Could you elaborate on the focus of your talk?

Behind so-called ‘personalised medicine’ is the concept of 4P medicine: preventative, predictive, precise and participatory. This means improved care provided at the right time to the right person. But how much of this concept is real and how much is ideological? Very few treatments or practices are truly preventive and predictive medicine raises many ethical questions. In terms of precision medicine, though important in the field of cancer, there are few clues to suggest it would be useful elsewhere. Finally, patient participation is important but there is a risk that certain behaviours (i.e. someone at risk from diabetes drinking sweetened beverages) may exclude a person from health insurance.

What issues arise when considering the ethics of new biotech developments? Are you able to offer an example of a new technology which presented a unique ethical debate?

Isaac Asimov said: “Knowledge raises questions that ignorance will never answer”. There is no progress without new questions and risks. Take for example regenerative medicine and stem cells; nobody today can say which cells would be ideally suited to a given treatment for a given disease. We need to investigate the potential of both embryonic, adult and induced pluripotent stem cells, which means deriving new embryonic cell lines from supernumerary embryos. But, if induced pluripotent stem cells are a good choice, one should raise the question of cost, the length of time and the enormous technical difficulties involved in obtaining clinically certified cells.

In your opinion, what makes an event such as BIOVISION so important?

In the field of life sciences and health, from basic knowledge to its transfer to the clinic, we need to build partnerships. The role of researchers is to discover new therapeutic strategies and the role of the biotech industry is to turn these discoveries into treatments, two complementary needs that require complementary approaches. Better understanding of both research and industry is the best way to accelerate knowledge transfer and at the right time – neither too soon nor too late.
Diane Gosselin is President and CEO of CQDM, a pre-competitive research consortium that seeks to accelerate drug discovery by funding the development of new tools and technologies. She participated in a session entitled ‘From big data to smart data’

What key points did you raise during this discussion?

The main goal of this session was to better understand the needs of bio researchers. We have been generating a lot of data in the last decade or so, and this represents a very important step in research. However, CDQM is focused on tools that will accelerate the discovery process and we need to develop something tangible that can be used by the pharma industry immediately after the project is completed. If we want to do that, we need to turn big data into smart data.

It’s a challenge – and probably one which is more important than we initially thought. When we sequenced the human genome, for example, we thought we would have a solution to almost everything, but it’s not the case. Why is that? Because we are still generating a lot of data. Most people are aware that producing smart data is a present challenge. I wanted to highlight a few examples of how we do this at CQDM and show that it’s certainly possible.

Could you give a specific example?

Precision medicine is a good example. We have funded some precision medicine technologies, especially in the field of cancer, which is important because patients respond so differently to treatment. Different tumours generate a lot of information, but what can you do with it? You want information that tells you a particular patient is going to react to a particular treatment in a certain way. This is exactly what we have done with several projects. We have developed biomarkers to predict who is going to respond to a given treatment – that’s the priority – but also to help us understand the stage of the disease and how we can better disturb its progression.

In your opinion, what major milestones have been achieved in the smart data arena to date?

Again, I would probably use the precision medicine example. I prefer to call it ‘precision’ rather than personalised medicine. We have achieved some milestones here, even though we still have a lot to do. Precision medicine has been discussed for the last 10 years, and simply showing how important it is, making everybody aware of this, is a significant milestone. At CQDM, we have some examples of success in breast cancer and leukaemia, but, personally, I think there’s much more to come.

How would the healthcare sector benefit from a shift to smart data?

In general terms, we want to better predict which patient will respond to a treatment. We want to be able to predict which patient will have side effects from a given medication. We want to be able to follow the treatment course and be able to identify the point at which the therapy is no longer effective. All of this will require smart data.

Finally, why did you agree to take part in BIOVISION?

It was a huge honour for us to be there. One of our goals is to increase our presence in France and Europe, so for us, it was a great opportunity to engage in discussions with biotech leaders, research experts and potential partners. Hopefully, we’ll create stronger links with companies in France and Canada.

