

A N N U A L
R E P O R T



Nutrition and
Toxicology Research
Institute Maastricht

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Preface

The Nutrition and Toxicology Research Institute Maastricht (NUTRIM) is an interfaculty research institute of the Faculties of Health Sciences and Medicine of Maastricht University (UM). Within NUTRIM, about 20 biomedical, clinical and behavioural-science departments cooperate in the implementation of scientific research projects in the fields of nutrition, nutritional toxicology, and nutrition and health. On November 26, 1992, the University Council of UM formally established NUTRIM.

By the end of 2000 41.9 full-time equivalent (fte) Scientific Staff, 10.00 fte Post docs, and 62 fte Administrative and Support Staff were participating in the research activities of NUTRIM. An important component of NUTRIM's activities is the training of PhD students. In 2000, 61 PhD students were active in the Institute and received their scientific training, 12 graduated on their doctoral theses as well as two external PhD-students.

In the course of the year 2000 UM has been expanding its activities within the 'BOS'- (Brede OnderzoekStrategie / Extended Research Strategy) framework in the fields of Molecular Biology, Developmental Biology and Genetics. Also in 2000 the 'Trans-national University Limburg' (tUL) was founded: a joint venture of the Universities of Limburg located at Diepenbeek/Hasselt (Belgium) and Maastricht. Since Life Sciences is one of three main research areas and NUTRIM perfectly fits both within BOS and tUL, it will occupy a key position in nutrition and toxicology research as well as in the development of functional foods. In education NUTRIM will be closely involved in the Master-course 'Nutrition and Toxicology'.

Together with Wageningen University and other research institutes NUTRIM participates in the Graduate School VLAG (Food Technology, Agro-biotechnology, Nutrition and Health Sciences). In January 1999 VLAG was accredited by the Royal Netherlands Academy of Arts and Sciences (KNAW) for a five-year period. Jointly with the other VLAG-partners NUTRIM developed several courses for NUTRIM/VLAG PhD-students, Post-docs and other Scientific Staff. In 2000 NUTRIM started a new procedure to improve the monitoring, supervision and coaching of its PhD students.

The year 2000 was an extremely successful year concerning the level of external funding. The magic level of 10 million Dutch guilders (€ 4.55 million) was exceeded. This is about 60% of the institute's total budget. Especially the 9 grants of the EC Fifth Framework can be considered a valuable indicator of NUTRIM's recognized excellence within Europe. NUTRIM also succeeded in continuing the high level both in quantity and quality of scientific output.

In 2000 the following NUTRIM researchers became professor: Prof. Ronald Mensink (Professor of Molecular Nutrition with emphasis on lipid metabolism), Prof. Hans Brug (Honorary Professor of Nutrition Education), Prof. Martin Hofker (Professor of Molecular Genetics) and Prof. Wim Buurman (Professor of Metabolism and Immunity).

Other highlights in 2000 were the farewell symposium of Prof. Dave Halliday, expert in Stable Isotopes and of great help in the development of the Stable Isotope Research Centre (SIRC) within NUTRIM; the 'Edmond Hustinx' award of Prof. Ronald Mensink and the scientific coaching of the Dutch Triathlon Team during the Olympic Games in Sydney.

Furthermore NUTRIM hosted 'the Calorimetry 2000 Symposium' on Energy Regulation Research.

It is a great pleasure for me to write this preface. Especially when the scientific results are very good it gives me a great confidence to be scientifically in charge of this dynamic institute.

Last but not least I would like to thank all NUTRIM colleagues for their dedication and collaboration in 2000.

Wim H.M. Saris, MD, PhD
Scientific Director



1 Organizational structure

1.1 General information

The Nutrition and Toxicology Research Institute Maastricht (NUTRIM) is an interfaculty research institute of the Faculties of Health Sciences and Medicine of Maastricht University. It is established in accordance with articles 93 and 98 of the University Education Act (WVO 9.49 ff. of the Higher Education and Research Act (WHW). The Faculty of Health Sciences governs NUTRIM. The Institute's bylaw specifies which regulations to be taken by the Council or the Board of the Faculty of Health Sciences, need to be heard and or approved by the Council or the Board of the Faculty of Medicine.

