

**Medical and Pharmaceutical Drug Innovation  
University of Groningen**

**June 2007**

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## FOREWORD

This report is part of the quality assessment of university degree programmes in the Netherlands. The purpose of this report is to document the results of the educational evaluation of the Master's programme in Medical and Pharmaceutical Drug Innovation of the University of Groningen (RuG) and to serve as the basis for accreditation of this programme by the Accreditation Organisation of the Netherlands and Flanders (NVAO).

The Quality Assurance Netherlands Universities Foundation (QANU) aims to ensure independent, unbiased, critically constructive assessments using standardised quality criteria as far as possible, while taking specific circumstances into account.

The Master's programme in Medical and Pharmaceutical Drug Innovation was evaluated in a thorough and careful manner within a clear framework. We trust the judgements and recommendations will be carefully considered by the course providers (the respective departments), by the management of the faculties concerned and by the Board of the University.

We thank the Chairman and members of the Review Committee for their willingness to participate in this assessment and for the dedication with which they carried out this task. We also thank the staff of the Mathematics and Natural Sciences and Medical Sciences Departments for their carefully prepared documentation and for their co-operation during the assessment.

Quality Assurance Netherlands Universities

Mr. Chris J. Peels  
Director

Dr. Jan G.F. Veldhuis  
Chairman of the Board



## 2. PREFACE

This report describes the assessment of the Master's degree programme in Medical and Pharmaceutical Drug Innovation of the University of Groningen.

The Evaluation Committee reviewed the quality of the educational programme and processes while focussing on the topics defined in the NVAO assessment framework.

The Evaluation Committee is grateful to the Faculties of Mathematics and Natural Sciences, Medical Sciences and the University Medical Center Groningen for their efforts in preparing the self-evaluation report and providing other documentation about the degree programme concerned. The information provided in the self-evaluation report served as a starting point for the assessment process and proved to be of great importance. The Committee appreciated the open, constructive and stimulating discussions with the board, management, staff and students.

The educational programme offers a challenging and motivating environment in which students are offered an excellent opportunity for learning about medical and pharmaceutical drug innovation.

Possible areas for improvement have been recognised by the management of the programme, and the committee trusts that the faculty management, departmental staff and students will be cooperating and working together to further improve the Medical and Pharmaceutical Drug Innovation educational programme.

As Chairman of the Committee, I would like to express my sincere appreciation for the commitment and the expert contributions of the committee members. They showed great interest and dedication in the different stages of the demanding assessment process.

Prof. Frans G.M. Russel  
Chairman of the Committee



## **PART I: GENERAL PART**



# **1. Introduction and general remarks**

## **1.1. Structure of the report**

In this document, the Educational Evaluation Committee for Medical and Pharmaceutical Drug Innovation (in this report referred to as ‘the Committee’) reports its findings. The report consists of a general part and a part which contains the results of the educational evaluation and assessment of the Master’s degree course in Medical and Pharmaceutical Drug Innovation offered at the University of Groningen.

The general part summarises the tasks, composition, input documentation and work procedures of the committee as well as a brief overview of the recent developments in the faculty organisation and Master’s degree programme.

The part describing the evaluation and assessment of the educational programme is structured in accordance with the accreditation criteria prescribed by the NVAO (Accreditation Organisation of the Netherlands and Flanders).

The report is written in English because of the international orientation of the programme.

## **1.2. General remarks**

### **Task of the Committee**

The task of the Committee was to evaluate and assess the Master’s degree programme in Medical and Pharmaceutical Drug Innovation offered at the University of Groningen in the period 2003-2005.

(The academic MSc programme in Medical and Pharmaceutical Drug Innovation; two years, CROHO 60617, started in September 2003.)

This evaluation and assessment are based on, and comply with, the accreditation requirements of the NVAO.

### **The constitution of the Committee**

A shortlist of candidates was formally approved by the QANU Board. All members of the Committee signed a declaration of independence as required by the QANU protocol to ensure that:

- the panel members judge without bias, personal preference or personal interest, and
- the judgement is made without undue influence from the institute, the programme or other stakeholders.

The committee consisted of a chairman and four members:

Chair:

- Prof. F.G.M. (Frans) Russel, Radboud University Nijmegen (RU)  
Faculty/department: RUN Medical Centre, Dept. Pharmacology and Toxicology.

Members:

- Prof. M.J. Giphart, University of Leiden  
Faculty/department: *IHB algemeen, Immunohematologie en Bloedtransfusie, Divisie 2*,  
Faculty of Medicine;
- Prof. D.W. (Dick) Slaaf, University of Maastricht, Eindhoven University of Technology  
Faculty/department: Medicine/ Biophysics, Biomedical Technology;
- Prof. R. (Rob) Leurs, VU University Amsterdam (*Vrije Universiteit Amsterdam*)  
Faculty/department: Faculty of Science, Pharm./Med.Chem;
- Mr B.D. (Daniel) Lam, Student member.

A short curriculum vitae of each of the committee members is included in Appendix A.

Dr. K.W. Maring (QANU) was appointed secretary of the Committee.

### **Materials presented to the Committee as a basis for the assessment**

The faculties offering the Master's degree course prepared a self-evaluation report in accordance with the new NVAO accreditation criteria<sup>1</sup> and the QANU instructions for the compilation of a self-evaluation report<sup>2</sup>. Appended to the self-evaluation report, the faculties provided their study guides and a list of the MSc theses.

The Committee feels that the self-evaluation report is elaborate and reflects on the existing status of the educational programme and related subjects in an open and thorough way. The self-evaluation report includes summaries of strengths and weaknesses per subject. Both staff and students contributed to the self-evaluation reports.

### **Working method adopted by the Committee**

The committee used the 'QANU protocol for the assessment of the Master's programme'.<sup>3</sup> This QANU protocol is an elaboration of the NVAO assessment criteria.

The committee held a preparatory / kick-off meeting on March 6, 2007. Based on previous study of the self-evaluation report, the committee discussed its contents and quality and formulated questions, in addition to the QANU protocol questions, in preparation for the actual visit.

The University of Groningen was visited on March 14 and 15, 2007. The programme of the site visit is included in Appendix B.

The visit started with a two-hour preparatory meeting in which each of the committee members reviewed a selection of documentation related to the degree course. Interviews with representatives of all relevant bodies of the faculty organisation were held subsequently. The Committee interviewed: lecturers, students, members of the Education Committee (*Opleidingscommissie*) and of the Examination Committee (*Examencommissie*), study coordinators, student coaches and members of the staff. Finally, the Committee took a tour of the laboratories and other learning facilities. A get-together was organized to meet representatives of the university board and of the faculty management. The afternoon of the last day of the visit was reserved by the Committee for review, to summarise the observations made and to prepare for the close-out meeting.

<sup>1</sup> Accreditation protocol for academic educational programmes, NVAO, 14 February 2003.

<sup>2</sup> Brief instructions for writing a self-evaluation report; QANU, March 2004.

<sup>3</sup> QANU protocol for the external quality assessment of academic Bachelor and Master's programmes for accreditation, v3.1, Jan 2004 – Aug 2005.

After the site visit a report was drafted by the Committee. This version was discussed by e-mail, and after some redrafting and corrections it was sent for review to the faculties for the correction of misinterpretations and factual errors. After correction, the report was formally approved by all committee members.

The scores per facet in this report follow the scale prescribed by the NVAO and have the following meaning:

- Excellent (4) means that this facet attains a quality level that is very good in all aspects and withstands international benchmarking. It is an example of best practice.
- Good (3) means that this facet attains a quality level that exceeds expectations and is the result of a well-considered policy;
- Satisfactory (2) means that the level of this facet meets the basic standard of quality.
- Unsatisfactory (1) means that the level of this facet is below the basic standard of quality.

The score 'satisfactory' means that all basic requirements for academic education are met and that nothing notable or remarkable has been observed, either in a positive or in a negative sense, relating to a particular facet.

The scores per facet are summed into a score – two-tier scale – 'satisfactory' or 'unsatisfactory' per topic. In this process an 'unsatisfactory' facet can be compensated by a 'good' or 'excellent' facet under the same topic.

This report is based on an assessment of the period 2003-2005 and is structured in accordance with the accreditation criteria prescribed by the NVAO.

All assessments are based on the status at the time of the evaluation.

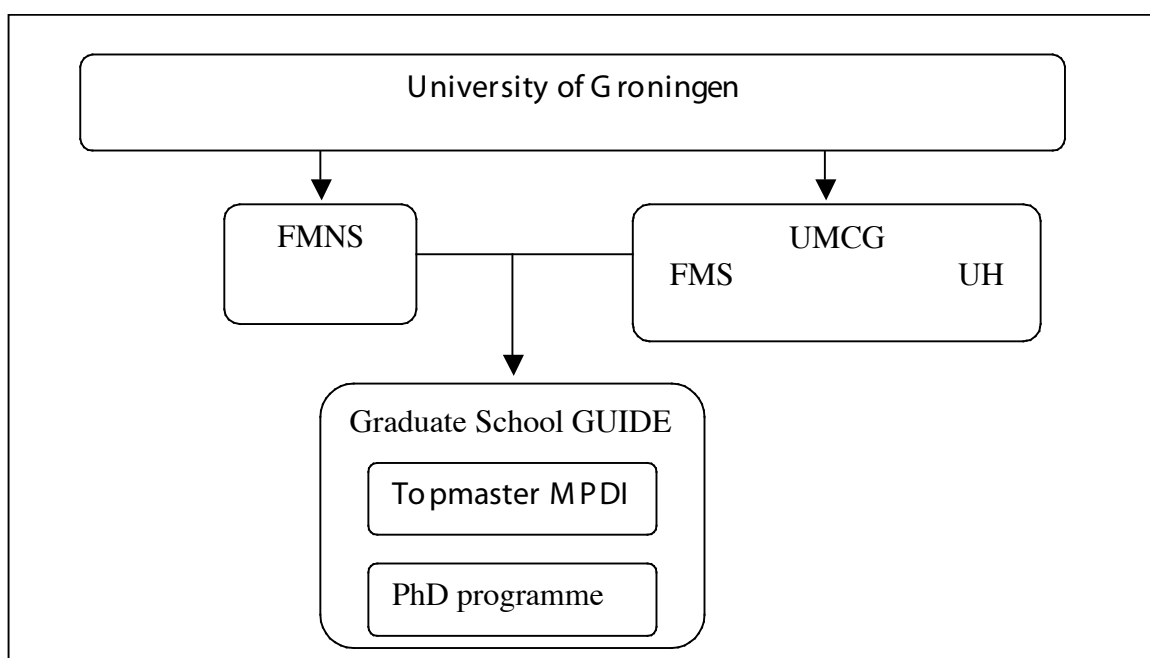


## 2. Educational evaluation and assessment of the Master's degree course

### Structure and organisation of the faculties and school

The MPDI Master's degree programme is an interdisciplinary programme supported by the Faculty of Mathematics and Natural Sciences (FMNS), the Faculty of Medical Sciences (FMS) and the University Hospital of the University of Groningen (see figure 1). In 2005 the FMS and the University Hospital merged into the University Medical Center Groningen (UMCG). In September 2005, the University of Groningen established a number of graduate schools. The Graduate School for Drug Exploration (GUIDE) includes the KNAW-accredited GUIDE research school and the MPDI Master's degree programme. The GUIDE Graduate School is an interfaculty graduate school in which the Faculty of Medical Sciences and the Faculty of Mathematics and Natural Sciences participate.

