

# ANNUAL REPORT 2007

Office of Technology Transfer at the University of Basel



## UNIVERSITY OF BASEL

Office of Technology Transfer

Schützenmattstrasse 16  
CH-4003 Basel  
Switzerland

Tel. +41 (0)61 267 30 14  
Fax +41 (0)61 267 09 97  
wt@unibas.ch  
<http://pages.unibas.ch/wtt>



## ***Foreword***

Today's university faces a complex and challenging mission:

- to expand scientific knowledge and understanding in core domains by performing high quality fundamental research
- to teach, educate and form state of the art scientists
- to further value the results of its research by initiating their conversion – where possible and appropriate – into applied R&D, thereby contributing to societal progress and problem solving through focused know how and technology transfer.

The University of Basel has pursued the first two objectives since more than five centuries. It has formally added the third objective in 1998, when establishing a competence and service centre for knowledge and technology transfer, known as “Office of Technology Transfer” (OTT). This unit is dedicated to assist individual scientists and academic groups in securing intellectual property rights/patents, identifying applied research & development opportunities and structuring the path to external collaborations. The OTT also operates beyond the University of Basel, for the University Hospital of Basel, the University of Applied Sciences Northwestern Switzerland (FHNW) and some other public institutions.

The OTT unit focuses on technology transfer related issues, such as the protection and exploitation of intellectual property rights. This primary focus was reinforced in 2007 through discussions and deliberations of a specific Advisory Board (WTT-Gremium) that was established in autumn 2007. Interviews with members of the University were conducted to clarify the role and enhance the understanding for the OTT unit, and fine-tune its procedure.

As outlined in the Annual Report 2007, the Office of Technology Transfer has established and progressively expanded its activities since 1998 as judged by quantitative parameters, e.g. number of new or pending technology transfer projects managed per year or number of newly received or concluded agreements with third parties per year.

In the year 2007, over 300 new projects were managed, more than 300 agreements concluded, and a contract value of over 100 million Swiss Francs was processed, with a University share of 26 million Swiss Francs. The OTT was able to execute 14 licensing agreements and 61 research contracts, could disclose 21 inventions and operate 51 active patent families.

Priority patent applications could be submitted for a broad range of inventions; for inventions covering a chemotherapy of neoplastic diseases, a breast cancer marker, the diagnosis and treatment of a novel subform of obesity, a pharmacologically active monoclonal antibody as a treatment of cachexia, a magnetic resonance method, amine-bearing phospholipids, oxygen permeable polymeric nanocontainers and functional peptidic membranes.

Three specific technology transfer projects may further highlight the innovation potential of the University of Basel and the efficiency of the technology transfer process: the market introduction of an industrial catalyst (collaboration of the Department of Chemistry with Solvias), the identification of a drug candidate based on a cellular assay (collaboration of the Institute of Microbiology with Actelion) and the development of an integrated software system for psycho-physiology analysis by the Department of Clinical Psychology and Psychotherapy (licensing agreement available from the University of Basel).

## *Annual Report 2007*

Taken together, the data presented by the Annual Report 2007 of the Office of Technology Transfer reflect two facts: an interesting level of innovation within the University of Basel and an efficient technology transfer process that is able to capture and value the innovation generated by the research groups.

Dr. Dieter Scholer, Member of the Council of the University of Basel

***Table of Content***

<b>1. YEAR 2007 IN REVIEW</b>	<b>5</b>
<b>2. TECHNOLOGY TRANSFER COMMITTEE</b>	<b>6</b>
<b>3. SELECTED INNOVATION PROJECTS</b>	<b>7</b>
3.1. Successful Market Introduction of an Industrial Catalysts	7
3.2. Drug Candidate Identification Based on a Cellular Assay System	7
3.3. Psychophysiology Analysis Software ANSLAB	8
<b>4. OTT ACTIVITIES</b>	<b>9</b>
4.1. Project Turn-Over and Efficiency	9
4.2. Agreements with Third Parties	10
4.3. Protection and Exploitation of Intellectual Property Rights	12
<b>5. FINANCES</b>	<b>14</b>
<b>6. CONTACT</b>	<b>15</b>

## **1. Year 2007 in Review**

Technology Transfer (TT) at universities and other public institutions involves the scouting, protection and exploitation of knowledge and research results generated at these institutions to society and industry. Various forms of exploiting university innovations and turning university know-how into added value and jobs exist, such as research and development (R&D) collaborations, contract research activities, research sponsorship, launching spin-off companies, funding as well as licensing or selling university know how, research results and technologies. The drive for innovation may stem from a new technology conceived in a University research group (“technology push”) or may be triggered by the industry (“technology pull”).

