



UNIVERSITY OF HELSINKI

Faculty of Pharmacy

Annual review 2006



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■ Preface

In 2006, the Faculty was, in addition to its ordinary duties, heavily engaged in a number of committee and working group meetings and the process of implementing the new pay system for State employees, with related evaluations, performance development reviews and pay scales. The degree reform, particularly planning the contents of the higher degree and drafting degree requirements, was a very demanding task, and the members of the Faculty's Studies Committee and the degree reform working group in particular deserve praise for their work.

The year 2006 also saw the completion of the organizational restructuring of the Drug Discovery and Development Technology Center (DDTC), which was aimed at integrating the Center's work more closely with other research and teaching activities in the Faculty. The DDTC's research activities, target plans and new organization received unconditional support from the international panel. The DDTC was also granted permanent funding.

In cooperation with the Palmenia Centre for Continuing Education, which operates under the auspices of the University of Helsinki, the Faculty organized two international scientific congresses: (1) the 18th Helsinki Drug Research 2006, and (2) the International Congress and 54th Annual Meeting of the Society for Medicinal Plant Research. The former was attended by a total of 327 research professionals from 29 countries and the latter by more than 500 participants from 60 countries.

The Faculty admitted a total of 193 new students in 2006 (244 in 2005); 51 (52) of these were enrolled for the M.Sc. (Pharm.) degree. A total of 193 (150) B.Sc. (Pharm.), 40 (39) M.Sc. (Pharm.) and 9 (7) Ph. D. (Pharm.) degrees and one (1) Ph.D. were taken in 2006. The average age of the new Doctors was 36 years (31.5 years). There was a 17% increase in the target number of 165 for new B.Sc. (Pharm.) degrees.

Important events related to teaching in the Faculty were the appointment of the Australian Simon Bell, Ph. D. (Pharm.) (Hons), as permanent lecturer as of August 1, 2006 and the visit of Professor Alan Lyles of the University of Baltimore who held the professorship in pharmacoconomics from the beginning of May to the end of July. Since September 2006, the professorship has been held by Ville Aalto-Setälä.

The following new professors were appointed by the Chancellor in 2006: Jari Yli-Kauhaluoma for pharmaceutical chemistry from May 1, 2006; by invitation, Tapio Kotiaho for mass spectrometry from January 1, 2007. The Faculty decided on founding the office of a pharmacy training coordinator, effective from January 1, 2007; Maaret Varunki, M.Sc. (Pharm.) was appointed to the office. On Martti Marvola's retirement as Professor of Biopharmaceutics on December 31, Dr Marjo Yliperttula was appointed as his replacement for a fixed term from January 1 to December 31, 2007.



Photo: Veikko Somerpuro

Raimo Hiltunen

■ Highlights 2006

Graduation ceremonies

Graduates (Bachelors, Masters, Licentiates and Doctors) are awarded their degrees at a graduation ceremony, after a speech given by the Dean or Vice-Dean. The graduation ceremony for spring 2006 was held May 23 for two Ph.D.s, six M.Sc.s and 113 B.Sc.s. (Picture: Henri Autio, newly graduated B.Sc. (Pharm.)).

Albert Wuokko Award for Päivi Tammela

At the opening ceremony of the 2006 Pharmacy Days, Doцент Päivi Tammela (picture) from the Faculty of Pharmacy was awarded the Albert Wuokko Award of the Finnish Pharmaceutical Society. The reasons for granting her the award included her rapid advancement from postgraduate to doцент and lecturer.

Päivi Tammela received her Ph. D. (Pharm.) in pharmacog-nosy in 2004. She has published a number of articles in

international scientific journals and has also supervised dissertations. Today she is a lecturer at the Faculty of Pharmacy at the University of Helsinki and a research scientist at the Drug Discovery and Development Technology Centre (DDTC), which is part of the Faculty.

