

Abolishment of the Teachers Exemption – Consequences and Position of the Swedish Biotechnology Industry

Stockholm July 2005

Introduction and background

Sweden has one of the strongest biotech sectors in Europe and is counted among the world leaders in the industry. Today the Swedish biotech, pharmaceutical and medtech industry employs over 40 700 people, with an annual growth rate in recent years of about 6 %, according to a Vinnova study¹. With the right conditions this knowledge-based industry will be vital in securing future welfare, jobs and prosperity in Sweden.

Today, many competing countries have recognized the growth potential of the biotechnology industry. It is likely that the number of leading biotech locations will be fewer than today as the winners in the race for investments emerge. The key to future expansion of the Swedish biotech industry is an environment that fosters success and innovation and is able to compete successfully with other strong biotech centres in the world. In this context the Swedish Government has initiated a process to investigate the consequences of a possible abolishment of the teacher's exemption.

SwedenBIO agrees that there are fundamental reasons to challenge the Teachers Exemption and that universities that are publicly funded ought to get a fair share of inventions generated in that environment. However, there are also strong reasons to retain the Teachers Exemptions and to be cautious before changing the system.

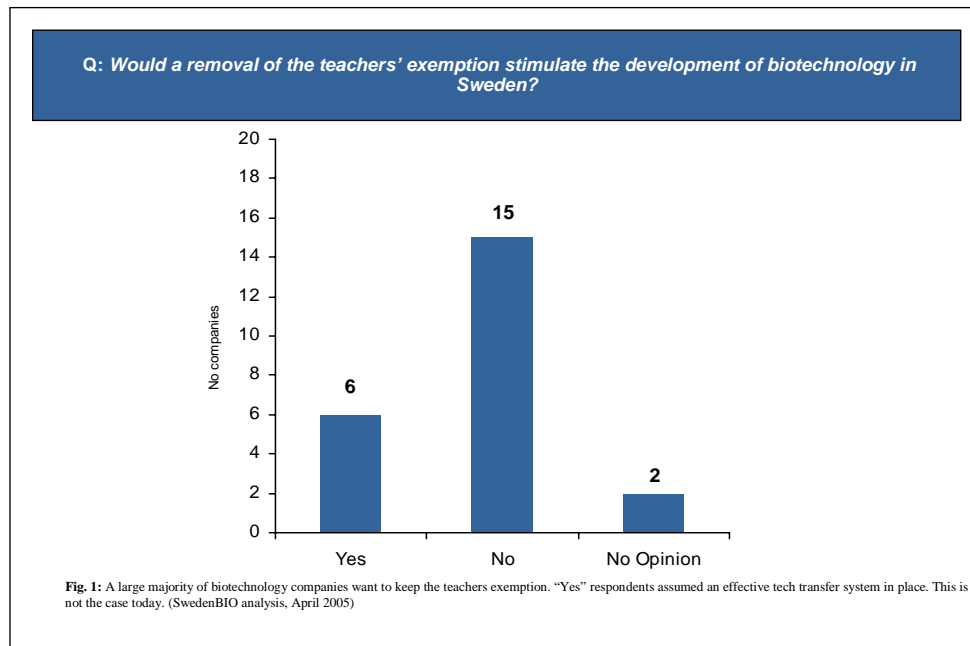
This PM covers two main topics: firstly key arguments from the biotechnology industry why teacher's exemption should be kept and secondly, if the teacher's exemption is removed – factors that should be considered to secure an effective transition into a new system.

Summary

The teacher's exemption has a very strong support in the industry and a clear majority of the companies wish to retain the present system. The general perception is that the teacher's exemption system is well established, cost efficient and predictable. It is recognized as an important driver and competitive advantage in building up the Swedish biotechnology industry by giving scientists incentive to commercialize their research by forming companies. ***SwedenBIO position is that the teachers exemption should be kept, at least until the national and university systems for technology transfer are sufficiently built up to shoulder the functions of the present system. A retained teacher's will be regarded as a competitive advantage and could attract international biotechnology innovations and innovators as well as investments to Sweden.*** Experiences from Denmark show that the transition is unlikely to become profitable in the foreseeable future and might risk the function of an already working system.

