

Assessment of Research Quality

*University Medical Centre Utrecht (UMC Utrecht)
2001 - 2006*

Scope and context of this review

The assessment of research at Dutch universities is carried out every six years. The previous assessment of the medical research in the Netherlands occurred in 1998 by an international panel appointed by the VSNU (the Association of the Universities in the Netherlands) and the KNAW (Royal Academy of Arts and Sciences). The panel assessed the medical research at the eight Dutch universities with a medical faculty.

Since the acceptance of the Standard Evaluation Protocol 2003 - 2009 for public research organizations in the Netherlands in 2002, the evaluation procedure has been changed substantially. The three main changes in the new procedure are:

- (1) the increased emphasis on the future prospects of the research groups;
- (2) the Board of the University, instead of the VSNU, is now responsible for the assessment and
- (3) the absence of a national comparison.

In this new procedure, The Board of Utrecht University has appointed the chair, members and secretary of the review committee (the committee) for the evaluation of the research at the UMC Utrecht (see Appendix 1). The Board of Utrecht University determined in more detail the guidelines for the present research assessment in a document called “Protocol for the research evaluation of the University Medical Centre Utrecht (UMC Utrecht)” (see Appendix 2).

The committee reports in the present document on its findings. The assessment covers the period 2001 - 2006. The Board of Utrecht University is responsible for the publication of the report of the committee and for the follow-up.

Data provided to the committee

A self evaluation of the UMC Utrecht had been prepared by the (former) dean of the UMC Utrecht and sent to the members of the committee under the responsibility of the Board of the University one month ahead of the site visit. This report contained documentation regarding the UMC Utrecht as an institute, the 10 individual divisions under evaluation and the graduate program. The self evaluation functioned as the main source of information for the committee.

The self evaluation provided a detailed account of the organization of the UMC Utrecht, its strategy and its affiliations, the tenured and non-tenured staff and the funding and expenditure.

Each division within the UMC Utrecht (with the exception of the Intensive Care Center and the Perioperative and Emergency Care, which did not participate in the present evaluation) was extensively described and a selected bibliography of the publications in the period 2001 - 2006 was assembled on a CD-Rom. In addition, the self evaluation gave detailed information on the graduate education and the training programs. The committee was impressed by the quality of the self evaluation: well-written, very informative and straight on the strengths and weaknesses.

Information available in the self evaluation is in general not repeated in this report.

Procedures followed by the committee

Previous to the site visit the members of the committee had four weeks to study the self evaluation in order to enable a preliminary review of the UMC Utrecht in general, the individual divisions and the PhD program. The evening before the formal site visit started the committee had an informal working diner with the President of the UMC Utrecht, the Dean and the head of the Research office of the UMC Utrecht.

The site visit started with the formal installation of the committee by the Rector of Utrecht University. During the three days of the site visit, the research and education managers of the ten divisions were interviewed and different facilities were visited. Separate interviews were held with the President and Dean of the UMC Utrecht, the director of the Graduate School of Life Sciences and with a selected group of PhD students (see Appendix 3 for the program of the site-visit). The interviews with the research and education managers were facilitated by their well-structured and very informative introductory presentations at the beginning of the interviews.

All interviews were held in the presence of the plenary committee. Also the final conclusions and scorings for the UMC Utrecht in general, the individual divisions and the PhD program were established in plenary discussions. The site visit was concluded with a short oral presentation by the chairman in which he presented the general conclusions of the committee to the UMC Utrecht community without going into the details of every single division.

The committee adhered strictly to the definition of the scores as described in the Standard Evaluation Protocol (SEP, p. 25):

5: Excellent

Work that is at the forefront internationally, and which most likely will have an important and substantial impact in the field. Institute is considered an international leader.

4: Very good

Work that is internationally competitive and is expected to make a significant contribution; nationally speaking at the forefront of the field. Institute is considered international player, national leader.

3: *Good*

Work that is competitive at the national level and will probably make a valuable contribution in the international field. Institute is considered internationally visible and a national player.

2: *Satisfactory*

Work that is solid but not exciting, will add to our understanding and is in principle worthy of support. It is considered of less priority than work in the above categories. Institute is nationally visible.

1: *Unsatisfactory*

Work that is neither solid nor exciting, flawed in the scientific and or technical approach, repetitions of other work, etc. Work not worthy of pursuing.

The committee should like to point out that, considering the relatively high aggregation level at which the research assessment had to take place (the division level, which often comprised several (sub)disciplines), the scores given are in fact approximated averages for the entire division. In certain divisions world class research may be well be conducted by specific (small) groups of investigators, but if this were not the case throughout the entire division, the committee obviously had to conclude towards a score representing the average of the division.

With this report, the activities of the committee have come to an end. The committee thanks everyone within the UMC Utrecht who made this evaluation for the members of the committee such an interesting and valuable experience. The committee expects this report will contribute to a further strengthening of the UMC Utrecht.

The committee realizes that, again given the level of aggregation on which the evaluation had to take place, the outcome including the recommendations of the committee will probably be primarily of inte-

rest to the Executive Board of the UMC Utrecht and Utrecht University. During the site visit it became more and more clear that a thorough judgement of the individual (sub)disciplines needs another approach, with an in-depth evaluation by peers in the specific (sub)disciplines. The committee advises such an in-depth evaluation for three divisions, so as to give more specific advice on further steps needed to further strengthen research in these divisions.

1 Assessment of the UMC Utrecht in general

The main conclusion of the committee after having read the documentation and the site visit is that the UMC Utrecht combines a unique spectrum of preclinical, translational and clinical research. Several divisions rank with the top medical research centers in the world in a variety of categories, especially in terms of academic reputation and numbers and quality of publications. Several of the research programs and focus areas are well-placed and at the cutting edge of biomedical research directions.

All of the recommendations of the committee should be read in the context of the committee's appreciation for what has been accomplished at the UMC Utrecht so far.