Figure 1. Basic structure of the top Master's programme MPDI (implementation of structure ongoing from September 1, 2006)



The Faculty of Medical Sciences/UMCG is the primary stakeholder, with the pro-dean of research as the person with the greatest responsibility. Within the GUIDE Graduate School, both the organization of research and the education of MSc and PhD students are combined into one organization.

The management of the Graduate School for Drug Exploration consists of:

Prof. H. Moshage	Scientific Director (FMS, Director of GUIDE/FMS, Programme Director MPDI)
Prof. B.H.C. Westerink	Deputy Director (FMNS; Director GRIP)

Staff members are appointed to specialist departments and perform their academic research duties at research institutes in one of the two faculties (FMNS or FMS). These staff members co-operate in both research themes and educational programmes within the GUIDE Graduate School.

The day-to-day management of the Top Master's Programme in Medical and Pharmaceutical Drug Innovation is the responsibility of the programme co-ordinator, Dr. A.M. van Trigt.

The curriculum is the responsibility of the Study Programme Committee (SPC). It comprises three staff members and three students, formally appointed by the Faculty Board. The programme co-ordinator of the Top Master's programme is Official Secretary to the Study Programme Committee.

Examinations are the responsibility of the Board of Examiners, appointed by the Faculty Board from the staff members actively involved in the Top Master's programme MPDI.

The Board of Examiners is quite large. The day-to-day decisions are the responsibility of an Executive Committee, consisting of three staff members in the Board of Examiners.

The Executive Committee of the Board of Examiners is also responsible for the admission of prospective students (Admissions Board). The Programme Co-ordinator of the Top Master's programme is Official Secretary to the Executive Committee of the Board of Examiners (and Admissions Board).

Further administrative support is provided by Ms. G. Winkel (School of Life Sciences) and by the GUIDE Graduate School, in particular by Ms. A.H.L. Bakker.

The MPDI Top Master's programme is tightly integrated with the research programme of the GUIDE Graduate School:

- all courses are taught by active GUIDE researchers;
- students participate in GUIDE research projects;
- students are offered a PhD position within GUIDE upon successful completion of their Top Master's programme.

GUIDE is subject to the regular quality assessment of the faculty. Every six years, an independent international peer review committee assesses the quality and productivity of the various research institutes. In the last assessment the quality of all research institutes involved was judged as very good to excellent. Although not specifically investigated, the committee judged the PhD training programme as good.

### **Introduction of Bachelor's and Master's degree courses**

Late in 2001, the Dutch Minister of Education, Culture and Science submitted to Parliament a proposal for a significant change in the structure of Dutch university courses. Following the 1999 Bologna Declaration, all university courses were to be redesigned to fit the Bachelor-Master framework. Additionally, and somewhat less visibly, the proposal included the introduction of excellent or 'top' programmes in the Master's phase. These top programmes were to be allied

preferably with the already existing top research institutes and were aimed at educating future leading-edge researchers. A new element was that admittance to these top programmes was to be highly selective. In line with these developments and the KNAW recommendations as given in the report 'Rijzende sterren: Om de kwaliteit van de onderzoekersopleiding' (Rising stars: about the quality of the researchers' training), the management of the GUIDE research school took the initiative to develop a novel Top Master's programme in Medical Pharmaceutical Drug Innovation (MPDI). The MPDI programme aims to attract the top 5% of students from all over the world. The programme was approved in September 2002 and started in September 2003 as one of the four programmes (embedded in research schools) at the University of Groningen. Students are selected at the start of their study and receive a stipend to cover their cost of living. On September 1, 2005, the MPDI programme was formally included in the GUIDE Graduate School. In August 2005, the first students graduated and subsequently started their PhD programme within the GUIDE Graduate School.

In 1994, GUIDE was accredited as a national research school bringing together all drug-related research within the Faculty of Medicine and the Department of Pharmacy. GUIDE's mission is to promote research into the pathophysiology of disease in order to establish innovative drug options. This is achieved by combining in-depth studies into the pathophysiology of selected, primarily chronic, diseases with advanced knowledge about the development of new drugs. Within the research programmes translational research is carried out, in which patient-oriented research leads to new pathophysiological concepts (from bed to bench). In a reverse manner, newly obtained insights into the pathophysiology of disease are translated into new treatment options (from bench to bed).

The GUIDE Graduate School has an unique position to cover all aspects of innovative drug development. Firstly, the clinical wards, outpatient clinics, research laboratories and the Department of Pharmacy are located on one campus (all under "one roof"), strongly facilitating intense interactions. Secondly, research is performed in multi-disciplinary teams, composed of clinicians, biomedical scientists (molecular biologists, biochemists, cell biologists, etc.), pharmacologists, pharmacists and analytical chemists. This interdisciplinary interaction strongly promotes the training of scientists who acquire a complete view of all aspects of drug development: from patients with their diseases, via biomedical research, to the development, preparation and application of novel drugs. Thirdly, all of the infrastructure needed to perform competitive research is available on the same campus and is "impressive" according to the report of the international research visitation committee.

The training of students and young researchers in this field has always been an important task of the GUIDE Research School (now Graduate School). From that point of view, it was a great opportunity to develop a programme for Master's students.

The Board of the school recognized the need for a challenging Master's programme in which top students could be invited to join the academic community of the school and be trained to become the scientists of the future.

Using the experiences of the training of young PhD students, a small group of staff members designed the programme. The Medical and Pharmaceutical Drug Innovation programme includes the training of scientific skills, the maturation of a scientific attitude and a thorough understanding of the fundamental concepts of medical and pharmaceutical drug research. The structure of the programme aims at creating interaction, collaboration and competition between students. It also guarantees intensive support and hands-on experience with research. Students are members of the academic community of the GUIDE Graduate School. Candi-

dates are recruited nationally and internationally. Admittance to the programme is competitive, and no places are reserved for students of the University of Groningen. The modules in the Master's programme are exclusively designed for the Top Master's programme, and only students admitted to this programme can participate in these modules.

The programme started in 2003, and the first students graduated in August 2005. These graduates designed their own PhD project and are now PhD students of the GUIDE Graduate School.

# PART II: PROGRAMME REPORT



# 1. Report on the Master's degree course in Medical and Pharmaceutical Drug Innovation offered by the University of Groningen

## Administrative data

### Master's degree course Medical and Pharmaceutical Drug Innovation:

Name of the degree course:	Medical and Pharmaceutical Drug Innovation
CROHO number:	60617
Level:	Master
Orientation:	university
Study load:	120 EC
Degree:	Master of Science
Variant(s):	fulltime
Location(s):	Groningen
Expiration accreditation:	31 December 2007

The visit of the assessment committee to the Faculty of Mathematics and Natural Sciences and the Faculty of Medical Sciences of the University of Groningen took place on March 14 and 15, 2007.

## 1.0. Structure and organisation of the faculty and/or department

This subject is discussed in the General Part.

## 1.1. Introduction of Bachelor and Master's degree courses, wrapping up old 'doctoraal' degree courses: state of affairs

This subject is discussed in the General Part.

## 1.2. The assessment framework

### 1.2.1. Aims and objectives of the degree course

#### **F1: Domain-specific requirements**

The final qualifications of the degree course correspond to the requirements made to a degree course in the relevant domain (field of study/discipline and/or professional practice) by colleagues in the Netherlands and abroad and the professional practice.

## Description

*The final qualifications for the Top Master's programme Medical and Pharmaceutical Drug Innovation*

The Master's programme Medical and Pharmaceutical Drug Innovation (MPDI) covers the interface of biomedical sciences and pharmaceutical sciences. The MPDI programme provides the student with a thorough understanding of the different disciplines in this area. The content of the programme is closely linked to the research themes of the Graduate School GUIDE.

In this Master's programme there is a strong focus on the development of scientific and academic skills. In this way, the graduates are well prepared for a career as research scientist, primarily in academia, but also in related employment areas.

The Master's programme trains students to become researchers. Upon completion of the programme, the graduates receive a master diploma (MSc) and a PhD-position will be offered to them.

The programme is aiming for an international student population. Consequently, the language of instruction is English. Only a small group of enthusiastic students with an exceptional talent for science and scientific research is selected and admitted to the programme.

Specific learning objectives:

1. to obtain a thorough understanding of the mechanisms of pathophysiological processes in order to identify novel targets for intervention (target finding) and subsequently to develop novel drugs for these targets based on modern concepts of drug innovation (for example drug targeting, drug delivery, drug design);
2. to acquire conceptual knowledge on advanced techniques used in biomedical research (for example proteomics and molecular imaging).

Additional learning objectives related to scientific (academic) skills:

3. to learn how to perform experimental research independently and to assess and judge research in a multidisciplinary setting; to learn to critically search and evaluate scientific literature;
4. to learn how to formulate relevant research questions and subsequently how to design and execute a research project;
5. to learn how to critically interpret scientific results and evaluate scientific research;
6. to pay attention to scientific depth and the international dimensions of scientific practice;
7. to allow for specialization and/or differentiation;
8. to learn to design, set up and execute scientific research independently.

### ***Comparison of medical-pharmaceutical Master's programmes in the Netherlands***

Several Dutch universities offer Master's programmes within the domain of (bio)medical-pharmaceutical sciences. As of March 2007 five different programmes are officially recognized (see table 1).