The University of Basel has been operating a competence and service centre for knowledge and technology transfer, known as the ‘Office of Technology Transfer (OTT)’, since 1998. The OTT also assists and advises members of the University Hospital of Basel (USB), the University of Applied Sciences Northwestern Switzerland (FHNW) and other public institutions in TT related projects and enquiries.

The OTT at the University of Basel is able to look back on an active year 2007. Its activities increased from 606 pending TT projects in 2006 to 665 pending projects in 2007, although the number of new projects has slightly decreased compared to the previous year.

The total number of agreements concluded with third parties and reviewed by the OTT amounted again to over 300 and were valued over 100 million Swiss Francs (CHF). Thereby, a share of 26 million CHF was directly allocated to the University of Basel. In contrast to the number of executed licensing agreements that increased slightly compared to the previous year, the number of executed research contracts fell slightly. Particularly, 14 license agreements have been entered into, whereas one was related to a spin-off formation, five were patent licenses, five were related to projects funded by the Swiss Commission of Technology and Innovation (CTI) and three were software licenses. In addition to these license contracts, three agreements regulating the transfer of intellectual property rights were concluded in 2007.

21 new inventions were reported to the OTT in 2007 by members of the University of Basel, the University Hospital of Basel or the University of Applied Sciences Northwestern Switzerland, whereas 9 priority patent applications were filed to cover these inventions. By the end of this year, the OTT was managing about 50 active patent families.

Furthermore, the financial turn-over and the level of self-financing of the OTT were higher in 2007 than in 2006. The positive result might also be a consequence of the increased number of licensing agreements, which should provide the University of Basel with further revenues within the next years.

In autumn 2007, the University Council has implemented a TT-Committee (WTT-Gremium), which is to assist the OTT in order to further strengthen the TT process within the University of Basel. The TT-Committee functions as an advisory board that directly reports to the University Council and comprises not only of members of the university, but also of industry. After a preliminary evaluation phase, the TT-Committee came to the conclusion that the OTT should in the future further focus its tasks and activities on TT related issues, such as the protection and exploitation of intellectual property rights.

## **2. Technology Transfer Committee**

In order to further strengthen the Technology Transfer (TT) process within the University of Basel, with a special emphasis to stronger involve single scientists but also research groups in the tech transfer topic, the University Council has implemented a TT-Committee (WTT-Gremium). The TT-Committee functions as an advisory board that directly reports to the University Council and it is to assist the University of Basel to achieve the above mentioned goals. Besides members of the University, also industry representatives are members of the TT-Committee, which reflects the importance of ensuring the involvement of industry partners in the TT process.

The TT-Committee was set up in September 2007. In a first phase, the TT-Committee evaluated the different tasks, activities and results of the OTT as well as its organization, set-up and financial basis. Secondly, other TT offices in Switzerland and abroad were analyzed and compared in some details with the set-up and results of the OTT of the University of Basel. In general it was concluded that the OTT of the University of Basel is working on a similar basis and on similar premises as other TT offices. Based on the available commercial potential of the University of Basel, the outcome of its technology transfer is comparable to that of the analysed institutions.

The TT-Committee interviewed almost 30 members of the University of Basel to evaluate the reputation of the OTT within the University. The results of this survey showed once again the conflict a TT office has to face, namely, the scientific and personal interests of the involved scientists on the one hand, and the more commercial but also legal interest which the OTT has to assert in the interests of the university, on the other hand. A separate working group will evaluate how best to approach this issue.

