panelists described the need for adopting a global perspective, a holistic view on planetary and human health, and greater political engagement.

“Scientists must be involved in politics, they can no longer stand back,” said Jeremy Farrar, encouraging others to ensure that the fruits of their labour become more equitably available around the world.

Malin Parkler discussed Pfizer’s work to increase vaccine availability by both negotiating with governments around the world and improving the vaccine itself so it can be more easily stored and distributed by countries with inferior infrastructures. She also described COVAX as an important way to ensure that all countries will be given access to the vaccine.

Stefan Swartling Peterson, who co-moderated the panel together with Nina Rawal, raised the question of additional vaccine production sites.

“It is good to have many production sites across the world,” commented Malin Parkler, “because we have seen what happens when borders between countries are closed. “We need to work together.”

Jenni Nordborg (Swedish Office for Life Sciences) also talked about the importance of building partnerships. Both Staffan Ingvarsson (Stockholm Business Region) and Mathias Uhlén (KTH) agreed that there should not only be national production sites. “It is a global issue, and we need to collaborate. It takes trust and political leadership,” said Staffan Ingvarsson.

Global health and life science

Looking beyond the healthcare sector and towards planetary well-being is the way forward, suggested Peter Stenvinkel (Karolinska Institutet).

“We need to integrate studies on human health with studies on the environment and animal health to solve our planet’s most pressing problems,” he said, and gave an example: “Animals have developed protection against the same threats humans are exposed to, and veterinarians can teach us a lot about lifestyle diseases.

Another example is the food system and global eating patterns. It does not only have a negative impact on human global health, but also on climate change and biodiversity. We have no protection against new pandemics unless we address the unsustainable food system,” said Peter Stenvinkel.

Stefan Swartling Peterson asked where life science is in all of this – the broken food system, the search for cheap protein and the prevention of climate catastrophies? Jenni Nordborg would like the life science community to take the opportunity to drive change in a more sustainable direction when it comes both to climate solutions and disease prevention – and to look beyond the traditional industrial structures.

Life science needs a more systematic approach

Everyone in the panel agreed on the need for a more systematic approach rather than working in silos.

“In times of crisis we need to look at the broader business community contribution, outside the life science community,” said Staffan Ingvarsson (Stockholm Business Region), who added that some companies

were struggling to enter the life science ecosystem – in the future, larger companies could contribute even more.

Mathias Uhlén gave an example from the pandemic’s early days when he and his colleagues quickly changed focus and started a lab, but didn’t receive any samples. “We were really fast on building an infrastructure for testing, but for six months only 10 per cent was being used. (...) It changed in October, and since then we have been very busy. One of the problems though is that we have not done a very good job when it comes to the digital part of the healthcare system; we are relying on adapting to regional systems,” he said.

Staffan Ingvarsson also pointed out that data is extremely important and must be used in even better ways.

Jeremy Farrar stated that the challenges of the 21st century, such as global health and climate change, require a system approach, which is not how the life science sector has worked over the past two decades. “We have to challenge ourselves more. We have been through a catastrophic event where seven to twelve million people have lost their lives. Stockholm and London may look good, but the rest of the world is still in a nightmare scenario.”



THE ROLE OF INDUSTRY AND INNOVATION IN PANDEMIC TIMES

Lotta Ljungqvist (Chair of SwedenBio, CEO of Testa Centre Cytiva), Anders Blanck (CEO, Swedish Association of the Pharmaceutical Industry, LIF) and Hans Möller (CEO, KI Holding AB) shared their reflections and experiences with life science industry collaboration during the pandemic. Agile work, the sharing of data and information, and challenge-based innovation are areas they suggest can be improved in the future.

The pandemic has shown how quickly we are able to respond to a crisis. The panel agreed that the sector has shown strength, which has greatly contributed to successful and rapid vaccine development. They also agreed with Lotta Ljungqvist that the life science community has proven that it can act, and act quickly, when compelled to do so.

“Companies have interacted and collaborated to provide data and science so that we can globally deliver a vaccine as quickly as possible,” she said.

Hans Möller expressed relief that the pandemic did not occur 15 years ago. He mentioned that groundbreaking technologies that have contributed to scientific and business success during the pandemic were developed and improved during the last decade, including broadband capacity, AI applications, methods of transporting data, and cloud technology.

