

Introduction

IN PUBLICA COMMODA - FOR THE GOOD OF ALL has characterised the self-image of the University of Göttingen since its foundation. The University combines research and teaching in a mutually stimulating way, with the aim of imparting excellent science to future generations while taking current political, social and economic interests into account through a process of critical reflexion. It is the University's main goal to create knowledge and to transmit it to society. In this context, the promotion of knowledge and technology transfer as well as spin-offs is explicitly one of the university's main tasks according to the Lower Saxony Higher Education Act¹. The University of Göttingen is closely linked to the scientific institutions on the Göttingen Campus² and sees itself as a source of fruitful innovation for all areas of life. The ensuing research and teaching cooperation with other institutions leads to the joint publication of research results and an open exchange about these results, as well as their application in the regional context.

The University sees multidirectional transfer as an important dimension of performance. Taking the Science Council's position into account (WR 2016³), it applies a broad concept of transfer, which encompasses all functions of knowledge: descriptive and explanatory knowledge, predictive knowledge, knowledge geared towards change and normative orientation knowledge. Transfer is not a linear process, but is multi-directional and requires mutual exchange. The University of Göttingen welcomes all forms of successful transfer!

Knowledge transfer is a genuine task of the University and assures a continuous flow of graduates at Bachelor's, Master's and doctoral level into employment in businesses, politics, administration and society. In order to fill the legal mandate with life, a variety of transfer instruments and paths are available: The classic instruments of transfer include publications and inventions protected by copyrights, patents or utility models, which can then be licensed to third parties. In addition, cooperation with companies as well as societal stakeholders are playing an increasingly important role in jointly developing innovations. In addition to contract research, consultations and services, the University can also be a point of contact for continuing education for lifelong learners. Spin-offs by members of the University are a mixture of transfer via people and transfer via intellectual property rights. The broad concept of transfer also includes science communication, for instance through the collections, the Forum Wissen, the student laboratories, numerous interactive communication formats such as the Night of Science or individual public appearances by scientists who communicate their results at various levels, transfer them into applications, reflect on them and criticise them in order to gain new impulses for society and science. Another relevant transfer path is scientific policy advice via corresponding international, supranational, national, regional and also local committees in governments and non-governmental organisations. The University is active in all these areas and actively welcomes all transfer activities, especially spin-offs from the University within the region!

Such a comprehensive concept of transfer reflects the disciplines of the University and its diverse social interconnections. Simultaneously to the development of the transfer concept, a strategy group on science communication set up by the Presidential Board prepared recommendations for the further development of the Forum Wissen and the Thomas-Oppermann-Kulturforum. In parallel, the

¹ § 3 Abs. 1 Satz 4.

² The Göttingen Campus includes the University Medical Center Göttingen (UMG) and eight local non-university research institutions, including five Max Planck Institutes. In addition, there are various associated partners from industry and public institutions.

³ https://www.wissenschaftsrat.de/download/archiv/5665-16.pdf?_blob=publicationFile&v=1.

ENLIGHT project is developing new teaching concepts together with other European universities in order to improve transfer in teaching. In the following, the transfer concept will focus on the development of knowledge and technology transfer in relation to companies and employees, and interweaves this with the other transfer activities in order to leverage synergy effects in the processes. The concept invites all institutions of the University to deal with transfer in a comprehensive sense and, if necessary, to develop differentiating transfer concepts for other subject areas and interlink them with the strategies already being developed.

This transfer concept has been developed by the Senate's Research Commission together with the Research and Transfer Department and many other areas of the Central Administration over the summer semester 2021. Strengths and weaknesses of transfer were discussed in four thematic workshops with predominantly professorial participation on Social Entrepreneurship, Life Science, Data Science and Measurement Technology, as well as a further workshop with academic staff and students and a workshop with the affected areas of the Central Administration. In a final workshop with the University's partners in the European network ENLIGHT, the transfer activities and structures of the University of Göttingen were compared with those at the Universities of Uppsala, Galway, Gent and the Basque Country. On 8th October, a university-wide discussion of the draft was initiated via the Georgia-Augusta Dialogue. The Senate adopted the strategy in January 2022.