After concluding the preliminary evaluation phase, the TT-Committee came to a first conclusion, namely that the OTT should in the future focus its tasks and activities more to on TT related topics, rather than simultaneously performing administrative work for the University. Based on this strategic setting, a working group composed of different internal members was currently asked to define the exact working packages, the necessary competences and resources thereof, as well as the financial basis for the OTT.

### **3. Selected Innovation Projects**

The TT process can exist in various forms and activities, such as research and development (R&D) collaborations, contract research activities, research sponsorship, launching spin-off companies, funding as well as licensing or selling university know how, research results and technologies. Below, three selected OTT projects show how the interaction between basic research and industry leads to successful TT projects.

#### **3.1. Successful Market Introduction of an Industrial Catalysts**

In April 2003, the Swiss Commission of Technology and Innovation (CTI) granted a research project in the field of catalysts to Prof. Andreas Pfaltz, Department of Chemistry, University of Basel. The aim of the project was dedicated to design and develop novel catalytically active chiral metal complex catalysts. The CTI supported the research performed at the University of Basel with a total amount of 500'000 CHF, whereas *Solvias AG*<sup>1</sup> in Basel as the industrial partner also made significant investments into the project. Based on the successful collaboration and the promising research results, an additional grant was awarded to Prof. Pfaltz in 2006 by the CTI to continue the collaboration with *Solvias AG*. In addition to the two existing parties, the research group of Prof. Antonio Togni, ETH Zürich, joined the second CTI research project.

Based on the concrete and commercial interesting results, *Solvias AG* filed several patent applications during the term of the projects, which are covering new catalysts as well as processes for the manufacture of chiral molecules. However, more interesting is the fact that in 2007 *Solvias AG* successfully introduced the first products into the market. The catalysts will be used for the manufacture of pharmaceuticals or intermediates thereof. The University of Basel will receive royalty payments for catalyst sold by *Solvias AG*.

#### **3.2. Drug Candidate Identification Based on a Cellular Assay System**

The research group headed by Prof. Christoph Moroni at the Institute of Microbiology, University of Basel, has developed a rapamycin<sup>2</sup>-sensitive cellular assay system, which can serve as a basis for identifying new anti-cancer drug candidates acting via the so-called TOR pathway. Mammalian Target of Rapamycin (mTOR) is a protein with protein kinase activity which integrates growth stimulatory and energy-sensing pathways. The assay developed by the research group was protected by a patent application filed by the University of Basel in 2007.

---

<sup>1</sup> For further information about *Solvias AG* see [www.solvias.com](http://www.solvias.com).

<sup>2</sup> Rapamycin, also known as Sirolimus, is an immunosuppressant drug used to prevent rejection in organ transplantation, especially useful in kidney transplants.

In a next step and as a result of a pro-active search for possible collaboration partners *Actelion AG*<sup>3</sup> in Allschwil could be identified and enlisted for the further development of the project. As a consequence, the University of Basel and *Actelion* successfully applied together for a research grant at the Commission of Technology and Innovation (CTI). In order to regulate the intellectual property rights of the background as well as the foreground technology *Actelion* and the University of Basel entered into a collaboration/licensing agreement.

### **3.3. Psychophysiology Analysis Software ANSLAB**

Prof. Dr. Frank Wilhelm and Dipl.-Psych. Peter Peyk, both working at the Department of Clinical Psychology & Psychotherapy, University of Basel, have developed an integrated software system called ANSLAB (Autonomic Nervous System Laboratory) designed to facilitate the display, editing and analysis of physiological data in a psychophysiology laboratory. The software is written in the MATLAB programming language and is meeting the demands of present scientific standards. It consists of a large variety of modules for the analysis of specific physiological systems and signals, such as electrocardiography (ECG), impedance cardiography (ICG), and electrodermal activity (EDA)<sup>4</sup>.

Some of the modules, which are based on a previous version of ANSLAB, are available at no cost under the GNU General Public License. The full version of the software, comprising the desired analysis modules and technical support is available under a licensing agreement between the University of Basel and the end user for a moderate fee. Academic groups in the US, Canada, and across Europe have already been purchasing the software to support their research.

---

<sup>3</sup> For further information about Actelion AG see [www.actelion.com](http://www.actelion.com).