Simon Bell – an Australian Ph.D. working for the Division of Social Pharmacy

Dr. Simon Bell (picture) from Sydney, Australia, was recently recruited to the permanent position of Senior Lecturer in Social Pharmacy at the Faculty of Pharmacy. He completed his doctoral thesis at the University of Sydney in 2006. He has enjoyed the opportunity to work with the staff and students at the Faculty of Pharmacy, and has conducted teaching in English at Bachelor's, Master's and postgraduate levels. Dr. Bell is looking forward to consolidating research and teaching collaboration with the University of Sydney, a process which began several years ago.

Photo: Eero Roine



Photo: Eero Roine



Specialization studies for future experts in the pharmaceutical industry

The first pharmacists to complete the new professional upgrading studies in industrial pharmacy were awarded diplomas in autumn 2006. These four pharmacists had previously worked in quality assurance and product development in the pharmaceutical industry. The studies offered them an opportunity to examine the industry from various perspectives and gave them new insight to complement their work experience.

These specialization studies in industrial pharmacy were launched in 1994 to meet the needs of the advancing pharmaceutical industry. The studies aim at creating know-how for promotion of the growth of an internationally competitive, research-based pharmaceutical industry in Finland. The course requirements for these studies were revamped in 2003 to meet the requirements for a Qualified Person status as set out in the relevant EU Directive. Completion of these studies may, under certain specified conditions, qualify a graduate for the status, which is a key requirement for release of batches of medicinal products for sale and clinical trials within the EU.

Natural drug researchers gathered in Helsinki

Nearly 500 experts in pharmacognosy, biology, microbiology, analytical chemistry and botany from 60 countries

gathered in Helsinki in autumn 2006 for the International Congress and 54th Annual Meeting of the Society for Medicinal Plant Research. The congress was organized by the Faculty of Pharmacy and the Society for Medicinal Plant Research.

The congress topics covered the pros and cons of new information, skills, techniques and technologies related to the discovery and development of drugs from natural substances. The main topics included the health effects of plant phenols, clinical research on medicinal plants, recent trends in the analytics of secondary metabolites, and genomics, proteomics and metabolomics in medicinal plant research.

More than 300 experts at Helsinki Drug Research

The 18th Helsinki Drug Research Congress held in June attracted more than 300 pharmaceutical researchers and experts from all over the world. This largest regularly held congress in pharmaceutical research in Finland was organized by the Faculty of Pharmacy of the University of Helsinki and the Finnish Pharmaceutical Society.

Held at Biomedicum, the event was divided into three parallel symposia, one of which focused on medication safety, another on innovative drug formulations, and the third on protein kinase enzymes as drug targets. Lectures were given by more than 50 leading experts from all over the world.

Photo: Ville-Matti Mäkinen



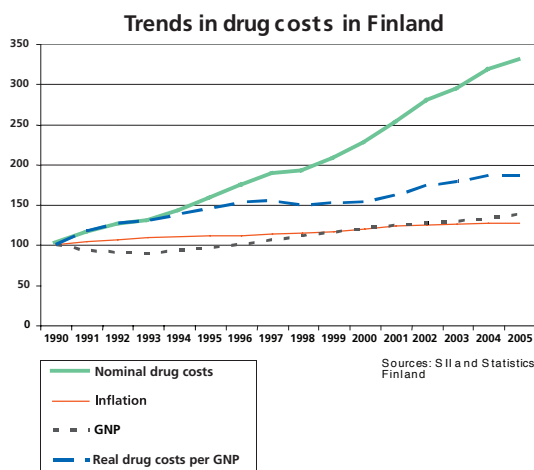
Photo: Veikko Somerpuro



News from the Faculty

Pharmacoeconomics in the Faculty of Pharmacy

The costs of drugs have been rising in all Western countries over the past twenty-odd years. The scale of the rise depends on the perspective chosen. If we need to stress the rapid pace of the rise in the costs we can say that nominal costs for drugs have increased by 230% from 1990 to 2005. From a more moderate perspective, the proportion of drug costs in terms of total consumption (GNP) has grown by 90% over the same period. It should be noted, however, that the rise in drug costs is not caused by higher prices; instead, drugs have become increasingly more effective and are used both to treat new diseases and increasingly to replace older drugs.



