

# Technology Transfer Readiness and Potential at CEITEC MU

Pavel Kerchev

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## 1. Aims of the report

The present report describes the readiness level, challenges and achievements related to Technology Transfer at CEITEC – MU. The information presented here largely stems from my activities as a Technology Transfer Manager at CEITEC – MU in the period September – December 2017. The factual information is combined with personal opinions and recommendations that have been shaped and influenced by discussions with researchers at CEITEC – MU, technology transfer practitioners and industrial stakeholders. The following report focused on results from the scouting will be prepared in Q1 2018.

## 2. Objectives of Technology Transfer at CEITEC MU

Being a relatively novel field at CEITEC – MU, technology transfer should be clearly defined in terms of activities and expectations in order to result in a meaningful approach, which has the potential to meet societal needs and transfer knowledge to the broader community. Presently, the concept of technology transfer is not uniformly viewed at CEITEC – MU and different parties involved in the process attach different meaning to it in discussions and planning. The preparation of a technology transfer strategy is a positive step in the direction of unifying the criteria and managing the expectations of researchers and management. The strategy should be based on existing good practices throughout the Czech Republic and Europe and accommodate the specific financial and bureaucratic peculiarities under which CEITEC – MU operates. For purpose of the current report, I will use the term technology transfer as a process that matches the results of basic research with the needs of commercial partners to bring new ideas and discoveries to the market.

## 3. Technology Transfer activities between September and December 2017

### 3.1 Scouting results

Between September and December 2017, I have contacted all research group leaders from research programs "Genomics and Proteomics of Plant Systems", "Molecular Medicine", "Structural Biology" and heads of core facilities at CEITEC – MU by email or in person. I have not contacted yet the group leaders from "Brain and Mind Research". The reply rates varied considerably among research programs. All group leaders from the research program "Genomics and Proteomics of Plant Systems", for example, were interested to meet and discuss technology transfer related activities. The reply rates between the researchers from research programs "Molecular Medicine" and "Structural Biology" were considerably lower, ~ 40% and ~ 30% respectively. Among the heads of core facilities the interest was around 70%. The reports from the individual meetings contain information about research directions, technical expertise, activities with commercial potential, and contacts with industrial partners. All reports are accessible on the shared "X" drive and I am planning to summarize the outcome of the mapping activities in an independent report. In parallel, I had informal conversations with many postdoctoral scientists and PhD students from different research groups, which gave me a broader view on the research activities at CEITEC.

In the next two months, I will try to engage the rest of the group leaders provided that they are willing to meet and dedicate time. Based on informal conversations certain group leaders clearly oppose the idea of having a person involved in technology transfer at CEITEC – MU, or do not see any added value in it.

### 3.2. Commercialization strategy for PASSAGE

In September I attended the WORLD AGRI-TECH INNOVATION SUMMIT in London, UK. The primary goal of the event was to accelerate the transition of technology from the laboratory to the field by connecting entrepreneurs, investors and accelerators. The main theme was “Commercializing Innovation in Tomorrow’s Agri-Food Systems” with discussions centered on the potential of Artificial Intelligence, robotics, gene editing and synthetic biology. The majority of the attendees were representatives of global agribusinesses, VC investors and technology start-ups from around the world. The attendance gave me an excellent overview of the trends that will shape the agricultural landscape in the coming years and was an excellent opportunity to discuss in person with representatives of some of the leading agribiotech companies, with some of whom I exchanged contact information.

Activities related to preparing of the commercialization strategy of PASSAGE have been an integral part of my duties in the past months. I have been exploring the industrial landscape of the Czech Republic and prioritizing companies relevant to PASSAGE in close collaboration with the Market Assistant Ester Jarour. Moreover, in the beginning of November I spent a week at VIB and attended closely the scientific discussions between the involved research group leaders and had personal meetings with some of them. The opportunity to exchange ideas with the Tech Transfer team at VIB during this stay was invaluable for shaping the structure of the commercialization strategy of PASSAGE. My visit to Ghent was combined with the EU-Life meeting. I was appointed a representative of the Tech Transfer working group for CEITEC, which gave me the opportunity to establish close contacts with other Tech transfer practitioners from EU-Life members.