<sup>4</sup> For further information on the ANSLAB software see [www.psych.unibas.ch/wilhelm](http://www.psych.unibas.ch/wilhelm).

## **4. OTT Activities**

The activities in terms of total TT projects of the OTT again increased slightly in 2007, reflecting the intensification of technology transfer over the last decade and the high quality of the research results of the University of Basel, the University Hospital of Basel (USB) and the University of Applied Sciences Northwestern Switzerland (FHNW). The following table shows the major TT indicators in 2007 using absolute and relative key figures.

**Table 1:** Absolute and relative key figures for TT indicators in 2006 to 2007:

<b>Key figure</b>	<b>Number 2007</b>	<b>Number per potential inventors 2007<sup>5</sup></b>	<b>Number per potential inventors 2006<sup>6</sup></b>
Executed licensing agreements	<b>14</b>	<b>0.014</b>	<b>0.011</b>
Executed research contracts <sup>7</sup>	<b>61</b>	<b>0.060</b>	<b>0.065</b>
Invention disclosures	<b>21</b>	<b>0.023</b>	<b>0.023</b>
Active patent families <sup>8</sup>	<b>51</b>	<b>0.050</b>	<b>0.052</b>

Compared to the previous year, the number of executed licensing agreements increased slightly, whereas the numbers of executed research contracts and active patent families decreased.

### **4.1. Project Turn-Over and Efficiency**

Another indication of the OTT activities is the number of projects managed by the staff related to agreements with third parties, including queries concerning overhead and VAT issues, and/or the protection and exploitation of intellectual property rights, measured either by the amount of new enquiries (new projects) or the amount of served projects in 2007 and previous years (pending projects).

For the first time, a slight decrease of new projects was noticed. However, the number of pending projects continuously increases over the years, as well as in 2007. The numbers of new and pending projects from 1998 to 2008 is pictured in the following chart:

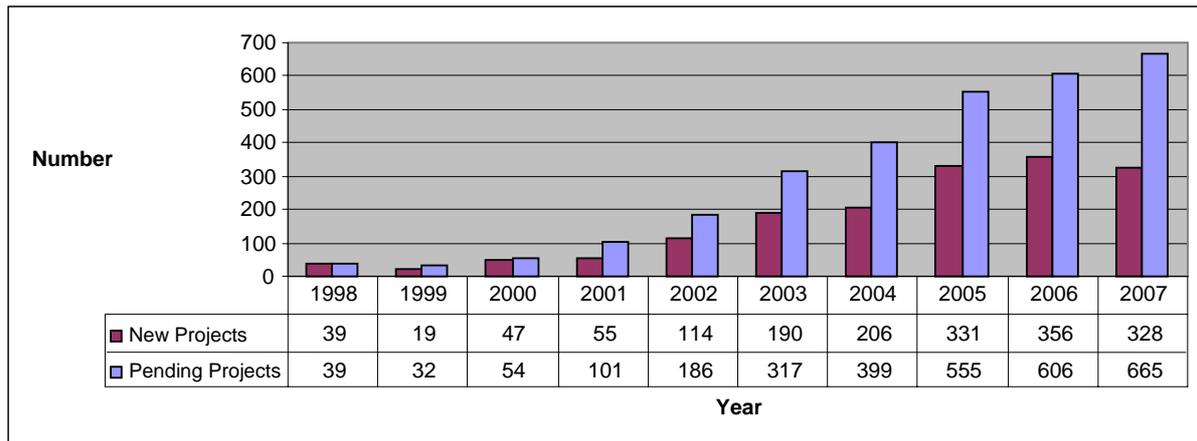
<sup>5</sup> In total 1021, i.e. the number of professors and lecturers, assistants and scientific employees in life sciences and natural sciences, medicine and pharmaceutical departments of the University of Basel according to BFS statistics "Staff in University Departments and Campuses 2006".

<sup>6</sup> In total 987, i.e. the number of professors and lecturers, assistants and scientific employees in life sciences and natural sciences, medicine and pharmaceutical departments of the University of Basel according to BFS statistics "Staff in University Departments and Campuses 2005".