¹ Vinnova (2005), Strategi för tillväxt – Bioteknik, en livsviktig industri i Sverige, Stockholm

Strong industry support for the teachers exemption – major costs to build a new system



Today a large majority of biotechnology companies support the current system. Responding companies bring attention to that the worst case scenario is that the present system is removed without replacing it with a clear and working infrastructure for the commercialization of research. Today there is no working national infrastructure at the academic environment to shoulder this function. Local TTO² systems are present at several universities and the TTO-infrastructure at Karolinska Institutet is specialized in life science. However, these present academic TTO-structures are not capable to shoulder the functions necessary. An abolishment of the Teachers Exemption is not possible without both large and long-term investments in national technology transfer infrastructure. Building up such functions requires both time and significant financial resources. In an interview³ Professor Svennerholm refers to US studies that estimate time-to-profit for a technology transfer office to 2 billion SEK and a minimum of 7 years. In this context the 50 million SEK proposed by Vinnova⁴ to annually be invested to support the build up of national tech transfer seem very limited. The challenge to build up this infrastructure belongs to the academia rather than industry – the industry is flexible and adapt to the conditions present. Still, the industry will be affected by a major policy shift like the removal of the teacher's exemption. If the ambition is to build a world class environment for R&D, this must be considered by decision makers.

² TTO, Technology Transfer Office

³ Forskning & Medicin, nr 4, 2004

⁴ Vinnova (2005), Strategi för tillväxt – Bioteknik, en livsviktig industri i Sverige, Stockholm

Key arguments why the biotech industry wishes to keep the teachers exemption

The Technology Transfer Offices – a public academic service not a profit centre

The function of Technology Transfer Offices (TTOs), university bodies responsible for facilitating the migration of innovations from academia to industry, are fundamental in an effective innovation system. The business idea of TTOs is to generate university funding by out-licensing patents or projects to industry and other partners. For universities, being increasingly forced to find external incomes to finance research the idea to actually being able to profit on the internal scientific efforts is indeed very interesting. In the ideal case the TTOs offer a fast and systematic process characterized by high competence and experience in key disciplines such as legal, patent and business. However this is not the general case and actually only very few TTOs are said to be successful. On every profitable Harvard or MIT there is mentioned to be hundreds of poorly financed and unmotivated TTOs. The reason is said to be that the patent business is very high-risk and requires high volumes to have a chance to be profitable. Experience from USA show that only a few “nuggets” generate enough return to cover the investment and the vast majority of patents do not even cover their costs⁵. Several of the responding companies have experiences with foreign TTOs that have not been functioning as in the ideal case. On the contrary, these have been characterized by being bureaucratic, slow and with limited business and scientific insight. The introduction of similar bodies in Sweden, without significant funding and with the ambition that they should generate revenues, will risk being a failure.

Teacher’s Exemption - a comparative advantage to attract innovation and investments

In an increasingly globalized world, where an increasing number of locations meet minimum requirements for traditional industries and business, it is interesting for Sweden to develop knowledge based industries where we can continue to compete. Biotechnology is widely believed to be one of the key industries where Sweden has the potential to continue to be expansive. As more leading countries recognize the growth potential of biotechnology by stimulating their national industries, the competition between locations increase and specialization and regional concentration will take place. Experts such as Dr Christian Ketels at Harvard Business School conclude that it is likely that fewer locations will remain than today as the winners in the race for biotechnology investments will emerge. According to Dr Ketels, the winners offer a world class environment combined with unique characteristics which lift them from the crowd⁶. For Sweden this means that it will be necessary to provide a level playground compared to competitors in areas such as tax incentives to stimulate R&D. Sweden must also develop a unique strategic profile where the differences compared to other locations are lifted. Key components in an offensive strategy might the Nobel Prize and the teacher’s exemption system.

“The teacher’s exemption should be promoted as a competitive advantage to attract innovation. In my view it is even positive that similar regulations are getting rare in the world. The message should be; ‘If you are smart and invent things – come to Sweden and profit from your research. If not – stay where you are.’”