What is your definition of smart data? What major milestones would you highlight?

Smart data is what I have in the past referred to as SUPER Data – ‘Suitable, Useful, Private, Exchangeable and Re-usable’ (although SMART may be a better word and could stand for Suitable, Meaningful, Accessible, Reusable and Transparent data). Such data serve the purpose for which it is intended (e.g. research, public health, safety surveillance) and are of high quality such that they are trustworthy. In this context, I believe that the global Clinical Data Interchange Standards Consortium standard for a core set of clinical research data, CDASH, is a true breakthrough, making it possible to start up studies in 70-90 per cent less time while paving the way for data sharing, aggregation and analysis. Studies are becoming increasingly complex, so prioritising the essential data needed to answer the important questions and collecting those data in an appropriate format in the first place is key to accelerating clinical research and the path to new therapies.

Would you say that too much attention is currently being paid to big data?

Big data is important for certain reasons and can help generate ‘signals’ or hypotheses; however, I do agree that the pendulum has currently swung a bit too far in that direction. Those hypotheses still need to be substantiated since they generally arise from low quality and disparate data. The healthcare sector would do well to spend time on improving data quality and producing a global standard export from electronic health records, preferably in CDASH format, to accelerate the path to a learning health system.
What did you discuss in this session?

Individuals’ health and wellbeing cannot be totally independent from the socioeconomic and environmental conditions surrounding them. The social and economic determinants of health mean that there are babies being born in one place where life expectancy is 45 years, while in another place it’s 85 years. The challenge for science is to be able to understand how the combined impact of the social determinants of health and human biology work together to produce a healthy individual. Worldwide benefit can come by substantially improving people’s living conditions, ie. providing better economic, housing, educational, work conditions, etc. will lead to improved health.

How do you interpret personalised health and in what ways would this approach benefit individuals on a global scale?

The World Health Organization (WHO) has adopted universal health coverage as a strategy to ensure that all people can access the health services they need without risk of financial ruin or impoverishment, now and in the future. In support of this, WHO also adopted a person-centred approach for healthcare delivery. Through this approach the individual is the most important component of the healthcare delivery system.

Personalised health is an integral part of this approach as the focus is on the person aiming to better understand their needs through better diagnosis, and therefore having access to the health service and medication that are specifically suited to them. Personalised health is about providing services to individuals based on their specific needs.

Why is BIOVISION an important event?

BIOVISION is an important event as it provides a platform for life scientists, technologists, the business community, academicians and the public sector to meet, network, discuss current or future issues, and develop a common understanding as well as alliances for facing future socioeconomic problems. BIOVISION is an opportunity to make science work for humanity. Being part of this is both an honour and a duty.

What does personalised health mean to you?

Personalised medicine aims to place the patient back at the centre of care and adapt the different parameters of care in accordance with the patient’s needs. This concept requires a great deal of change and is based on new technologies that are challenging organisations and our thinking. This paradigm shift also has an impact on how clinical research is conducted. We will have to collect and analyse a phenomenal amount of information in order to treat a patient. In the future, data on how a patient responds to a certain treatment will be required to treat others. Cancer medicine is often ahead of medical practice but we can imagine that, little by little, all medicine will evolve in this direction.

In your opinion, what value does BIOVISION offer?

Academics and industry leaders need to be aware of the radical changes taking place in cancer medicine over the next 10 years so that they are suitably trained to fulfil new jobs, and can propose new structures and solutions to meet future needs. This symposium provided an opportunity to present this vision of the future and exchange ideas with innovators.

What are the challenges facing personalised healthcare?

We will have to adapt existing systems for collecting data on high-throughput sequencing of tumours and, gradually, on epigenetics, microenvironments, pharmacogenetics, constitutional genetics, etc. Secondly, many diagnostic and predictive tests are also entering the market to guide prescriptions, and these tests need to be compared, positioned and evaluated according to clinical interest. Finally, the cost of targeted therapy also presents a challenge for our health systems.