Pharmacoeconomics examines the relationship between the costs and benefits of drug treatment, looking for the best possible result given the resources available. Pharmacoeconomics may focus on the effectiveness of drug treatments in specific types of cases as well as on the overall functionality of the drug market. The importance of studying the drug market is emphasized by the special characteristics

of the market. However, unlike in the normal markets for other commodities, selecting the drug, using it and paying for it are done by different players – in most cases, the physician, the patient and the public sector, respectively. Because of these characteristics, therefore, the normal laws of economics do not apply to the drug market.

In autumn 2006, the University Pharmacy (Yliopiston Apteekki) funded a professorship in pharmacoeconomics in the Faculty of Pharmacy, which was placed under the Division of Social Pharmacy. While the chair still remains vacant, the acting Professor is Ville Aalto-Setälä. Pharmacoeconomic research in the University of Helsinki currently focuses on the overall functionality of the drug market, as we examine the price competition between interchangeable drugs and the effects of price changes on demand. Because of the detailed, high-quality research material available with regard to both prices and sales volumes, the research on the functionality of drug markets will be first class. The results can be applied in the development of the regulation of the drug market. Our domestic partners in this work are the National Agency for Medicines, Yliopiston Apteekki, the National Consumer Research Centre and the Social Insurance Institution. Our main international partners are located in the US and Sweden.



Ville Aalto-Setälä

Photo: Maarit Kyttöharju

Drug Discovery and Development Technology Center (DDTC) in 2006

During 2006, the DDTC was established as a new independent centre in the Faculty of Pharmacy. The research centre includes seven multidisciplinary research groups that have expertise in several fields of drug discovery and development of the preclinical phase.

The DDTC published in 52 publications in 2006. The DDTC obtained funding of 700,000 euro from the University of Helsinki and it received external funding of 1,621,000 euro. Therefore, the external funding was the major part of the total funding of 2,321,000 euro. Currently, there are more than 40 employees working at the DDTC. The Center of Excellence application of the DDTC and its partner (Bioinspire) was selected for the second, and final, round for full evaluation. The status and plans of the DDTC were evaluated by the International Scientific Board in September 2006. The overall assessment was 'excellent' with a score of 6/7. The plans were considered to be highly relevant and ambitious, leading the centre towards the status of international centre of excellence.

Together with its partners, the DDTC organized three international postgraduate courses:

- Nanotechnology in Drug Discovery and Development
- Surfaces in Nanotechnology: Functionalisation and Analysis BioNanoScience
- Introduction to HTS Technologies.

Researchers from the DDTC participated in the teaching in the Faculty. The DDTC provides teaching expertise to the Faculty of Pharmacy in many fields, including molecular and cell biology, bioorganic chemistry, polymer chemistry, gene therapy, and pharmacokinetic modelling.

Photos: Veikko Somerpuro



■ Student-oriented cooperation for achieving the goals of the teaching of pharmacy

In September 2006, the Faculty of Pharmacy organized a staff cruise to Tallinn to focus on development of the Faculty and to discuss the Faculty's target programme set for the next three years. Participants formed teams to work on a concrete implementation plan for teaching, creating dialogue that provided new ideas and inspiration for the Studies

Committee. This dialogue was exactly what the Faculty was eager to emphasize: according to Nina Katajavuori, pedagogical lecturer (picture), development of the teaching plan requires commitment, cooperation and dialogue, all of which must involve the participation of the students as well.

Long-term efforts pay off

The long-term, goal-oriented development of the education provided by the Faculty of Pharmacy received official recognition from the University of Helsinki in 2006 as the Faculty was designated a High-Quality Education Unit.

Enhancing the quality of education

The quality manual and the operating manuals compiled for each department, which were prepared in autumn 2006, provided a sound basis for the development and implementation of teaching as well. The implementation plan for teaching focuses on five areas:

The first and most important goal is to provide high-quality teaching that systematically supports students with regard to an in-depth understanding of their subject. The learning content and the teaching must be continuously evaluated to ensure that this goal is achieved.