The mission statement of UMC Utrecht is that it is 'an internationally leading university medical center, where knowledge about health, disease, and health care is generated, tested, shared and applied'. This general mission statement, which in principle could be used by almost any medical center, fails to highlight the unique position of the UMC Utrecht in comparison with the other university medical centers in the Netherlands. The committee found it quite exciting to hear that the UMC Utrecht in its positioning in patient care has made an explicit strategic choice to connect to the seven research programs of the UMC Utrecht wherever appropriate and possible. The committee recommends that the Executive Board pays attention to this explicit choice in the mission statement of the UMC Utrecht.

The research of the UMC Utrecht is focused in seven research programs that cross the twelve division borders. These are four disease oriented research programs (Neurosciences, Cardiovascular Sciences,

Immunology and Infectious Diseases and Oncology) and three themes which are more oriented to development of new methods and techniques (Biomedical Genetics, Biomedical Image Sciences and Clinical Epidemiology). These together constitute a matrix which, according to the committee, may be a rather clear organizational structure on paper, but it is in its actual functioning complicated by the division structure of UMC Utrecht and by the recently defined 'Focus and Mass' program of Utrecht University. The committee gained the impression that the matrix model may work quite well in practice, but it requires a strong commitment and continuous attention by all research managers at the division level, because that is where the budget responsibility lies.

The UMC Utrecht is divided into twelve decentralized divisions, each led by a management team. A management team consists of a chairman of the division, a medical affairs manager, a care manager, a research and education manager and a personnel and financial affairs manager. Each division has its own budget and policies and operates in the areas of direct patient care, education and research. This organization model seems to work well. However, to profit fully from the strength of the matrix model the committee recommends the Executive Board to consider possibilities to direct more financial means directly to the chairs of the research programs because they are at the key positions to define research priorities.

The UMC Utrecht is part of the Academic Biomedical Centre (ABC), together with the faculties of Veterinary Medicine and Sciences and the Hubrecht Institute. The committee considers the cluster of biomedical sciences as represented in the ABC to be one of the jewels in the crown of the UMC Utrecht. ABC has proven to be very successful, with the UMC Utrecht and Utrecht University being active participants in for

example nearly all eleven centers of excellence of the National Genomics Initiative. The committee was pleased to hear that the collaboration between the partners within the ABC will be even further strengthened in the coming years. The committee advises the Executive Board to further formalize the existing collaboration with the National Institute for Public Health and the Environment (RIVM) and the Netherlands Vaccine Institute (NVI) as well as with the Hubrecht Institute in the context of the ABC. There appears to be great potential in further strengthening research collaboration considering the complementarities of expertise in the different institutions.

The UMC Utrecht is led by a dynamic and ambitious Executive Board. An important task of the Executive Board is the stimulation of research and the strengthening of the research themes in conjunction with the divisions. The Executive Board will use the matrix as a guide for the investments in the UMC Utrecht's research programs during the next five years. The Board also has made extra investments at the interface of the matrix in the past few years. The committee advises the Executive Board to continue its policy of investing in identified areas where strategic impulses are needed and so to strengthen the crossroads of the matrix. As indicated before, this should be done in close interaction with the chairs of the research programs in the context of strategic research developments.

The committee confirms the view of the Board of the UMC Utrecht that the appointment of professors is the most important instrument in human resource management for promoting research. The UMC Utrecht is allowed to appoint 135 professors. Of these chairs, one hundred are directly assigned to the divisions. In addition there are thirty chairs assigned to divisions based on strategic decisions made

by the Board. Finally, the Board has five extra chairs for young talent, which are initially for five years. If the young professor functions well he or she may be promoted to a regular professorship. In practice the 135 places seem to be sufficient for the time being. Yet the committee wishes to caution that the current limit to the number of professorships in UMC Utrecht will not become an obstacle in attracting the best talent from elsewhere or in career tracks development of internal high potentials. It advises the Executive Board to use the 35 strategic chairs explicitly to strengthen the crossroads of the matrix.

The committee supports the initiatives of the Executive Board to attract top talent. Attracting and keeping top talent is an important aspect in protecting the position of the UMC Utrecht as an international top research organization. The success of the UMC Utrecht in the prestigious personal Veni, Vidi and Vici grants is illustrative of the attraction and the high quality of young researchers within the UMC Utrecht, and gives confidence for the future.

The UMC Utrecht has, to quote the self evaluation, an 'excellent' financial position. This is worth a compliment, as some years ago the UMC Utrecht was in serious financial trouble.

The research budget of the UMC Utrecht in 2006 is about 60 million Euro (25 million Euro from Utrecht University and 35 million from research funds and contracts). In view of the policy of the Minister of Science and Education to transfer money from the universities to NWO, the direct funding from the UU to the UMC Utrecht probably will decline somewhat in the near future. The need for the UMC Utrecht to seek revenues from other sources (KNAW, NWO, EU, charity funds, industries) will therefore become even more important than it already is. The committee endorses the view of the Rector of Utrecht

University that the UMC Utrecht has, considering its track record, very good opportunities in this respect. Nevertheless, the committee advises the Executive Board to keep focussed on its competitive position and earning capacity.

Research at the UMC Utrecht is also highly dependent on equipment facilities. Based on the documents and what has been seen during the site visit (at which time a 7T imaging system was opened), the committee considers the facilities in general to be excellent. In the near future the UMC Utrecht will, together with the partners in the ABC, also open a new facility for animals, including large animals. This is a major and necessary investment, and it should be noted that several Dutch universities have recently given up research facilities in large animals. And although therefore the solid exploitation of this facility is a *sine qua non*, the committee wants to stress the importance of the facility as an essential tool for high quality biomedical research. In this context also interactions with the faculty of veterinary medicine are recommended.

The committee wants to conclude its general assessment of the UMC Utrecht with reference to the SWOT analysis in the self evaluation. The committee certainly subscribes to its final conclusion, i.e. ‘that the UMC Utrecht is a very dynamic organization with lots of ambition and possibilities.’

