Expert Meeting GenderBasic Maastricht, January 26-27, 2007

Promoting attention to sex and gender in biomedical and health related research

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Expert Meeting GenderBasic: Promoting attention to sex and gender in biomedical and health related research (Maastricht, January 26-27, 2007)

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Specific Support Action GenderBasic: Work Package 5, January 2007

Centre for Gender and Diversity & Care and Public Health Research Institute (Caphri)

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Expert Meeting organised as activity of EU FP6 Women and Science Specific Support Action GenderBasic

Maastricht, January 26-27, 2007

Objectives

Objective of the Expert Meeting is to provide scientists involved in health related research (with a focus on basic and clinical research) funded by the EU Framework programmes, with practical tools, relevant examples and best practices as regards paying attention to sex and gender differences in the content of their research. Ten reviews have been commissioned which together cover various methodological aspects of paying attention to sex and gender in research as well as six health areas where attention to sex and gender issues is urgently called for. The methodological reviews address basic, translational, clinical and public health research. The identified health area's are: anxiety disorders, asthma, metabolic syndrome, nutrigenomics, osteoporosis, and work-related health.

The reviews are meant to provide the state of the art as regards specific problems and opportunities (challenges) and at proposing widely supported solutions. The reviews, referee comments and discussions will contribute to answering the following questions:

- What is the state of the art as regards integration of attention to sex and gender issues in the methodologies of basic, translational, clinical and public health research?
- What do we know? Which gaps in knowledge can be identified that deserve further research?
- What is the state of the art as regards integration of sex and gender aspects in selected health
 areas identified as in urgent need of addressing sex and gender factors (anxiety disorders, asthma,
 metabolic syndrome, nutrigenomics, osteoporosis, and work-related health)
- What do we know? Which gaps in knowledge can be identified that deserve further research?
- Which tools do researchers need to ensure a better integration of sex and gender aspects in their research?

Expected Results

- Tools to be used by EU services, researchers and research evaluators for the improvement of attention to the gender dimension in basic, preclinical and clinical research
- Recommendations on how to further implementation of the gender equality policy for research in the EU 7th Framework Programme (2007-2013)

Wider ideas

The Expert Meeting will bring together high profile researchers from a variety of disciplines (basic researchers, clinical researchers, epidemiologists, social scientists, gender researchers) with an interest in addressing sex and / or gender issues in research. We would like to discuss the following wider ideas (session on Saturday):

- A planning for individual publication of review papers or for a special volume
- Is it interesting to investigate ideas based on the commissioned GenderBasic reviews for FP7 proposals?
- Would it be a viable idea to develop a European Research Agenda for sex and gender sensitive biomedical and health related research? The reviews and identified gaps in knowledge constitute a first input. That agenda should be anchored in research institutes and supported by European and member state health research policy
- Dissemination / translation of review papers to education: to health and medical curricula

Policy implications

• How can DG Research contribute to guarantee continuing attention to sex and gender aspects in research? FP7 work programmes contain the following sections:

Theme 1: Health

Gender aspects in research

Gender aspects in research have a particular relevance to this Theme as risk factors, biological mechanisms, causes, clinical manifestation, consequences and treatment of disease and disorders often differ between men and women. The possibility of gender/sex differences must therefore be considered in all areas of health research where appropriate.

Theme 2: Food agriculture and biotechnology

Participation of women and gender aspects in research

The pursuit of scientific knowledge and its use in service to society requires the talent, perspectives and insight that can only be assured by increasing diversity in science and technological workforce. Therefore, an equal representation of women and men at all levels in research projects is encouraged.

Gender aspects in research have a particular relevance to this theme as risk factors, biological mechanisms, behaviour, causes, consequences, management and communication of diet related disease and disorders may differ in men and women. Furthermore, roles and responsibilities, the relationship to the resource base (land management, agricultural and forest resources etc) and the perception of risk and benefits may have a gender dimension. Applicants should systematically address whether, and in what sense, sex and gender are relevant in the objectives and in the methodology of projects.

GenderBasic: promoting integration of sex and gender in (basic) life sciences research

Background

Integration of the gender dimension in biomedical research and health related research consists of the consideration of both sex differences and differences resulting from gender. (Klinge & Bosch, 2001. Gender Impact Assessment Study of EU FP5 Life Sciences Research Programme Quality of Life and Management of Living Resources).

Biological and socio-cultural differences between women and men may result in different epidemiological patterns and effect modification of diagnostic, preventive and therapeutic interventions. It implies that in specific research projects the focus of attention driving the research questions can be on sex differences, on effects of gender or on the interaction between the two.

The EU Sixth Framework Programme (FP6) guidelines comprise a set of specific questions as regards integration of the gender dimension. Life sciences projects funded by FP6, had to meet the following criteria:

- Research proposals must include a description of how attention to sex and/or gender differences will be integrated in the content of the research
- Research consortia must report on the implementation of these plans in progress reports to the Commission

Applying the FP6 guidelines to biomedical and health related research is not without difficulty and will pose different challenges (practical, methodological, conceptual, ethical and financial) to basic, translational, clinical or public health research. It seemed that basic life sciences research involving cells, tissues, animals and other materials, encountered a variety of problems. Ongoing monitoring studies will provide insight into the level of adherence to the guidelines.

Aim GenderBasic

GenderBasic has the aim to examine:

- how the EU gender equality policy impacts the content of basic, preclinical and clinical research funded by FP 6
- which services the EU may offer to enhance the possibilities of researchers to integrate attention to sex and gender differences in basic, preclinical and clinical research

Planned activities

- An assessment of facilitating and inhibiting factors for the incorporation of attention to sex differences and/or gender effects in basic, preclinical and clinical research among selected FP6 life sciences research projects.
- An assessment of facilitating and inhibiting factors for the incorporation of attention to sex differences and/or gender effects in basic, preclinical and clinical research among research coordinators of acclaimed European research Institutes in the life sciences (e.g., Inserm, Charité, Karolinska, Max Planck)
- The production of topical papers by experts, describing best practices and possible solutions for identified methodological and conceptual issues: (e.g. equitable inclusion men and women, sub group analyses data, sex-gender interactions)
- A meeting for researchers and experts to reach consensus about proposed solutions on issues regarding the incorporation of attention to sex differences and/or gender effects in the content of basic, preclinical and clinical research. (January 26-27, 2007)
- The development of tools to advise EU services, researchers and research evaluators on how to improve attention to the gender dimension in basic, preclinical and clinical research

General Information



Maastricht University P.O. Box 616 6200 MD Maastricht the Netherlands

Centre for Gender and Diversity

The Centre for Gender and Diversity plays a key role as initiator, coordinator and inspirator behind teaching and research in the field of gender and diversity conducted at various faculties of Maastricht University. It encourages the study of the myriad ways in which categories of difference, such as gender, ethnicity, class, age, sexuality and religion, often in combination with each other, may lead to social differences and inequalities.

The Centre for Gender and Diversity was founded in 1998 to provide an institutional basis for the teaching and research spread over various faculties in the field of gender studies. The centre is financed by the university and is formally affiliated to the Faculty of Arts and Culture. An important factor in the foundation of the Centre was the acquisition of the rotating Extraordinary Chair 'Power and Strategy' instituted by the feminist magazine 'Opzij'.

Activities of the Centre

Not only does the Centre play a stimulating role within the various faculties, it also develops research and teaching programmes and promotes the formulation of allied research clusters within and between faculties. The Centre's research is concentrated around certain themes, which include:

- 'cultural studies'
- gender, diversity and science
- migration and cultural transformation
- ICT, the Internet and multimedia from a gender and diversity perspective.

The Centre also conducts contract research for third parties, including the European Commission. The Centre's staff members are internationally active in their diverse research areas. They belong to the research schools recognised by the Royal Dutch Academy of Sciences (KNAW) - the Netherlands Research School for Women's Studies (NOV), and Science, Technology and Modern Culture (WTMC).



Care And Public Health Research Institute

Overview of organisation

The Research Institute Caphri (Care and Public Health Research Institute) is a research institute of the Faculty of Health, Medicine and Life Sciences of Maastricht University.

Within Caphri 20 departments cooperate in 21 programmes over 150 scientific projects in the fields of health promotion, prevention and care. In all, the research of approximately 396 people (336 scientific staff (including Ph.D. students) and 60 non scientific staff) is conducted in affiliation with Caphri. Caphri has 94 Ph.D. students. In 2005 the total level of external funding was 35. 898.083,- Euro.

On a national level, the institute programmes participate in the Graduate School CaRe (Netherlands School of Primary Care Research) and in the Graduate School WTMC (Science, Technology and Modern Culture). Both Schools are officially acknowledged by the KNAW (Royal Netherlands Academy of Arts and Sciences).

Clusters

The research institute Caphri is divided into three clusters.