Secondly, students must be helped to become experts in their field, which requires high-quality learning, integration of scientific information into practical knowledge and regular dialogue between students, teachers and representatives of working life.

Thirdly, the implementation plan for teaching focuses on both teaching that is based on scientific research and problem-oriented teaching where research and teaching support each other and where the teaching staff apply their own research and the latest theoretical knowledge to their teaching. The Faculty also examines teaching practices, studies the views of teachers and students and develops teaching practices on the basis of the findings. The implementation plan itself is based on such research.

The fourth goal is to develop an international perspective on the teaching of pharmacy in order to improve students' capabilities to work in international contexts and expert positions. An example of the Faculty's achievements in a leading international front is the three-year development project funded by the University on the development of a seam-based model for a curriculum for pharmacy studies,

which aims at integrating research-oriented students into research networks within the Faculty and around the world. Another goal is to promote students' pharmacy training abroad and international exchange of postgraduates and postdoc researchers.

The fifth goal, which is also a very important part of the teaching and the studies, is the active participation of students in the scientific community. Students must be integrated into the scientific community and introduced to research-oriented thinking and problem-oriented learning from the start of their studies. The Faculty will survey the students' willingness to commit to research and will identify research teams prepared to commit to active development of this area.

Another area where the Faculty of Pharmacy has focused on teaching are the 'teacher forums', where participants discuss teaching in the various departments and identify good teaching practices. To support the evaluation and development of teaching, the Faculty has created and launched a system for regular, comprehensive feedback for the various courses. Spring 2006 saw the launch of the pilot version of an electronic feedback form on the Faculty's courses (within WebOODI), and the system was then launched in the Faculty in autumn 2006 for feedback from all courses. Teachers have to supply counter-feedback to students, with information on any planned improvements of the courses.



The cruise to Tallinn



Photo: Satu Himanen

Nina Katajavuori



Photo: Veikko Somerpuro

Jouni Hirvonen, 1. vice dean

■ The Faculty

The Faculty of Pharmacy comprises six divisions and an interdisciplinary research unit.

Division of Biopharmaceutics and Pharmacokinetics
http://www.helsinki.fi/farmasia/biofarmasia/index_en.html

Division of Pharmaceutical Biology
<http://www.helsinki.fi/farmasia/pharmbiol/english/Engindex.html>

Division of Pharmacology and Toxicology
<http://www.biocenter.helsinki.fi/Farmakologia/mainpage.htm>

Division of Pharmaceutical Chemistry
http://www.biocenter.helsinki.fi/ml/farml/chemistry/english/eng_chemistry.htm

Division of Pharmaceutical Technology
<http://www.pharmtech.helsinki.fi/english/frontpage.htm>

Division of Social Pharmacy
<http://helsinki.fi/farmasia/sosiaalifarmasia/english/>

Drug Discovery and Development Technology Center (DDTC)
<http://www.ddtc.helsinki.fi/>



Photo: Veikko Somerpuro

Photo: Veikko Somerpuro

Administration

The faculty council consists of the Dean and 10 other members, of whom four are professors, three belong to the teaching and other personnel group and three are students.

Faculty council

In 2006, faculty members (vice members) were as follows.

Professor, dean Raimo Hiltunen, chairman

Professor Martti Marvola

Professori Raimo Tuominen

Professor Jouko Yliruusi

Professor, vice dean Jouni Hirvonen

University lecturer Leena Luukkanen

University lecturer Ulla-Mari Parkkisenniemi-Kinnunen

Laboratory technician Marjo Vaha

Student Sini Eskola (till 31.1.)

Student Soile Seppälä (from 31.1 till 15.9.)

Student Henri Autio (from 15.9.)

Student Jarkko Lakkisto

Student Jesse Lindholm

The faculty council had 10 meetings during the year.

(Professor Marja Airaksinen)

(Professor Risto Kostiainen)

(Professor, vice dean Heikki Vuorela)

(Professor Hannu Elo)

(University lecturer Jari Yli-Kauhaluoma)

(Assistant Tero Wennberg till 4.8., Leading Scientist Ann Marie Kaukonen from 4.8.)