2 Assessments of the divisions

Division **Radiology, Radiotherapy and Nuclear Medicine**
Chair: dr. M.J. Hendriks
Research and education manager: prof. M. Viergever

Quality: 4
Productivity: 4
Relevance: 4
Vitality: 4/5

This division is generally well thought out and coordinated, dividing the overall thrusts into basic science and applied clinical science. The directions and goals for the program as stated are appropriate, especially the movement towards molecular/cellular optical/MR imaging.

The division is well-known on the international stage in medical image analysis, SPECT imaging and MRI. In addition, Prof. Viergever is very well published and known in the biomedical imaging community.

The quality of publications is solid overall, although the division would like to publish more in the highest impact journals such as *Science* or *Nature*. While the committee concurs that this would be good, there is an appreciation that imaging methods development is often better published in more technical journals.

The dissemination and advancement of knowledge have been this division's strong points, with some strengths in implementation (e.g. F. Beekman's work). As efforts move toward more clinical, translational work, more relevance in terms of implementation is expected.

Prof. Viergever has driven much of the division's research directions over the years, and has also been instrumental in mentoring a number

of successful young investigators. There are a number of researchers at the “Associate Professor” level who need to be, and are being, mentored to more senior levels. It is important that they become more visible on the international stage in terms of leadership positions at meetings/ journals/etc.

The planned future directions are appropriate. One potentially exciting area is the move towards cellular and molecular imaging. Work in a variety of modalities including MRI/MRS and ultrasound is interesting. It will also be important to bridge to optical imaging. Key work in these areas goes on in biology departments, biomedical genetics and laboratory medicine/pharmacology. It is important that the division extends the current collaborations and finds new ways to bridge to these groups, who are generally developing the fluorescent biomarkers that can be optically imaged, but which may become labeling targets for nuclear or MR imaging techniques.

Division **Biomedical Genetics**

Chair: prof. J.L. Bos

Research and education manager: prof. J.L. Bos

Quality: 5

Productivity: 5

Relevance: 4

Vitality: 5

This division is undoubtedly world-class and contributes very significantly to the overall research reputation of the UMC Utrecht. The depth of internationally competitive scientists is impressive as is their success in quality of research output and competitive funding. The facilities that have been developed within the division are also excellent, aided by the involvement of key scientists in major national initiatives such as the Cancer Genomics Centre and Proteomics Centre. All three themes within the division are very strong. Leadership of Prof. Bos is dynamic and excellent. Therefore this is a division that the UMC Utrecht should be extremely proud of.

However, full advantage of the strength of this division to enhance research in other divisions through collaboration, joint appointments and development of common interests is not occurring. Some progress and steps in the right direction are being made - for example with the appointment of Prof. Medema to the division of Internal Medicine who has research interests that overlap with those of a number of scientists in this division and to which his laboratory is co-located. There is also some collaboration with the division of Woman & Baby. However, these interactions remain limited and could, and in the view of the committee should, be more extensive. This is particularly important if the division is to strengthen its translational research ambitions and

capability. The opportunities for this are very significant but do not appear to be of high priority and as a result are not being fully realised. Further strategic investment through appropriate research positions could facilitate moves in this direction particularly if these positions were joint positions with other divisions. The research area that could benefit most is oncology where there is great potential for further building on the interactions with the division of Internal Medicine. Given that this is a Medical Centre the ambition of this division to translate basic research findings should be of high priority.

Division **Julius Center for Health Sciences and Primary Care**

Chair: prof. D.E. Grobbee

Research manager: prof. D.E. Grobbee

Quality: 5

Productivity: 4/5

Relevance: 5

Vitality: 4

The Julius Center, under the dynamic and innovative leadership of Prof. Grobbee, is a world renowned center for clinical epidemiology. It engages in all kinds of epidemiological research, from observational studies and surveys to clinical trials and screening programs. On clinical epidemiology, there are few other centers in Europe that can compete with this division. In general this division, with its very high publication output, is one of the pace setters for the UMC Utrecht. Within the UMC Utrecht matrix, clinical epidemiology figures as a horizontal line, crossing through neurosciences, cardiovascular sciences, immunology and infectious diseases and oncology. The research focus is predominantly on cardiovascular diseases, but there is a growing emphasis on immunology and infectious diseases. The collaboration with oncology and neurosciences is developing. The relevance of clinical epidemiology for both the research within the UMC Utrecht and the public at large is great indeed. The future of this division is very good. The committee advises the division to sort out and define the collaboration with or integration of biostatistics and of the UU Center for Biostatistics into the division. The role of public health and preventive medicine within the division should also be newly defined. The committee applauds the closing of the nursing section. The role of the nutritional science department within the division should also be better defined.

Division Heart and Lungs

Chair: prof. J.J. Lammers

Research and education manager: prof. M.A. Vos

Quality: 3/4

Productivity: 3/4

Relevance: 4

Vitality: 4

This is a division in transition. New leaders have recently been appointed for the departments of cardiology, cardiothoracic surgery and physiology, while the department of lung diseases has been stable. Research output in recent years was of good quality, average for the UMC Utrecht, and of adequate volume. A most successful program has been the development of ‘Octopus’.

It should be realized that Cardiology and Vascular Medicine are exceptionally strong in a number of universities in the Netherlands. The new leadership at the division Heart and Lungs will attempt to meet the challenge to develop equally strong programs. With this respect they should be complimented with their recent initiatives to raise research funds, for example in the Center for Translational and Molecular Medicine (CTMM) and Bio-Molecular Materials (BMM). It seems appropriate for the UMC Utrecht to invest in these developments. Furthermore the board should consider to promote collaboration of vascular medicine (division Internal Medicine) and cardiology, or even integration of vascular medicine in the division Heart and Lungs. The research plans are focused on 3 topics: heart failure & arrhythmia’s, COPD, atherosclerosis and the innate immune response. There are particular good perspectives for stem cell research, together with the Interuniversity Cardiology Institute of the Netherlands (ICIN) and the

Hubrecht Institute, and for the biobank of carotid plaques. Clinical arrhythmia research will be strengthened through basic research in the department of physiology. So far there is little research interaction between the cardiac departments and the lung department. Several large clinical observational studies are ongoing. These will provide interesting material for future analyses. These research topics are certainly relevant for patient care.