In general, how responsive is France to personalised health?

France is well positioned in terms of precision medicine in that genomic analysis of tumours is accessible to all, through genetic platforms that benefit 75,000 patients a year.
Dr Alexander von Gabain

Why did you agree to sit on the BIOVISION advisory committee?

I was involved in BIOVISION 2014 and from my experience of numerous European conferences, this event has been the most stimulating in terms of frank and open panel discussions. I really enjoyed last year’s BIOVISION – in particular, the awareness of challenges and how they might be addressed. I saw big pharma organisations such as Johnson & Johnson become excited by the sincerity of discussions with delegates, whether they were from academia, large or small companies, abroad or the local region. This is why I was keen to be involved in this year’s BIOVISION. It was an honour to be on the advisory committee and participate in such a high quality programme.

How important are events such as BIOVISION?

We face enormous challenges, and we need to get our act together over the next 10 years – specifically in terms of putting the economy back into the hands of the people, moving away from state intervention, encouraging entrepreneurship, utilising the enormous wealth of young people in Europe, from Spain right up to Poland, etc. By not utilising all this potential, something will go wrong.

Certainly in the field of biotechnology, BIOVISION is a catalyst for open dialogue and exchange – and for expressing and finding solutions to these great challenges. CEOs from large organisations take part, which is indicative of the event attracting the right people.

A CATALYZER FOR GROWTH

Three research projects withstood a rigorous selection process to win a BIOVISION Catalyzer Award. The accolade will enable the winning teams to connect with potential partners and investors from both the private and public sectors.

LAUNCHED IN 2013 in collaboration with Lyonbiopole, which supports healthcare innovation in the Rhône-Alpes region of France, the BIOVISION Catalyzer aims to give its award winners a step up towards the next phase of their development, whether it be through investment or partnerships with industry and/or the public sector. This year, 18 candidates were selected to pitch their projects, which ranged from a new therapy to treat sepsis to an initiative encouraging entrepreneurship among researchers.

The 2015 candidates were evaluated according to the following criteria:

• Key milestone reached within two years
• Societal benefit
• Level of innovation in terms of the science and technology
• Team structure
• Existing or potential collaborations
• Overall quality of the application

Diabeloop has developed an artificial pancreas, which the team claims will be the first to be approved for market. Consisting of a glucose sensor, a control panel similar to a smartphone, a remote server linked to a medical team, and a patient support service, the artificial pancreas is aimed at patients with diabetes who need regular insulin treatment. The goal is to minimise costs associated with diabetes healthcare, relieve health complications and burdens for patients, and reduce overall mortality rates. CEO Erik Huneker says: “We already have a prototype tested during clinical trials and are looking to have the device on the market within two years.”
Cartimage has developed augmented arthroscopy technology for repairing cartilage. Using intra-articular ultrasound, 3D navigation and data fusion, ChondroSight, as it is known, aims to improve intra-operative imaging of cartilage, bone and ligaments. It will also enable the surgeon using the device to assess the quality of tissues within the body and access a database of patient information. CEO Benoît Vettier explains: “The ultimate goal is to enhance cartilage repair, prevent early osteoarthritis and enable people to live with healthy joints for longer.”

In view of the ever-increasing amount of data collected by biologists, NovaHub aims to provide a structured and maintainable biomedical knowledge base. At present, acquiring data is heavily time- and context-dependent. Primarily focused on cancer, the platform will enable users to produce ‘knowledge models’ of selected diseases, which can be converted into mathematical and computer simulations. The team claims that effectively translating existing ‘unstructured/uncurated knowledge into actionable insights’ would benefit the society at large.

In your opinion, what makes an event such as BIOVISION so important?