<sup>7</sup> Executed research contracts include R&D collaboration, service and contract research agreements.

<sup>8</sup> Number of active patent families owned or co-owned by the University of Basel. Patent families that have already been sold to third parties are therefore not included in the figures.

Figure 1: Number of new and pending projects managed by the OTT per year (1998 to 2007):



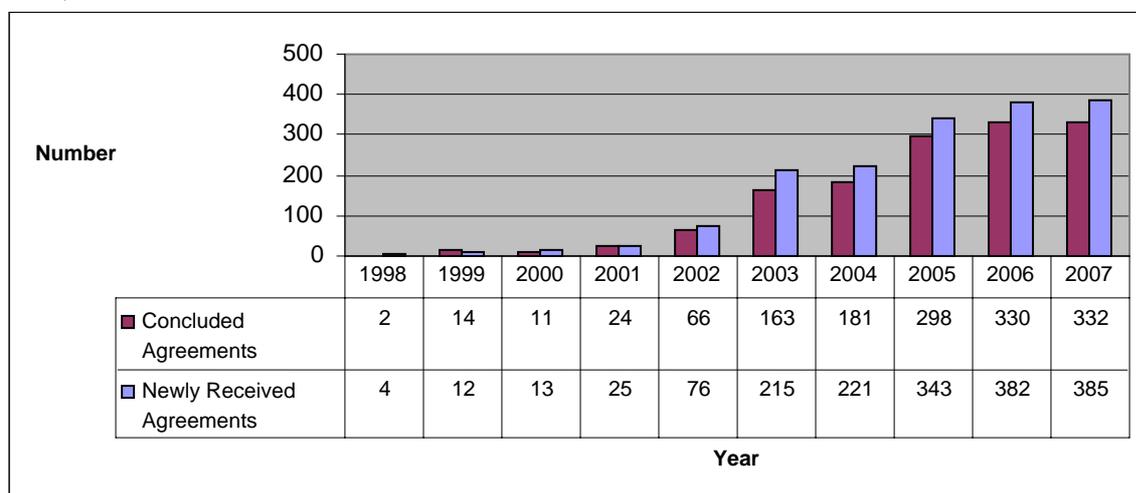
As apparent in the Figure 3, the number of pending TT projects has constantly grown since the year 2000. The increasing number of pending projects is due to the fact that the protection and exploitation of university know-how and research results can take some time before a financial return is achieved. Therefore, processing such projects may be rather time-consuming. As a consequence thereof, the staff capacity was 175 pending projects per full-time equivalent in 2007.

49 of all active projects in 2007 directly stem from the TT Consortium Northwestern Switzerland and 13 projects thereof are supervised by the technology scout of the University of Basel.

## 4.2. Agreements with Third Parties

The number of agreements with third parties managed in 2007 by the OTT levelled off and it seems as if the amount of contracts has peaked. In total, 385 new agreements have been recorded and 332 contracts were signed in 2007. The following figure shows the numbers of contracts negotiated/concluded between 1998 and 2007 as per year.

Figure 2: Number of newly received and concluded agreements by the OTT per year (1998 to 2007):



***Contract Types***

The agreements and contracts are divided into several contract types. Based on the fact that certain agreements comprise provisions, which permit attribution to more than one specific type, it is possible that an agreement falls within more than one category.

The total number of contracts divides as follows: donations, sponsorship and funding (30%), Confidentiality Agreements or CDAs (16%), Material Transfer Agreements or MTAs (11%), services and contract research (11%), R&D collaborations (7%), license agreements (5%), inter-institutional contracts and agreements between universities (2%), EU contracts (2%), contracts concerning the transfer of intellectual property (1%), and other contracts (15%).

For the core TT activities, the most prominent and important contract types are license agreements and contracts concerning the transfer of intellectual property. In 2007, 14 license agreements were entered into, whereas one was related to a spin-off formation, five were patent licenses, five were related to projects funded by the Swiss Commission of Technology and Innovation (CTI) and three were software licenses. In addition to these license contracts, three agreements regulating the transfer of intellectual property were concluded in 2007.