### **3.3. Contacts with companies**

During the reported period, I initiated establishing contacts with industrial stakeholders and meeting some of them. So far I had met with the founder of “CF PLUS Chemicals”, Brno. Three more meetings are scheduled for the coming weeks. Two local startups specializing in

solutions for precision agriculture, “Skymaps” and “Worldfromspace” will visit CEITEC and meet with some of the research group leaders from “Plant Genomics”. In February or March we anticipate representatives of the publicly listed French company “Plant Advanced Technologies” who expressed a clear interest be strategic partners in PASSAGE.

### 3.4. Training and workshops

In November I attended BioFIT 2017 in France, which is one of the primary meeting points in Europe for tech transfer and for sourcing early-stage innovations stemming from public research institutions, academic spin-offs and emerging biotech companies. Together with big pharma, biotech and diagnostics companies, BioFIT operates as a platform to build partnerships for all public and private actors. I attended the event with Jana Dankova from the TTO of MU with whom we talked to representatives of several companies. During these meetings we managed to agree on the terms of a previously established collaboration between “DyNABind”, Germany and CEITEC and invited the CEO of the company to visit Brno. Moreover, we introduced the objectives of PASSAGE to representatives of “Plant Advanced Technologies”, France and attracted their attention as potential partners on the project.

## 4. Current Status of Technology Transfer at CEITEC MU

A prerequisite for successful technology transfer is an excellence in research. The overall scientific expertise and state-of-the-art equipment at CEITEC – MU provide a good basis to engage in research collaborations with industry and deliver inventions with market potential. Nevertheless, the number of technologies available for licensing at CEITEC – MU is currently limited. These low numbers largely reflect the basic science conducted from the majority of the research groups and/or the lack of yet consolidated data in some of the groups. Most scientists are aware of the applied potential (or the lack of thereof) of their research and actively look for industrial partners and/or ways to patent their inventions. In certain excellent

research groups at CEITEC – MU technology transfer has been naturally explored with the help of the Tech Transfer Office (TTO) at MU. The main driving forces behind such activities have been attracting external funding and engaging in valuable scientific collaborations with industry. That said, however, the technology transfer potential of the individual groups varies significantly. These big differences can be attributed to the specific research topics, some of which are closer to the market, and the overall scientific performances.

Researchers who do not possess inventions and whose scientific expertise is not of immediate interest to industry are in more unfavorable position to estimate the technology transfer potential of their research. A detailed knowledge of the market trends and personal contacts with industry are the way to capitalize on their research activities. These tasks could be performed by a Technology Transfer Manager who is familiar with the conducted research and understands the implications for a successful commercialization. However, convincing the scientists to communicate their research at an early stage and collaborate in the process of identifying relevant industrial partners is a potential bottleneck. Based on the low interest rates among the researchers from CEITEC – MU this is not a viable strategy for many of them.

## **5. Scenarios to Facilitate Technology Transfer Activities at CEITEC MU**

Technology transfer activities do not count towards the evaluation of individual group leaders at CEITEC – MU. This makes technology transfer an activity largely driven by personal attitudes and proactivity. Making technology transfer an integral part of the evaluation process should be approached carefully, but in a long run it has the potential to beneficially stimulate the scientific environment.

A clear and well-defined roadmap on how to protect inventions and engage in research collaborations with industrial partners is a must for stimulating more researchers to embark on the technology transfer pathway. A significant part of the group leaders with international research careers have been previously exposed to tech transfer activities and possess an understanding of process. A typical work flow anticipated from the majority of the researchers is described below:

The Tech Transfer Office is contacted with an invention disclosure in a timely manner. Following evaluation of the patent literature, prior art and market potential, a strategy how to patent the invention is devised and put in motion. Meanwhile the Tech Transfer Office and the researchers could try to identify commercial partners for out-licensing and exploiting of the invention. Identifying the right industrial partner and reaching an agreement are the limiting factors on the way to commercialization for the majority of the inventions. Failure to do so could stem from the low innovative value of the patent and/or lack of interest from the industry. The inventors should have realistic expectations and the collaboration between them and the Tech Transfer Office should be mutually beneficial.