Cluster A: Primary Care **Cluster B:** Integrated Care Cluster C: Public Health

Promoting integration of the Gender Dimension in (basic) life sciences research SpecificSupport Action, Women and Science, EU 6th Framework Programme





Friday January 26, 2007:

Registration 09.00-9.30

Opening 9.30- 9.40

Welcome and introduction to the Expert Meeting

Ineke Klinge, coördinator GenderBasic

Session 1 9.40-11.10

paper 1 Integrating the dimension of sex and gender into basic life sciences research: methodological

and ethical issues in research. A review of the problems and solutions in experimental studies

Author: Anita Holdcroft

Reviewers: Rein Vos

Flavia Franconi

paper 2 Gender differences in asthma development and progression

Author: Dirkje Postma Reviewer: Onno van Schayck

Coffee 11.10-11.30

Session 2 11.30-13.00

paper 3 Methodological ramifications of paying attention to sex and gender differences

in clinical research

Authors: Martin Prins et al. Reviewer: Susan Phillips

paper 4 Integrating a gender dimension in osteoporosis and fracture risk research

Authors: Piet Geusens & GeertJan Dinant

Reviewers: Dorly Deeg

Alan White

Lunch 13.00-14.00

Session 3 14.00-15.30

paper 5 Sexually dimorphic gene expression in somatic tissue

Authors: Jörg Isensee & Patricia Ruiz Noppinger

Reviewers: Edwin Mariman

Agnes Wold

paper 6 The metabolic syndrome: sex and gender related issues

Authors: Vera Regitz-Zagrosek et al.

Reviewers: Jan-Åke Gustafsson

Angela Maas Eva Swahn

Tea 15.30-15.50

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Session 4 15.50-17.20

paper 7 Methodological and ethical ramifications of paying attention to sex and gender differences

in public health research. Prevention, health care delivery; focus on health inequalities with

particular examples from Austria

Authors: Anita Rieder & Kitty Lawrence

Reviewer: Piroska Östlin

paper 8 Anxiety disorders: a gender test case within mental health (care) research

Authors: Marrie Bekker & Janneke van Mens-Verhulst

Reviewers: Karen Ritchie

Elisabeth Zemp-Stutz

Drinks 17.20-17.40

Session 5 17.40-19.00

Dr. Mineke Bosch: EU policy for gender equality (GE=WP+GD)

Film: The mind has no sex

Mr. Ermo Daniels: Information on FP7 and possibilities for research projects

Dinner 20.00

Melodious Intermezzo "I carry your heart"

Renée Harp, soprano

Heleen Verleur, composer, pianist

Saturday January 27, 2007:

Opening 9.00 - 9.10

Session 6 9.10- 10.40

paper 9 A tool for distinguishing gender research from gender difference research -

examples from work-related health

Author: Anne Hammarström Reviewer: Monique Frings-Dresen

paper 10 Gender, a major player in the crosstalk between genes, environment and health

Author: Jose Ordovas Reviewer: Nicolien Wieringa

Coffee 10.40 -11.00

Session 7 11.00-12.00

Good practice: Incorporating a gender dimension in food allergy research: a review

(Allergy 2006:61(11):1336-1343)

Author: Audrey DunnGalvin et al.

Summing up The way forward

Ineke Klinge

Farewell 12.00 - 13.00

Abstracts

Paper 1

Integrating the dimension of sex and gender into basic life sciences research: methodological and ethical issues in research. A review of the problems and solutions in experimental studies.

Anita Holdcroft, MB ChB MD FRCA

The research process, from study design, selecting a species and its husbandry, through the experiment and analysis, publication and peer review, is rarely subject to questions about sex or gender differences in mainstream life sciences research. However, the impact of sex and gender on these processes has been recognised to be important in explaining biological variations and presentation of symptoms and diseases. The mechanisms for these effects lie not only in biological differences but also in environmental, social and psychological interactions. Unfortunately, laboratory research often imposes restrictions that are not present in a normal population. These are particularly related to ageing, socializing and reproduction and, although present in humans, are not systematically studied in the laboratory.

Methodological approaches to this present lack of a gender dimension in research include actively reducing variations through attention to physical factors, biological rhythms and experimental design. The hormonal milieu is another factor and although their genomic activity is well recognised, the more acute non-genomic effects of hormones may play a role in the development of small sex differences that can compound during the course of an acute pathological event. In addition there are now many exogenous sex steroid hormones and their congeners used in medicine, for example in contraception and cancer therapies, and these may further alter cellular activity.

Having determined that sex and gender are determinants of many outcomes in life science research then in order to embed the gender dimension into basic science research, it has to be broadly applied. One approach may be externally through animal ethical review boards and peer review of manuscripts where standardised questions can be asked about study design and analysis. In addition the relevance of laboratory models should be questioned in order to determine how best they can represent the age-related changes, co-morbidity and variations experienced by different genders in clinical medicine.

Paper 2

Gender differences in asthma development and progression.

Dirkje Postma, MD PhD

Asthma is an inflammatory, chronic airway disease that has a higher prevalence in boys before puberty and a higher prevalence in females in adulthood. Due to the complexity of the disease, no straightforward single mechanism can explain gender differences found in asthma. It is likely that hormonal changes and genetic susceptibility both contribute to the change in prevalence around puberty. Intriguingly severe asthma is also more predominant in females. It has to be established whether this is a social, cultural, hormonal and/or genetic issue. Topics requiring further research are:

- Fetal lung development in interaction with hormonal factors, since it has longstanding consequences
 up to adult life in which females are more susceptible to smoking and not only develop asthma but also
 COPD, the third cause of mortality worldwide
- Stratification of genetic studies on asthma for gender, since some polymorphisms are in particular related to asthma in females. Further studies on hormone-gene interactions and e.g. X-chromosome genes in relation to asthma and atopy.
- Cellular hormonal influences in asthma and atopy in relation with innate and acquired immunity in both sexes. This would not only benefit asthma but many other diseases that show gender differences in prevalence, severity and treatment response.
- Animal models investigating the observed differences between males and females and susceptibility to environmental and hormonal factors in relation to lung and immune development
- Differences in treatment response in asthma. It is of prime importance to stratify each double blind study for gender and investigate treatment responses in females and males separately. This is true for both studies designed by investigators working in universities and for pharmaceutical industries.

Methodological ramifications of paying attention to sex and gender differences in clinical research.

Martin Prins, MD PhD Kim Smits, PhD Luc Smits, PhD

Essential in studies on differences in effect based on sex is the evaluation of effect or accuracy estimate differences between patient groups based sex, i.e. the analysis of effect modification. The use of absolute risk differences to illustrate differences in treatment effect size between sexes should be preferred to facilitate decisions on diagnostic and /or treatment strategies separately for sexes. Confounding can be introduced by an unequal distribution of potential effect modifiers of prognostic variables associated with sex or gender. Therefore, differences in the distribution of presumed effect modifiers or prognostic variables should be presented and, if possible, taken into account. The choice of a statistical model for analysis should be based on the effect measure that was chosen to measure treatment effect. If risk ratios were used, analyses should be based on a multiplicative model. In addition, due to a possible association between sex, gender and prognosis, interactions between treatment and sex should be analysed by calculating the effect of treatment within each of the sexes and subsequently comparing these effect sizes with each other. For the use of results in meta-analyses, point estimates and their 95% confidence intervals should be presented for each sex separately.

Paper 4

Integrating a gender dimension in osteoporosis and fracture risk research.

Piet Geusens, MD PhD GeertJan Dinant, MD PhD

Sex (referring to its strict biological sense) and gender (referring to the socio-cultural dimension) are major determinants of health and disease. The aim of this review is to examine differences between sexes in the prevalence of osteoporosis and fractures and their risks in terms of bone- and fall-related factors and to review differences between genders in relation to the perception of fracture risk and the possibilities of prevention of fractures.

The incidence of fractures differs between women and men: it is higher in boys than in girls and the burden of fractures in adults increases with age, and is higher in adult women than in adult men. With life expectancy growing the yearly number of fractures is likely to increase substantially. Vertebral, hip and other nonvertebral fractures in adults result in increased mortality (more in men than in women), increased morbidity (equal in women and men) and high costs (more in women than in men).

The reasons for the differences in incidences of fractures between men and women are multiple. They are related to the many factors that determine fracture risk: those related to bone and those related to falls. Such differences, but also similarities, have been documented from the molecular and cellular level up to the organ level. Sex hormones play a central and essential role in the physiology of bone. Sex hormones have a wide array of functions and influences on bone, cartilage and muscle cells by direct and indirect mechanisms. Differences in sex hormones therefore directly and indirectly contribute to sex differences in fracture risk.

Adult men fracture less because they build up structurally stronger bones than women and which they are able to maintain longer. Men build up larger bones during growth with better microarchitecture and thereafter have less increase in bone remodelling. Furthermore, they develop later bone loss and fewer older men are hypogonadic than women.

Case finding strategies for patients at risk for fracture, including bone densitometry, is much better documented at the population level in women than in men.