Thanks to those innovations, he concluded, “today we are more resilient.”

“Eighteen months ago, we did not believe we could have a vaccine today – but now we do. This is thanks to good science produced over decades,” said Anders Blanck.

What can we do even better in the future?

Hans Möller talked about the concept of open innovation, which has been used in the technology industry for many years.

“Sharing information not only between the academic, industrial, and public sectors, but also between competitors, makes it easier to develop new solutions to big challenges,” he said.

“We have a lot of technology that can be used in new areas,” said Lotta Ljungqvist, and mentioned the mRNA technology used to produce the new COVID-19 vaccine. We need to continue and bring this kind of work forward so we can increase preparedness for future pandemics.

What roadblocks need to be removed?

This was a question raised by Anders Blanck, who also gave some examples – keep staff healthy, remove export barriers, and stop vaccine nationalism.

Lotta Ljungqvist agreed and said that the world cannot afford to have every country producing their own vaccine. Hans Möller also expressed concern about people continuing to work from home.

“Collaboration is built on trust, and new creative ideas occur when people meet. We must create new environments for offices and labs, which promote creativity,” he said.

INTERDISCIPLINARY RESEARCH COLLABORATION: BARRIERS AND BENEFITS

Lars Engstrand (Professor of Infectious Disease Control, KI), Eleni Aklillu (Professor of Tropical Pharmacology, KI), and Lars I Eriksson (Professor of Anaesthesiology and Intensive Care, KI) discussed the importance of evaluating and learning from the pandemic, not only from a regional or national perspective, but also from a global one.

There is great disparity in international collaboration. Researchers from low- and middle-income countries were less engaged in the early work of the pandemic, said Eleni Aklillu. For her it was obvious that international collaboration, as well as multidisciplinary and cross-sector initiatives, have been key in combatting COVID-19.

“No one should be left out. The open sharing of data and knowledge contributed to the development of vaccines,” she said, and added: “We need to include researchers from low- and middle-income countries and involve them in our comprehensive roadmap to tackle new global health emergencies.”

Lars Engstrand gave another perspective on the lack of international cooperation early in the pandemic when he experienced what he described as selfish behaviour from many countries. “It was a fight for supplies,” he said.

Regarding challenging roadblocks, Eleni Aklillu talked about the differences between low- and middle-income countries and high-income countries with regard to differences in funding as well as research and laboratory capacity.

Lars I Eriksson mentioned the importance of working with a completely different information strategy when tackling a new disease.

“Sweden is a small country, but we still have fragmented systems. It is critical for the future to take the next step in understanding what causes diseases, what affects a poor or good outcome, which therapies are harmful or beneficial for the patient, and so on. I really hope that the evaluation and investigation following the pandemic provides a direction from a national point of view – how Sweden should proceed over the next 10 years to meet the next crisis in a much better way when it comes to patient information and resources to handle Big Data,” he said.

Lars Engstrand said he would like to make better use of all the unique registers available in Sweden and link them to biological samples in order to learn more about COVID-19, for example: *Who will develop more severe disease and who will have mild symptoms? What kind of long-term consequences will there be?*

“We need security in biobanking as well as large-scale biobanking,” said Lars Engstrand.

Lars I Eriksson emphasized the need for society to be better prepared for the next pandemic. He suggested using the coming period to establish better collaborations, better utilize critical resources and infrastructure, and to find out together what can work from day one.

“We must use our experiences and build this into a plan for the next challenge, with a global perspective on how we can work together, learn from each other, and better collaborate.”

DATA USAGE, SHARING AND IMPLEMENTATION

Olli Kallioniemi (Director of SciLifeLab), Magnus Boman (Professor in Intelligent Software Services, KTH, KI) and Clara Hellner (Director of Research Innovation, Region Stockholm) discussed obstacles that must be overcome when using data in research.

Clara Hellner referred to the electronic patient data stored in Sweden as “the new gold”.

“Alongside the development of computer technology and science, electronic data provides tremendous opportunities for data handling and analysis,” she said.