A more flexible approach should be adopted with research groups lacking concrete inventions but possessing commercially relevant scientific expertise. An up-to-date knowledge of the industrial landscape, future trends and personal contacts with companies are crucial in order to match the existing expertise with the requirements of the private sector in successful research collaborations. The most realistic way to establish such collaborations is to organize small, focused meetings with industry representatives on which researchers can present their projects and discoveries. Ultimately the success of this approach depends on the willingness of the individual researchers to dedicate time and effort.

Technology transfer activities could be further incentivized by allocating a small budget (5 – 10 000 EUR per project) for more applied type of research, which could result in a patent



application or be part of a research collaboration with an industrial partner. The budget can be used as additional leverage to encourage researchers to communicate with the Technology Transfer Manager who should be responsible for distributing the funds together with a small committee of up to three scientists.

A good working example in the Czech Republic is IOCB Prague whose technology transfer activities are concentrated in a subsidiary company.

## 6. Weaknesses of the Current System

The Tech Transfer Office (TTO) at MU has been the sole contact point for researchers from CEITEC – MU willing to protect an invention and establish a start-up. So far several researches have successfully patented their inventions with the help of the TTO. Moreover, the TTO has been active in preparing license agreements and collaboration agreements during negotiations with industrial partners. The TTO maintains living contacts with a number of companies relevant to CEITEC – MU and proactively tries to broaden its network by organizing networking activities and attending partnering events. Despite the relatively well-established roadmaps for exploitation of inventions, the TTO has a limited impact on the technology transfer landscape at CEITEC – MU and it engages predominantly in *ad hoc* activities. In this respect, the TTO provides mainly legal support during preparation of agreements and IP protection and only in certain cases can find suitable industrial partners. The latter largely stems from the challenging biotech environment in the Czech Republic, which is an additional factor that hampers the commercialization of inventions originating at CEITEC – MU. The limited number of biotech and agri-biotech companies with sufficient market power and in-house R&D activities is a major constraint for establishing a healthy ecosystem within which CEITEC – MU can operate as center of excellence and expertise. Given that CEITEC – MU strives to be an international player, the non-conducive local

conditions can be seen as an opportunity to explore opportunities beyond the borders of the Czech Republic and establish living contacts with companies from around the world.

The TTO is responsible for all researches affiliated to MU resulting in limited human resources allocated specifically to CEITEC – MU. The position of Technology Transfer Manager has been envisaged as a way to provide additional support for the TTO and simultaneously scout for early stage inventions by being in a close contact with researchers at CEITEC – MU, thus bridging the existing gap between the TTO and CEITEC – MU. Currently, this approach fails to deliver any results due a plethora of reasons, which will be elaborated upon below.

The lack of interest from a significant number of researchers to engage with the Technology Transfer Manager largely reflects the established roadmap for technology transfer. Researchers with a patentable invention or in a need of a collaboration agreement would directly contact the TTO sidestepping the Technology Transfer Manager. Similarly, during discussions with researchers at CEITEC – MU the TTO representatives would not involve the Technology Transfer Manager. The Technology Transfer Manager would also not be involved in meetings/negotiations between researchers and companies. Taken together, these scenarios point towards a dysfunctional role of the Technology Transfer Manager beyond technology scouting. Without being put in the broader context of the above described activities, technology scouting is a largely futile activity and questions the relevance of the position.

Perhaps the most important part of technology transfer after research excellence are the living contacts with companies centered around concrete science that can be effortlessly communicated between the involved parties. Currently, opportunities to meet companies are almost limited and working towards more frequent and science-based meetings should be a priority.

A major drawback of the TTO is the coverage of a wide range of disciplines, which creates a lack of focus and restricts the understanding of the market and future trends in specific industries relevant to CEITEC – MU. A similar limitation is being created at CEITEC – MU with having one responsible who is supposed to cover disparate fields that could be broadly described as agri-biotech, biotech and pharma. These industries are intrinsically different and require specific knowledge and approach from a technology transfer perspective.



