Impact Report for Europe

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The *ASTP Impact Report for Europe* showcases how technology transfer makes the world a better place.

Materials and support

The *ASTP Impact Report for Europe* is available in both print and electronic formats. Visit the ASTP website or headquarters for more details.

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About ASTP

The initiative of a multinational group of professionals to meet and share experiences on a regular basis resulted in the establishment of the non-profit Association of European Science and Technology Transfer Professionals. ASTP is practitioners and members-focused and is growing rapidly.

The association consists of more than 600 members, covering 41 European countries. The majority of its members are technology transfer professionals at public knowledge institutions. The ASTP wishes to professionalise and promote technology and knowledge transfer between the European science base and industry.

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Koen Verhoef, PhD, RTTP

As Vice President of the Association of European Science and Technology Transfer Professionals (ASTP), I am very proud to present to you the first edition of what I hope will become a regular ASTP publication: *the ASTP Impact Report for Europe*.

With this publication, we wish to highlight outstanding examples of products that have been successfully introduced in the marketplace and were made possible by research results obtained at a European public research institute. After all, helping make such successes possible is what the technology transfer profession is – and should be – all about.

This *Impact Report for Europe* also serves to underscore the importance of investment in research and innovation as it has the potential to dramatically alter the lives of people for the better.

The stories that you will read in this report have been selected after a call was put out by ASTP in late 2011 for submission of success stories. The call was distributed among our members and the national networks for Knowledge and Technology Transfer in Europe. We were thrilled to receive almost 50 entries in response to the call.

The stories were scored by a jury consisting – in good ASTP tradition – of volunteer members.

Four parameters were evaluated: (1) major step (i.e. how revolutionary is the product: disruptive versus incremental innovation), (2) economic impact, (3) societal impact and (4) whether the technology transfer office was instrumental in making the story a success.

The scores for each of the parameters were added up for each entry and the stories were subsequently ranked from highest to lowest total score. The societal impact parameter appeared to strongly favor health-related innovations over non-health-related stories so we reduced the relative weighting of this parameter in the overall score by 50%. The 14 highest-scoring stories were selected for inclusion in this first report.

I hope you will enjoy reading the stories as much as I have.

Koen Verhoef, PhD, RTTP
Vice President, ASTP

Europe has excellent universities and research institutions where state-of-the-art knowledge is available. In order to strengthen Europe's competitiveness further and create more jobs, we need to seize every opportunity to unlock knowledge, to use our research, to encourage innovators as well as entrepreneurs and develop innovative products and services. Continuous investments in R&D are therefore necessary and European universities and research institutions will need to develop this capacity further to share key knowledge and knowhow with those best placed to take it to the marketplace.

In fact, the EU's Framework Programmes for research have systematically supported knowledge and technology sharing since the early 1980s: the 7th Framework Programme is currently supporting over 4000 collaborative research projects. Over the years, increasing emphasis has also been placed on training including the development of business-oriented skills. The recently launched calls for proposals under the current FP7 Framework Programme earmarks €30m for European Industrial Doctorates, over €80m for Industry Academia Partnerships and Pathway and €10m for the new Proof of Concept Grants administered by the European Research Council to allow their existing grant holders to test potentially marketable concepts. The Commission is also promoting a set of "Principles for Innovative Doctoral Training" which recommends including exposure to industry and employment in other relevant sectors. But more must still be done to make it easier for industry and commerce to access the knowledge and knowhow that they need to remain competitive.

This is why the Commission's proposal for Horizon 2020, the next generation programme for research and innovation (2014-2020), will further support this approach. The Europe 2020 Strategy for smart, sustainable and inclusive growth, to pull Europe out of the current economic downturn, highlights the importance of a coherent approach towards research and innovation. Horizon 2020 will, therefore, focus on turning scientific breakthroughs into innovative products and services that will create new business opportunities. It will provide increased support for frontier research, from which so many unforeseen spin-offs and innovations arise and will concentrate collaborative research on key societal challenges that can be best tackled at the EU level such as better and cleaner transport, food and energy security, health and dealing with our ageing societies.