Division **Internal Medicine and Dermatology**

Chair: prof. D. Biesma

Research and education manager: prof. E. van der Wall

Quality: 3/4

Productivity: 4

Relevance: 4

Vitality: 3

This is a very large and diverse division which is undergoing a major reorganisation and focussing of its research activities based on a strategic plan ('Talent in Focus') that has recently been developed. The committee strongly applauds the efforts that are being made under the direction of Prof. Van der Wall and is impressed by some of the changes that are being implemented. Focussing of research activities is essential if this division is going to perform at a high research level. This focussing is taking place and the committee fully appreciates that it is 'work in progress'. However, it is likely that even further focussing will be needed over the next year or two. For example in the theme of immunology and infectious diseases the research interests are still very broad. It is still too early to tell how successful this overall reorganisation will be, but the potential for research development and improvement is very significant. Success will be important for both the UMC Utrecht and for enhancing translational research. The development of scientific links with the division of Biomedical Genetics holds great promise and potential, and the recent appointment of Prof. Medema to the division is very encouraging, providing a bridge between the excellent basic research in signalling and cell division control present in the division of Biomedical Genetics to translational research activities within this division. The committee encourages further development of such a model with additional appointments that can form productive bridges.

This approach could also be productive with immunology groups in other divisions, particularly the division of Laboratories and Pharmacy. It was difficult to judge from the input received how strong the clinical trial programs were - the clinical and translational research facilities for phase I/II trials, the quality of these trials and the support infrastructure for phase III trials. Clearly this should be a major strength of the division and potentially an area that will need further investment to capitalise on the opportunities.

Because of the importance of this division and its complexity, the committee advises organising a more focussed in-depth, international review of this division within the next two years. The timing would be good since admiral progress in reorganisation is being made but further honing of the strategy and research focussing would likely be beneficial. A review would help during this important transition and hopefully ensure that the changes maximise the potential impact of the division's research.

Division **Neuroscience**

Chair: prof. R.S. Kahn

Research and education manager: prof. J.M. van Ree

Quality: 4/5

Productivity: 4

Relevance: 4

Vitality: 4

This is a well organized division, with very good to excellent research leading to many publications in highly respected journals. The clinical departments are not natural bed fellows, so a completely homogeneous approach is not possible, but their individual research programs are highly focused to answer questions about a limited number of important diseases. The alignment of clinical work to research is very impressive and has required difficult choices. There is a strong shared focus with imaging in the cerebrovascular and psychiatric clinical areas. The relationship between clinical and non-clinical groups is more difficult (not just in UMC Utrecht!). However, a focus on neurodevelopmental and behavioural phenotypes could inform the clinical work in autism and schizophrenia. There is an absence of an obvious pharmacological emphasis, which may represent a conscious choice but makes ultimate translational applications less likely.

Leadership is coherent and the approach appears hard but fair, with a strong emphasis on management control and monitoring of the research process. The specialist review in 2003 has clearly shaped strategy. The opening of the 7T MR facility is very exciting and will give the clinical groups an important immediate edge. Future plans highlight a contemporary emphasis on phenotype (or endophenotype)/genotype relationships in psychiatry. There are growing doubts about how easy

this will be in common diseases. There was clear evidence that practice in pastoral care of graduate students improved after a specialist review in 2003. The scientific and social relevance of neurosciences research is obvious. The committee sees a bright future for this division.

Division **Laboratories and Pharmacy**

Chair: prof. F. Miedema

Research and education manager: prof. F. Miedema

Quality: 4

Productivity: 4

Relevance: 4

Vitality: 4/5

This division has found new research foci in the past 5-6 years, with strong researchers in key areas. The greater emphasis on translational and clinical research in infection and immunity, oncology and hematology seems appropriate, although the statement that there is less focus on the molecular biology of cancer is surprising given the fact that stem cell research and oncology were given recent boosts in funding. The research management goals are clear and appropriate. There are already a number of very strong, internationally-recognized senior faculty within this division (a number of editorships of important journals, for instance).

Coherence of the program and relationships to the Utrecht research programs are very good. It is unfortunate that there is not more bridging to the division of Biomedical Genetics (and maybe the Imaging Sciences), as there are a number of new opportunities in the imaging and quantitative analysis of molecular/cellular signaling events, including those related to stem cells.

However, Prof. Miedema, who is a well-known, well-published scientist (16,000 cites, h-index of 67) with a palpable energy and enthusiasm, indicated that more of this may happen in the near future.

The overall number and quality of publications is strong and will likely become even stronger in the years ahead, given the planned directions.

The distribution is difficult to assess. The number of PhD theses is reasonable, but in some years (2004 when there were only 7) seems low compared to the number of tenured faculty, although this number is definitely on the rise in recent years, and will likely get larger as the newer research groups take hold.

The division's research is clearly driven by clinical problems. This is especially true in the area of pediatrics, as there is a very strong interaction with this division, with research laboratories from the two divisions working side by side. In addition, the development of research groups in new and interesting areas are making this division even more relevant, especially as translational efforts are encouraged by the division director (who has significant experience with forming startup companies and obtaining patents).

Overall, the division's plans to move in new directions (such as in the areas of Pharmacy and Virology) are positive, although there could be more involvement by faculty from this division with the UMC large animal facility planning. Prof. Miedema is enthusiastic and aggressively pursuing ideas intended to make this division more visible on the international stage. Going after new, young research talent and having younger faculty participate in advisory committees are all positive and interesting ideas (although the committee noted that keeping faculty at all experience levels engaged in the division is important as well).

Finally, the committee noted that pharmaco-epidemiology is a particularly viable area of research within this division due to the presence of a strong related research group within the Utrecht Institute for Pharmaceutical Sciences and encourages interactions along these lines.

Division Surgical Specialities

Chair: prof. C. van der Werken

Research and education manager: prof. A.J. Verbout

Quality: 2/3

Productivity: 3/4

Relevance: 3

Vitality: 3

The division has a broad scope of activities, leading to some fragmentation. The quality of the research is heterogenous and could not be assessed in detail within the scope of this review. However, it is obvious that efforts of focusing the research are being made along the regenerative medicine and oncology initiatives. These efforts should be further encouraged.