(Laboratory technician Leila Peltola)

(Student Soile Seppälä till 31.1.)

(Student Henri Autio from 31.1. till 15.9.)

(Student Juho-Matti Renko from 15.9.)

(Student Erika Pylkkönen)

(Student Katja Hakkarainen)



Photo: Veikko Somerpuro



Heikki Vuorela, 2. vice dean

■ Facts and figures (2006)

Students

	Women	Total
Lower degree	521	628
Higher degree	173	220
Postgraduate degree	73	101
Total	767	949

Degrees

	2002	2003	2004	2005	2006
B.Pharm.	145	197	152	150	193
M.Sc. (Pharm.)	42	48	37	39	40
Lic.Pharm.	8	13	3	4	-
Ph.D. (Pharm.)	7	11	7	7	9
Ph.D.				1	1
Total	202	269	200	201	243

Doctoral thesis defended in 2006

Alaranta, Antti

Medication Use in Elite Athletes

Airavaara, Mikko

GDNF/RET signalling in regulation of brain dopaminergic systems: significance for drug addiction

Kansanaho, Heli

Implementation of the principles of patient counselling into practice in Finnish community pharmacies

Kreander, Kari

A study on bacteria-targeted screening and in vitro safety assessment of natural products

Laitinen, Leena

Caco-2 cell cultures in the assessment of intestinal absorption: Effects of some co-administered drugs and natural compounds in biological matrices

Leinonen, Antti

Novel Mass Spectrometric Analysis Methods for Anabolic Androgenic Steroids in Sports Drug Testing

Pakkanen, Jukka

Upregulation and Functionality of Neuronal Nicotinic Acetylcholine Receptors

Rantamäki, Tomi

Brain TrkB neurotrophin receptor as a target for antidepressant treatments

Seitavuopio, Paulus

The roughness and imaging characterisation of different pharmaceutical surfaces

Wennberg, Tero

Computer-assisted separation and primary screening of bioactive compounds

Publications

In 2006 the personnel of the Faculty of Pharmacy published 94 articles in scientific periodicals with referee system.

Articles in scientific periodicals with referee system

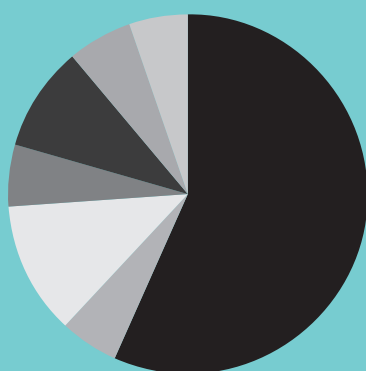
Year

2002	60
2003	80
2004	90
2005	67
2006	94

Detailed information can be found in the Helsinki University Knowledge Databases (<http://www-db.helsinki.fi/osaamistietokannat/index.shtml>).

Finances (k€)

2006

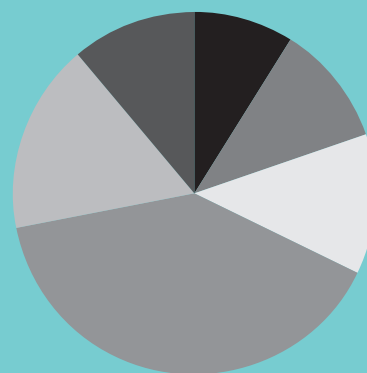


■ Basic budgetary funding (incl premises)	5.159
Supplementary funding	3.963
■ - Academy of Finland	495
■ - Tekes	1.079
■ - EU	509
■ - Foundations	854
■ - Domestic industry	555
■ - Other sources	471

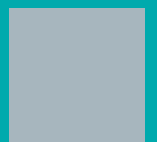
Staff

Personnel in person years in 2006

■ Professors	12,5
■ University lecturers	15,3
■ Assistants	17,7
■ Researchers (including graduate students)	55,9
■ Laboratory technicians and other supportive technical staff	23,8
■ Administrative personnel	15,5
All together	140,7



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