1.2 Divisions

The research institute NUTRIM is divided into four Divisions.

- Division 1 Nutrition and metabolism
- Division 2 Clinical aspects of nutrition
- Division 3 Epidemiological and behavioural-science nutrition research
- Division 4 Health hazards in living environments and nutrition.

Per Division, a Division Head is appointed. A Division Head is in charge of all activities of a Division. In turn, a Division is composed of a number of Research Lines. For every Research Line, a Research Leader is appointed. A Research Leader is in charge of all activities of a Research Line.

1.3 Board of Directors

The general management of NUTRIM's activities rests with the Institute's Board of Directors. In addition, the Institute's Board of Directors prepares NUTRIM's research programme and its curriculum for Scientific Researchers in Training once every five years on proposal of the Scientific Director who previously hears the Institute's Council in these matters. The group of Scientific Researchers in Training consists of Trainee Research Assistants, (AIO's) Trainee Researchers, (OIO's) Trainee Medical Assistants, (AGIO's), Non-Trainee Medical Assistants, (AGNIO's) and Medical Assistants in Clinical Training (AGIKO's). Annually, the

Institute's Board of Directors determines a detailed research programme and curriculum for Scientific Researchers in Training, taking into account the multiple-year programme.

Members of NUTRIM's Board of Directors:

For the Faculty of Medicine:

P.B. Soeters, MD, PhD, chairman
Professor of Surgery
Department of Surgery
University Hospital Maastricht azM

E.F.M. Wouters, MD, PhD
Professor of Pulmonology
Department of Pulmonology
University Hospital Maastricht

For the Faculty of Health Sciences:

G.A.M. Widdershoven, PhD
Professor of Health Ethics and Philosophy
Department of Health Ethics and Philosophy
Maastricht University

H. Kuipers, MD, PhD
Professor of Movement Sciences
Department of Movement Sciences
Maastricht University

For the Scientific Researchers in Training:

G.J.W.M. Rietjens, PhD student
Department of Movement Sciences
Maastricht University

External member:

D. Kromhout, PhD, MSc
Professor of Epidemiology
National Institute of Public Health and Environmental Protection

External advisor:

J.J. Carpay, PhD
Chairman of the Council of Directors of the University Hospital Maastricht

1.4 Council

NUTRIM's Council consists of the Scientific Director (chairman), the Division Heads, and a representative of the Scientific Researchers in Training. The chairman of the Institute's Board of Directors functions as an observer within the Institute's Council; hence, his advisory function in this body.

The Institute's Council, invited or uninvited, is entitled to call the Board of Director's attention to matters which are of direct importance to the research institute and to advise it.

Apart from the Institute's Council, there is another official advisory body within NUTRIM. This body convenes at regular intervals to exchange views about content-related matters. The Scientific Director (chairman), the chairman of the Institute's Board of Directors, the Division Heads as well as the Research Leaders serve on this body.

1.5 Scientific Director

On behalf of the Institute's Board of Directors, the Scientific Director of NUTRIM is entrusted with the promotion and management of daily scientific affairs of the research institute. Next to this, he is responsible for the organization and coordination of NUTRIM's research programme and the curricula concerning Scientific Researchers in Training and Postdoctoral Research Fellows (Postdocs).

The Scientific Director also functions as an advisor to the Institute's Board of Directors; he attends the meetings of the Institute's Board of Directors and advises this body. In addition, the Scientific Director regularly confers with the chairman of NUTRIM's Board of Directors; together with the Managing Director, they make up NUTRIM's Daily Board of Managers.

The Scientific Director of NUTRIM is:

W.H.M. Saris, MD, PhD,
Professor of Human Nutrition
Department of Human Biology
Maastricht University

1.6 Managing Director

The Managing Director is responsible for those components of NUTRIM's daily affairs which do not concern content. His task relates to financial-economic affairs as well as coordinative, managerially preparatory, and executive duties. The Managing Director is NUTRIM's main representative and public relations manager both within and outside the University. In addition, he assists the Scientific Director in the performance of his task. He is the official secretary of the Institute's Board of Directors and its Council. The Managing Director's mandate for signing contracts infers that NUTRIM acts as an independent party to contracts.