The overall productivity, both in terms of PhD theses and publications can be increased. The relative lack of focus has an impact in moderating the relevance of what has been achieved.

Leading a division of surgery is a difficult task, given the many surgical subspecialties involved. In some subspecialties efforts have been made to select patients in relationship with research themes. The division has set up an internal scientific advisory committee. This is a good idea, although it appears so far to be not so very active in defining strategic lines and proposing choices. The committee recommends focussing research activities. Incentives are required in order to implement this focussing. Recruitment of young investigators with a primary interest in research is in this respect necessary. Projects based on collaboration with other divisions involved in imaging and surgery should be prioritized. An increase in experimental surgery activities is also encouraged. The co-appointment of a new professor together with the Veterinary

faculty is a promising step in the right direction. The committee proposes to undertake an in depth review of the research activities of the division in order to facilitate decision taking and to accompany their implementations.

Division Pediatrics

Chair: prof. W. Kuis

Research and education manager: prof. W. Kuis

Quality: 3/4

Productivity: 3/4

Relevance: 4

Vitality: 5

In the last nine years remarkable efforts have been made to focus the research in this division from 22 into 2 major topics. The overall quality of the research is good and has significantly increased in the last three years to very good. One observes in parallel a steady trend in increase of productivity. However, there is still room for improvement, and Prof. Kuis is aware of this. The division is encouraged to deepen its contacts with other groups involved in research in basic immunology in order to provide a full potential to address the scientific questions in inflammation and vaccination. The management team has realized the need of this deepening of contacts. The plan to merge the laboratory of the division with that of Immunology located next door in the same building of the Pediatrics hospital represents a major asset to implement this request. This goes along very well with the joint appointment of Prof. Coffe. The relevance of research goals and achievements is very satisfactory as they deal with major health care issues, i.e. the vaccination program of children and chronic disabling inflammatory disorders. The division has a very dynamic leadership, well aware of what needs to be improved and how to do it. The recruitment of several young investigators, some back from the US, in recent years is a very positive signal and is going to reinforce, significantly, strengths in immunology and inflammation studies. It is also remarkable to notice that clinical

activities have been very well oriented toward research interest (and vice versa) with a very good integration of experimental and clinical activities. Integration of basic science expertise is likely to raise further the quality of research performed in the division of Pediatrics.

Division **Woman and Baby**

Chair: prof. B.J.C.M. Fauser

Research manager: prof. B.J.C.M. Fauser

Quality: 2/3

Productivity: 2/3

Relevance: 4

Vitality: 3/4

Prof. Fauser does highly visible, original and relevant research in reproductive medicine. The division posed a major challenge to focus research across the various clinical themes - neonatology, reproductive medicine, obstetrics and gynecological cancer. It was not clear to the committee that mission and goals are sufficiently focussed to allow internationally competitive programs to be developed in any single area through a concentration of existing resources. The committee saw no clear plan to make a focus in a way that cross-cuts with biomedical genetics, epidemiology or imaging. Instead, the impression is that efforts are being made to present quite diverse research as coherent, when the converse is really the case.

There appear to be important possibilities in relation to the Hubrecht Institute, but greater emphasis is currently given to the psycho-neuro-immunology group. Clinical resources - such as the neonatology unit and its close proximity to pediatrics - appear to be superior. The potential to focus clinical work in order to achieve a major research impact is clearly a challenge.

Performance was hitherto modest in both volume and quality, but has improved in recent years. This is very encouraging and suggests important potential. Academic reputation of individuals is adequate to very good.

The committee suggests that the division undertake an in depth review of its research activities with external experts. This may be of help to Prof. Fauser in making the necessary difficult choices. His presentation was impressive and he clearly has the ambition and personal drive to make important changes.

3 Assessment of the quality of the graduate education and training programs

In 2005, Utrecht University brought together all graduate research programs within six Utrecht Graduate Schools, amongst which was the Life Sciences program. The Graduate School of Life Sciences is the responsibility of the deans of the three cooperating ABC faculties. The deans have appointed Prof. G.F.B.P. van Meer as their legal representative and as the chairman of the board of studies for the Utrecht Graduate School of Life Sciences (UGS-LS).

On paper, the UGS-LS is doing well. The PhD training and education is offered by internationally renowned research institutes and national research schools that have been accredited by the Royal Netherlands Academy of Arts and Sciences (KNAW). They offer a wide variety of graduate courses and support graduate students during their PhD studies. As of the beginning of 2007 not all the (approximately 700) PhD students were yet participating in a proper training program, the UMC Utrecht is beginning to introduce a uniform Training and Supervision Agreement (TSA) for all PhD students so as to safeguard the quality of the training and supervision of PhD students.

The committee considers the clustering of all graduate research programs within the ABC in the UGS-LS and the introduction of the TSA as important steps in safeguarding the quality of graduate education. However, in the meeting with Prof. Van Meer, and in the separate meeting with the PhD students, it appeared that there is a need for further improvement.

A general observation is that nearly 50% of the PhD students have a Utrecht background and that only 9% of the PhD students come from abroad. For an ambitious international top medical center, such as the UMC Utrecht, it would be desirable to attract more talented PhD students from elsewhere, in particular also from other countries.

It appears to be that the board of studies of the UGS-LS is not given insight into the research progress of a PhD student. This is a significant shortcoming, as in the first year of the PhD training the ‘go-no go’ decision is given. Until now, this decision has been the responsibility of the chair of the research program. The committee advises reconsidering this policy by implementing a structure where there is a formally appointed Dean of the Graduate School with integrated responsibility for supervising education and research progress of PhD students.

PhD students are stimulated to follow courses that are useful to their research, but also to broaden their horizon. The TSA provides an extensive overview of the courses that PhD students can follow. The minimum credit load of 20 ECTS credits seems reasonable. PhD students have not been obliged to pass exams of the courses, but the committee advises to reconsider this policy in terms of pros and cons.