Table 1: Overview officially recognized Dutch Master's programmes within the domain of medical-pharmaceutical sciences (120 EC) March 20, 2007

Official name of the programme <sup>1</sup>	CROHO code	University
Medical and Pharmaceutical Drug Innovation	60617	University of Groningen
Medisch Farmaceutische Wetenschappen	60611	University of Groningen
Bio-pharmaceutical Sciences	60207	University of Leiden
Pharmaceutical Sciences	66989	VU University Amsterdam
Farmaceutische Wetenschappen <sup>2</sup>	60294	Utrecht University

All medical-pharmaceutical Master's programmes – except Medical and Pharmaceutical Drug Innovation – have a broad scope, indicated by the existence of different tracks within the Master's programme, for example research, management, communication and education. Furthermore, according to the Rules and Regulations (in Dutch: OER) students with an appropriate Bachelor's diploma are admitted to these Master's programmes without any selection.

The programme "Farmaceutische Wetenschappen" (Utrecht University) offers an 'honours' programme. The goal of this programme is to provide excellent students with an extra challenge on top of the regular programme. Students need to apply for this 'honours' programme, and the application procedure appears comparable to the application procedure used in MPDI.

The difference is that the MPDI programme offers a complete programme (120 EC) at a challenging and ambitious level (honours level), while in the honours programme of Utrecht, students have to do honours projects (each year at least 10 honours EC) in addition to the regular programme. Another important difference is that the honours programme is open for students from all different tracks and not exclusively for those interested in research.

In each programme the focus of the research track(s) is closely related to the focus of the medical-pharmaceutical research programme of the university. In Amsterdam the programme has a strong relation with chemistry (e.g. Computational Medicinal Chemistry and Toxicology, Drug Design and Synthesis, Biomolecular Drug Analysis), Leiden and Utrecht focus on pharmaceutical aspects (e.g. drug design, drug targeting and delivery), whereas the programme of MPDI is more oriented towards molecular medicine (disease mechanisms, target finding and design). The MPDI Master's programme is completely embedded in the Graduate School GUIDE and poses restrictions on the participation of staff in the programme, based on both scientific and educational quality.

In comparison to the other Master's programmes, MPDI is the only one that specifically and exclusively trains for a career in research (in the other programmes this is one of the options). This is further substantiated by the possibility of graduated students to design and perform their own PhD-programme. The MPDI programme has a strict selection procedure, and the total programme of 120 EC is on an 'honours' level. This means that only a limited number of highly motivated students is admitted to this programme.

The research focus of all Master's programmes is different and closely related to the research programmes within the universities.

<sup>1</sup> Official name as registered in the CROHO (i.e. register of programmes in higher education)

<sup>2</sup> The official CROHO name is Farmaceutische Wetenschappen; on the website of the UU the name Drug Innovation is used.

## Assessment

Usually, the domain-specific reference framework is supplied by QANU, after consulting relevant experts or organisations. In this case, the department specified these frameworks in the self-evaluation report.

The Committee stated that it could not work properly with the frameworks originally supplied. The Committee preferred a more generic framework, in which the relationship with similar courses (medicine, natural sciences and some technology) is indicated, and the specifically Groningen aspects are specified. For MPDI, reference was made to the domain-specific framework of the Pharmaceutical Sciences, in particular part '2.1.2 Opleidingen, anders dan leidend tot apotheker'. The Committee ascertained that this part could be declared applicable to MPDI, because it had already been anticipated in the original site visit of the academic degree programmes in Pharmacy that Pharmaceutical Sciences programmes not leading to a PharmD degree (i.e. at the Universities of Groningen, Leiden and Utrecht) were also to be assessed. This MPDI reference framework is a reformulation of the text from the self-evaluation report and was approved by the Committee.

The Department based the final qualifications on a careful comparison with similar programmes. This shows that they meet the criteria set by fellow colleagues.

The Committee feels that the course is rather oriented towards cell biology, which makes its basis somewhat smaller than the name suggests. An alternative name for the course which may cover its field better could be 'molecular medicine'.

*Master's degree course Medical and Pharmaceutical Drug Innovation: the assessment by the Committee is satisfactory.*

### F2: Level

The final qualifications of the degree course correspond to general, internationally accepted descriptions of the qualifications of a Bachelor or a Master.

## Description

The level defined by the learning outcomes of the MPDI Master's degree programme is in accordance with the Dublin descriptors for Master's (or second-cycle) qualifications. Table 2 gives an overview of the learning outcomes of the MDPI Master's degree programme in relation to the Dublin descriptors.

Table 2: *The relation between learning outcomes of the MPDI Master's degree programme and the Dublin descriptors*

<b>Learning outcomes of the MPDI Master's degree programme</b>	<b>Dublin descriptors</b>
<p>Students have acquired</p> <ol style="list-style-type: none"> <li>a. Knowledge of Cardiovascular diseases, Oncology, Liver, Intestinal and Metabolic Diseases, Kidney Diseases, Lung diseases, Inflammation, Transplantation, and Immune Disorders</li> <li>b. Knowledge and understanding of fundamental concepts of cell cycle regulation, cell death and survival pathways, cellular signalling, immunology, macromolecule trafficking, membrane and organelle function, and drug delivery and targeting</li> <li>c. Advanced knowledge on important modern techniques such as macromolecule separation and analysis, genomics &amp; proteomics, bioinformatics, gene transfer, genetics, and molecular imaging</li> <li>d. Knowledge of research evaluation methods, patent application and grant systems</li> </ol>	<p>Students have demonstrated knowledge and understanding that is founded upon and extends and/or enhances that typically associated with Bachelor's level, and provides a basis or opportunity for originality in developing and/or applying ideas, often within a research context.</p>
<ol style="list-style-type: none"> <li>e. An ability to conduct scientific research in areas of medical and pharmaceutical drug innovation that are relevant to the advancement of knowledge and insights into fundamental aspects and applied aspects of health and disease <ul style="list-style-type: none"> <li>• An ability to design and execute experiments, and interpret data, addressing problems in medical and pharmaceutical research</li> <li>• An ability to translate a clinical or health-relevant problem or question into a rationally designed experiment to meet desired needs.</li> <li>• An ability to critically judge and evaluate existing knowledge and insights</li> </ul> </li> </ol>	<p>Students can apply their knowledge and understanding, and problem-solving abilities in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their field of study.</p>
<ol style="list-style-type: none"> <li>f. An awareness of potential societal and ethical implications of scientific research in medical and pharmaceutical drug innovation and, in this context, an ability to critically evaluate the effects of (his/her) research.</li> </ol>	<p>Student has the ability to integrate knowledge and handle complexity, and formulate judgements with incomplete or limited information, but that include reflecting on social and ethical responsibilities linked to the application of their knowledge and judgements.</p>
<ol style="list-style-type: none"> <li>g. A capacity to communicate effectively in written and verbal form to other researchers in the field and to lay persons.</li> <li>h. The ability to collaborate in a multidisciplinary setting, i.e. clinicians, biological and pharmaceutical researchers.</li> </ol>	<p>Students can communicate their conclusions, and the knowledge and rationale underpinning these, to specialist and non-specialist audiences clearly and unambiguously.</p>

<ul style="list-style-type: none"> <li>i. An ability to study international scientific research.</li> <li>j. An ability to develop new concepts within the field of medical and pharmaceutical drug research</li> <li>k. To have an understanding of the requirements for a successful scientific career and the ability to judge whether the student fulfils these requirements.</li> <li>l. Recognition of the need for, and an ability to engage in ongoing learning.</li> <li>m. Students are capable of designing their own PhD-projects</li> </ul>	<p>Students have the learning skills to allow them to continue to study in a manner that may be largely self-directed or autonomous.</p>
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### Assessment

The course is highly ambitious and aims to train “opinion leaders” of the future (professors). The course recruits among the top 5% of students.

Given terms like Top Master and Top Class, the question arose of where this increased depth of knowledge is gained. It was ascertained that much knowledge is developed along the lines of the department’s research topics and that classic deepening of knowledge through lectures and examinations was stressed less.

Regarding the Programme Committee, it was noted that fundamental knowledge (e.g. textbook *Molecular Biology of the Cell*, van Alberts *et al.*) is tested in the classical way. This is followed by more indirect knowledge testing. Knowledge and skills are transferred via the GUIDE lines of research in combination with theoretical lectures. One example of this transfer is the section “conflicting views”, in which the student is asked to write an essay about opposing views in two articles.

The self-evaluation report stated that the student is expected to know about a large number of diseases and clinical pictures. The question arose of how extensive this knowledge is.

The programme organisers stated that the GUIDE research domain was the focus (each of the sub-domains received a score of 4 or more on the last assessment visit). For the module in question, the emphasis lies more on conceptual knowledge than on the concrete factual knowledge of the diseases listed.

According to the MPDI students, deepening of knowledge occurs by reading reviews and articles and attending lectures. Each week a different topic is handled. The emphasis lies more on conceptual knowledge than on extensive factual knowledge.

It was noted that in the research project the accent did not lie on skills, but on doing new things and “learning to think”.

The students feel well prepared for the research project.

The Committee was convinced that deepening occurs in different ways, especially ones closely related to research. The level of this programme thus clearly exceeds that of a Master’s course as defined in the Dublin descriptors.

*Master’s degree course Medical and Pharmaceutical Drug Innovation:* the assessment by the Committee is good.

**F3: Orientation**

The final qualifications of the degree course correspond to the following descriptions of a Bachelor and a Master at universities:

- The final qualifications are based on requirements made by the academic discipline, the international academic practice and, if applicable to the course, the relevant practice in the prospective professional field.
- A University (WO) bachelor possesses the qualifications that allow access to a minimum of one further University (WO) degree course at master's level as well as the option to enter the labour market.
- A University (WO) master possesses the qualifications to conduct independent academic research or to solve multidisciplinary and interdisciplinary questions in a professional practice for which a University (WO) degree is required or useful.

**Description**

The programme provides students with basic knowledge of the fields involved on the one hand (Top Class I, II and III) and in-depth knowledge of two different research subjects (research projects) on the other hand.

The Master's degree programme is compiled around two research projects of 30 EC, to be undertaken in two different research groups involved in the MPDI Master's degree programme at the University of Groningen. (Students can go abroad during the second research project under the supervision of a GUIDE staff member.) This allows students to participate on a daily basis in the practice of scientific research. The student has to work in a multidisciplinary team and will be trained to perform scientific research. During these research projects students will participate in group meetings, including oral presentations, and the research projects are concluded by an oral presentation by the student to an audience with ample expertise in the subject of study, followed by a discussion.

In these two research projects students acquire in-depth knowledge on two different research subjects (state-of-the art methods and techniques) within the field of medical and pharmaceutical drug innovation. Furthermore, students experience different research situations by being a member of two (different) scientific groups.