- **Professor Ulf Landegren, Uppsala University**⁷

⁵ Sellenthin M. (2004), Who should own university research?, A2004:013, ITPS, Östersund

⁶ At “Issues Shaping Nordic Competitiveness in Biotechnology” at Stockholm School of Economics, June 2005

⁷ At “Issues Shaping Nordic Competitiveness in Biotechnology” at Stockholm School of Economics, June 2005

The motivated and commercially minded scientist – the preferred industry partner

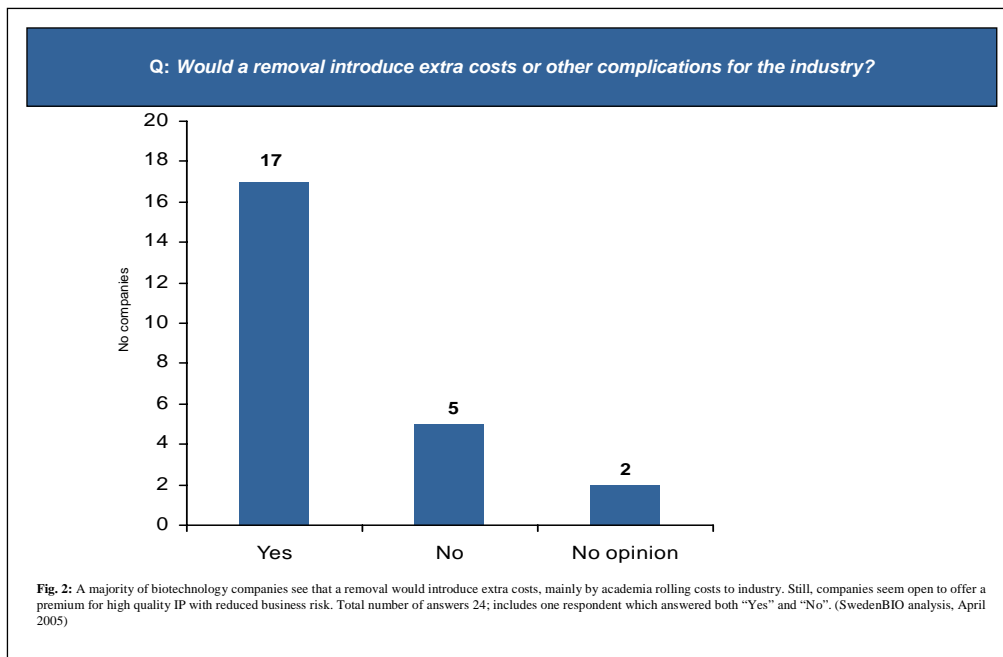
The general view is that an individual scientist or group, characterized by motivation and excellent technological insight, is a better partner with a faster and less complicated process than a poorly financed and often unmotivated bureaucratic university Technology Transfer Offices, which many of the companies have encountered.

“At Harvard we considered the TTO as a service function, not a profit centre. If universities are to compete successfully with private alternatives they need an information advantage – and what does the university know about the individual project and the business potential that the scientist and investor do not know?”

- **Kenneth Levin, Senior Technology Manager, Harvard Medical School⁸**

The pricing and the quality

The general expectation negotiating with an individual scientist is that it would mean a lower price, but also a greater business risk due to the risk of sub-optimal IP and study design. There is also a risk that the expectations of the individual are unrealistic high negotiating his/hers innovation. The build up of TTOs will require significant investments and there is a worry among the responding companies that the universities will roll costs to the companies. Still companies seem open to pay more if risk is reduced buy developed screening and IP-quality.



If the teacher’s exemption is removed – what factors should be considered?

Secure sufficient financial resources and time

It is tempting to look at the situation at Harvard, MIT and Stanford and assume that it is both profitable and easy to build up a proper infrastructure to commercialize research and that this should be a way to ease the financial burden of Swedish universities. A profitable tech transfer system is very difficult to develop and very few locations world-wide have succeeded.

⁸ At CIP Forum 2005, May 2005, Gothenburg

Excellent competence in disciplines like law, IP, science and business are fundamental in building up a successful tech transfer system. To be able to both attract and retain the level of expertise necessary it is fundamental that the universities are prepared to adjust their compensation levels to the ones outside the academic sphere. The public TTOs have to be able to compete with the very best outside the academia. Otherwise selection effects, as described by Sellenthin⁹ can occur, leading to “good” ideas being commercialized outside the university tech transfer system and “bad” ones within the public system. It also takes time to build up a technology transfer system with the necessary level of expertise and experience.