Some PhD students complained about the costs of courses. The committee was surprised to hear that PhD students of the UMC Utrecht wishing to follow courses that are offered by one of the divisions within the UMC Utrecht, have to pay ‘commercial’ fees. The committee advises reconsideration of this policy: PhD courses within the framework of the UMC Utrecht should be free of charge for UMC Utrecht PhD students.

UMC Utrecht has over 700 PhD students, who are represented by an independent PhD council. It became clear to the committee that the PhD council is not very well known yet. The primary association of the PhD student is for obvious reasons with his/her division. The committee supports the suggestion made by the PhD students to set up a central register of all PhD students within the UMC Utrecht and to make this register available for the PhD council, which would enable the council to directly contact all PhD students on important developments. Also the management of the graduate school would thereby be able to strengthen the interests of the PhD students within the UMC Utrecht in toto.

The TSA demands that the PhD student prepares an annual progress report. This progress report is discussed with the supervisor in the annual performance appraisal interview. In most instances this seems to work well. However, the relationship between the PhD student and the supervisor always remains a sensitive one. The committee noted from the PhD students that for that reason in some divisions it is a standard procedure to assign an independent mentor to the PhD student. The mentor also attends the annual interview meeting with the supervisor and can, if necessary, operate as a mediator. The committee advises this model to be applied to all PhD students.

Appendix 1 The Review Committee

Prof. Douwe D. Breimer (Chairman)

Douwe Breimer is full professor of pharmacology at Leiden University since 1975. He studied pharmacy at the University of Groningen and obtained his PhD at the University of Nijmegen (1974). He became the first Director of Research of the Center for Bio-Pharmaceutical Sciences (1984) and subsequently of the research school Leiden/Amsterdam Center for Drug Research (LACDR) until 2000. He is the founder of the Center for Human Drug Research (CHDR) in 1987 and co-founder of Leiden Advanced Pharmacokinetics and Pharmacodynamics (LAP&P). He is also co-founder of the League of European Research Universities (LERU), of the European Federation for Pharmaceutical Sciences (EUFEPS) and of ULLA, a European consortium in the pharmaceutical sciences for graduate students. He is co-author of more than 500 scientific publications and the promotor of 50 PhD-students.

He received doctorates honoris causa from the Universities of Uppsala, Gent, Boedapest, London, Navarra, Montreal and Hoshi University in Tokyo. He is a life member of the Royal Dutch Academy of Arts and Sciences (KNAW) and foreign associate member of the Institute of Medicine of the National Academy of Sciences USA. From 2001 until the beginning of 2007 he was the Rector Magnificus of Leiden University. He was also a member of the first National Innovation Platform chaired by the Prime Minister. He is chairman of the board of directors of Life Sciences Partners in Amsterdam, vice-chairman of the supervisory board of the Technical University Delft and member of the governing body of University College Cork. He is chairman of the national N.W.O-committee on “systems biology”, chairman of the supervisory board of the Netherlands Metabolomics Center and member of the board of trustees of TIPharma.

Prof. James Duncan

James S. Duncan is the Ebenezer K. Hunt Professor of Biomedical Engineering, as well as a Professor of Diagnostic Radiology and Electrical Engineering at Yale University, New Haven, CT, USA. He trained in Electrical Engineering, receiving the PhD from the University of Southern California, Los Angeles, in 1982. He has been at Yale since 1983, where he currently is the Director of Undergraduate Studies and the Associate Chair of Biomedical Engineering and the Vice-Chair for Bioimaging Sciences research in Diagnostic Radiology. His research and teaching efforts have been in the areas of computer vision, image processing and medical imaging, with an emphasis in biomedical image analysis. He has published over 170 peer-reviewed articles in these areas and has been the principal investigator on a number of peer-reviewed grants from both the National Institutes of Health and the National Science Foundation. Over the past 23 years Professor Duncan is a member of Eta Kappa Nu and Sigma Xi, is a Fellow of the IEEE and is a Fellow of the American Institute for Medical and Biological Engineering (AIMBE). He is on the editorial board of the *Journal of Mathematical Imaging and Vision*, is an Associate Editor for the *IEEE Transactions on Medical Imaging* and is one of the founding co-Editors-in-Chief of the journal *Medical Image Analysis* (Elsevier). In 1994, he was a Fulbright Research Scholar at the Universities of Amsterdam and Utrecht in the Netherlands.

Prof. Alain Fisher

Alain Fischer is Professor of Pediatrics since 1986, Director of the Department of Pediatric Immunology and Hematology at Hospital Necker, University Paris Descartes. He is the Director of an INSERM Research Laboratory. He studied medicine in Paris and received the degree of Doctor of Medicine in 1979 and a PhD in Immunology in 1979. He had a post doctoral training in Immunology at University

College London in 1980-1981. His main research interests are development of the immune system, genetic diseases of the immune system and gene therapy. He is the author or co-author of 500 publications in peer reviewed journals since 1978. He is a member of the board of reviewing editors of the Science magazine and in the editorial committee of other journals including the EMBO J. He is serving as Vice president of the board of the Pasteur Institute. He is a member of EMBO and of the French National Academy of Science. He was awarded the L. Jeantet prize in 2001.

Prof. Nic Jones

Professor Jones has been Director of the Paterson Institute for Cancer Research at the University of Manchester since 1999. In 2006 he was also appointed as inaugural Director of the Manchester Cancer Research Centre. His research interests are in the role of stress-activated signalling pathways in development and tumourigenesis. Professor Jones studied microbiology at the University College London and obtained his PhD from the University of Edinburgh (1974) before moving to the United States to further his research career. After 12 years, 6 years at the University of Connecticut Health Centre and 6 years at Purdue University, he moved back to the United Kingdom where he became a senior scientist at the Imperial Cancer Research Fund laboratories in London.