Participants in Horizon 2020 will benefit from greatly simplified and harmonised procedures that will reduce administrative overheads and allow for more flexibility in reclaiming direct costs. This will be of particular benefit to SMEs who will also benefit from grant support and debt and equity funding covering the whole innovation cycle.

The mission statement of the Association of European Science and Technology Transfer Professionals makes it clear that transfer is a two-way process between the European science base and industry: an exchange and sharing of experience. The examples highlighted in this book demonstrate that such cooperation leads to some really outstanding results.

Robert-Jan Smits,
General Director, DG
Research and Innovation,
European Commission

hMPV

When a virus creates jobs

In 2001 virologists in Rotterdam, The Netherlands discovered a new virus that causes serious respiratory illnesses mainly in young children. The discovery was the beginning of a successful company that enabled the development and production of a range of diagnostic products. This led to substantial job creation and made a positive contribution to public health.

About 2500 Dutch children are diagnosed with the dangerous respiratory syncytial virus (RSV) and admitted in hospitals every year. However, in 2001 researchers at the Erasmus Medical Centre in Rotterdam, The Netherlands discovered that 20% of these children were not infected with RSV at all. There had to be another virus causing their symptoms. 'So we opened our laboratory methods toolbox, to find out what caused the disease in these children,' Professor Ab Osterhaus recounts. Osterhaus has been head of the Viroscience department at the Erasmus Medical Centre since 1993.

This research revealed that a new virus was responsible for the illnesses, ranging from mild respiratory problems to severe cough, bronchiolitis and pneumonia. The Erasmus group named the new virus human metapneumovirus (hMPV). That discovery was the start of the establishment of the successful company ViroNovative.

'When research leads to such important results, it is a logical next step to file a patent application to support the commercial development of the finding,' says Osterhaus. Fortunately, he had good contacts with Professor Eric Claassen, who was experienced in commercialising knowledge. Since, as stated by Osterhaus, a university is an excellent place to perform research but not the best setting to conduct business, Osterhaus and Claassen developed a business plan for a new company. Professor Claassen, a medical biologist, immunologist and entrepreneur, is co-founder and CEO of ViroNovative. Prior to the initiation of ViroNovative, Claassen had been working for seven years as Research Director at ID-DLO Institute for Animal Health and Science of The Netherlands, where viral infections in animals are studied. He also became the first Biopartner Professor Entrepreneurship in the Life Sciences, on behalf of the Ministry of Economic Affairs at the Athena Institute of the Vrije Universiteit in Amsterdam, The Netherlands.

'From my experience with businesses that I had already set up in the past and my knowledge of laboratory research, I appreciated the field from both sides,' Claassen remembers. 'I communicate well with the people in this type of research, because I have been trained as an immunologist.'

- **Product:** Out-licensing the hMPV patent, enabling diagnostic and therapeutic applications
- **Research institute:** Erasmus Medical Centre (Erasmus MC), Rotterdam (The Netherlands)
- **Marketed by:** ViroNovative BV (The Netherlands)
- **On the market:** since 2001
- **Noteworthy:** ViroNovative sells knowledge instead of a product

Sequence

ViroNovative and the Erasmus MC developed the patent strategy in close collaboration. Osterhaus and his research group were the first to discover the hMPV virus and determine its RNA sequence. Being the first to discover the virus also meant that there were no existing patents on these viral sequences that could hinder commercialisation. This enabled the company to create a solid IP basis supporting its commercial goals. It also meant that the researchers were able to obtain patent rights with a broad scope of protection themselves.

To be exact, it is not the entire virus that is patented, but the use of pieces. These pieces (epitopes and RNA sequences linked to specific function) of the virus can be utilised to make a vaccine or a diagnostic kit. Osterhaus makes clear that, in this way, ViroNovative is an essential partner in the commercial development of diagnostics, vaccines, therapeutic or prophylactic antibodies and anti-viral compounds. Consequently, ViroNovative makes an essential contribution to the detection, prevention and treatment of hMPV infection.