***Contract Value***

The financial value of all agreements, which were managed by the OTT and concluded in 2007, is the sum of each contract having either the real or an estimated monetary amount<sup>9</sup>. In addition, the share of the contract value that flow directly to the University was balanced separately.

As the last four years, the total contract value exceeded again CHF 100 mio, but decreased by CHF 8 mio to CHF 104 mio compared to 2006. In 2007, a share of CHF 26.4 mio went to the University. Table 2 gives an overview of the total contract value of agreements concluded by the University with third parties in 2007 and the share of financial backflow to the University.

***Table 2: Overview of the monetary and estimated value of contracts concluded in 2007 in Swiss Francs:***

<b><i>Contract value</i></b>	<b><i>Monetary</i></b>	<b><i>Estimated</i></b>	<b><i>Total</i></b>
Overall	104'000'000	600'000	<b>104'600'000</b>
University share	26'000'000	400'000	<b>26'400'000</b>

<sup>9</sup> Contracts with no fixed contract value, e.g. MTA, are subject to a standardized lump sum estimation

### 4.3. Protection and Exploitation of Intellectual Property Rights

One of OTT's core tasks is the protection and exploitation of intellectual property rights, mostly patents, which are covering inventions and other results of the research efforts of its members. In order to capture this effort, this task is subdivided into the two activities, patenting and technology brokerage.

#### *Patenting Activities*

OTT's patenting activities involve the assessment of invention disclosures as well as the filing and prosecution of priority and continuing patent applications.

In 2007, 21 inventions were disclosed to the OTT. This is again less than the average of the previous four years. In total 9 priority patent applications as well as 10 follow-up patent applications were filed in 2007. All in all, the patent portfolio managed by the OTT in the reporting year comprised of 51 active patent families. Table 3 gives a summary of the key figures of patent activities at the institutions served by the OTT in 2007:

*Table 3: Key figures of OTT's patenting activities in 2007:*

2007	UniBas <sup>10</sup>	USB <sup>11</sup>	FHNW <sup>12</sup>	KBH <sup>13</sup>	Total
Invention disclosures	13	6	2		21
Priority applications	8		1		9
Continuing applications	6	3		1	10
Patents granted	2				2
Active patent families	34	15	1	1	51
Active patents granted	32	34			66
Active trademark families	3				3

The above mentioned priority patent applications were covering inventions directed to a chemotherapy of neoplastic diseases, a breast cancer marker, the diagnosis and treatment of a novel subform of obesity, a pharmacologically active monoclonal antibody as a treatment of cachexia, a magnetic resonance method, amine-bearing phospholipids and uses thereof, oxygen permeable polymeric nanocontainers (2 applications) and functional peptidic membranes.

<sup>10</sup> University of Basel (UniBas)

<sup>11</sup> University Hospital of Basel (USB)

<sup>12</sup> University of Applied Sciences Northwestern Switzerland (FHNW)

<sup>13</sup> Bruderholzspital (KBH)

***Technology Brokerage Activities***

At the end of the reporting year, the University of Basel's overall technology portfolio totalled 25 technology offers, i.e. technologies, patents, software for which partners are searched for. In 2007, three patent protected inventions were admitted to the University's push-marketing process. Four technologies were removed from it and submitted to pull-marketing. Push-marketing describes a process where the OTT pursues a pro-active marketing strategy by identifying, profiling and filtering potential industry partners before approaching them directly. All 25 technologies were also advertised on technology brokerage platforms (pull marketing)<sup>14</sup>. Such platforms are intended to be utilized more frequently and extensively in 2008, as they are believed to be a viable and time-efficient supplementation (but in no case substitution) for the pro-active push strategy described above. By the end of 2007, six technologies were irrevocably removed from the portfolio due to the abandonment of underlying patent rights.

In 2007, the University entered into two licensing agreement, which can be directly attributed to OTT's push-marketing activities. One of these two license agreements could yet be concluded for a technology admitted in 2007. Although, given the rather small volume of absolute data, the brokerage success rate of 2/3 for push-marketed technology in 2007 should not be overestimated. The number perfectly mirrors the OTT's long-term success rate of about one third and is also a sound indication for the efficiency and reliability of the pro-active marketing strategy. Taking into account the invention quality and additional measures for perfecting the push and pull marketing activities, it is assumed that the technologies currently at stake have the potential to equalize or even top the 2007 results next year.