Drug therapies that reduce the risk of a broad spectrum of fractures, even within short term, are more clearly demonstrated in randomised controlled studies in women than in men. Drug therapy is more widely available for women with osteoporosis, but only scarcely for men with osteoporosis.

In how far perception of osteoporosis could be different between genders is less well documented. In general, osteoporosis is under diagnosed and under treated both in women and men, and related to limits in patient's and doctor's awareness at all clinical stages, from case finding to compliance and persistence of therapy.

Sexually dimorphic gene expression in somatic tissues.

Jörg Isensee, MSc Patricia Ruiz Noppinger, PhD

The sexually dimorphic differentiation of the bipotential gonad into testis or ovary initiates the sexually dimorphic development of mammals and leads to divergent hormone levels between sexes for the entire life time. However, despite the fact that anatomical and hormonal differences between genders are well described, only a few studies investigated the manifestation of these differences at the transcriptional level in somatic tissues. More recently, the application of microarray technology enabled the systematic evaluation of sex-biased gene expression on transcriptome level indicating that the regulatory pathways underlying sexual differentiation are giving rise to extensive differences in gene expression in adults. A sustainable annotation of sex-biased gene expression represents a key towards the understanding of basic physiological differences between males and females in the healthy as well as diseased condition. This review focuses on basic regulatory mechanisms of sex-specific gene expression and discusses recent gene expression profiling studies to outline basic differences between sexes on transcriptome level in somatic tissues.

Paper 6

The metabolic syndrome - sex and gender related issues.

Vera Regitz-Zagrosek, PhD Eleke Lehmkuhl Shokufeh Mahmoodzadeh

Clustering of risk factors for cardiovascular disease such as abdominal obesity, hypertension, dyslipidemia and disturbed glucose tolerance is increasingly prevalent in the western world. The combination of these risk factors leads to a disproportional increase in cardiovascular risk and has therefore been described as an own entity - the metabolic syndrome. In the recent years, the prevalence of the syndrome rises particularly in young women where it is driven by over- and malnutrition, lack of exercise and the resulting obesity. However, all disease elements contributing to the metabolic syndrome are also strikingly increased by menopause i.e. the metabolic syndrome is also characteristic for post-menopausal women.

There are significant differences in the pathophysiology of the metabolic syndrome between pre- and post-menopausal women and men. They are due to the increase in android obesity, dyslipidemia and hypertension in post-menopausal women and to the disproportionally increased cardiovascular risk that diabetes carries in women, among others. New information on pathophysiology of the syndrome pinpoints the role of intra-abdominal fat. It contributes to the conversion of testosterone into estrogens leading to significant oestrogen levels in old women and men, to the synthesis of adipokines and inflammatory mediators and determines free fatty acid levels in the portal circulation. Malfunction of adipocytes affects hormone levels, inflammatory mediators and lipid profile.

Altogether we have to realise that there is an endemia of all components of the metabolic syndrome with more than 60% of the old women being hypertensive, with more than 40% of the adult population having a disturbance in glucose metabolism and with about 30% of the adults being overweight or obese and a large proportion of the population being dyslipidemic. Prevention of the metabolic syndrome by exercise, healthy nutrition and aggressive medical therapy of its components with suitable approaches in women and men seems essential.

Keywords: metabolic syndrome, menopause, cardiovascular disease, gender differences

Methodological and ethical ramifications of paying attention to sex and gender differences in public health research. Prevention, health care delivery; focus on health inequalities with particular examples from Austria.

Anita Rieder, MD Kitty Lawrence, BEng DiplON

Much progress has been made in recent years towards achieving a more "gender conscious" approach to research and health promotional and preventive intervention. The profile of gender specific medicine has been further heightened by initiatives, statements and guidelines from, for example, the WHO, the Beijing platform for action and gender mainstreaming "Gender Good Practices" and the EU framework programme. Increasingly countries are paying more attention to gender issues, developing strategies and setting up projects to incorporate gender mainstreaming and gender equity, not only in medicine, but also in all walks of life. However, no country has yet managed to completely eliminate the gender gap. There is much work still to be done and much to be considered in terms of the ethical and methodological implications of gender orientated public health research and practical application. The question Does sex matter? has long since been answered with yes. It is time now to examine what we know and how we can best utilise and implement this knowledge in effective public health research and strategy.

As a multifaceted determinant of health, gender is inextricably linked with public health which assumes illnesses and health problems are influenced by physical factors, the social/cultural and health political environment. Inequities between men and women in terms of health, access to public health programmes and medical treatments have in part stemmed from the past lack of gender differentiated research. This paper looks at the implications that incorporation of gender in public health research has for methodology and public health ethics. It aims to identify where potential disparities lie starting with education at medical school through to inequalities in access to health care and health care delivery and further discusses implications for policy. Finally some practical examples have been cited from Austria such as the compilation and use of gender specific health reports, which have proved an invaluable tool in the development of public health policy.

Only through gender-based research and public health planning and intervention can we achieve health promotion and prevention tailored to the specific needs of men and women in the 21st century.

Gender Specific public health strategies have a major responsibility to meet the societal needs and to contribute to the societal value of health research.

Paper 8

Anxiety disorders: a gender test case within mental health (care) research.

Marrie Bekker, PhD Janneke van Mens-Verhulst, PhD

Anxiety disorders are more prevalent among women than among men. The present paper is aimed at investigating to what degree current theories and treatment of anxiety disorders pay attention to gender. To that end, we systematically scrutinized the literature, mainly the Psycinfo and Pubmed databases, but also performed several additional searches. The main themes in our searches were current prevalence figures of the several types of anxiety disorders, and co-morbidity; theories explaining anxiety disorders; and studies on treatment effects.

Our main conclusion is, first, that more attention should be given to gender-relevant individual differences leading to anxiety disorders via learning processes. Attachment experiences and resulting affective-cognitive conditions in terms of attachment styles and autonomy-connectedness seem promising but firmer empirical evidence has to be established, also concerning possible processes between these conditions and phobic fears and avoidance. Secondly, large discrepancies are observed between the attention paid to the sex differences in prevalence of anxiety disorders and their possible background on the one hand, and the scarce attention given to these differences when it comes to treatment, at the other hand. Prevention and treatment might gain efficiency if the available knowledge on sex- and gender specificity of aspects of anxiety disorders would be implemented into practice. Simultaneously, treatment effect studies should be improved by paying more attention to sex and gender throughout the research process.

A tool for distinguishing gender research from gender difference research - examples from work-related health.

Anne Hammarström, MD PhD

Background: The awareness of gender research is low in academic medicine and the concepts of 'sex' and 'gender' are often used synonymously. The number of medical articles with focus on gender and women is increasing, while the number of articles based on gender research is still quite small.

Aim: The aim of this paper is to identify possible problems and /or challenges with regard to the concepts of 'sex' and 'gender' in work-related research as well as to propose a tool to implement the theoretical insights. The tool will be used to distinguish gender research from gender or sex difference research in relation to the public health consequences of unemployment and labour market position.

Results: Gender research differs from sex/gender difference research in several important ways. While gender research questions the dominating epistemology of medicine, sex/gender research is performed within the dominating paradigm. While gender is an analytic category and structural analyses of gender relations are central in medical gender research, the level of analyses in sex/gender is often as a variable on the individual level in gender difference research. Masculinity research constitutes a dynamic part of gender research. However, in sex/gender difference research men, as well as women, are analysed as one of several variables. Through questioning the existing field of knowledge, gender research - with its base in power analyses and theoretical development - can lead to new knowledge about men and women. There is a vigilance in gender research with regard to the risk of exaggerating differences between men and women; these differences are either biomedical or socio-cultural in nature. In gender difference research there is a risk for essentialism, i.e. the tendency to regard differences between men and women as constant, general and unimpressionable.

Conclusion: In this paper I have developed a model which may be used to distinguish gender research from gender difference research. The model may become a practical tool for making such comparisons. However, the questions in the tool need to be refined and further developed in an active dialogue with gender researchers.

Paper 10:

Gender, a major player in the crosstalk between genes, environment and health.

Jose M. Ordovas, PhD

Men and women share most of the genetic information; however, they have dramatically different disease susceptibilities that go well beyond the expected gender-specific diseases (i.e., cervical or prostate cancer). Sex influences susceptibility to nearly all common diseases that affect both men and women, including atherosclerosis and diabetes and their preceding risk factors, such as hyperlipidemia, insulin resistance and obesity. These are all known to be highly complex and multifactorial in their origin, involving genetic factors but also a myriad of environmental and behavioural factors that interact with the genetic component, which, in itself, is highly polygenic. This complexity underlies the poor replication obtained for most candidate gene association studies examining common diseases and their predisposing risk factors. There is already evidence about the different pharmacogenetic response to lipid-lowering drugs in men and women. However, pharmacogenetic knowledge deals with the population that is already diseased or at high risk of developing disease. Parallel developments are taking place in the area of nutrigenomics aimed to the health of the entire population. In this regard, information exists regarding significant gene-gender interactions for risk of diet-related diseases (i.e., obesity) as well as more complex gene-gender-diet interactions (i.e., perilin). However, we are still lagging behind in terms of replication of preliminary interesting findings as well as on the definition of the functional basis for these gender-specific effects.