Prof. Ulrich Keil

Ulrich Keil is Professor and Chair of the department of Epidemiology and social medicine of the university of Münster. He is adjunct professor at the department of epidemiology, school of public health, university of North Carolina at Chapel Hill and head of the WHO Collaborating Centre for Epidemiology and Prevention of Cardiovascular and other chronic diseases at the university of Münster. He

graduated in 1969 from Heidelberg university with a Dr.med. degree, in 1971 MPH degree from UCLA and in 1980 PhD in epidemiology from UNC Chapel Hill. He is author or co-author of more than 300 scientific papers in peer reviewed journals, three books and more than 70 contributions to books. Member of the World Health Organization Expert Advisory Panel on Cardiovascular Diseases since 1988. Member of the scientific Council on Epidemiology and Prevention of the World Heart Federation, Geneva. Member of the expert group of public health of the European Science Foundation, Strasbourg. Member of the working group on “chances and challenges of an aging society” of the LEOPOLDINA=Deutsche Akademie der Naturforscher, Halle(Saale). Frederick H. Epstein Memorial Lecture Award by American Heart Association 2007. He is co-editor, associate editor and member of editorial boards of presently 6 scientific journals. His research activities are in the fields of epidemiology and prevention of cardiovascular diseases, of the epidemiology of asthma and allergies in childhood and of occupational epidemiology.

Prof. Guy Manning Goodwin

Guy Goodwin has been W A Handley Professor of Psychiatry at the University of Oxford since 1996. His research interests are in the treatment of bipolar disorder and the application of neuroscience in understanding the neurobiology of mood disorder and developing new treatments. He trained in medicine and completed a PhD in neurophysiology at Oxford.

After training in psychiatry he was for 10 years Clinical Scientist and Consultant Psychiatrist in the MRC Brain Metabolism Unit in Edinburgh. He has served as a member of the Wellcome Trust Neurosciences Panel, the Council of the British Association for Psychopharmacology, the Clinical fellowships panel of the MRC and the neuroscience panel of ANR(INSERM, France). He was the elected president of the British

Association for Psychopharmacology for 2004 - 2005 and is a Fellow of the Academy of medical Sciences and a foreign corresponding fellow of ANCP.

Prof. Maarten Simoons

Maarten Laurens Simoons is Professor and Chief of Cardiology, Thoraxcenter, Erasmus University Rotterdam, The Netherlands. He studied medicine at the University of Utrecht, (1962-1970) and received the degree Doctor of Medicine (PhD) in 1976. After registration as cardiologist (1978) he was appointed at the Thoraxcenter, Erasmus University.

He was appointed Professor of intensive cardiac care Erasmus University (1990), Professor of Cardiology (1998) and Chief of Cardiology, Chairman of the Thoraxcenter and Chairman of COEUR (cardiovascular research school Erasmus University Rotterdam) in 2003.

His main research interests are ischemic heart disease and coronary care. He is a leader of many national and international clinical trials, particularly related to acute coronary syndromes, supervisor of 25 young scientists completing their PhD-thesis, and author or co-author of > 600 publications in peer reviewed journals up to January 1, 2007.

He was a member of the Board of the European Society of Cardiology and president 2000-2002. He is a fellow of the Royal Netherlands Academy of Arts and Sciences and of many international professional organizations. Since 2006 he serves as chairman of the scientific advisory board of the Netherlands Heart Foundation.

Drs. Klaas Deen (secretary)

Klaas Deen is free-lance academic consultant. He was former staff member at the Royal Academy of Arts and Sciences (KNAW) and the Association of Universities in the Netherlands (VSNU) and director of the Utrecht School of the Arts (HKU). He has acted as secretary of several research and education evaluation committees in the Netherlands.

Appendix 2 Protocol for the research evaluation of the University Medical Centre Utrecht (UMC Utrecht).

The review committee is kindly asked to assess the quality, productivity, relevance and viability of the research and the quality of the graduate programs of the UMC Utrecht, during the period 2001 - 2006 against international standards, on basis of the Standard Evaluation Protocol (SEP) and taking into account the additional information provided. The SEP is defined by the three main Dutch organizations responsible for publicly funded research in The Netherlands - the universities, the Royal Netherlands Academy of Arts and Sciences (KNAW) and the Netherlands Organization for Scientific Research (NWO) - for practical use in all research evaluations conducted under their auspices.

Introduction

The core businesses of the University Medical Centre Utrecht are research, education and patient care. One of the major goals of the UMC Utrecht is to translate results from our laboratory research into new diagnostic tools and new therapies for disease. Scientists who pursue basic research questions closely collaborate with clinicians involved in patient care, allowing us to remain at the forefront of new developments and to provide better care for our patients and state of the art lectures and courses for our students and medical professionals.

The UMC Utrecht is organized in twelve decentralized units known as divisions:

Biomedical Genetics

Heart & Lungs

Intensive Care Centre

Internal Medicine and Dermatology

Epidemiology

Laboratories and Pharmacy

Neuroscience

Pediatrics

Perioperative and Emergency Care

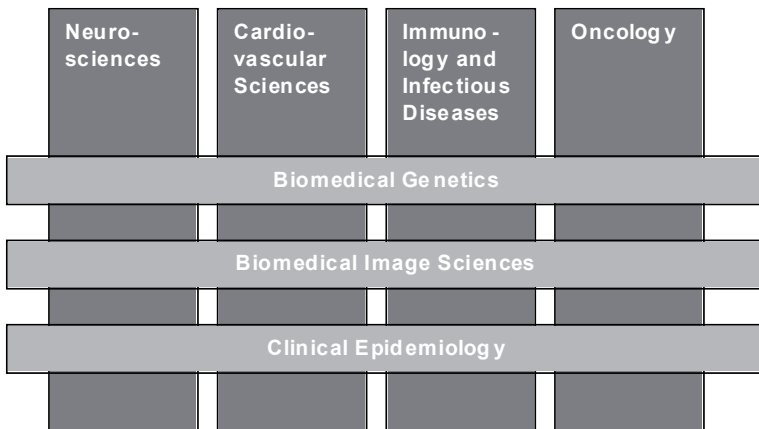
Radiology, Radiotherapy and Nuclear Medicine

Surgical Specialities

Woman and Baby

All divisions operate in the areas of direct patient care, education and research. They have their own budgets and policies, which are based on their specific categories of patients.