The Managing Director of NUTRIM is:

N.M.J.G. Lebens

The Managing Director is assisted in the performance of his comprehensive tasks by an Assistant Managing Director and a secretary. Together they make up NUTRIM's Managing Director's Office.

The Assistant Managing Director of NUTRIM is:

Mrs. M.H.N. Sondejker

NUTRIM's secretary is:

Mrs. M.H. Grispén-Beurgens

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1.7 Research Assistant Co-ordinator

Since the end of 1997, Dr. A. Schols has been Research Assistant Co-ordinator (AIO Co-ordinator) at NUTRIM. The AIO Co-ordinator has the following responsibilities:

- Monitoring the continuity of progress for each individual AIO using the NUTRIM progress monitoring procedure;
- Approving the supervision and education plans within 3 months after appointment of an AIO and ensuring their annual adaptation;
- Acting as an ombudsman for the AIOs, exercising a critical attitude towards all parties involved (AIO, mentor, supervisor, division or programme leader) and, if necessary, meeting with personnel consultants;
- Providing a programme of high-quality special courses;
- Representing the institute in the Interfaculty AIO Committee (IAC)

2 Research and education within NUTRIM

2.1 General information

The nutrition research within NUTRIM focuses particularly on research questions concerning the effects of nutrition, nutritional components, and nutritional behaviour on the health of man. In this, clinical nutrition research is an important spearhead. The Maastricht clinical nutrition research is rightfully among the national and international research top. The multidisciplinary nature of the research within NUTRIM also results in research with a social-scientific and an epidemiological character. Examples of induced research are research into eating and drinking habits and into the significance of certain nutrients, foods, and nutritional patterns to the cause of diseases. Within the fields of toxicology and environmental health science, research is performed into health effects of detrimental factors in nutrition and working and living environments. The purpose of these studies is to optimize estimates concerning health risks. In view of the social interest in research questions regarding nutrition and environment, research within NUTRIM has an applicative nature which expresses itself in an extensive cooperation with government and industry.

Besides being an institute of scientific research, NUTRIM also aims at creating an infrastructure and at organizing the education of Scientific Researchers in Training. Education is also provided to students of health sciences and medicine within the respective Faculties. The education aim is to mould students into highly qualified, independent researchers in the second phase of their training.

2.2 Specific information on the research within NUTRIM

2.2.1 Division 1 Nutrition and metabolism

Division Head

R.P. Mensink, MSc, PhD
 Professor (endowed chair) of Molecular Nutrition with emphasis on lipid metabolism
 Department of Human Biology
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 Fax : +31-(0)43-3670976
 E-mail: R.Mensink@HB.unimaas.nl

Research within Division 1

Research Line:

Energy metabolism and body composition

Research Leader:

M.A. van Baak, PhD

Associate Professor of Human Biology

Research within this domain is focused on the energy requirement of man in relation to characteristics like age, body composition, and growth. Especially the factor of physical activity under daily circumstances is investigated. Next to this, research is performed into interventions in healthy subjects and patients to maintain the energy balance in situations in which energy intake and/or energy expenditure have changed.

Research Line:

Pathophysiological aspects of the intermediary metabolism and its regulation

Research Leader:

B.H.R. Wolffenbuttel, MD, PhD

Associate Professor of Internal Medicine and Endocrinology

Nutrition is an important factor in the regulation of the intermediary metabolism on organ and cell level. The energy-supplying substrate fluxes between organs constitute a complex interplay of neural and hormonal systems and are dependent on the intermediary metabolism in a cell. These processes are studied in particular with respect to syndromes like diabetes mellitus, hyperlipidaemia, and obesity. Additionally within this particular domain, research is carried out into the effectiveness of interventions regarding nutrition, medication, and physical training.