Biographies of authors

(alphabetical order)

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As a Professor of Clinical Research in General Practice, GeertJan Dinant is appointed at the Department of General Practice and Care and Public Health Research Institute (Caphri) of Maastricht University. Besides his clinical work in an academic health centre in Maastricht, he is a teacher for pre- and post-graduate medical students, general practitioners and researchers. One example is his leading role in the combined clinical and research training program for general practice. After 6-7 years participants are graduated general practitioners who completed a PhD-thesis. More recent he was a fellow founder of the Brisbane group on Advanced Education in Primary Care Research, a collaboration between primary care research schools in Europe, Australia and North America. A third example is his leadership of the research training program of the Dutch College of General Practitioners (NHG Kaderopleiding wetenschappelijk onderzoek). His scientific work concentrates on frequently occurring complaints and diseases in general practice, with the emphasis on diagnostic and prognostic research. The clinical areas include osteoporosis and osteoporotic fractures, shoulder complaints, lower respiratory tract infections and influenza, and cardiovascular diseases. Other subjects are very specific for general practice: unexplained complaints, the 'something is wrong' feeling of the doctor, and the care for people with intellectual disabilities living in the community. Finally, he is the program leader of general practice research training programs in Rumania, Turkey and Kenya.

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Degrees in Early Childhood Studies, Applied Psychology, Masters in Forensic Psychology. PhD candidate in Paediatric Allergy (qualitative study entitled 'Living with a food allergy. An exploration of children's views and

experiences: The biopsychosocial impact of food allergy on children. (includes an exploration of gender differences in developmental trajectories).

Research Associate in Europrevall, developing HRQoL questionnaires for children with food allergy, aged 0-12 years. I have a research interest in gender in research methodology and have published papers on it.

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University degrees

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- PhD, K.U.Leuven, 1992

University activities

- Consultant Internal Medicine-Rheumatology, K.U.Leuven, 1979-95
- Professor in Medicine, University Hasselt, Diepenbeek, since 1993
- Department of Rheumatology, Academic Hospital, University Maastricht, The Netherlands since 1/8/98

Graduate Bourses and Foreign Courses

Bourse of the British Council (6 months), T Scott, Kennedy Institute & Chairing Cross Hospital, London, 1977 Educational grant, PJ Meunier, Lyon, 1977

Graduate promotion

Promotor of PhD thesis in Medicine

- Yebin Jiang: 'Radiology and Histology in the Assessment of Bone Quality', KULeuven, 1995
- D van der Voort: 'Detection and Determinants of Osteoporosis in Primary Health Care', UMaastricht, 2000
- In preparation: 5

Membership societies

Boards: IOF, ISCD

Societies: ECTS, ASBMR, ACR, BBC, NVCB, KBVR, NVR

Administrative functions and counsellor in academic and governmental organisations: RIZIV, IMEA, FDA,

Editorial Board of Journals: Osteoporosis Int, J Clin Dens, Progress in Osteoporosis, Current Osteoporosis

Reports (Associate Editor), Ned T calcium en botstofwisseling, since 2003 (co-editor), CTI

Publications: > 350 publications in the national and international literature

Contributions to >30 book, (co)editor of 5 books

Regular review activities for >15 journals

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Anne Hammarström is professor of public health focusing on Gender research at Umeå University combined with 33 per cent clinical work as a general practitioner in Umeå health care. She has more than 23 years experience of research on unemployment and health from a Swedish as well as international perspective, She has been a pioneer in developing gender research in public health and is now main responsible for the newly started Centre for Gender Research at the Faculty of Medicine at Umeå University, with more than 130 members. Her main research fields are the following: 1. critical analyses of how sex and gender are dealt with in medical research 2. gender theoretical development in public health and medicine 3. empirical research on gendered constructions of depression as well as on gendered life circumstances (such as unemployment, labour market attachment, work environment, work-related rehabilitation, socioeconomic determinants, gender-based violence). Her empirical research is mainly based on a longitudinal school leaver's studies with extremely low non-response rate.

She has several national as well as international commissions related to her competence in gender research, e.g. a gender expert for the National Institute of Public Health, a member of the Swedish Governments Scientific Working Committee, a member of the board of the Swedish Secretariat for Gender Research as well as a Member of the Employment Conditions Knowledge Network, WHO Commission on the Social Determinants of Health.

Anita Holdcroft, MB ChB MD FRCA

Clinical Reader in Anaesthesia and Honorary Consultant Anaesthetist
Department of Anaesthetics, Pain Medicine and Intensive Care
Division of Surgery, Oncology, Reproductive Biology and Anaesthetics (SORA)
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http://www1.imperial.ac.uk/medicine/sora/

Anita Holdcroft, as Reader and Honorary Consultant Anaesthetist, Chelsea and Westminster Hospital, Imperial College London is an internationally recognised clinical scientist specialising in pain medicine especially in women. She was first the secretary and then the Co-Chair of the International Association for the Study of Pain Special Interest Group on Sex, Gender and Pain from 1999 to 2005. She is the immediate Past President of the Royal Society of Medicine Forum on Maternity and the Newborn, has authored and edited definitive textbooks such as 'Principles and Practice of Obstetric Anaesthesia and Analgesia' and 'Core Topics in Pain'. Her publications include the Chapter on 'Sex and Gender Differences in Pain' in Wall and Melzack's Textbook of Pain 4th and 5th Editions and multiple scientific papers on pain relating to women and anaesthesia during childbirth. She has research grants and publications investigating pain during childbirth and gender differences in human pain sensations.

She is the Deputy Chair of the British Medical Association Medical Academic Staff Committee and she has grants to develop women's careers in academic medicine.

Jörg Isensee, MSc

Center for Cardiovascular Research (CCR)
Max-Planck-Institut für Molekulare Genetik
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Charité, Universitätsmedizin Berlin
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10115 Berlin

Phone: +49 - 30 - 450 578 727 Fax:+49 - 30 - 450 525 901 e-mail: isensee@molgen.mpg.de

Date of birth: 13.11.1975

Place of birth: Hannover, Germany

Nationality: German

Education:

22.09.1997 - 13.07.2002 Study of biochemical engineering at University of Applied Sciences Hamburg.

Diploma thesis under the supervision of Prof. Dr. A. Bader at the German Research

Center for Biotechnology (GBF).

15.10.2002 - 31.08.2004 Study of Life Sciences at the Leibniz University Hannover. Master thesis at the

Center for Cardiovascular Research, Charite Berlin, under the supervision Prof. Dr. P. Ruiz with the title "Age- and sex-specific differences in myocardial gene expres-

sion of mice and men".

Scientific experience:

01.09.2004 - now Ph.D. thesis at the Center for Cardiovascular Research, Charite Berlin,

under the supervision Prof. Dr. P. Ruiz

Kitty Lawrence, BEng. DipION

Master of Public Health student General Secretary Association Altern mit Zukunft Lazarettgasse 19/4th floor A-1090 Vienna Austria

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After gaining a Bachelor of Engineering in Mechanical Engineering in 1988 Kitty Lawrence spent 10 years working in the oil and gas industry as a structural engineer designing oil platforms. A job that, aside from engineering skills, required a sound grasp of project management, flexible communication skills in order to establish a reputation in an overwhelmingly male dominated environment, and not least involved a rather chilly February site visit to an offshore oil platform in the North Sea. Kitty's interest in nutrition was awakened around 9 years ago following a short introductory course and resulted in her completing a three-year diploma course in Nutritional Therapy at the Institute for Optimum Nutrition in London. This enabled the transition from engineering to social medicine, which started with part time work at the Institute of Social Medicine of the Medical University of Vienna in April 2001. Working in close collaboration with Professor Anita Rieder, Kitty's work included research for and preparation of scientific research papers in the fields of nutrition, gender, and heart disease, as well as, administrative and academic support for the First and Second World Congress for Men's Health in November 2001 and October 2002 respectively.

In her current job as General Secretary of the non-profit making Association "Altern mit Zukunft" (since November 2004) the motto "prevention is better than cure" seems particularly appropriate for the well being and health promotion of people of every age group. Although the focus of the Association is to support health promotion and care within the scope of medical scientific projects, and thus stimulate preventive potential and encourage personal responsibility for more active and healthier aging, taking into account social and gender specific factors, Kitty's scope of work has been manifold. Amongst other things she assisted Professor Rieder in the research for and preparation of a proposal for the Medical University of Vienna for a Master of Public Health program with a specific emphasis on Gender. She has also been involved in the compilation of health reports on diabetes, neuropathic pain, allergy, and obesity, the organisation of discussion rounds on special health topics, supported Prof. Rieder in the research and preparation of public health presentations on for example gender, obesity, diabetes, heart disease etc. and coordinated a pilot study of an early detection tool for cognitive disturbances in the elderly for use by the general practitioner.