“The role of the university TTO:s should be to safeguard the quality of IP and support the transition to market. The invention should rest with the inventor.”

- Mr Anders Vedin, fm President Astra-Hässle, Chairman of Medivir, Cellartis¹⁰

Build critical mass and centralize procedures

Commercialization of patents involves a significant business risk for the TTO. Costs are continuously paid at increasing rates. At the same time the incomes from a patent is very uncertain and depends if and how a patent is out-licensed or developed. In fact only 15% of the patent projects at Stanford cover their costs and only 0,5% generate incomes over 50 million SEK¹¹. In order to spread both business and transaction risks a large volume of patents have to be handled by a TTO function. In Germany each federal state have one TTO-type of function and it is questionable if Sweden, having about half the number of universities compared to a state such as Northrhein-Westphalia, can afford a TTO at every university without a clear risk of these being of sub-optimal size.

Avoid lock-in-effects of scientists

In the present system the researchers owns their own results and are free to continue the research at the university where the conditions are most favorable. This freedom to operate might risk to be limited in a situation where the academic institution is stronger linked to the results than the individual researchers. In this context a removal of the teacher’s exemption might risk to bind a scientist to a university and as a result hamper the exchange of ideas and new technologies.

Conclusion

The Swedish biotech industry is one of the most interesting in Europe with a large potential to generate new treatments, jobs and companies. The present system has a strong industry support and a large majority wish to keep the present system. To be able to build value in an increasingly competitive global environment Sweden must develop unique characteristics, to differentiate itself from other biotech locations. The teacher’s exemption has a potential to be a key component in achieving such a strategic agenda. A removal with the ambition to achieve international harmonization and generate university funding might not be profitable for many years and would jeopardize the currently working system which is recognized of being a key driver behind the industry development in Sweden.

⁹Sellenthin M. (2004), Who should own university research?, A2004:013, ITPS, Östersund

¹⁰ At CIP Forum 2005, May 2005, Gothenburg

¹¹ Vinnova (2003), FINNFORSK Vinnovas förslag till förbättrad kommersialisering och ökad avkastning i tillväxt på forskningsinvesteringar vid högskolor, Vinnova, Stockholm

The study

The SwedenBIO IP Working Group has been active in realizing the study which has been compiled by Mats Berggren, Project Leader at SwedenBIO. Representatives in the working group are senior IP executives from leading Swedish biotech companies. A questionnaire was sent to more than 50 companies that work within biotechnology. The majority of the companies are SwedenBIO members but some additional companies were added to make the list more complete. To minimize study fall-outs, the companies were approached via email reminders and telephone calls. A total of 23 biotechnology companies are included in the study.

Appendix:

Participating companies and representatives:

Company:	Name:	Position:
Actar	David Jern	CEO
Active Biotech	Kajsa Lönroth	Patent Manager
Affibody	Mårten Österlund	SVP Bus. Dev.
Alligator Bioscience	Gun-Britt Fransson	CEO
Angiogenetics	Mattias Kalén	CEO
Arexis	Anders Bergman	Head of Chemistry
AstraZeneca	Thomas Lundqvist	Patent Attorney
Biacore	Björn Widén	Senior Patent Council
BioInvent	Kerstin Bergman	Patent Manager
Biotech	Sofia Nikolopoulou	Patent Manager
Biovitrum	Lars Höglund	Senior Patent Manager
Carlsson Research	Clas Sonesson	Patent Manager
Cellavision	Mikael Holtenman	Patent Manager
Doxa	Leif Hermansson	Patent Manager
GE Healthcare	Ulf Lundberg	Head of Legal Affairs
Innate Pharmaceuticals	Sune Rosell	CEO
Karocell	Mikael Snellman	CEO
Medivir	Iain Morrison	Patent Manager
Neuronova	Kerstin Genetay	Senior Patent Manager
Orexo	Thomas Lundqvist	Patent Manager
Pharmacia Diagnostics	Per Matsson	Head of Patents
Quiatech	Per-Johan Ulfendahl	Head of Patents
Tripep	Anders Vahlne	CSO