Research Line:

Bioregulation, nutrients, and nonnutrients

Research Leader:

Vacancy

Research within this domain is focused on studying the importance of lipids (fats and fatty acids), lipoids (sterols, ceramides, etc.), and nonnutritional food components (like antioxidants and tyrosine-kinase inhibitors) to an optimal health. Next to this, roles of these compounds in certain disease processes are characterized, effects of nutritional interventions in groups at risk are studied, and mechanisms which lie at the basis of observed effects are unraveled.

Staff list of senior researchers*M.A. van Baak, PhD*Associate Professor of Human Biology
Department of Human Biology*T.W.A. de Bruin, MD, PhD*Professor of Medicine and Endocrinology
Department of Internal Medicine*R.-J.M. Brummer, MD, PhD*Associate Professor of Gastroenterology
Department of Internal Medicine*W.J.M. Gerver, MD, PhD*Associate Professor of Paediatrics
Department of Paediatrics*J.W.M. Heemskerk, PhD*Assistant Professor of Human Biology
Department of Human Biology*M.H. Hofker, PhD*Professor of Molecular Genetics
Department of Genetics and Molecular Cellbiology*G. Hornstra, PhD*Professor of Experimental Nutrition
Department of Human Biology*A.C. van Houwelingen, MD, PhD*Assistant Professor of Human Biology
Department of Human Biology*H.A. Keizer, MD, PhD*Associate Professor of Endocrinological Exercise
Physiology
Department of Movement Sciences*H. Kuipers, MD, PhD*Professor of Human Movement Sciences
Department of Movement Sciences*W.D. van Marken Lichtenbelt, PhD*Assistant Professor of Human Biology
Department of Human Biology*R.P. Mensink, MSc, PhD*Professor (endowed chair) of Molecular Nutrition
with emphasis on lipid metabolism
Department of Human Biology*W.H.M. Saris, MD, PhD*Professor of Human Nutrition
Department of Human Biology*A.M.W.J. Schols, MSc, PhD*Associate Professor of Pulmonology
Department of Pulmonology*P.B. Soeters, MD, PhD*Professor of Surgery
Department of Surgery*A.J.M. Wagenmakers, PhD*Associate Professor of Human Biochemistry
and Physiology
Department of Human Biology*K.R. Westerterp, PhD*Professor of Human Energetics
Department of Human Biology*M.S. Westerterp-Plantenga, PhD*Associate Professor of Human Biology
Clinical Research associate, Novartis Nutrition
Research Unit,
Faculty of Health Sciences*B.H.R. Wolffenbuttel, MD, PhD*Associate Professor of Internal Medicine and
Endocrinology
Department of Internal Medicine*E.F.M. Wouters, MD, PhD*Professor of Pulmonology
Department of Pulmonology**Doctoral theses***D.P.C. van Aggel-Leijssen*Exercise training in the treatment of obesity -
Metabolic and cardiovascular effects.

Maastricht University, Maastricht 2000

Promotor: W.H.M. Saris, MD, PhD and M.A. van
Baak, PhD*R.M.A. Beisser- van Gorp*

Cellular responsiveness to oxidative stress.

Glutathione oxidation and signal transduction in
platelets and endothelial cells.

Maastricht University, Maastricht

Promotor: G. Hornstra, PhD and M.C.E. Dam-Mieras,
PhD

Co-promotor: J.W.M. Heemskerk, PhD

*S.A.J. Coolen*Indicators for oxidative stress. In vivo and in vitro
studies

Maastricht University, Maastricht

Promotor: F.A. Huf, MD, PhD & W.H.M. Saris, MD, PhD

Co-promotor: J.C. Reyenga, MSc, PhD

E.C. Creutzberg

Anabolic management in patients with COPD

Maastricht University, Maastricht 2000

Promotor: E.F.M. Wouters, MD, PhD

Co-promotor: A.M.W.J. Schols, MSc, PhD

E.A. van Mil

Energy metabolism in pediatric obesity.

Maastricht University, Maastricht 2000

Promotor: C.E. Blanco, MD, PhD, W.H.M. Saris, MD, PhD and K.R. Westerterp, PhD.