Kitty's enthusiasm for her work at the Association and extensive involvement in the field of public health encouraged her to start a Master of Public Health program at the University and Medical University of Vienna in October 2005, from which she is due to graduate in July this year.

Janneke van Mens-Verhulst, PhD

Former Professor of Women's (Mental) Health Care, University for Humanistic Studies, Utrecht & Associate Professor in Health Psychology, Department of Health Psychology

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Janneke van Mens-Verhulst (1947) has been a researcher and lecturer in health, health care and gender since 1981.

She studied social psychology and pedagogy at the University of Amsterdam. In 1972, she became a lecturer in communication and counselling skills in the Faculty of Medicine, Utrecht University, subsequently moving to the Faculty of Social Sciences, at the same university. She held tenure in the Departments of Andragology (1976-86), Clinical and Health Psychology (1986-98) combined with Women's Studies (1986-94), joining the Department of Health Psychology in 1998.

Simultaneously (1995-2006) she was a professor in Women's (Mental) Health Care at the University for Humanist Studies, also in Utrecht. In that capacity she co-ordinated the 'Gender and Health' group of the Netherlands' Research School of Women's Studies (www.let.uu.nl/nov) until 2005, and she managed the project 'Quality of Women's Health Care', which produced a range of studies on women's mental health care and its integration into the regular mental health-care system. Since 1993 she was a board member for the Dutch Foundation of Women and Health Research.

Gradually, she has extended her topic to Health Care and Diversity, with a special interest in the intersectionality approach. As she formally entered an early retirement scheme in 2006, she nowadays continues her activities on a freelance basis.

Her research topics vary from "daughtering and mothering" to the psycho-social aspects of chronic illness, and from the resilience of "Forgotten Women on Farms" (in South Africa) to medically unexplained complaints in the Western world. Her methodological interests include exploring the possibilities of computer simulation as a means for performing prospective research in addition to quantitative and qualitative analyses.

Jose M. Ordovas, PhD

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Senior Scientist and Director, Nutrition and Genomics Laboratory Jean Mayer USDA HNRCA at Tufts University 711 Washington Street Boston, MA 02111-1524, USA Phone: (617) 556-3102

USDA Human Nutrition Research Centre on Aging at Tufts.

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Dr Ordovas was educated in Spain at the University of Zaragoza. He did postdoctoral work at the MIT, Harvard and Tufts University. He is Professor of Nutrition and Director of the Nutrigenomics Laboratory at the

Dr. Ordovas' major research interests focus on the genetic factors predisposing to cardiovascular disease and their interaction with the environmental factors. He has participated in the Framingham Heart Study for over 20 years and is carrying out multiple population studies to determine CVD risk in populations around the world. Dr Ordovas has published ~400 articles in peer review journals and written numerous reviews and edited 5 books on topics surrounding Nutrigenomics, diet and CVD.

Dr Ordovas has participated as invited speaker in hundreds of International Congresses, courses, and symposiums in Europe, Asia, Central and the Americas. He serves as editor for Current Opinion in Lipidology (Genetics Section), he is also consulting editor for the Am. J. Clin. Nutr., Member of the Editorial Board of the J Lipid Res. and Associate Editor for Nutr. Metab. Cardiov. Dis. Moreover, he serves on several other editorial boards and is active with several peer review committees, including the NHLBI Program Projects Parent Committee, and professional memberships. He is also a member of the Institute of Medicine's Food and Nutrition Board (National Academies).

He is Member of Honour of the Spanish Society of Atherosclerosis and he has received other awards for his

contributions to the field of Nutrition and Genomics such as the USDA Secretary's Award, the Mary Swartz Rose Memorial Lecture from the Greater New York Dietetic Association and several other awards.

Dirkje S. Postma, MD PhD

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Dirkje S. Postma, MD, PhD, is Professor of Pulmonary Diseases in the Department of Pulmonology at the University Hospital Groningen in Groningen, The Netherlands. She is in charge of GRIAC (Groningen Research Institute for Asthma and COPD), and she works in clinical practice as well.

Prof. Dr. Postma is one of the 10 best researchers in the world in the field of asthma and COPD. Her description of asthma based on genetic research has been considered a breakthrough. She served on the National Heart, Blood, and Lung Institute/World Health Organization working committee of the Global Initiative for Chronic Obstructive Lung Disease (GOLD). A member of the Royal Academy of Sciences in the Netherlands, Belgium and U.K., she is also the recipient of the 2000 Netherlands Organization for Scientific Research (NWO)-Spinoza prize (the highest academic award in the Netherlands).

Prof. Dr. Postma has published more than 400 papers in journals such as European Respiratory Journal, Clinical and Experimental Allergy, New England Journal of Medicine, Lancet, Journal of Allergy and Clinical Immunology, Thorax, and American Journal of Respiratory and Critical Care Medicine.

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Vera Regitz-Zagrosek, MD PhD

Professor of Cardiology
Center for Gender in Medicine and Cardiovascular Disease in Women and Cardiovascular Research Center Berlin
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Germany

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Training

1972-1979	Medical School: Homburg, Germany and Grenoble, France Scholarship,
	Max Planck Institute for Experimental Cardiology, Prof. Dr. W. Schaper, I
1080-1081	Research position, Dept of Riochemistry, University of Madison, Wiscon

1980-1981 Research position, Dept. of Biochemistry, University of Madison, Wisconsin, USA,

Bad Nauheim

Prof. Dr. A.L. Shug

1981 Training position, Max-Planck Institute for Experimental Cardiology,

Prof. Dr. W. Schaper, Bad Nauheim

1985 Research position, Dept. of Biochemistry, University of Madison, Wisconsin,

USA, Prof. Dr. A.L. Shug

1979 License to practise medicine from the "Universität des Saarlandes", Germany

Degree as a "Dr. med." from the "Universität des Saarlandes"

Professional career

1981-1984	Intern at the "Deutsches Herzzentrum München", Prof. Dr. W. Rudolph
., ., ., ., .	

1986-1991 Member of the founding team and intern at the German Heart Centre Berlin "Deutsches

Herzzentrum Berlin (Director: Prof. Dr. R. Hetzer). Founder and principle investigator of

the section for experimental cardiology.

1990 Intern at the "Freie Universität Berlin", Dept of Haematology and Oncology" Prof. Dr.

Huhn Specialist in Internal Medicine, Berlin

1991 Specialist in Cardiology, Berlin

Habilitation in Internal Medicine and Associate Professor in Internal Medicine at the

"Freie Universität Berlin".

1996 Professor in Internal Medicine at the "Humboldt Universität zu Berlin"

2000 Assistant Medical Director and Head, Experimental Cardiology, Dept of Internal Medicine/

Cardiology at the German Heart Centre Berlin

Head, Experimental Cardiology, Dept of Cardiac Surgery, German Heart Institute

2001 Founder and Speaker: Graduate course in Myocardial Hypertrophy, Charite, Berlin (training

programm for 12 PhD students and medical students from the German Research Foundation,

DFG)

2003 Vice-Director, Centre for Cardiovascular Research, Charite, Berlin

Gender Research and Development

2002	Founder and Head of the Working Group Cardiovascular Disease in Women at the German Cardiac Society
2002	First Chair Cardiovascular Disease in Women at the Charite, Berlin in cooperation with
	German Heart Centre, Berlin
2003	Founder and speaker of the "Center for Gender in Medicine" (GiM), at the
	Charite- University Medicine, Berlin
2003	Project leader in the Competence Network Heart Failure (German wide network
	sponsored by the ministry of Research, 2003-2008) on projects on "Gender aspects in the
	epidemiology in heart failure" and "Gender aspects in cardiac surgery"
2004	Chair: Committee for Guidelines on Cardiovascular Disease in Women at the German
	Cardiac Society
2004	Founder and Speaker: Graduate course for Gender Aspects in Myocardial Hypertrophy,
	Charite, Berlin (training program for 15 PhD students and medical students from the
	German Research Foundation, DFG, 2004-2010)
2005	Task manger Gender at the "Eugene heart project"; Integrated project 2005-2010 at the EU
2005	Partner in Cardiovasc (Early stage training project at the EU, 2005-2008) with gender aspects
2005	Board member at the studies for "International health and society" of the International
-	Women's University at the Charite Berlin

Member of the founding team of the International Society for Gender Medicine

Board member: "Gender in medical education" at the Medical School Hannover

(with Marianne Legato, Karin Schenck-Gustafsson)

Anita Rieder, MD

2006

2006

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Anita Rieder is a Health psychologist and specialist in social medicine working at the Institute for Social Medicine of the Medical University of Vienna since 1989 and attained the rank of full professor in 2000. She has also taught abroad, as visiting professor at the University of Ottawa, National Heart Institute, Canada, as well as, visiting professor at the Medical University of Hannover, Germany. Placing great value on her own personal development Anita Rieder has attended a number of high profile courses at acclaimed universities, including Wharton School, University of Pennsylvania and Harvard School of Law, Boston. Anita Rieder is a member of several advisory bodies, including the Wiener Landessanitätsrat (public health council); the advisory council of the Vienna Women's Health Promotion Program; the Oberster Sanitätsrat (supreme public health council), where she chairs the Public Health Commission; the Medical Sciences of the European Academy of Sciences and Arts; and the Austrian Health Promotion Fund Project Advisory Committee. Recently, as one of the scientific course directors, Anita Rieder has been instrumental in launching the Master of Public Health Program at the Vienna Medical University, which commenced in October 2005.