In the last module of the Master's programme, students prepare their own PhD project in the research area of their choice. These projects are prepared and assessed using an adaptation of the NWO VENI procedure. In this module students will apply all of the knowledge and skills developed during their training.

The procedure for the evaluation of these projects mimics the NWO VENI procedure (tender, full proposal, review and reply to review, and oral presentation and defence before a committee of experts from all divisions within GUIDE) that not only ensures quality control of awarded projects, but also trains the students to perform well in future grant procedures/applications.

**Assessment**

This knowledge-based approach is good. The didactic concept is also good, especially the writing of an "editorial" and the application of the VENI procedure (modified as necessary) to the PhD project proposals. These elements of the programme contribute to the graduates' good scientific abilities.

When the MPDI students and alumni were asked about whether they (particularly the Dutch students) are or were stimulated to undertake a work placement elsewhere in the Netherlands or abroad, they replied that it was one of the options.

In the opinion of the Committee, the Dutch students in particular should be encouraged more during their course to spend a period abroad.

*Master's degree course Medical and Pharmaceutical Drug Innovation: the assessment by the Committee is good.*

**Assessment of the subject “Aims and objectives of the degree course”:**

The Committee concludes on the basis of its assessments of the relevant facets that the assessment for the subject “Aims and objectives of the programme” for the Master’s degree course Medical and Pharmaceutical Drug Innovation is satisfactory.

**1.2.2. Programme**

**Description of the programme of the degree course:**

*Table 3: Programme of the Master’s Degree MPDI*

Year	Module	EC		assessment
1	Top Class I: Recent developments in medical, biomedical and pharmaceutical sciences	11	Lectures, Group work, Group discussions, Assignments	Test; written report (editorial) and oral presentation
1	Top Class II: Modern techniques in medical, biomedical and pharmaceutical sciences	9	Lectures, Group work, Group discussions, laboratory practice	Written report and oral presentation
1	Top Class IIIA: Theoretical preparation for advanced research in medical, biomedical and pharmaceutical sciences	3	Lectures, Individual Assignments, interviews with experts	Oral presentations
1	Research project Paper	3	Self-study and discussions with project supervisor	Written report
1	Research project	30	Lab practical, self-study, discussions, interim mentor assessments	Progress Written report
1	Colloquium	3	Self-study	Oral presentation
1	Miscellaneous (extended research project)	1	Lab practical	
2	Capita Selecta	6	Discussions with supervisor, self-study	Written report
2	Research project II Paper	3	Self-study and discussions with project supervisor	Written report
2	Research project II	30	Lab practical, self-study, discussions	Progress Written report
2	Colloquium II	3	Self-study	Oral presentation
2	Top Class IIIb: Theoretical preparation for advanced research in medical, biomedical and pharmaceutical sciences: Research proposal training	7	Lectures, Discussions, Self-study	Oral presentations, and written reports
2	Research proposal	6		Written report and oral presentation
2	Miscellaneous (extended. research project or elective)	5		

**F4: Requirements**

The programme meets the following criteria applicable to a degree programme at a University (WO):

- The students acquire knowledge on the interface between teaching and academic research within the relevant disciplines;
- The programme follows the developments in the relevant academic discipline(s), as it is demonstrated that it incorporates current academic theories;
- The programme ensures the development of skills in the field of academic research;
- For those courses for which this is applicable, the course programme has clear links with the current professional practice in the relevant professions.

**Description**

All members of the MPDI teaching staff are active in one of the areas of medical and pharmaceutical research pursued within the GUIDE graduate school. Because they integrate the results of their own current research into their assigned courses, their students are aware of recent developments in the relevant scientific fields.

In the Master's degree programme students acquire fundamental scientific knowledge and skills such as critically evaluating the scientific literature, debating scientific issues, and presenting research findings in a clear, critical and stimulating manner. They also learn how to judge and appreciate scientific quality. It is considered to be very important that the Master students participate in the academic community of the GUIDE Graduate School and experience being a scientist in the "real" world. The programme ensures that students participate in research projects in different research groups.

All teachers are involved in academic research as senior scientists and supervisors of PhD students; these teachers are also the potential future employers of the Top Master students. Since these teachers participate in the different committees of the programme, the programme is tuned to the requirements of the field. The teachers are selected based on their scientific and teaching skills.

**Assessment**

Partly due to the small scale of the course (small cohorts), there is a well-coordinated master-apprentice relationship. The course is clearly research oriented. The aim is to allow students who successfully complete the course to continue on to a doctoral programme within GUIDE.

One point of attention is the current theory forming in related disciplines.

*Master's degree course Medical and Pharmaceutical Drug Innovation:* the assessment by the Committee is good.

**F5: Relationship between aims and objectives and contents of the programme**

- The course contents adequately reflect the final qualifications, both with respect to the level and orientation, and with respect to domain-specific requirements.
- The final qualifications have been translated adequately into learning targets for the programme or its components.
- The contents of the programme offer students the opportunity to obtain the final qualifications that have been formulated.

**Description***Table 4: The relation between learning outcomes and the different modules*

<b>Learning outcomes of the MPDI Master's degree pro-</b>	<b>MPDI modules</b>
a. Knowledge of Cardiovascular diseases, Oncology, Liver, Intestinal and Metabolic Diseases, Kidney Diseases, Lung diseases, Inflammation, Transplantation, and Immune Disorders	Top Class I; Research Projects 1 & 2, Capita
b. Knowledge and understanding of fundamental concepts of cell cycle regulation, cell death and survival pathways, cellular signalling, immunology, macromolecule trafficking, membrane and organelle function, and biology	Top Class I, Research Projects 1 & 2, Capita
c. Advanced knowledge on important modern techniques such as macromolecule separation and analysis, genomics & proteomics, bioinformatics, gene transfer, genetics, and molecular imaging	Top Class II, Research Projects 1 & 2, Capita
d. Knowledge of research evaluation methods, patent application, and grant systems	Top Class III (A+B), Top Class I, Research proposal
e. The capacity to apply and integrate knowledge and know-how in the fields of medicine, medical biology and drug research in order to design research and solve complex biomedical problems	Research Projects 1 & 2, Capita
f. An ability to conduct scientific research in areas of medical and pharmaceutical drug innovation that are relevant to the advancement of knowledge and insights into fundamental aspects and applied aspects of life and disease: <ul style="list-style-type: none"> <li>• An ability to design and execute experiments, and interpret data, addressing problems in medical and pharmaceutical research</li> <li>• An ability to translate a clinical or health-relevant problem or question into a rationally designed experiment to meet desired needs.</li> <li>• An ability to critically judge and evaluate existing knowledge and insights</li> </ul>	Research projects 1 & 2, Capita
g. An awareness of potential societal and ethical implications of scientific research in medical and pharmaceutical drug innovation and, in this context, an ability to critically evaluate the effects of (his/her) research.	Top Class I, Colloquia
h. A capacity to communicate effectively in written and verbal form to other researchers in the field and to lay persons.	Top Class I, II,III; Colloquia, Research Papers, Research projects 1 & 2, Project Proposal
i. The ability to collaborate in a multidisciplinary setting, i.e. clinicians, biological and pharmaceutical researchers.	Research projects 1 & 2 Top Class I, II and III

<ul style="list-style-type: none"> <li>j. An ability to study international scientific research.</li> <li>k. To have an understanding of the requirements for a successful scientific career and the ability to judge whether the student fulfils these requirements.</li> <li>l. An ability to develop new concepts within the field of medical and pharmaceutical drug research</li> <li>m. Recognition of the need for, and an ability to engage in ongoing learning.</li> <li>n. Students are capable of designing their own PhD projects</li> </ul>	Entire programme (j-n)
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### Assessment

The matrix presented by the Department and the teaching materials examined by the Committee show that the final qualifications of the course are clearly translated into parts of the programme. In general, achievement of the goals is partly ensured because the teaching parallels the research domain of GUIDE. The teaching of certain diseases and clinical pictures stresses conceptual knowledge of them more than concrete factual knowledge.

The Committee feels that this is the correct approach to take.

*Master's degree course Medical and Pharmaceutical Drug Innovation:* the assessment by the Committee is satisfactory.

### F6: Coherence of the programme

Students follow a programme of study that is coherent in its contents.

### Description

The description of the programme shows that it is coherent in terms of the acquisition of knowledge, the development of scientific skills and the application of knowledge and skills. The concept of the programme is learning through active participation. The first modules are designed to introduce students to the research topics of the GUIDE Graduate School and to introduce them to the skills necessary to participate in the scientific community. The programme continues with the active participation in research. At the end of the two-year programme the students prepare their own PhD project. The final module is preceded by a training in writing project proposals.

### Assessment

The coherence of the programme is supported by a thoroughly elaborated didactic concept (e.g. master-apprentice relationship). The programme's design is logical and consistent concerning the development of knowledge and skills and the position of research and research projects.

The basis of the course does not entirely cover the broad field of "drug innovation"; see earlier remarks about this above.

*Master's degree course Medical and Pharmaceutical Drug Innovation:* the assessment by the Committee is satisfactory.

**F7: Study load**

The programme can be successfully completed within the set time, as certain programme-related factors that may be an impediment to study progress are removed as much as possible.

**Description**

The study load is used by the theme teachers to determine the number of lectures, assignments and the amount of practical work. One day of practical work is taken to be equivalent to 8 hours. One EC represents 28 hours.

During each module evaluation the students are interviewed about the module load, and asked whether the actual load was in accordance with the planned load. If the evaluation outcome is unfavourable, then the Study Programme Committee (SPC) can decide that the module must be changed. This was the case with the first module; after discussions with the SPC, the number of assignments in the programme was reduced, and the length of this module was extended.

At the start of each research project, a plan is made. This plan is checked regularly by the student and his/her supervisor and in discussions with the mentor (F16). During the programme the students have to meet a number of strict deadlines. Some students experience a heavy workload close to these deadlines and have the feeling they cannot handle this kind of pressure.

**Assessment**

If students do not meet the targets, catch-up assignments can be given. Resitting is not an option.

Any drop-outs are supervised in their transition to another, standard Master's programme. They seem to be successful there, which emphasises that they are among the better students. They can subsequently continue on to doctoral programmes.

The reason for dropping out often involves research. Students, especially foreign ones, are often uncertain about the potential success of a topic.

The supervision is intensive and would be unfeasible with large cohorts, but with the size of the current student cohort, the intensive supervision contributes to the feasibility of the programme.