---

<sup>14</sup> The current technology offers of the University of Basel are listed on the OTT's homepage ([http://pages.unibas.ch/wtt/Info\\_Comp/Lic\\_opp/lic\\_opp.html](http://pages.unibas.ch/wtt/Info_Comp/Lic_opp/lic_opp.html)) and available technology opportunities from Swiss academic research institutes, including the University of Basel, are listed on the "Switt List" (<http://www.switt.ch/html/technologies.php>).

## 5. Finances

In 2007, as compared to the previous year, OTT's gross operational expenditure continued to total about one million CHF. The labour costs remained to be the steepest position on the expenditure side, followed by the legal costs for securing and maintaining intellectual property rights, which slightly increased by about CHF 6k and can be attributed to the filing of three EU trademark applications. Further expenditures of about CHF 125k were due to refunds and remunerations to University inventors, departments, institutes and/or research groups for royalties accrued from the exploitation of intellectual property rights.

Looking at the revenues of almost CHF 550k generated from the provision of services (CHF 370k) to third parties (such as University Hospital Basel, University of Applied Sciences of Northwestern Switzerland, Resort Finance and Controlling [R&FC]) and financial backflows from intellectual property deals (CHF 180k) show an increase of more than CHF 60k (12 %) compared to 2006.

Setting the total revenues against the total expenditures, the operating shortfall amounted to CHF 457k, which results in a self-financing ratio of 55 % (+5 % compared to 2006). If not taking into account intra-university refunds and remunerations, the self-financing ratio would extend to 58 % and to a plus of almost 10 % compared to 2006. This increase can be attributed to the largely bigger amount of revenues collected from the exploitation of intellectual property rights in 2007.

Receipts for covering University overhead expenses (infrastructure, administration etc.) from third party collaborations amounted to CHF 415k in 2007. More than CHF 320k of the total overhead receipts were directly allocated to the Central University Administration, whereas about CHF 90k were transferred back to the departments and institutes of the University<sup>15</sup>. However, all these figures do not take into account overhead payments directly received by the Rectorate or the Central University Administration. The following table shows the key financial figures for the years 1998 to 2007.

**Table 4:** Key financial figures (in kCHF) of the OTT between 1998 and 2007:

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
<b>Expenditure</b>	298	333	328	423	541	780	995	938	1000	1006
<b>Intra- university refunds</b>			3	16	14	107	105	19	118	125
<b>Revenues<sup>16</sup></b>	83	136	137	279	289	435	544	549	488	549
<b>Operating shortfall</b>	215	197	191	144	252	345	451	389	512	457
<b>Level of self-financing (%)</b>	28	41	42	66	53	56	55	59	49	55
<b>Overhead revenues<sup>17</sup></b>						22	76	298	320	415

<sup>15</sup> According to the 75 % / 25 % split-up stipulated in the *Rules Relating to Ancillary Activities, Agreements with Third Parties and the Utilization of Intellectual Property in the Course of University Work*, dated August 18, 2004, and special arrangements entailed by specific circumstances of the corresponding overhead-charged project.

<sup>16</sup> Years 1998-02: No revenues from overhead invoicing; years 2003-04: OTT revenues include revenues received from overhead invoicing; years 2005-07: OTT revenues do not include revenues received from overhead invoicing

<sup>17</sup> Reported overhead revenues do not include overhead revenues directly received by the Rectorate and/or Central Administration

## **6. Contact**

**Contact:**

University of Basel  
Office of Technology Transfer (OTT)  
Schützenmattstrasse 16  
4003 Basel  
Website: <http://pages.unibas.ch/wtt>

Dr Bruno Dalle Carbonare  
Head of OTT  
Tel.: 061 267 27 31  
Fax: 061 267 09 97  
E-Mail: [bruno.dallecarbonare@unibas.ch](mailto:bruno.dallecarbonare@unibas.ch)