For a number of years now, the promotion of gender-specific medicine in Austria and internationally has been a key activity for Professor Rieder. In 2004, together with Prof. Brigitte Lohff of Hannover, Anita Rieder Published the textbook "Gender Medizin - geschlechtsspezifische aspekte für die klinische praxis" (Springer Verlag), which aimed to investigate and answer the following questions:

- 1. Which, clinically relevant or irrelevant, gender differences and similarities are currently known?
- 2. What scientific evidence and clinical experience currently exists?
- 3. Do these have an influence on clinical diagnoses, therapy and outcome? and
- 4. Can recommendations be derived for medical practice and, if so, which?

This work is a comprehensive guide to gender medicine.

In 2005 Professor Rieder was invited to be a member of the committee of specialists on the inclusion of gender differences in health policy, for the Council of Europe. The report was completed in October 2006. The key aim of the Commission was the formulation of proposals for the integration of gender aspects in the public health care system for the Health Ministries of the Council of Europe.

Patricia Ruiz Noppinger, PhD

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Date of birth: April 28th, 1965
Place of birth: Schaffhausen (CH)
Nationality: Spanish/Austrian

Education

1983 - 1986 Study of biology at the Universidad Complutense of Madrid (Spain) 1986 - 1990 Study of biology at the Paris-Lodron University Salzburg (Austria)

Diploma thesis under the supervision of PD Dr. H.C. Bauer at the Institute for Molecular Biology of the Austrian Academy of Sciences, Salzburg (Austria)

Scientific experience

1990 - 1994	Ph.D. thesis at the Basel Institute for Immunology, Basel (Switzerland) under supervision of Prof. B.A. Imhof.
1994 - 1996	EMBO Postdoctoral fellow at the Max-Delbrück Centre for Molecular Medicine, Berlin (Germany) in the Dept. of Prof. W. Birchmeier.
1996 - 1998	TMR Postdoctoral fellow of the European Community at the Max-Delbrück Centre for Molecular Medicine, Berlin (Germany) in the Dept. of Prof. W. Birchmeier.
1998 - 1999	Postdoctoral fellow in the Dept. of Prof. H. Lehrach at the Max-Planck Institute for Molecular Genetics, Berlin, (Germany)
1999 - 2004	Group leader at the Max-Planck Institute for Molecular Genetics, Dept. Vertebrate Genomics (Leharch), Berlin, (Germany)
2003	Habilitation: "Molecular Approaches to Human Disease in General, and to Dilated Cardiomyopathy in Particular" at the Paris-Lodron University Salzburg (Austria).
Since 10/2003	Group leader at the Centre for Cardiovascular Research, Charité Universitätsmedizin Berlin, Campus Mitte
Since 12/2004	Professor for "Molecular Basis of Gender Differences" at the Centre for Cardiovascular Research at the Charité Universitätsmedizin Berlin and guest group leader at the at the

Teaching experience

(Germany)

Since 2001 Paris-Lodron University Salzburg (Austria) and at the Charité Universitätsmedizin Berlin

(Germany) Lectures and tutorials on Mouse Models in the Analysis of Human Disease and

Max-Planck Institute for Molecular Genetics, Dept. Vertebrate Genomics (Lehrach), Berlin,

on the Molecular Basis of Gender Differences in Human Disease

Evaluator activities

- Member of the PhD committee ("Promotionskommission") of the Charité Universitätsmedizin Berlin.
- Communicating editor of the journal "Molecular Genetics and Genomics" (MGG) and reviewer for "The Journal of Molecular Medicine", "Cardiovascular Research" and "Nucleic Acid Research".
- Evaluator activities for the World Cancer Research Fund International, the Swiss Cancer League and the 6th Framework Programme of the European Commission.

Biographies of reviewers alphabetical order

Dorly J.H. Deeg, PhD

Professor of Epidemiology of Aging
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Dorly J.H. Deeg, PhD is a strategic professor of epidemiology of aging in the Institute for Research in Extramural Medicine and the Department of Psychiatry, VU University Medical Centre, Amsterdam, the Netherlands. Since 1991, she is the scientific director of the ongoing Longitudinal Aging Study Amsterdam (LASA). By education a methodologist, Prof. Deeg has worked mainly in the areas of public health and gerontology. To date, publications include studies of longevity, chronic conditions, functional limitations, cognitive impairment, depression, personal competence, social support, and methodology of longitudinal research. Current interests include cross-national comparison and time trends. Prof. Deeg is editor-in-chief of the European Journal of Ageing.

Flavia Franconi, MD PhD

Professor of Pharmacology

Department of Pharmacology, Università di Sassari, PhD School of Gender Pharmacology, University of Sassari, Gender Oriented Group of Italian Pharmacological Society, National Institute of Biostructures and Biosystems-Section of Sassari University.

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Flavia Franconi is a MD and full professor of Pharmacology at University of Sassari, Italy; she is the coordinator of Gender Pharmacology Committee of Italian Pharmacological Society, coordinator of PhD School of Gender Pharmacology opened this year at University of Sassari, Italy; is the coordinator of journal of Italian Pharmacological Society: Quaderni della SIF

She is member of national advisory board of Pharmacological Research and drugs gender oriented of Ministry of Health. Previously, she was a member of the national advisory board for Menopause Guidelines of the Ministry of Health.

She is referee of the following international journals: Diabetologia, Alcohol and Alcoholism, American Journal of Clinical Nutrition, Life Science, Archives of Medical Research, British Journal Clinical Nutrition.

She is author of about 150 scientific publications in international journals and books, and author of oral communications in national and international congresses.

Her research is focused on gestational diabetes mellitus and in developmental programming; moreover she is interested in the control of oxidative stress and in the use of antioxidant substances in many diseases such diabetes mellitus. She also focused her attention on gender pharmacology and in particular on therapy optimisation in females; much has been dedicated to education, information and dissemination (e-learning, ECM, meeting, media).

Monique H.W. Frings-Dresen, PhD

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Monique H.W. Frings-Dresen (birth date: March 4th, 1952) is Full Professor in 'Occupational Health and Medicine' at the Coronel Institute of Occupational Health, Academic Medical Centre, Amsterdam, The Netherlands. She is director of AmcOGG (Amsterdam Centre for Health and Health Care Research) and research leader of the Work and Health Program.

Before she worked as researcher at the Faculty of Medicine, University of Amsterdam (Department Physiology), as Assistant Professor at "Centre Hospitalier et Universitaire de Grenoble, consultations de Medecine du Sport" Grenoble, France, and was (co-)director of the Netherlands Centre for Occupational Diseases, Amsterdam. She is an expert on the topic of occupational diseases, especially in (work-related) musculoskeletal and mental disorders.

She is National Secretary of the International Commission on Occupational Health (ICOH) for The Netherlands and member of:

- ICOH Scientific Committee 'Aging and Work', and 'Musculoskeletal Disorders'
- European Expert Group 'Prevention of upper limb disorders' (European Agency for Safety & Health at Work, Bilbao, Spain)
- Technical Committee 'Musculoskeletal disorders' of the International Ergonomics Association (IEA)
- The Dutch Health Council.

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Angela Maas, MD PhD

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The Netherlands
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Angela Maas was born on August 9th 1956 in Utrecht, the Netherlands.

She graduated secondary school in 1974 at the Stedelijk Gymnasium in Utrecht and started Medical School in the same year at the University of Groningen. The in-hospital training in the last 2 years of medical study (1980-1981) were done at the St. Elisabeth Hospital in Curacao, Netherlands Antilles. She obtained her medical degree in December 1981.

In 1982 she worked for one year at the department of Thoracic surgery at the St. Antonius Hospital in Utrecht (drs.F.E.E.Vermeulen). In 1983 she continued her residency of Internal Medicine at the St. Antonius Hospital in Nieuwegein (dr.C.E.M.de Maat), followed by her residency in Cardiology (dr. C.A.P.L.Ascoop). In January 1988 she was registered as a cardiologist and worked for almost 5 years at the department of Cardiology in Arnhem/Velp. In September 1992 she joined the department of Cardiology at the Isala klinieken in Zwolle where she is a staff member since 1994. During the last decade she has developed a main interest in heart disease and prevention in women. In September 2006 she obtained her PhD at the University of Utrecht (Prof.dr. Y. van der Graaf) with the thesis: "Breast arterial calcifications and heart disease risk in women". Angela is married to Ernst Faber and they have two sons, Arthur (1989) and Eric (1990).