Referring to the uncertainty students feel when conducting a research project, the mentors stated that the current batch of students finds it difficult to accept disappointing experimental results, because they feel that the results will negatively influence their assessment. This is particularly the case with foreign students.

All students need continuous feedback (positive and negative). This feedback should be given earlier in the programme than is now the case. At the start of the Master's course, each student should be assigned a mentor (see Facet 16 Student support and guidance, for a more detailed explanation).

The students indicated that they knew in advance that the course would be hard work and so they do not find that a problem. Stress to meet deadlines is deliberately included in the programme, to show the students what their future holds.

*Master's degree course Medical and Pharmaceutical Drug Innovation:* the assessment by the Committee is satisfactory.

**F8: Intake**

The structure and contents of the programme are in line with the qualifications of the students that embark on the degree course:

- Bachelor's degree at a University (WO): VWO (pre-university education), propaedeutic certificate from a University of Professional Education (HBO) or similar qualifications, as demonstrated in the admission process.
- Master's degree at a University (WO): bachelor's degree and possibly selection (on contents of the subject).

**Description**

Requirements for enrolling in the Master's degree curriculum are:

- a completed Bachelor's degree affiliated to the medical or pharmaceutical sciences;
- sufficient knowledge of the relevant sciences;
- sufficient knowledge of the English language; and
- a suitable attitude, motivation and talent to follow the Master's degree programme.

The students are properly informed about the programme requirements in advance. Students participating in the MPDI programme and alumni are involved in the counselling of prospective students.

The Examination Board acts as the Admissions Board and decides on the admission of students.

The selection of suitable students is difficult. It is hard to predict how students will handle the 'cultural' differences in the educational system (international students) and deal with the pressure of deadlines and very tight time constraints. These students are used to high grades and being in the top 5% of their class/year. To be surrounded by other talented and ambitious students is also something they have to get used to. Because of these aspects all students are assigned to a mentor, who monitors whether the students are able to meet the programme requirements and advises them during the programme. After one year the students receive an advice about whether or not to continue the Top Master's programme. All students enrolled in the second year of the programme who finish the degree programme are offered a PhD position within the GUIDE Graduate School.

The enrolment is small (5 – 10).

**Assessment**

The programme organisers stated in the self-evaluation report that they intend to recruit among the top 5% of students. The question is, to which group does this percentage apply?

The programme organisers indicated that the percentage applies to Dutch and foreign students. Selection is based on the list of grades (top 5% of their year), motivation, references and command of the English language (for foreigners).

In the Netherlands the focus is on the biomedical sciences domain (including the areas of overlap with the natural sciences). It is estimated that this group amounts to 1000 students. The top 5% would thus represent 50 students. The next aim is to have 50% of the intake from the Netherlands and 50% from abroad.

The experience of the past few years has shown that there is more interest from abroad than in the Netherlands. The successful candidates receive a grant. Only some of the applicants are actually admitted.

The programme organisers indicated that the target intake maximum is 15 to 20 students (in the self-evaluation report 10 to 15 was given as desirable).

It was noted that such a small-scale course is relatively expensive, but the professors' motivation to supervise these top students (and future doctoral candidates) is very high.

Although for PR reasons it probably would have been better to have two intake dates, the programme organisers decided on just one intake date also because the selection process is so labour-intensive.

With reference to the extensive study programme, the Committee asked MPDI students and alumni whether they knew about the requirements beforehand and whether the procedure was clear, that the top 5% of students formed the target group. This seems to have been the case. It was noted that Dutch students in particular found the top 5% criterion to be rather worrying. On the other hand, it was also considered a challenge. It was important to have the motivation and willingness to work hard for two years.

Three of the six people present had been awarded a BSc cum laude.

It was noted that the selection interview is rather technical and is strongly oriented towards motivation.

The nature of education in the country of origin sometimes differs considerably from the Dutch situation. There, the focus lies mainly on the transfer of knowledge.

The Committee ascertained that the practical skills of foreign students in particular are sometimes deficient. These deficiencies are often noticed very late. The Review Committee recommends testing them at an early stage.

The Programme Committee stated that in the past only one incident of deficient practical skills had occurred. In general, it can be said that the foreign students (BSc) possess fewer practical skills. This is not such a problem as it can be corrected in the course, but more attention should be paid to this aspect in the admissions procedure.

The Programme Director has said that he will work on this suggestion. He will pay attention to the students' practical skills at an earlier stage. Between the Top Class 1 and Top Class 2 modules, a test will be given, and any deficiencies spotted can be corrected in the Top Class 2.

When asked about their experiences with the intake selection and the selection of students after the first year, the Examination Committee indicated that it is increasingly satisfied. With the aim of trying to select the top 5% of students, the programme wants to appear to be something special. One element in the assessment is the possibility of becoming "professor" in the future. The Examination Committee realises that Dutch students sometimes find this idea difficult to accept because for many, striving for excellence has received a negative image.

The Examination Committee stated that the selection of foreign students has become stricter.

*Master's degree course Medical and Pharmaceutical Drug Innovation:* the assessment by the Committee is satisfactory.

**F9: Duration**

The degree course complies with formal requirements regarding the size of the curriculum:

- Bachelor of a University (WO): 180 credits as a rule.
- Master of a University (WO): a minimum of 60 credits, dependent on the relevant degree course.

**Description**

The programme of the Master's degree course Medical and Pharmaceutical Drug Innovation comprises 120 EC and complies with the formal requirements with respect to the size of the programme.

## Assessment

*Master's degree course Medical and Pharmaceutical Drug Innovation:* the assessment by the Committee is satisfactory.

### **F10: Coordination of structure and contents of the degree**

- The didactic concepts are in line with the aims and objectives.
- The teaching methods correspond to the didactic concept.

## Description

The concept of the MPDI Master's programme is learning through active participation. The programme is designed to provide training which develops specific capabilities and fosters the acquisition of knowledge necessary for this field of study. Because the numbers of students in the modules are kept low, there is always a lot of interaction between the teaching staff and the students. From the start of the programme, students are expected to participate in discussions with the lecturers and to prepare (oral) presentations. All assignments find their origin in the day-to-day scientific practice. For some assignments students have to co-operate with colleagues, train their teamwork (and social) skills; other tasks are individually assigned. The major part of the programme is learning through active participation in two research groups. In this part laboratory skills are also trained.

## Assessment

Elsewhere in this report, the Committee already stated that the didactic forms employed are characterised by a smoothly working master-apprentice relationship and participation in the relevant industry. This offers the student an unique context in which to become a researcher, although the Committee feels that the research projects are quite heterogeneous, in terms of the scope, quality, evaluation, etc. There are no generally applicable guidelines.

*Master's degree course Medical and Pharmaceutical Drug Innovation:* the assessment by the Committee is good.

### **F11: Assessments and examinations**

The system of assessments and examinations provides an effective indication whether the students have reached the learning targets of the course programme or its components.

## Description

The method of assessing a module is related to the nature of the module.

In Top Class I there are two different assessments. The first assessment is a knowledge test on predefined chapters of the book *Molecular Biology of the Cell* (Alberts et al). The second test concerns a written editorial and oral presentation thereof on a subject/article selected by the teachers. The student receives his/her grade accompanied by feedback in a talk with the coordinator of this module.

In Top Class II, the grading is based on a final assessment of a research proposal on a subject related to the editorial presented in the first module and using the technology presented during this second module. The student gets his/her mark with feedback on the proposal in writing. In the third module, the student presents an analysis of the research and teaching qualities of three of the potential supervisors interviewed. Grading is based on the quality of the analysis and priority scores made. Students receive their mark in a conversation with the teachers.

The assessment of the research projects is carried out by the supervisor of the project guided by the mentor, using a checklist designed by the Board of Examiners. Students have regular meetings (at least once every three months) with their mentor and supervisor about their progress. The assessment of the research project includes the evaluation of research and communication skills.

The assessment of the colloquia is done by all mentors, supervisors and teachers of the various modules. Again the student receives his/her grade in a talk accompanied by a recommendation to continue this programme or transfer to another Master's programme. This recommendation is based on the grades and the discussions with the mentor and research supervisor.

The capita selecta are assessed by the supervisors in collaboration with a member of the Board of Examiners using a predefined assessment form.

Finally, the project proposals in module three (top class IIIB) are evaluated by a committee consisting of experts from all divisions within GUIDE. Besides providing comments on the project and grading the students, this committee also judges which of the projects will be nominated for funding by GUIDE as a PhD project.

### **Assessment**

The MPDI students and alumni ascertained that lower grades were given in the Top Master's programme than in standard Master's programme. The difference amounted to 1.5 points in their opinion. Those present unanimously felt that this must change, particularly regarding the designation cum laude.

A direct consequence of the lower grades is that if the student transfers after a year to another Master's course, an incorrect negative image could arise that not only makes the transfer difficult, but also leads to a lower final grading than would be fair.

The Programme Director noted that students who were not accepted for the second year were not poor students. They did not belong to the absolute top however, and sometimes did not have a 'helicopter view'. Thus, they were not eligible for a permanent position (now or later) as researcher. These rejected students transferred without difficulty to standard Master's programmes, like pharmaceutical sciences, and are doing well there. There they may also go on to doctoral programmes; a single example of this was cited. The Committee remarked that the students did not agree with the evaluation method in the Top Master, which produced grades that were on average 1.5 points lower than in standard Master's programmes. When leaving after one year, an unnecessarily negative image was created, which worked against the students. The Programme Director accepted that this method is used, but the concern was being discussed in the Examination Committee and would be rectified. Unfortunately, nothing can be done for those who have already graduated or left the course for another one.

The Committee argues particularly for making the guidelines for assessment of parts of the research projects more uniform, such as design and conduct, and evaluation. It is recommended to include an independent expert for the evaluation, in addition to the supervisor.

The Programme Committee stated that evaluation is currently done first by the supervisor. Then the results of the research project are presented by the student in a colloquium (open to the public). This presentation is primarily attended by the members of the Examination Committee, who can then pronounce an assessment.

Nevertheless, the Programme Committee welcomed the suggestion to involve an independent assessor for the research projects. The Programme Committee plans to put this into effect.

The Examination Committee stated that the proportion of students leaving after one year was 50%. The Dutch students are easy to evaluate. This is more difficult with the foreign students,

particularly with reference to cultural differences and knowledge of English. In addition, the range of intake is broad (biochemistry, pharmacy, molecular biology, etc.). Foreign students often have less practical experience than Dutch students.