The transfer concept begins with a brief description of the status quo summarizing the strengths and weaknesses of the University, which were identified in the strategy development process. The ensuing definition of goals for the coming years with clear recommendations for action serve to develop knowledge and technology transfer into an integral part of research and teaching in the minds of all members and affiliates of the University.

Status Quo

The University of Göttingen's knowledge and technology transfer has been significantly developed and expanded since 2015 through the acquisition of several third-party funded projects and has been able to bring about a continuous increase in the University's transfer activities. Compared to similarly positioned universities, however, the University still has a lot of catching up to do in the area of transfer. In the annual ranking of the Stifterverband's Founder's Radar of the Donors' Association, the University of Göttingen is still in 31st place in the group of large universities. At the same time, the respectable 9th place in networking in the start-up area shows that some areas of the transfer efforts are already working well.

The University and University Medical Center Göttingen (UMG) each have their own transfer offices as points of contact and work in close coordination, including joint (pro-rata) basic funding of staff and joint applications for third-party funding for transfer projects. The Innovation and Transfer Department has been part of the University's Research and Transfer Department since 2021. The University Medical Center (UMG) Knowledge and Technology Transfer Office has existed since 2019 and is assigned to the Executive Board for Research and Teaching.

The regional cooperation project SüdNiedersachsenInnovationsCampus (SNIC), which is funded by the Lower Saxony Ministry of Science and Culture, has been in existence since 2016. It focuses on cooperation and start-up support as well as practical offers for a broad expansion of the knowledge and technology transfer of the University together with three other university partners in Southern Lower Saxony, the economic development agencies of the Southern Lower Saxony districts, the City of Göttingen and the non-university research institutions. SNIC's current term of operation ends in 2024.

The EXIST funding from the Federal Ministry for Economic Affairs and Energy (BMWi) in the funding priority "Raising Potentials" has enabled the University's Transfer Office to offer a broad support programme. Since 2020 it increases science-based spin-offs and establishes a cross-disciplinary start-up culture.⁴ EXIST funding is accompanied by a focus on the areas of life science, data science, social entrepreneurship and measurement technology. EXIST funding also runs until 2024.

In the joint project of Göttingen and 19 universities on securing property rights "WIPANO - Knowledge and Technology Transfer through Patents and Standards", which is also funded by the BMWi, the University is responsible for management and coordination. The university subsidiary MBM ScienceBridge GmbH acts as a patent exploitation agency and exploits around 20 inventions per year from the University and UMG.

With the founding of the Life Science Valley GmbH by University Medical Center Göttingen (UMG), Sartorius AG⁵ and their subsidiary Life Science Factory in August 2021, the support and ecosystem in Göttingen for start-ups in the field of life sciences is to be expanded in the long term. It has been agreed that the University, the city and other partners will be involved as shareholders of Life Science Valley GmbH. Initially, basic funding is to be made possible through project funds; financial independence is planned in about ten years.

Strengths in transfer

The University conducts top-level research in many areas. This is reflected in high-ranking publications as well as in collaborative research in DFG-funded Collaborative Research Centres, Research Training Groups and Research Colleges and in excellent individual research. The University of Göttingen is internationally visible and is also regularly listed among the best universities in Germany in international rankings such as the Times Higher Education or the Shanghai Ranking.

In the past, the University of Göttingen and the Göttingen Campus have repeatedly produced business enterprises: the most successful example is Sartorius AG, which was founded in 1870 by the university mechanic Florenz Sartorius. The former company Develogen and today's Evotec SE, Qioptic Photonic GmbH und Co KG, Coherent Laser System GmbH und Co KG or also Abberior Instruments GmbH are further milestones of successful science-driven start-ups at the Göttingen location.

A wide range of strengths that arise from the interaction between the University and the Göttingen Campus: The outstanding basic research in the field of life science, especially in medicine, biology, chemistry, physics, mathematics and computer science at the University together with the Max Planck Institutes MPI for Multidisciplinary Sciences as well as the German Primate Centre (Leibniz Institute DPZ) is just as much a unique selling point as the closely related measurement technology. "Green science" is also outstanding in terms of ecosystem or breeding research.