Edwin C.M. Mariman, PhD

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Prof. Mariman studied chemistry at the Catholic University of Nijmegen from 1973 until 1979. In 1978 he received the Unilever Chemistry Award. At the Department of Biochemistry of the same university he performed fundamental research on RNA-splicing and in 1983 he received his PhD degree. As a postdoctoral scientist he studied the molecular mechanisms underlying rheuma. In 1985 he moved to the Department of Human Genetics where he was appointed as senior research scientist. As Associate Professor of Molecular Genetics in 1990 he became the head of the Molecular Research Division of the Department until 1995, when he was appointed head of the Division of DNA-diagnostics of the Clinical Genetics Centre of the Academic Hospital in Nijmegen with all its aspects of patient-care, quality control and technological innovation. He was also responsible for the DNA-sequencing and genotyping facility of the Hospital. He supervised the Research Section on Multifactorial Disorders of the Department of Human Genetics. Main area of research interest was the identification of genetic risk factors for human neural tube defects. Because of the increased international attention for complex disorders, this section was extended and additional topics were added including dyslexia and Crohns disease. In 2001 he was appointed Professor of Functional Genetics at the Department of Human Biology of the University of Maastricht. The major line of research concerns gene-nutrient interactions in relation to complex human disorders like obesitas, diabetes and cardiovascular disease. He is the coordinator of the Maastricht Proteomics Centre www.proteomics.unimaas.nl. He is a board member of the national Center for Human Nutrigenomics and of various scientific advisory committees (i.e. the National Heart Foundation).

Piroska Östlin, PhD

Senior Lecturer

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Dr. Piroska Östlin is Senior Lecturer at the Karolinska Institute and Expert in International and Global Health at the National Institute of Public Health in Sweden. She is Member of Board of the European Institute of Women's Health (EIWH) and Adviser to the World Health Organisation (WHO) on gender mainstreaming and health equity issues. Currently, Dr. Östlin is Director of the Women and Gender Equity Knowledge Network of the WHO Independent Commission on Social Determinants of Health (CSDH). Her former positions include Secretary of the Swedish Public Health Commission and Chair of Board of the Nordic School of Public Health. Her publications include Gender Inequalities in Health: A Swedish Perspective, HCPDS, Harvard University Press, 2001 (with Danielsson M, Diderichsen, et al), and Engendering International Health; The Challenge of Equity, MIT Press, 2002) (with Sen G and George A).

Susan P. Phillips, MD MSc CCFP

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family medicine in Ontario's remote First Nations communities, downtown Toronto, and Kingston's Community Health Centre have shown her, firsthand, the link between social circumstances and health. Her research has been published in numerous journals including the New England Journal of Medicine, Social Science and Medicine and the International Journal for Equity in Health. Dr. Phillips has been invited by the WHO as well as several Australian and Canadian universities to contribute to the integration of gender into medical education and research. In the past year she has had the honour and pleasure of participating in work connected with gender and health for the World Health Organization, the Swedish Research Council, and the governments of Bosnia and Serbia. The Gender and Health Curriculum Project, a web enabled undergraduate curriculum of Ontario's medical schools, owes much to her initiative and ongoing involvement.

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Dr Karen Ritchie is a neuropsychologist and epidemiologist, who began her career with the Health Services Evaluation Unit, University of Oxford (Sir Richard Doll) and the Social Psychiatry Research Unit, MRC Australia (Professor Scott Henderson). She is currently Director of the French National Institute of Medical Research (INSERM), Research Unit E99-30 (Epidemiology of Nervous System Pathologies). The research work currently being undertaken by this group includes multidisciplinary population studies of neurological and psychiatric disorders in the elderly, molecular epidemiological studies of neurodegenerative and psychiatric disorder, clinical studies of senile dementia, depression, suicide, epilepsy, and care evaluation. The group also collaborates with the European Government and WHO in the development of population indicators for mental health surveillance. She is a member of the Board of Directors of the International Psychogeriatric Association, and member of the editorial board of International Psychogeriatrics, International Journal of Geriatric Psychiatry and Journal of Clinical and Experimental Gerontology. She is also a consultant to the Mental Health Division of the World Health Organisation and a member of the Advisory Committee on Women's Health for the European Government.

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Prof. Dr. C.P. van Schayck is born in Sorong Irian Jaya (New Guinea) on 16 April 1958. After obtaining his PhD on the Faculty of Medicine of the University of Nijmegen (The Netherlands) he started in 1990 as research coordinator at the Department of General Practice of the University of Nijmegen and since 1996 also at the Department of General Practice of the University of Maastricht. In 1998 he was appointed as professor of medicine of the Faculty of Medicine of the University of Maastricht and the University of Nijmegen. The past 15 years he has been in charge over 40 research projects especially concerning the diagnosis and treatment of asthma and COPD and smoking cessation in primary care. In 1999 he was appointed as Research vice dean of the Faculty of Medicine of the University of Maastricht and on 1 October 2000 he became Scientific Director of the Care and Public Health Research Institute (Caphri) of the Faculty of Medicine of the University of Maastricht. He is chair of the Guidelines group of the IPCRG making the GINA, GOLD and ARIA guidelines applicable for primary care.

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Eva Swahn studied medicine at the Karolinska Institute, Stockholm, Sweden and has been employed at the Department of Cardiology, University Hospital, Linköping since 1980. She was head of the Coronary Care Unit from 1990 to 2002 and head of the Cardiology Department, Linköping from 2002 and onwards. She completed her PhD on early exercise testing in unstable angina patients in 1987, and became Associate Professor in 1994 and Professor in Cardiology (FESC, FACC) in 2004. Professor Swahn has produced several publications in her main research interest of acute coronary syndromes (ACS) and the gender perspective. She has been invited on numerous occasions to congresses in cardiology as a speaker and as a senior lecturer at post-graduate courses organised by the European Society of Cardiology. Professor Swahn has been the assistant principal/ principal coordinator in multicentre studies including RISC, TRIC, FRISC I and II. These studies have all engaged patients with ACS. RISC and FRISC I and II are landmark studies that are internationally known and often cited. Eva Swahn is the principal investigator of the gender perspective for the Register of Information and Knowledge about Swedish Heart Intensive Care Admissions. Eva Swahn started the Linköping Female Medical Association and was its president for 4 years. She held the position of scientific secretary of Linköping Medical Association between 1998 and 2002, and has been president of the Swedish Society of Cardiology between January 2004 and April 2006.

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Professor Alan White was the worlds first Professor of Men's Health and is the Director of the Centre for Men's Health at Leeds Metropolitan University, which is a focus for research and education on the health of men. Alan was a founder member of the Men's Health Forum (England and Wales) and has been the Chair of the Board of trustees since 2000.

His research includes the Scoping Study on Men's Health for the Department of Health in 2001, the report on the State of Men's Health across 17 European Countries (for the EMHF), which was launched at the European Parliament in 2003, and he has recently completed a study into the Patterns of Mortality for Young Men and Women (aged 15-44 years) Across 44 Countries. Other on-going research includes the evaluation of the Bradford Health of Men team and the evaluation of "Self Care for People" and "Self Care for Primary Health Care Professionals" as part of the NHS Working in Partnership Programme of work. Alan's work also includes studies into men's experiences of illness including coronary heart disease, diabetes and prostate cancer.

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Science shop for Medicine at the University of Groningen. The aim of the Science shop is to provide facilities for research specifically from the patient perspective. Among other issues, research involved drug use in women and elderly.

In the period 1992-1996 Nicolien was action-research co-ordinator at the Women's Health Action Foundation in Amsterdam. In an international setting, the organisation worked on issues of women's health, in particular regarding scientific, social and political aspects of reproductive health.

In the period 1994-2001 Nicolien conducted her PhD research in collaboration with the Dutch Medicines Evaluation Board. She studied discrepancies between patients in phase III clinical trials of cardiovascular drugs and users in daily practice. The under-representation in clinical research of elderly, women, patients of ethnic minority groups and those with co-morbidity/medication is a well recognised problem by clinicians and pharmacists. Representatives of these professional groups proposed a wide range of strategies to change regulatory practices to overcome shortcomings.

In 2004 Nicolien was co-ordinator and principal researcher of a diversity project at the University of Amsterdam that was commissioned by the Netherlands Organisation for Health Research and Development (ZonMw). Studies were performed on the need for diversity in clinical research, conceptualisations of diversities that matter, socio-cultural and political drivers for analysing diversity in clinical research, ethical issues, methodological implications and novel policy strategies to diversity in clinical research.