There aren’t too many events like this that aim to bring together researchers focused on a specific area with end users. In this case it’s the life sciences, from agriculture to health. Connecting people with not only policy makers, regulatory bodies and decision makers but also the private sector, investors, etc. is important. There are a lot of scientific events that might focus solely on the thematic research; neuroscience, for example, but I don’t know of many broadly themed events such as BIOVISION that follow the trail from policy to basic sciences and their applications. And BIOVISION has an increasingly international flavour as well. In the real world, policies and industries are globally relevant, and science and health are pretty much international affairs.
Dr Michel Goldman, founder of the Institute for Interdisciplinary Innovation in Healthcare, former Executive Director of Innovative Medicines Initiative and BIOVISION Catalyzer co-Chair, discusses the benefits of the award scheme for start-ups and his own ambitions for the Institute, set up this year.

As co-Chair on the BIOVISION Catalyzer Selection Committee, what were your key duties?

I was involved right from the beginning, from the recruitment of potential candidates to the first evaluation process and final selection. During the event, I was on the panel which evaluated the shortlisted presentations and helped select what we deemed to be the most promising project or start-up to win the BIOVISION Catalyzer award.

What criteria did you use to evaluate candidates?

The first criterion was the project’s level of innovation – we were looking for the most promising and innovative scientific discovery. Secondly, we considered whether the project would benefit citizens because it’s important to align scientific excellence and innovation with society’s expectations. We also evaluated the strength of the management team and the potential for collaboration. Finally, we asked the project owners how the BIOVISION Catalyzer would contribute to their search for partnerships.

Could you explain the benefits of the Catalyzer for the winning project?

We hope this award will help both the winning and shortlisted projects to find support and funding. The pitch session offered a unique opportunity for direct exposure and advertising, and the selected projects and start-ups will meet with potential public and private partners, and investors. The Catalyzer is about initiating partnerships and discussions, and ensuring the owners are fully aware of their project’s market value.

In your opinion, what set the winners Diabeloop apart from the other shortlisted candidates?

First and above all, the team displayed scientific excellence in a field of major public health relevance, and an interdisciplinary approach, which is often a key of success. They also had a convincing development plan and entrepreneurial spirit.

In 2004, you founded the Institute for Medical Immunology, the first public-private partnership in the biomedical sector in Wallonia, Belgium, and are in the process of setting up the Institute for Interdisciplinary Innovation in Healthcare (I3H).

What advice would you give to entrepreneurs and others interested in creating a start-up?

My advice would be to view a start-up as more than a continuation of the research. A start-up signifies a new stage and researchers should be fully aware of this – it’s not simply a means of finding funding. Right from the beginning, researchers must reflect on the future of their project. It’s not just about launching the next trial phase, for example; scientists should be anticipating well in advance what will come next – and be excited not only by the science, but also about the entrepreneurial part of their activity. Moreover, scientists have to be sure that they are indeed entrepreneurs and have the appropriate skillset, or at least have people with the right skills around them.

In short, it’s about having the skills to hand and being passionate about both the project itself and its entrepreneurial prospects – it should be recognised that having this passion is no less easy than founding the start-up itself.

What is the premise for your new Institute, I3H?

The aim of I3H is to foster interdisciplinary innovation and to bring people who have common goals together. Often, researchers working in different fields don’t realise they are working towards the same objectives as many others. Our idea, therefore, is to create a platform for collaboration as well as training and education programmes, such as the new Master’s in Translational Medicine. Educating a new generation of researchers, who are fully aware of patients’ needs and how these might be addressed, is the best way to develop new therapies and bring them to those that require them. Thus, patients’ needs will be an important consideration for delivering strong outcomes in drug development.

We already have connections with world renowned universities, including Massachusetts Institute of Technology, and we are forming partnerships with companies and financial institutions to support us in these endeavours.

Looking ahead to the next few years, do you have any key goals or priorities in mind?

My goal is to succeed in convincing decision and policy makers involved in the exciting field of innovation that now is the time to not only contemplate new collaborations, but to consider how to organise these partnerships and measure their impact. Now is the time to reflect on preparing the new generation of scientists.