The Committee indicated that the transfer rate to the second year must be raised from the current 50% to 75% or more. The Committee also ascertained from the discussion about the transfer percentage that rejected students go on to study successfully in other, standard Master's programmes, so the percentage of drop-outs from the Master's level is actually very low.

The Committee recalled the discussion about the difference in the level assessment between the Top Master and standard Masters and the department's agreement to normalise these aspects.

*Master's degree course Medical and Pharmaceutical Drug Innovation:* the assessment by the Committee is satisfactory.

#### **Assessment of the subject "Programme":**

The Committee concludes on the basis of its assessments of the relevant facets that the assessment for the subject "Programme" for the Master's degree course Medical and Pharmaceutical Drug Innovation is satisfactory.

### **1.2.3. Deployment of staff**

#### **F12: Requirements for University**

The degree course meets the following criteria for the deployment of staff for a degree course at a University (WO):

Teaching is largely provided by researchers who contribute to the development of the subject area.

#### **Description**

All staff members involved in the MPDI Top Master's programme are engaged in research in the topics they teach.

Staff members participating in the MPDI programme ("Top teachers") must fulfil quality criteria defined as:

- a. active participants in GUIDE divisions receiving an average score of 4 or higher in the latest research visitation according to the SEP;
- b. active researchers with a more than five-year track record on a clearly identified research theme on which they have regular publications in highly ranked journals (top 25%) of relevant field;
- c. teaching staff involved in the MPDI programme need to be tenured staff at the level of assistant-professor, associate professor or full professor;
- d. staff members of GUIDE that have successfully guided PhD students as "promotor" or "co-promotor".

#### **Assessment**

The research conducted provides the various themes taught and the professors who teach them.

The teaching staff's research is considered high quality.

*Master's degree course Medical and Pharmaceutical Drug Innovation: the assessment by the Committee is good.*

**F13: Quantity of staff**

The staff levels are sufficient to ensure that the course is provided to the required standards.

**Description**

*Table 5: Number of teaching staff involved in the top Master's programme MPDI*

Category	Number	Fte
Full professor	25 (4 female)	0.35
Associate professor	20 (3 female)	0.45
Assistant professor	10 (2 female)	0.1
<b>Total</b>	<b>55 (9 female)</b>	<b>0.85</b>

**Assessment**

The Committee ascertained that great investments have been made in the programme. There are enough committed staff members available to realise the intensive teaching in the “master-apprentice relationship”.

*Master's degree course Medical and Pharmaceutical Drug Innovation: the assessment by the Committee is good.*

**F14: Quality of staff**

The staff is sufficiently qualified to ensure that the aims regards contents, didactics and organization of the course programme are achieved.

**Description**

It is essential that members of the scientific staff have excellent didactic skills. Since September 1997, an assessment of the didactic qualities of candidate staff members is an explicit aspect in the recruitment process.

Both the Faculty of Medical Sciences and the Faculty of Mathematics and Natural Sciences have introduced a tenure-track system. Acquiring didactic skills and assessing conformance to pre-established levels of didactic skills are an integral part of this tenure-track system.

Newly appointed staff members are required to attend the course Basic teaching skills, offered by the University's Educational Centre (UOCG). If needed, a further plan for professionalisation is drawn up. Results of these courses are kept in the staff member's personnel file, and are reviewed during the annual staff assessment talks.

Since the MPDI Top Master's programme trains students for a career in scientific research, the teaching staff should be involved in research and must fulfil the quality criteria as defined. The teaching consists of teaching individual students and small groups. Most of the teachers are also involved in the training of medical doctors as tutors/mentors, and these staff members have been trained to coach small groups. The quality of the teaching staff is

evaluated after each module by the students. The teaching staff receives feedback through module co-ordinators.

### **Assessment**

The teaching expertise of the professors is monitored during the tough selection process. The Programme Committee provides feedback about the quality of the teaching. As the cohorts are so small, feedback occurs quickly.

The professors' fluency in English is good. Selected professors have generally spent a lot of time working abroad.

The MPDI students and alumni indicated that in the first half-year, an oral presentation has to be given each week in English. The professors provide constructive feedback on oral and written presentations. The professors speak fluent English according to the students.

*Master's degree course Medical and Pharmaceutical Drug Innovation:* the assessment by the Committee is good

#### **Assessment of the subject "Deployment of staff":**

The Committee concludes on the basis of its assessments of the relevant facets that the assessment for the subject "Deployment of staff" for the Master's degree course Medical and Pharmaceutical Drug Innovation is satisfactory.

### **1.2.4. Facilities and provisions**

#### **F15: Material facilities**

The accommodation and material facilities are sufficient to implement the programme.

#### **Description**

The multidisciplinary nature of MPDI means that the programme employs facilities from both FMNS and FMS/UMCG. A substantial part of the Master's teaching takes part in the laboratories and conference rooms of the research groups involved in the programmes. These laboratories have state-of-the-art laboratory facilities and a full range of highly advanced core facilities, including a Center for Medical Biomics (proteomics, genomics, genotyping), confocal and electron-microscopy imaging facilities (UMIC). The research facilities of the GUIDE/UMCG graduate school were judged "outstanding" in the latest evaluation procedure. More information on these facilities can be obtained at <http://www.graduateschoolguide.nl/html/facilities/about.htm>.

Additional e-learning support is available at university level through the digital learning environment, Nestor, which is based on the advanced Blackboard learning system.

All students receive a RUG account which provides basic memory space (currently about 50 MB) and connections to e-mail, Internet and Nestor, with a link to the university library system. The library of the University of Groningen has licences for over 20,000 electronic journals.

## Assessment

During a tour the Committee viewed the material facilities and judged them to be adequate.

*Master's degree course Medical and Pharmaceutical Drug Innovation:* the assessment by the Committee is satisfactory.

### F16: Student support and guidance

- The student support and guidance, as well as the information given to students are adequate for the purpose of students' progress.
- The student support and guidance, as well as the information given to students meet the requirements of the students.

## Description

At the start of the programme the students receive general information from the Programme Coordinator. Reference is made at that time to the wealth of facilities at the faculty and institute levels.

During the first part of the programme, the students can consult the Programme Coordinator and the chairperson of the Programme Committee for advice.

After this period, the Examination Committee appoints mentors. Each student is assigned a mentor for the rest of the course. The mentor is responsible for the evaluation of the student's progress, skills and limitations. There is regular contact between the mentor and the student. At the end of each year, the mentor reports on the student's development to the Examination Committee.

The results of examinations and tests are generally announced to the student within ten working days and discussed with him/her.

Student members of the Programme Committee provide effective feedback about any problems.

## Assessment

The MPDI students pointed out that they meet with the mentor twice, in the middle and at the end of a research project. Mentor and supervisor discuss the conduct of a project and suggest possible improvements. At the end of the project the results are discussed.

The mentor acts as an intermediary, because the supervisor focuses on the research.

There is another supervisor for the second project, while the mentor remains the same.

Students often have to wait a long time to hear about whether they have been admitted to the second year. The research project plays an important role in this. The students would prefer to receive feedback from the mentor sooner and have more contact with him/her.

A mentor is a confidential counsellor, who supervises at most three students. The mentor consults with the assistant/senior lecturers/professors about the students' assessments when carrying out projects. Students are under the impression that the project assessment and the subsequent evaluation with the mentor are decisive in the decision about whether to admit the student to the second year. This impression is based on a misunderstanding according to the Programme Committee.

The Committee feels that feedback (positive as well as negative) should be given by the mentor to the student more often. Also, the mentor should be appointed sooner.

The mentors noted that the first phase of the programme is tightly structured. The presence of a mentor is particularly important in the individual part of the course, particularly for foreign students. Feedback in the more collective part of the programme is done by the professors.

In the concluding discussion held by the Committee with the Faculty Board and the department management, the Committee stated that mentoring is a good system. The question is why this system is initiated only after half a year has passed. The Committee ascertained that providing feedback to the students earlier is essential. This applies equally to positive feedback, especially where the general rule now applies, “no news is good news”.

The Programme Committee agreed with the remarks made and has promised to start the mentoring sooner.

The Programme Director stated that second-year foreign students are being used to assist first-year foreign students (buddy system). This system will be augmented further.

*Master's degree course Medical and Pharmaceutical Drug Innovation:* the assessment by the Committee is satisfactory.

**Assessment of the subject “Facilities and provisions”:**

The Committee concludes on the basis of its assessments of the relevant facets that the assessment for the subject “Facilities and provisions” for the Master’s degree course Medical and Pharmaceutical Drug Innovation is satisfactory.

### 1.2.5. Internal quality assurance

**F17: Evaluation of results**

The degree course is subject to a periodic review, which is partly based on verifiable targets.

#### **Description**

In the MPDI programme all modules are evaluated individually. Because the number of students is small, all students are invited to participate in group discussions on the various modules. Recently, the SPC has developed a questionnaire for the evaluation of the research projects. The results are discussed in the SPC, which proposes any action to be taken, if deemed applicable (see previous section).

The marks for internship and thesis work are based on the evaluation of the project supervisor in co-operation with the mentor. The mark for the capita selecta is given by the supervisor of the capita in agreement with a member of the Board of Examiners. The colloquia are judged by the staff attending the colloquia. The final research proposal is graded by representatives of all divisions of the GUIDE graduate school.

#### **Assessment**

The MPDI students in the Programme Committee do not receive any training or go on a course for their activities in the committee. Just like in the entire programme, it is a question of “learn-

ing by doing”. Each module is evaluated and discussed. If necessary, changes are proposed. One example of this is the practical skills module in Top Class 2, where the professor was replaced. If a professor is not fluent in English, the Programme Coordinator must be contacted. In general, there are few complaints. Small problems are discussed directly with those persons involved. Larger problems are considered in the Programme Committee first. One example of this is the duration of Top Class I.

The Committee ascertained that in a number of cases the focus lies less on verifiable targets than on more implicit targets. One example of this is the success rate. The Committee recommends that the transfer rate to the second year be increased from the current 50% to 75% or more (see also under F11).

*Master's degree course Medical and Pharmaceutical Drug Innovation:* the assessment by the Committee is satisfactory.

**F18: Measures to effect improvement**

The results of this evaluation form the basis for measures that can be demonstrated to improve the course and that will contribute to reaching the targets.

