

# Open Innovation

## University and commerce – a winning partnership

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Technology transfer of the Universities of Basel, Bern and Zurich

The background features stylized 3D human figures in grey and gold, arranged in a way that suggests movement or a sequence of actions. The figures are simplified, with rounded heads and limbs, and are set against a white background.

**University research is predominantly orientated towards the development of new scientific findings. But it is also an important element in the training and further education of up-and-coming scientific talent. In principle, the central focus is the generation of scientific results that yield mid- to long-term benefits for society. The benefits are not only oriented towards economic criteria but rather to social benefits in the widest sense. Particularly in biomedical and natural science research, however, university research regularly generates knowledge that is also an important basis for economic applications. This is even more pronounced in the engineering sciences or other technical disciplines promoted by the technical universities.**

Prionics<sup>®</sup>-Check WESTERN, Lokomat<sup>®</sup>, Intego<sup>®</sup>, Intron-A<sup>®</sup>, Schatzsuche, CURA-baby<sup>®</sup> and CAS-one<sup>®</sup> (Fig. 1) are examples of products that are significantly based on research work by the Universities of Bern and Zurich and their associated university hospitals (Tab. 1). What all the mentioned products have in common is that the researchers at the universities have worked out the scientific technological foundations, developed a functioning prototype or have demonstrated the correctness of the concept in animal experiments. The actual product development is, however, not the domain of the universities, because this is neither in the interest of the researchers at the universities, nor does it belong to their core tasks. Additionally, the specific know-how and the necessary infrastructure for professional product development are often missing. The universities are, therefore, reliant on commercial partners, who are interested and capable of taking on such projects, to develop the product in readiness for the market and to launch it.

## From the Idea to the Market

The commercial realisation can either take place through an existing company or through a spin-off company, i.e. a company (co-)founded by researchers at the university. This phase of project transition, from the university to a company, is often difficult. Above all, this is because the path to a market-ready product is still very long and the developmental costs and risks are correspondingly high. Therefore, it is not rare for interested companies to request additional R&D work by the university, before they come to a definitive investment decision. This is also true for purely financial investors (e.g. venture capital firms), who sometimes reject projects because, in their opinion, they are still too vague. This “gap” is not easy to bridge, because the financial resources at the university and the know-how for the further development of the project are lacking, and this is, as mentioned, also not the task of the universities.

## A Question of Means

In order to allow for this problem, also known as “valley of death”, the universities have developed various models. The so-called “proof of concept funds” (PoC funds) are very widespread, with which , projects can be supported financially to a limited extent, in order to advance them as near as possible to a potential commercial partner or to develop the necessary foundations for an investment decision. Such funds can, therefore, help to support the transition of a project into the commercial sector. The work can either take place at the university itself – as far

as the necessary conditions are met – or they can be performed by a contracted third party, e.g. by a technical college or a company. PoC funds can be found today in many research-orientated universities and represent a useful tool. But they are limited in their possibilities, since the maximum support contribution per project is usually in the range of 20,000 to at most 100,000 Swiss francs.

Research work in life-science projects in particular is often very cost intensive, so that the means of the PoC funds are often insufficient for closing the mentioned gap to the commercial sector. A further problem can be presented by the availability of the necessary means for PoC funds, because the universities do not see such research, targeted in the direction of product development, as their core task, and therefore are not willing to invest the limited resources in it. In various countries (e.g. in the USA, Britain, the Netherlands, Belgium), therefore, the government invests substantial sums for this purpose, in addition to the normal university funding. In Switzerland, there are barely any public monies available for such funds, which is why private investors must be found.

## Earlier Access to Ideas

For years, a strong trend has been observed towards the increased outsourcing of research and development services, particularly in the pharmaceutical area. A large part involves cooperation with other companies, such as CMO, CRO or small biotechnology firms., In recent years, however, the universities have also been playing an increasingly important role, especially with regard to truly

**Tab. 1** Examples of products from universities

This table shows examples of products available on the market from various branches and application areas, which were based on research work performed by researchers at the universities of Bern and Zurich and out-licensed to companies.

Product name	Company	University	Description
Prionics®-Check WESTERN	Prionics	University of Zurich	Veterinary diagnostics; world leading product for BSE diagnostics.
Intron-A®	Schering-Plough	University of Zurich	Pharmaceutical; used in the treatment of Hepatitis B and C as well as various tumours.
Lokomat®	Hocoma	University of Zurich	MedTech – Rehabilitation; robotised gait orthosis, which automates locomotion therapy on a treadmill.
Intego™ PET Infusion System	Medrad	University of Zurich	MedTech – Radiology; for the automated application of patient-specific FDG doses for PET/CT examinations and the reduction of radiation exposure for radiographers.
CAS-one™	CAScination	University of Bern	MedTech – Surgery; navigational system for liver surgery.
CURA-baby™ teething ring	Curaden	University of Bern	Consumer articles for the end-user; teething rings with an elaborate combination of massage toothbrush, teething ring and rattle.
Treasure Hunt	University of Zurich	University of Zurich	Medical – Psychotherapy; computer game that is used world-wide in the behavioural-therapeutic treatment of 9- to 13- year old children; directly marketed to therapists.

novel therapeutic approaches. Various large pharmaceutical companies have launched corresponding Open Innovation Programmes, aiming to give them early access to innovative ideas and providing a framework within which they can introduce their own ideas, which can then be taken up and adapted by the university research groups. This enables the companies to process a multitude of (high-risk) projects very cost effectively, and thereby profit from the strengths of the academic research. Properly designed, such programmes are also of interest to the universities and their researchers, because exciting and relevant research projects can be worked on, which the firms support financially, as well as with payment in kind and know-how, without limiting the necessary freedom of the researchers. In the ideal case, this leads to knowledge from various disciplines of the university and company flowing into the project early on, so that a more targeted and efficient development, registration and marketing of the product can then advance out of the basic research. Such a pooling of knowledge, from the fundamental research, the preclinical and clinical development, up to the regulatory or production-specific aspects, offers a huge potential in the cooperation between the universities and the commercial sector. Last but not least, the “not invented here syndrome” can be avoided, which not uncommonly complicates the transfer of projects from the university to the commercial sector considerably. Over the next few years, we will be able to see which of these new approaches in the area of Open Innovation prove themselves and yield the corresponding successes.

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Unitectra is the joint technology transfer organisation of the Universities of Basel, Bern and Zurich and their associated university hospitals. It has the legal status of a non-profit limited company, which is entirely owned by the universities. Unitectra supports researchers during the commercial transfer of research results by the protection and management of the intellectual property of the universities and hospitals, their licensing to interested firms and support during the creation of new spin-off companies. Unitectra has been managing its own proof-of-concept fund for over eight years. In 2011, over 80 inventions were registered for new patents and over 50 licenses awarded to firms. In the last 10 years or so, over

120 technology-orientated spin-off companies have arisen from the Unitectra-supervised universities and hospitals, of which 90% are still active.

Additionally, Unitectra is also responsible for the negotiation of research agreements with external commercial partners in the areas of medicine and natural science. In 2011, contracts were made for over 1,000 research projects. For their accomplishments at the interface between the universities and the business sector, last year Unitectra was awarded the “European Biotechnica Award 2011”.