ViroNovative, still located on the Erasmus MC campus, was a commercial hit from the beginning. Although the spin-out was facilitated by Erasmus MC, it did not receive start-up money from the medical centre. 'It was our own commercial success, because we immediately turned to industry and have been working with disclosure fees. Before the patent was published, companies with an interest in the patent had to pay first, before we showed the patent.'

discovery In 2001 Dutch researchers identified a human paediatric virus, that causes respiratory illnesses and hospitalises 1% of all children. (Photo by Amanda Mills)

Royalty payments

Claassen analyses the immediate financial success of the company further. 'Our philosophy is that you need to generate money from industry in the

hMPV

pieces ViroNovative is a commercial partner in the development of applications in diagnostics, vaccines, therapeutic or prophylactic antibodies and anti-viral compounds.

first 18 months that your patent application is still confidential. Because we had a strong patent and our technology was powerful, we could generate money in the first year. If industry is not interested in this first period, they will not be later on. In a way, that first period is a measure for future success.'

'By smartly licensing patents, ViroNovative created more than a hundred research jobs'

Claassen also explains that to attract industry, it is of most importance to show that your claimed invention works. Therefore, you need a strong virology laboratory, to prove that the patent is valid. 'We are fortunate to have received very good support from the Erasmus Medical Centre.'
Subdivision of the market is another point that adds to the ViroNovative success story. ViroNovative sublicensed 14 companies for diagnostics and antivirals in the United States and Europe. Several companies develop and produce diagnostic kits. These kits differ in the use of particular detection methods or in their sensitivity or specificity, but they all make use of the knowledge that ViroNovative provides. End-users make their own choice on which kit they want to purchase and ViroNovative receives royalty payments.

Furthermore, ViroNovative out-licensed the patent rights to develop vaccines and therapeutic antibody applications claimed in their patent to the biotech company MedImmune that had plans for developing a vaccine. Since then pharmaceutical company AstraZeneca has acquired MedImmune and decided to abandon the development of an hMPV vaccine. This was disappointing for Osterhaus, who is eager to progress. 'We are now talking with new partners for the vaccine development.'

Hand-in-glove

But what about publishing research results? There is this unwritten rule in scientific research that says: what is unpublished does not exist. Osterhaus and his group's deep-rooted goal is to publish in high-ranking journals. However, with ViroNovative, he also wanted to create a vehicle that allowed the university to financially benefit from the commercial development of his research. Osterhaus needed to take into account the requirements for obtaining patent protection, which necessitate the filing of a patent application before the first publication of an invention. By doing so, virology researchers at the Erasmus MC have been able to publish in high-impact papers while securing patent rights. Business developers, IP experts and scientists worked together hand-in-glove. Consequently, there was no interference of scientific output with IP protection.

Creating jobs

With the patent, ViroNovative was able to generate several millions of euros of free cash flow. This money flows back to the Viroscience department. In that way, the company created more than a hundred jobs at Erasmus MC, which allowed more research to be performed.
The main driver to work at ViroNovative for Claassen is that he wants to do good work for society. He wants to make his business an economic success. 'In the end, it all boils down to the fact that I want to create jobs.'
Osterhaus appreciates the job creation that IP valorisation can bring, but his main ambition is to improve public health. 'We do important work on a virus that hospitalises up to 1% of all children and is also dangerous to elderly people and transplantation patients. In countries with a less-developed medical infrastructure, infected patients may die from this virus. So I think ViroNovative is of great importance to society.'

In the spotlight: Selling knowledge awarded

ViroNovative has developed a technology transfer model for biotech-based scientific research. The model focuses on capturing the value of new findings in continuous collaboration between academia and industry and with a direct link to the relevant industries for a better transfer to the market and ultimately to the patient. In 2009 ViroNovative won the annual Valorisation Award of The Netherlands Genomics Initiative (NGI). ViroNovative received the award for excellence in structuring and managing technology transfer activities. According to the NGI jury, ViroNovative has demonstrated excellence in deal-making with industry. This way, valuable knowledge developed by scientists is utilised to provide benefits for society and industry.

Colophon

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The *Impact Report for Europe*, published by the Association of European Science and Technology Transfer Professionals, celebrates the complex but very rewarding profession that is technology transfer. In this book, you will read how excellent research is put to use to lengthen lives, thoroughly alter them or just make them a bit better.

To read more about technology transfer, visit **www.astp.net**.

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