**Description**

Both the conclusions from the evaluation of the results and new initiatives from students and staff members can lead to modification of the programme, either in terms of content (topics studied) or educational method used. The procedure starts with a discussion in the SPC. The Master's degree programme has been running for three years now, and adjustments have taken place: the duration of the first module (Top Class I) was adjusted, the number of assignments was reduced because of the workload experienced. The content of the second module was slightly modified as well as the assignment. Feedback to staff members starts with a discussion of the results of the evaluation with the co-ordinators of the modules within the Study Programme Committee, and will be followed – if necessary – by feedback from the Director of Education. The Director of Education also plays a role in the evaluation of the staff.

**Assessment**

The small scale of the programme allows direct and rapid feedback to be given. The organisation should pick up these signals, however. The Committee feels, for instance, that the organisation (including the mentors) should give more positive feedback.

*Master's degree course Medical and Pharmaceutical Drug Innovation:* the assessment by the Committee is satisfactory.

**F19: Involvement of staff, students, alumni and the professional field**

Staff, students, alumni and the professional field in which graduates of the course are to be employed are actively involved in the internal quality assurance.

**Description**

Staff and students play an essential part in the Study Programme Committee (SPC), the formal advisory committee (WHW art. 9.18) that checks study progress, identifies existing and potential problems, and can propose modifications of the curriculum.

At present the number of alumni is limited. The graduates are presently working at the University of Groningen as PhD students.

The professional field (i.e. senior researchers) has been involved in this programme from the beginning. Senior research staff is concerned with all elements of the programme.

#### **Assessment**

The programme is new, which means that the alumni are mostly still working on their doctoral research and are focused on that. They have not yet considered a professional working career.

The Committee suggests establishing an external advisory committee.

*Master's degree course Medical and Pharmaceutical Drug Innovation:* the assessment by the Committee is satisfactory.

#### **Assessment of the subject “Internal quality assurance”:**

The Committee concludes on the basis of its assessments of the relevant facets that the assessment for the subject “Internal quality assurance” for the Master’s degree course Medical and Pharmaceutical Drug Innovation is satisfactory.

### **1.2.6. Results**

#### **F20: Level that has been achieved**

The final qualifications that have been achieved correspond to the targets set for the final qualifications in level, orientation and domain-specific requirements.

#### **Description**

A detailed list of research projects and grades is presented in the self-evaluation report. As can be seen from their titles, the research projects aptly match the specific goals of the Master’s degree programme. Up until now, the final qualifications of the students correspond well with the intended final qualifications. This is reflected in the marks for the final research project. The number of diplomas granted is limited because the programme is still in its initial phase.

#### **Assessment**

The Committee feels that the final reports are of good quality. It has, however, some critical comments to make regarding the rather heterogeneous character of research projects and their evaluation (two external assessors and using score forms; see also under F10).

The Committee has ascertained that the alumni are satisfied with the level of competence achieved.

The Committee feels that the MPDI is an excellent programme. It noted in conclusion, however, that ‘appearance can be deceiving’: the accent lies more on exploring the causes of disease processes and finding new ‘drug targets’, while ‘drug discovery’ in the broadest sense is not considered as much. As a possible alternative, the course could be renamed ‘molecular medicine’.

The Dean of the Faculty of Medical Sciences noted that the MPDI programme is a reflection of the GUIDE graduate school, in which the pharmaceutical and medical sciences participate, with respective weighting factors of one-third and two-thirds. Partly for this reason, but also in general, the Faculty is not in favour of changing the name.

*Master's degree course Medical and Pharmaceutical Drug Innovation:* the assessment by the Committee is satisfactory.

**F21: Success rates**

To measure the success rates, target figures have been set in comparison with relevant other degree courses. The success rates meet these targets.

**Description**

The number of students admitted to the programme is not at the maximally allowed level i.e. fifteen students in 2003, and ten in 2004 and 2005. Especially the number of Dutch students applying is low; this might be due to the fact that students have to get used to the Bachelor-Master system and the possibility of transferring to a different Master at another university. It is expected that the number of Dutch applications will increase in the coming years. The PR activities to recruit these students have been intensified, both locally, nationally and internationally, and involve nationwide advertisement in popular media and intensified use of web-based PR.

Two students finished the Master's degree curriculum within the planned time. However, after one year students who do not belong to the top 10% of all Master students are advised to change to another Master's programme. So far, all of the students concerned have followed this recommendation. Some students decided in an early stage to withdraw from this programme because of the study load.

*Table 6: Granted Master's degrees in relation to initial admissions*

Cohort	Enrolment			Foreign	Positive recommendation (after year 1)	Granted degrees
	Total	F	M			
2003 - 2004	4	4	0	0	2	2
2004 - 2005	9	5	4	6	4	-
2005 - 2006	5	4	1	3	-	-
2006 - 2007	8	7	1	7	-	-

The graduated students appear to perform well in subsequent employment. The goal of the programme to train talented students for career in research is achieved. At present, the limited numbers (initial phase) prohibit the drawing of far-reaching conclusions.

**Assessment**

The Committee ascertained that the implicit target of a success rate of 75% will not be reached. The Committee does not consider this a disaster because the drop-outs transfer successfully elsewhere. The quality of the programme and of the graduates must remain the objective and not the desired success rate.

Given the experience with the students, a tightening of the selection process should be considered.

*Master's degree course Medical and Pharmaceutical Drug Innovation*: the assessment by the Committee is satisfactory.

**Assessment of the subject “Results”:**

The Committee concludes on the basis of its assessments of the relevant facets that the assessment for the subject “Results” for the Master’s degree course Medical and Pharmaceutical Drug Innovation is satisfactory.

## Overview of the assessment by the Committee

### Master's degree course Medical and Pharmaceutical Drug Innovation:

Onderwerp	Oordeel	Facet	Oordeel
1. Aims and objectives of the degree course	Satisfactory	1. Domain-specific requirements	Satisfactory
		2. Level	Good
		3. Orientation	Good
2. Programme	Satisfactory	4. Requirements	Good
		5. Relationship between aims and objectives and contents of the programme	Satisfactory
		6. Coherence of the programme	Satisfactory
		7. Study load	Satisfactory
		8. Intake	Satisfactory
		9. Duration	Satisfactory
		10. Coordination of structure and contents of the degree	Good
		11. Assessments and examinations	Satisfactory
3. Deployment of staff	Satisfactory	12. Requirements for University	Good
		13. Quantity of staff	Good
		14. Quality of staff	Good
4. Facilities and provisions	Satisfactory	15. Material facilities	Satisfactory
		16. Student support and guidance	Satisfactory
5. Internal quality assurance	Satisfactory	17. Evaluation of results	Satisfactory
		18. Measures to effect improvement	Satisfactory
		19. Involvement of staff, students, alumni and the professional field	Satisfactory
6. Results	Satisfactory	20. Level that has been achieved	Satisfactory
		21. Results of teaching	Satisfactory

### Overall assessment by the committee of the Master's degree course Medical and Pharmaceutical Drug Innovation

The Committee concludes, on the basis of its assessments of the subjects and facets from the assessment framework, that the *Master's degree course Medical and Pharmaceutical Drug Innovation* fulfils the quality requirements which are a condition for accreditation.

# APPENDICES



## **Appendix A: The Committee Medical and Pharmaceutical Drug Innovation**

### **Prof. F.G.M. (Frans) Russel (1957)**

Radboud University Nijmegen (RUN)

Faculty/department: RUN Medical Centre, Dept. Pharmacology and Toxicology

Frans Russel is Professor of Molecular Pharmacology and Toxicology at the Radboud University Nijmegen (RUN) Medical Centre and the Faculty of Science. He heads the Molecular Pharmacology and Toxicology Section of the Nijmegen Centre for Molecular Life Sciences and is scientific director of the international MSc programme in Biomedical Sciences. He received a Master's degree in Pharmaceutical Sciences (1981) and Pharm.D. (1983) at the University of Groningen. In 1988 he obtained his PhD in Pharmacology at the RUN for his studies on renal drug transport. He was appointed associate professor in 1991 and full professor in 2000. His research interests range from molecular to clinical pharmacology and toxicology, with special reference to the role of transport processes in drug efficacy and safety. He has been elected a Fellow of the American Association of Pharmaceutical Scientists (2005) for his accomplishments in the area of pharmacokinetics and drug transport. In addition, he is a board-certified clinical pharmacologist and certified supervisor of the graduate and postdoctoral training of pharmacologists and toxicologists. He is Secretary of the Board of the Dutch Foundation for Pharmacological Research, and in 2007 he will be the next President of the Dutch Society of Toxicology. Since 2005 Frans Russel has held a position as member of the Executive Board of the Dutch Top Institute Pharma, which aims to achieve leadership in research and education in areas critical for the international competitiveness of the pharmaceutical industry in the Netherlands. He served as a member of the site visit committee of the academic degree programmes in pharmaceutical sciences in the Netherlands and of many national and international research review panels.

### **Prof. M. (Marius) J. Giphart (1942)**

University of Leiden

Faculty/department: General IHB, Immunohaematology and Blood Transfusion, Division 2, Faculty of Medicine

Marius Giphart (1942) studied chemistry and biochemistry at the University of Leiden. He subsequently worked as a research assistant in the Immunohaematology and Blood Bank Department of the Academic Hospital Leiden (AZL); the study was partially conducted at Harvard University in Cambridge (USA). In 1979 he was awarded a doctoral degree under the supervision of Prof. J.J. van Rood. He pursued a scientific career in the AZL with his own areas of research and national and international collaboration. In 1987-1992 he was professor with an endowed chair at Wageningen University. From 1984 he has been closely involved in establishing and arranging the four-year course in Biomedical Sciences in Leiden, a course that he has run since 1992. The introduction of a five-year curriculum followed somewhat later by the Bachelor-Master structure was accomplished under his guidance. In the past 6 years there has been an intracurricular semester exchange with the Karolinska Institutet (Stockholm). In 1992-1997 he was a member of the university council, managing the education and research portfolio. Along with membership of several scientific organisations, he was a member of site visit committees in Belgium and the Netherlands. Since 2001 he has been Professor of Biomedical Sciences in Leiden University Medical Centre.

**Prof. D.W. (Dick) Slaaf (1945)**

University of Maastricht, Eindhoven University of Technology  
Faculty/department: Medicine/ Biophysics, Biomedical Technology

Dick Slaaf studied Physics at the University of Utrecht (UU). He was awarded a PhD at UU in 1977 and became a certified physiologist in 1982.

He has been Professor of Physics of the Microcirculation at the University of Maastricht, since 1997, and Professor of Vital Imaging and Microscopy, Eindhoven University of Technology, since 2003.