Another strength of the University are the University-wide formats in knowledge transfer, such as the Night of Science, public lecture series on annually changing topics and also making the historical collections available to the interested public – most notably through the opening of the Forum Wissen.

Another of the University's strengths is the certificate it offers in "Innovation and Foundation" as entrepreneurship education through the Südniedersachsen-InnovationsCampus (SNIC) in the

⁴ <https://www.exist.de/DE/Programm/Exist-Potentiale/inhalt.html;jsessionid=90968E3EB132C9481C2701ACDCC6C8CA>.

⁵ Founded in 1870 as a spin-off of the university, Sartorius AG is one of the 15 largest companies in Lower Saxony and one of the largest pharmaceutical and laboratory suppliers in Germany.

University's Central Institution for Languages and Transferable Skills (ZESS), a pre-incubator for students interested in founding a company and, together with the Göttingen Economic Development Corporation (GWG) and the SNIC Life Science Accelerator for start-up ideas. Students as well as scientists can participate in the university's LIFT-OFF competition for start-up ideas, which has existed for five years. It has already produced several successful start-ups and now provides more than 30,000 euros in prize money per year through sponsorships. The regional cooperation structures in the SNIC between the University of Göttingen, Clausthal University of Technology, HAWK and PFH Private University of Applied Sciences as well as the non-university research institutions, the districts and chambers of commerce open up concrete innovation projects that receive state and federal funding. In the ENLIGHT network, the University is in close exchange with nine other European universities in order to evaluate their transfer efforts in an international comparison and, indirectly, to further develop regional cooperation structures. Organisationally, SNIC has is a transfer office that is well connected within the University, which identifies transfer potential in close exchange with academics and helps to initiate business cooperation in research. It also advises on funding applications and supports start-up projects. Its own patent exploitation agency MBM ScienceBridge provides competent assistance in applying for and exploiting intellectual property rights.

The University and Göttingen Campus are supported by strong partners from the private sector for the transfer into the economy: Sartorius AG has created a new player with the Life Science Factory, which supports spin-offs from the scientific community with consulting services and laboratory space and closely cooperates with the Research and Transfer Department. The Life Science Factory with its combined office-lab building on the old Sartorius campus represents a lighthouse in transfer that makes the location visible nationally and internationally in the field of life science.

Weaknesses in transfer

The University shows weaknesses in raising researchers' awareness of knowledge and technology transfer. Recognizing the importance and potential of transferring one's own findings, thinking about transfer and driving it forward is not widespread enough and often does not find the appropriate supporting structures. Young researchers in particular are not sufficiently aware of the various transfer paths, so that they are not able to proactively shape them for their own research. In the case of industrial collaborations, where the handling of intellectual property rights must be clarified in advance, there are many uncertainties with regard to cooperation agreements. Many are equally uncertain about whether they want to use intellectual property rights at all, because they fear the administrative burden or the delay in scientific publication, which is much more important for their own scientific career. The possibility of generating income through intellectual property rights or transferring a research idea into a broader, even commercial application is often not yet seen by researchers.

While the patent exploitation agency MBM ScienceBridge can help, there is also a significant downside: On the one hand, it advises researchers on applications for patents and utility models, which is positive, and represents the University in granting licenses to its own spin-offs. On the other hand, however, spin-offs complain that the process is not sufficiently timely and is not bound by fixed deadlines, so that they suffer a negotiating disadvantage.

Moreover, depending on the issue, the transfer office, the legal department or the MBM ScienceBridge are available for industry cooperation: For those interested in transfer, this seems confusing. The University's transfer office with a small core staff base, has been able to secure

project funding and thus expand its field of activity and staff to support the target groups much more broadly. However, these activities are tied to the duration of the funding as well as the project tasks applied for. Structurally, university members therefore also criticise the fact that there is no clear and coordinated division of labour between the various institutions of the central administration (Transfer Office, Legal Department, Public Relations, MBM ScienceBridge), the faculties and the centres, so that there are no clear points of contact, especially for new scientists and students in Göttingen. So far, there is also no internal, case-based review of transfer structures to show how requests can be optimally processed.