Since 2005 Nicolien works as researcher at the Science and Society Group of the University of Groningen. She studies social implications of functional foods for obesity that are based in nutrigenomics research.

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Agnes Wold was born in 1955. She has a bachelors degree in Chemistry, Biology and Immunology and is also an MD with specialization in Clinical Immunology and Clinical Bacteriology. She is currently a consultant at the Laboratory of Clinical Bacteriology at the Sahlgrenska University Hospital in Göteborg. She holds a 50% position as researcher in clinical allergy.

Agnes Wold's research concerns the composition, establishment and turn-over of the commensal microbiota of the gut, as well as its interaction with the immune system. Particularly, she is interested in the role of the microflora in stimulating the developing immune system in infancy, thereby promoting normal tolerance development. She published her thesis in 1989 and became Associate Professor in 1993. She heads a research group consisting of 15 persons focusing on studies of the normal intestinal microflora, particularly in relation to development of allergy and inflammatory bowel disease in childhood.

Agnes Wold has a long-standing interest in gender equality in academia. In 1997, she and her colleague Christine Wennerås published the ground-breaking study "Nepotism and sexism in peer-review" in Nature. This study demonstrated that women had to be much more qualified than men in order to be judged equally competent by evaluators at the Medical Research Council in Sweden. She participated in the ETAN network which published their report in 2000 on (the lack of) equality among scientific researchers in the EU. She is currently a member of the advisory board on gender equality at the Swedish Board for Higher Education. She was a member of the board at Karolinska Institute in 1997-2003. She heads the Association of Academic Women in Sweden, funded in 1904 by women struggling for the rights to academic positions.

Agnes Wold has written several newspaper articles and essays on gender equality in academia. She has also given numerous lectures on the subject and has brought these issues into the attention of the general public by frequent interviews and debates in radio and television. Agnes Wold became an Honorary Doctor at the Chalmers University of Technology in Göteborg, Sweden, in 2006, due to her contribution to the field of gender equality in academia.

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Ineke Klinge is a biologist by training and specialized in immunology. She received a KWF fellowship to conduct research at the Dutch Cancer Institute. Her second specialization is in Gender Studies in Science. As lecturer at University Utrecht (1988-1997) she developed and coordinated an interdisciplinary research program Health and Gender: the medicalization of the female body with a focus on ageing. She taught many (inter)national courses on gender and science and organized a number of national and international workshops on the climacteric, sex/gender in science and predictive medicine. Her PhD thesis Gender and Bones: the Production of Osteoporosis 1941-1996 was published in 1998. She is currently appointed at Maastricht University as assistant professor in Gender Studies in Health Sciences. In 2004 she also joined the Centre for Gender & Diversity. She has a long standing experience with research for the European Commission. Already in 1992 she conducted a EU project Women's views of the Human Genome Project and participated in the first EC workshop Women in Science and Technology Research in 1993. In 2001 she conducted one of the seven commissioned Gender Impact Assessment Studies of the Fifth Framework Programme (Klinge & Bosch, 2001). Her study addressed the integration of the gender dimension in the Research Programme for the Life Sciences Quality of Life and Management of Living Resources. She is the leader of the Caphri research programme Gender and diversity in health and health care research. Under this umbrella a number of national and international research projects are carried out ranging from integration of a diversity perspective in quality assurance in health care institutions to integration of the gender dimension in FP6 Integrated Projects and Networks of Excellence in the field of Food Quality and Safety. She published widely on osteoporosis, the female body, medicalization, menopause, gender & health and gender sensitive research methodologies in life sciences and health research. She is board director of the European Institute of Women's Health (EIWH) and board member of the Dutch Foundation for Women and Health Research (DFWHR)

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Dr Mineke Bosch is a historian by training and specialized in women, gender and science and has a lot of experience with European projects, gender mainstreaming and gender impact studies and instruments. Dr Mineke Bosch studied history at the University of Groningen, where she received her M.A. in 1981. In 1994 she defended her dissertation, entitled: Het geslacht van de wetenschap. Vrouwen en hoger onderwijs in Nederland, 1878-1948 (The gender of science. Women and higher education in the Netherlands, 1878-1948) at the Erasmus University Rotterdam (cum laude). From 1994 -1996 she was lecturer in Gender Studies, Faculty of

Cultural Sciences, University of Maastricht. In 1996 she became a guest lecturer at the Universität Bielefeld, followed from 1996 - 1998 by the coordination of staff equal opportunities policies University of Maastricht (m/f, interculturalisation and handicaps). She is currently appointed as Associate Professor of Genderstudies, Centre for Gender and Diversity, University Maastricht.

Her research focuses on historical and contemporary issues regarding gender equality in higher education and science in the Netherlands and the EU. She also conducted research into the development, implementation and evaluation of mainstreaming gender equality in all policies, programmes and processes in universities and academic and scientific institutions at national and European level.

She has completed over a dozen research projects, funded by the University Maastricht, the Advisory Council for Science and Technology Policies, the National Organisation for Research and the European Commission. She is author or co-author/editor of ten books and author or co-author of over 50 articles and chapters in journals and books in the Netherlands, the UK, Germany, Belgium and the United States. She is member of the European Technology Assessment network 'Women and Science', which prepared the EC report Science Policies in the European Union: Promoting Excellence through Mainstreaming Gender. (Brussels, 2000).

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Rein Vos (1955), MD, PhD, studied medicine and philosophy (cum laude) at the University of Groningen receiving (1989) his PhD (cum laude: Drugs Looking for Diseases - Innovative Drug Research and the Development of the Beta Blockers and Calcium Antagonists, Dordrecht: Kluwer Academic Publishers, 1991). He is University Professor Theory of Health Sciences and Chair of the Department of Health Ethics and Philosophy at the Faculty of Health, Medicine and Life Sciences, Maastricht University. He was (1982-1997) working in Social Pharmacy, Pharmacoepidemiology and Drug Policy and Special Professor of History of Pharmacy and Pharmaceutical Research at the University of Groningen.

In 1990 he was a Visiting Professor, Centre for Medical Ethics, Oslo University, Norway. In 1991 he was a Research Fellow at the Centre for Philosophy of Science, University of Pittsburgh and the Department of Medical Humanities, George Washington University, Washington D.C. In 1997 he was a senior investigator and secretary to the Commission on Orphan Drugs. He is a member of the Health Council and Health Research Council advising the Dutch Ministry of Health. He is a member of the Editorial Board of the International Journal Theoretical Medicine and Bioethics.

He has a research interest in epistemological, ethical and political aspects of medical technology and genetics in medicine and public health. Regarding gender and medicine he has been and is involved in the EU projects GENDERWATCH and GENDERBASIC and supervised Dr. Nicolien Wieringa PhD project (2001), co-sponsored by the Dutch Medicines Evaluation Agency, on the comparison of discrepancies regarding age and sex distribution, ethnic origin and patterns of co-morbidity and co-medication between phase III trial populations and patients in medical practice using cardiovascular drugs.

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Cultural intermezzo: "I Carry Your Heart"

Today's performance 'I Carry Your Heart' is from a collection of songs composed by Heleen Verleur (Amsterdam, 1964), with music set for soprano voice and piano, and lyrics borrowed from a wide variety of sources. In 2006, Renée Harp and Heleen Verleur produced a CD 'I Carry Your Heart' with a selection of thirteen songs from this repertoire. The CD title refers to a poem 'I carry your heart with me', by E.E. Cummings. The title song can be downloaded from www. hogehoed.nl.

The overall musical mood of the songs is melancholic, with occasional mood swings into the joyous and comical. The music is performed by Renée Harp (soprano voice) and by the composer herself, on piano. The lyrics come from Octavio Paz (Mexico), Pablo Neruda (Chile), plus a range of English-American, French, German, Italian and Dutch poets. The music always reflects the origins of the lyrics-from French chanson to Argentinean tango.

Compositions of Verleur are performed regularly within the Netherlands and abroad. The premiere of her Second Pianotrio was broadcasted live from the Concertgebouw in 2002 (in the context of the Avro program 'Spiegelzaal'). Her work can be heard on classical radio broadcast stations such as Concertzender. In 2006, one of her pieces was selected for performance by the famous Schöonberg Ensemble during the International Gaudeamus Music Week.

Renée Harp has her own opera company Prima Diva, which produces small scale opera events on demand. She teaches at the Dutch Opera (DNO) and the Amsterdam Conservatory. In 2000 she started her 'Hoge Hoed Zangkunst-bedrijf', a production company for musical performances and singing lessons. A sample of her songs can be downloaded from the company website, www.hogehoed.nl.

Renée Harp and Heleen Verleur often perform together, with repertoire from 'I carry your heart' and with other programs. When they participated in the poetry festival Haarlemse Nachten their contribution received a very favourable review in the local press.

More information: www.hogehoed.nl and www.heleenverleur.nl.