He has held a range of administrative positions including: Associate Dean of Research, Faculty of Medicine, University of Maastricht, September 1996 – September 1999; Vice-Dean, Department of Biomedical Engineering, Eindhoven University of Technology (TUE) in collaboration with University of Maastricht, 1999-2003; and (vice) Chair Academic Division EAMBES (European Alliance of Medical Biology and Sciences), (2003-2004) 2005-2006. Since 2007 he is Secretary-General of EAMBES.

Research activities include: Clinical microcirculation (skeletal muscle perfusion regulation, methodology, design measurement systems, microscopy; platelet-vessel wall interactions, leukocyte adhesion, angiogenesis), nonlinear analysis of vasomotion patterns and atherosclerosis (two-photon microscopy)

Educational activities include: *University of Maastricht*: Case coordinator, Tutor, Mentor, Examiner of skills labs, Practicals Microscopy; *Biomedical Engineering, TUE*: Case coordinator, Tutor, Lecturer on Modern Techniques in Microscopy, Supervisor of Master's Theses, Supervisor of projects (multidisciplinary)

Dick Slaaf has been the promotor of 19 PhD theses. He was co-author of more than 150 refereed international publications, more than 60 proceedings, books and book chapters, and more than 400 abstracts. He has ample experience in assessments: co-organizer of the EAMBES/IFMBE project BIOMEDEA, which aims at harmonization of Biomedical Engineering education and training and at accreditation requirements of BME programmes in Europe – representative of EAMBES on these topics at the 2<sup>nd</sup> Whitaker Summit on BME Education in 2005; reviewer of the Center of Excellence in Microcirculation Research in Louisville (KY), USA; as chair of the International Project Advisory Board (IPAC), performed an on-site review of the Common Asian European Curriculum on Biomedical Engineering (CASECUBE) and wrote the evaluation report; coordinator of the accreditation committee of BME at Eindhoven University of Technology and author of the self-evaluation report of that programme; and supervisor of the quality control of BME in Eindhoven.

**Prof. R. (Rob) Leurs (1964)**

VU University Amsterdam (*Vrije Universiteit Amsterdam*)  
Faculty/department: Faculty of Science, Pharm./Med.Chem

Rob Leurs earned his Master in Medicinal Chemistry (1986) and PhD in Molecular Pharmacology (1991) at the VU University Amsterdam, the Netherlands. Dr. Leurs received his postdoctoral training under Jean-Charles Schwartz at the Institute National de la Sante et Recherche Medical (INSERM), U109-Neurobiology and Pharmacology. He was involved in the cloning of the histamine H1 and H2 receptor and discovered the previously unknown serotonin 5HT6 and 5HT7 receptors. He received a five-year fellowship at the Royal Netherlands Academy of Arts and Sciences and introduced the field of molecular biology in the area of medicinal chemistry of histamine receptors. Rob Leurs has received a NWO Pioneer grant (2001), the Galenus Research Prize (1997), the Organon Prize in Pharmacology (1999) and a

Pfizer Academic Award (2001). In 2000 he was appointed Professor of Medicinal Chemistry at the VU University Amsterdam. From 2003-2005 he was one of the two scientific directors of the Leiden/Amsterdam Center for Drug Research (LACDR). Since 2005 he has been a member of the Executive Board of the Dutch Topinstitute Pharma, which was founded in 2005 with a start-up grant of €260 million. Currently, he is Director of the VU Drug Discovery Center and Vice-Dean of the Faculty of Science. Rob Leurs serves or has served on many international committees, assessing candidates for chairs in the areas of pharmacology, chemical biology, medicinal chemistry and drug discovery.

**B.D. (Daniël) Lam (1983), student member**

Career

1996 – 2002 vwo Johannes Fontanus College Barneveld (NT&NG)

2002 – 2005 BSc in Molecular Life Sciences, Radboud University Nijmegen

2005 – present MSc in Molecular Life Sciences, Radboud University Nijmegen  
(biochemistry & bioinformatics)

Educational and teaching experience: member of the pupils' counsel and representative advisory body (LR and MR) during secondary education (vwo); member of the Education Committee (OC) for Molecular Life Sciences – in this committee, quality aspects of the courses of the Bachelor's and Master's programme were discussed and in addition, visits and accreditation had to be prepared; teacher's assistant during the courses: 'Introduction to Molecular Life Sciences' (1st year), 'Introduction to Bioinformatics' (2nd year), 'Applied Bioinformatics' (3rd year) and 'Data Analysis' (2nd year).

Interests are quantitative cell biology, biochemical networks, metabolomics, mathematical models, signal transduction, systems biology; student teaching, quality of education.



## Appendix B: Programme for the site visit LST & MPDI (Rijksuniversiteit Groningen)

**Wednesday, 14 March 2007**

The Committee meets in the Petrus Camperzaal, A Deusinglaan 1, Groningen.

- 09.00 Preparatory meeting of the site visit committee
- 11.45 Meeting with the Faculty Board, the Curriculum Directors, chairpersons of the Education Committees, Programme Coordinators, etc.  
(joint LST & MPDI)  
*Prof. L. F.M.H. de Leij (FB FMW)*  
*Prof. J.M. Koolhaas (FB FWN)*  
*Prof. J.P. Franke (dir LW)*  
*Prof. D. Hoekstra*  
*Prof. A.J. Moshage (dir MPDI)*  
*Prof. H.H. Kampinga (chair OC MPDI)*  
*Prof. P.J.M. van Haastert (chair OC LST)*  
*Dr. A.M. van Trigt (programme coordinator MPDI)*  
*Dr. P.F van Hutten (programme coordinator LST)*
- 12.30 Lunch (in meeting room; only members of the site visit committee)
- 13.15 Meeting with MPDI students and alumni  
(conducted in English)  
*Evgenia Verovskaya (OC)*  
*Cigdem Ercan (OC)*  
*Elsa Berends (OC)*  
Other students:  
*Vindyallatta. Dindore*  
*Annemieke v.d Goot*  
Alumni:  
*Alice Gerrits*  
*Anil Rana*  
*Elise Langenkamp*
- 14.00 Meeting with MPDI teachers (members of the Education Committee and other professors).  
*Prof. H.H. Kampinga (OC)*  
*Prof. H.J. Haisma (OC)*  
*Prof. K. Poelstra or Prof. G. Groothuis*  
*Prof. R.H. Henning (professor)*  
*Prof. A.J. Moshage (professor)*  
*Prof. J.M. van Dijl (professor)*  
*Dr. E. Nollen (professor)*
- 14.45 Consultation/ Parallel tour (infrastructure, facilities, etc.)
- 15.45 Coffee and tea break

- 16.00 Meeting with the Examination Committees (joint LST & MPDI)  
 Total: eight people  
*Prof. A.J. Moshage*  
*Prof. H.J. Haisma*  
*Dr. A.M. van Trigt*  
*Prof. D. Hoekstra*  
*Prof. P.J.M. van Haastert*  
*Dr. P.F. van Hutten*
- 16.30 Review by the Committee / detailed study of material
- 17.00 Get-together/social (De Koepel, Fonteinstraat 3, 4<sup>th</sup> floor, turn right after the swing doors)
- Members of the site visit committee and QANU representative(s)
  - Board of Governors, University of Groningen, *Prof. F. Zwarts*
  - Faculty of Mathematics and Natural Sciences – FWN – *Prof. J.M. Koolhaas*
  - Educational Institute of Life Sciences, *Prof. J.P. Franke, Prof. D. Hoekstra*
  - Faculty of Medicine – FMW/UMCG *Prof. L.F.M.H. de Leij*
  - Curriculum Directors *Prof. A.J. Moshage*
  - Chairpersons of the Educational Committees *Prof. H.H. Kampinga (MPDI), Prof. P.J.M. van Haastert (LS&T)*
  - Programme Coordinators *Dr. A.M. van Trigt, Dr. P.F. van Hutten*
- 15.15 The Committee members go to their hotel. Dinner  
 Evening meeting of the Committee (without RUG staff members)

### **Thursday, 15 March 2007**

The Committee meets in the Petrus Camperzaal, A Deusinglaan 1, Groningen.

- 09.00 Meeting with LST students.  
OC members:  
*Mike van Diest*  
*Lutzen Kuiper*  
*Marieke Visscher*  
Other students:  
*Mariëlle Corsten*  
*Jetze Beekma*  
*Michelle Langeslag*  
*Sjaak Riede*
- 09.45 Meeting with LST alumni (provisional list of names)  
*Caroline Coppens*  
*Jocelyn Dröge*  
*Niels Haan*  
*Marcia Peters*  
*Tom Schotkamp*  
*Jasper Steggink*

- 10.15 Coffee and tea break
- 10.30 Meeting with LST professors (members of the Educational Committee and other professors).  
*Dr. E van der Zee (OC)*  
*Dr. T van Kooten (OC)*  
*Prof. H. Duijhuys*  
*Dr. M. Linskens*  
*Dr. U. Eisel*  
*Dr. R Bakels (OC)*  
*Dr. P. de Vos (OC)*  
*Prof. H.W.G.M. Boddeke*
- 11.30 Meeting with mentors (course and student coaching)  
 Joint LST & MPDI, in total around six people  
*Dr. A.M. van Trigt (student supervision MPDI)*  
*Prof. G.J. de Haan (mentor MPDI)*  
*Prof. J.M. van Dijl (mentor MPDI)*  
*Dr. K Voskamp (LST)*  
*Dr. P van Hutten (LST)*
- 12.00 Lunch (only members of the Committee)
- 12.45 Drawing up a list of points for the upcoming discussion together in Committee
- 13.15 Discussion with the Faculty Board and curriculum management (joint LST & MPDI)  
*Prof. L.F.J.M. de Leij (FB FMW)*  
*Prof. J.M. Koolhaas (FB FWN)*  
*Prof. J.P. Franke (dir LW)*  
*Prof. D. Hoekstra*  
*Prof. A.J. Moshage (dir MPDI)*  
*Prof. H.H. Kampinga (chair OC MPDI)*  
*Prof. P.J.M. van Haastert (chair OC LST)*  
*Dr. A.M. van Trigt (programme coordinator MPDI))*  
*Dr. P.F van Hutten (programme coordinator LST)*
- 14.00 Meeting of the Committee to prepare the report and the informal documentation of the preliminary findings  
 (Coffee and tea break included)
- 16.30 Informal reporting of the preliminary findings (joint LS&T and MPDI)  
 Boeringzaal, A. Deusinglaan 1, BG  
 This meeting is open to the public.
- 17.00 Close with get-together  
 Hall, A. Deusinglaan 1