All three participants in the deep-dive session agreed that data is a gold mine when it comes to learning about the pandemic, patients, and treatments. However, there are also several complicated barriers to accessing and sharing data, including:

- Technological, administrative and legal barriers
- Lack of knowledge on what can be done
- Lack of cross-disciplinary collaboration

“National records are organised to treat people, not for research. They are therefore stored in complicated ways and it takes qualified staff to withdraw accurate data from these systems,” said Clara Hellner. Magnus Boman offered a solution – using artificial intelligence methods that excel at taking chaotic data and making sense out of it.

To overcome the obstacles above, the panel agreed that cross-disciplinary collaboration and a multimodal approach are needed.

According to Olli Kallioniemi, SciLifeLab has already started this journey. They have been involved in more than 100 such projects, which were funded and designed to work together. Moreover, they have also created an online COVID-19 portal. As part of this ongoing initiative, raw data from nearly 1,300 articles written in Sweden has already been added.

“A successful effort in real data sharing,” said Olli Kallioniemi, and mentioned two things that will take us into the future:

- First, government supported work on laboratory preparedness for future pandemics, including data preparedness. The aim is to work together with all stakeholders, including the Public Health Agency of Sweden in particular.
- Second, one of the biggest ever research investments in Sweden: a 12-year data-driven life science program containing 11 partners and four research areas. “This is really something that should help us in the future to combat the issues we were facing during the pandemic, but also to do a lot of other cool research stuff,” said Olli Kallioniemi.

BUILDING AND MAINTAINING PUBLIC TRUST

Åsa Wikforss (Professor of Philosophy at Stockholm University), Karin Tegmark Wisell (Deputy Chief Epidemiologist, Public Health Agency of Sweden), and Samuel Lagercrantz (Editor-in-Chief of Life Science Sweden, Nordiske Medier Stockholm AB) discussed ways in which scientists and journalists can combat the spread of conspiracy theories that weaken societal trust.

Public trust is a key ingredient in the fight against COVID-19 and contributes to societal willingness, for example, to follow restrictions and get vaccinated. “The pandemic is a new phenomenon that needs all of society to be committed. We rely on the engagement of the general public,” said Karin Tegmark Wisell.

A pandemic also offers opportunities to create mistrust, which is conspiracy theorists’ objective, said Åsa Wikforss, and stated that “there are players trying to undermine trust and prevent the spread of knowledge in order to create a mistrust of democracy.”

Conspiracy theorists’ impact on the pandemic is not fully known. But we do know that Qanon conspiracy theories continue to spread. “The combination of groups that subscribe to these theories is something we saw in the 1930s, and their false narratives are now gaining ground in Sweden,” said Åsa Wikforss. She further described the challenges posed by groups who tend to resist available evidence.

It is therefore important that everyone – including scientists, journalists, and politicians – takes responsibility for challenging conspiracy theorists.

Samuel Lagercrantz talked about the mission of journalists, which he says is about both questioning authorities and questioning the conspiracy theories about authorities. He described the problem in countering conspiracy theorists with facts when they respond “it is you who is knowledge resistant”.

“But we need people to ask questions,” said Samuel Lagercrantz, pushing the debate further.

Both Åsa Wikforss and Karin Tegmark Wisell added that well-grounded questions about research-backed evidence is, of course, welcome and needed. “We need an open debate. That is a pivotal point for public trust,” said Karin Tegmark Wisell.

Conference planning committee:

Sara Aldén, Stockholm Life Science Conference 2021 project manager, Management Office
Maria Lönn, Head of unit, Management Office
Richard Cowburn, Head of unit, External Engagement Office
Johanna Bylund, Communications officer, Communications and Public Relations Office
Marie Franzén, Coordinator, KI South, Department of Neurobiology, Care Sciences and Society

Steering committee:

Ole Petter Ottersen, President, Karolinska Institutet
Anders Gustafsson, Vice President, Karolinska Institutet
Katarina Bjelke, University Director, Karolinska Institutet
Maria Eriksdotter, Dean, KI South

Conference moderator:

Nina Rawal, Founder, Emerging Health Ventures

Conference report:

Editor and project manager: Sara Aldén, Karolinska Institutet
Text: Luxlucid AB
Photos: Erik Cronberg, Erik Flyg, Martin Stenmark, Getty Images
Layout and design: Arkitektkopia AB



Photo: Erik Cronberg



Photo: Erik Cronberg



Photo: Martin Stenmark