Research at the UMC Utrecht focuses on seven programs that cross the division borders, as depicted in this matrix.



The UMC Utrecht closely collaborates with the Utrecht University within the Academic Biomedical Centre (ABC), which offers a unique life-science environment that combines the expertise of various faculties (such as the Faculty of Veterinary Medicine and the Faculty of Natural Sciences) and research institutes.

The research evaluation

The objectives of this research evaluation are to assess the quality of the scientific research and the graduate programs carried out at the UMC Utrecht during the period under review.

In the current evaluation the research activities and results of the divisions will be assessed. In the self-evaluation and during the audit the divisions will reflect on their main lines of research, their scientific output, research and personnel policy, their collaborations, their resources, funding and facilities and their academic reputation.

In addition divisions will be asked to address their contribution to the research programs and their analysis, perspectives and expectations for the research program allowing the committee to consider the cohesion between divisions and research programs.

Divisions will also be asked to reflect on the participation of programs in the large interdisciplinary research cluster of the UU, the ABC.

The research management of the executive board of the UMC Utrecht and the research office will also be evaluated in terms of leadership, research strategy, human resources policy, resources, funding, facilities and organisation.

On top of the research assessment the committee is kindly asked to pay special attention to the quality of the graduate education and training programs.

As described in the SEP the evaluation will be a combination of retrospective and prospective analysis, with emphasis on the future and should be carried out in view of the multidisciplinary context of the UMC Utrecht.

Delineation and required expertise of committee members

The international review committee should have expertise in all research programs of the UMC Utrecht. The proposed members are selected on their expertise in at least one of the seven programs. The review committee will consist of eight members, including the chair and the secretary, in order to cover all programs.

Information for the committee and procedures

The research evaluation will cover the research published in the period 2001 up to and including 2006. The review committee is independent and will determine its own method of working within the framework of the SEP. The assessment will be performed on the basis of a self-evaluation report provided by the research managers of the divisions and the chairs of the research programs (which are covered by the same persons). The self-evaluation will be conducted conform the SEP. The evaluation committee receives all relevant material four weeks in advance of their site visit.

The committee, or individual committee members, will have meetings with the managers' research of the divisions who also represent the research programs, with the board of the UMC Utrecht, the board of the University Utrecht, with PhD students, and will visit the various research buildings of the UMC.

At the end of the visit, the committee will announce their preliminary review.

Appendix 3 Program site visit

Sunday, December 2, 2007

Location: Grand Hotel Karel V

- 17.00 - 20.00 Preliminary discussion conference room Lodewijk Napoleon
- 20.00 - 23.00 Opening diner with evaluation committee and Board of Directors UMC Utrecht Koning Willem I Zaal

Monday, December 3, 2007

Location: UMC Utrecht conference room C02.424

- 09.00 - 09.15 Welcome and inauguration of committee by Prof. J.C. Stoof, Rector Magnificus Utrecht University
- 09.15 - 10.15 Prof. J.L.L. Kimpen, dean and vice-president of the Executive Board of the UMC Utrecht and Dr. M.A. Oosterwegel, head of Research Office
- 10.15 - 10.30 Break
- 10.30 - 11.30 Prof. M.A. Viergever, research and education manager of Division of Radiology, Radiotherapy and Nuclear Medicine and chair of research program Biomedical Image Sciences
- 11.30 - 11.45 Break
- 11.45 - 12.45 Prof. J.L. Bos, research and education manager of Division of Biomedical Genetics and chair of research program Biomedical Genetics.
- 12.45 - 13.45 Lunch C01.203

- 13.45 - 14.45 Prof. D.E. Grobbee, research and education manager of The Julius Center for Health Sciences and Primary Care and chair of research program Clinical Epidemiology
- 14.45 - 15.00 Break
- 15.00 - 15.30 Tour Stratenum, host Prof. F.C.P. Holstege
- 15.30 - 16.30 Prof. M.A. Vos, research and education manager of Division of Heart and Lungs and chair of research program Cardiovascular Sciences
- 16.30 - 16.45 Break
- 16.45 - 17.30 Prof. E. van der Wall, research and education manager of Division of Internal Medicine and Dermatology and Oncology
- 17.30 - 18.00 Discussion
- 19.00 - 22.00 Diner Restaurant Blauw Utrecht

Tuesday, December 4, 2007

Location: UMC Utrecht meeting room C01.203

- 09.00 - 09.15 Preliminary discussion
- 09.15 - 10.15 Prof. J.M. van Ree, research and education manager of Division of Neuroscience and chair of research program Neurosciences
- 10.15 - 10.30 Break
- 10.30 - 11.30 Prof. F. Miedema, research and education manager of Division of Laboratories and Pharmacy and chair of research program Immunology and Infectious Diseases
- 11.30 - 11.45 Break
- 11.45 - 12.45 Prof. G.F.B.P. van Meer, chair Utrecht Graduate School of Life Sciences about PhD training and PhD students
- 12.45 - 13.45 Lunch with PhD students

- 14.00 - 14.45 Prof. A.J. Verbout, research and education manager of
Division of Surgical Specialties
- 14.45 - 15.00 Break
- 15.00 - 16.30 Prof. W. Kuis, research and education manager of
Division of Pediatrics and host tour Wilhemina
Children's Hospital
- 16.30 - 16.45 Break
- 16.45 - 17.30 Prof. B.C.J.M. Fauser, research manager of Division
Woman and Baby
- 17.30 - 18.00 Discussion
- 19.00 - 22.00 Diner Restaurant Wilhelminapark Utrecht

Wednesday, December 5, 2007

Location: UMC Utrecht conference room C02.424

- 09.00 - 10.00 Consulting hour
- 10.00 - 12.30 Preparation of advice Research Evaluation
- 12.30 - 13.30 Lunch C01.203
- 13.30 - 14.00 Preparation of advice Research Evaluation
- 14.30 - 15.00 Preliminary report, Descartes Center, Matthias van
Geunsgebouw
- 15.00 - 16.00 Reception