Founders also lack a fixed location for their spin-offs. Although the pre-incubator and accelerator are available, three changes of location in five years have meant that students and staff do not associate a fixed location with start-up activities. And this structure is also tied to project funding and expires in 2024.

Furthermore, Entrepreneurship education is hardly to be found in the curricula beyond the certificate "Innovation and Founding" in order to provide those interested in founding with basic knowledge and to develop those interested in founding from this group. The topic of research transfer often also does not play a role in undergraduate teaching because there is a lack of time and support for teachers.

The potential for academic continuing education of graduates with professional experience, which is available through the excellent basic research, has so far only been utilised in three continuing education Master's degree programmes. There is also great potential for activities in the area of lifelong learning in possible offers for the university's own alumni, also in cooperation with the other regional universities.

Finally, for the areas of data science, social entrepreneurship and measurement technology, the University has so far lacked strategic industry partnerships, as it did in the area of life science, to support its spin-offs.

Goal definition

The University understands transfer as an inherent task in research and teaching. Every transfer of scientific knowledge and results is also an opportunity to increase the visibility of the University via new findings, inventions, innovations or spin-offs and to contribute to economic and social development. The University understands transfer as a multidirectional intertwined exchange process between all possible social actors and therefore takes an active role in corresponding networks.

Based on the strengths and weaknesses pinpointed above, the University is pursuing the following goals in the coming years:

1. The University intends to improve and promote its transfer activities by supporting industry cooperations as well as cooperations with other social actors. To this end, the University is reconsidering the existing incentives in the performance-oriented allocation of funds and in remuneration in order to reward the transfer activities of researchers more strongly and to establish an appreciative transfer culture in the University.
2. The University understands transfer as a multi-directional process and strives to take up questions and challenges from society and incorporate them into the University's research

activities. To this end, representatives of industry and public institutions are to be brought into direct conversation with researchers, and existing formats in knowledge transfer from the University are to be continued in order to make the findings from research accessible to society.

3. The University promotes spin-offs through intellectual property rights via spin-off-friendly licensing as well as improved consulting, including the coordination of consulting services within the University. The University will optimize the existing processes together with MBM ScienceBridge so that there are no delays for the spin-offs. The goal is to (1) double the number of science-driven spin-offs over the next five years from seven to fourteen, and (2) increase the number of patents from the University and UMG from an average of 20 patents per annum to 30 patents per annum.
4. The University is working on expanding Entrepreneurship and Innovation Education available across the University and anchoring it the curricula of the degree programmes as electives in order to provide central competences for the implementation of innovative projects or the introduction of innovative products or services for all interested students.
5. The University pursues cooperation with private actors from the economy in order to further develop the start-up ecosystem in the areas of life science, data science, measurement technology and social entrepreneurship. This is, in part, due to limited own financial resources, and provides spin-offs with a network of private investors, which can be decisive for a positive development of a spin-off early on. To this end, the University is pursuing an intensification of start-up support with Sartorius AG, ottobock SE & Co KGaA, KWS SE via the Life Science Factory and Life Science Valley, among others, and is using the regional growth fund - both supported by the state government of Lower Saxony.
6. In the area of continuing academic education, the University of Göttingen has so far only developed selective offers. But when pursued across the breadth of the faculties, continuing education would significantly strengthen the transfer contribution, also in cooperation with interested companies. To this end, the University is working on a suitable structure to both ensure financial added value and strengthen the connection to regional companies and to its alumni.
7. A central medium- to long-term goal for the University remains a start-up and innovation centre in cooperation with the City of Göttingen, where young people interested in starting up a business can exchange ideas with experienced founders in the fields of data science, measurement technology and social entrepreneurship, and receive support and advice from the University for the first steps towards realising their ideas.
8. The foundation for strengthening knowledge and technology transfer is based on excellent basic research and teaching at the University. To improve transfer sensitivity and transfer culture, the University is setting up a regular transfer college "Science to Innovation", in which interested members of the University discuss perspectives and measures for transfer thematically along the University's thematic priorities. The transfer college evaluates the achievement of goals, discusses structural deficits, brings together individual transfer concepts and reflects on measures to improve transfer in exchange with the Senate and the Presidential Board of the University in order to strengthen multidirectional transfer at the University overall.