S.J. Otto

Maternal essential fatty acid status before, during and after pregnancy.

Maastricht University, Maastricht 2000

Promotor: G. Hornstra, PhD & A.C. van Houwelingen, PhD

A. Schaafsma

Chicken eggshell powder in nutritional intervention of age related bone loss.

Maastricht University, Maastricht 2000

Promotor: W.H.M. Saris, MD, PhD & F.A.J. Muskiet, PhD

S.L.H. Schiffelers

Role of β -adrenoceptors in human obesity

Maastricht University, Maastricht 2000

Promotor: W.H.M. Saris, MD, PhD & M.A van Baak, PhD.

Cooperation with national and international institutes

Dutch institutes

- Analytical Biomedical Laboratory, Assen, The Netherlands;
- Children's Rehabilitation Centre 'Franciscusoord', Valkenburg, The Netherlands;
- Eindhoven University of Technology (TUE), Department of Mechanical Engineering, Eindhoven, The Netherlands;
- Erasmus University Rotterdam (EUR) Department of Paediatrics, Rotterdam, The Netherlands;
- Food and Nutrition Institute of the Netherlands Organization for Applied Scientific Research Zeist, The Netherlands;
- National Institute of Public Health and Environmental Protection, Bilthoven, The Netherlands;
- University Clinic for Children and Adolescents, Utrecht, The Netherlands;
- Wageningen University Department of Human Nutrition, Wageningen, The Netherlands;
- and others.

Institutes abroad

- Catholic University of Leuven (KUL), Department of Internal Medicine, Leuven, Belgium;
- Center of Disease Control (CDC), Atlanta, Georgia, USA;

- Dunn Nutrition Unit, Cambridge, United Kingdom;
- Institute of Animal Physiology & Genetic Research, Cambridge, United Kingdom;
- Karolinska Hospital, Stockholm, Sweden;
- King's College Hospital, School of Medicine and Dentistry, Department of Obstetrics and Gynaecology, London, United Kingdom;
- Laboratory for Research into the Biochemistry of Lipoproteins/Laboratoire de Biochimie des Lipoprotéines, Faculty of Medicine, Dijon, France;
- Manitoba Institute of Cell Biology, Winnipeg, Canada;
- Medical Academy Erfurt, Institute for Pathological Biochemistry, Erfurt, Germany;
- Medical School, Cape Town, South Africa;
- Moi University, Faculty of Health Sciences, Eldoret, Kenya;
- MRC Environmental Epidemiology Unit, Southampton, United Kingdom;
- MRC Human Metabolism Research Group, London, United Kingdom;
- National Institute of Food Hygiene and Nutrition, Physiological and Pathophysiological Department, Budapest, Hungary;
- Society for Research into Environmental Physiology/Association pour la Recherche en Physiologie de l'Environnement, Bobigny Cedex, France;
- University Hospital Quito, Department of Gynaecology and Obstetrics, Quito, Ecuador;
- University Hospital Tampere, Department of Gynaecology and Obstetrics, Tampere, Finland;
- University of Aberdeen, Department of Environmental Medicine, Aberdeen, United Kingdom;
- University of Crete, Greece;
- University of Geneva, Department of Physiology, Geneva, Switzerland;
- University of Ghent (RUG), Department of Endocrinology and Metabolic Diseases, Ghent, Belgium;
- University of Graz, Institute of Biochemistry, Graz, Austria;
- University of Linköping, Department of Surgery, Linköping, Sweden;
- University of Milan, Department of Obstetrics and Gynaecology, Milan, Italy;
- University of Oslo, Institute for Nutrition Research, Oslo, Norway;
- University of Oxford, Department of Biochemistry, Oxford, United Kingdom;
- University of Tampere, Department of Biomedical Sciences, Tampere, Finland;
- University of Uppsala, Nutrition Institute, Uppsala, Sweden;
- University of Wollongong, Wollongong, Australia;
- and others.

Indicators of esteem*Authorships, co-authorships, and editorships*

- Editor for Growth Hormone and IGF-I Research;
- Guest editor of a supplement called 'Lipids - The Continuing Challenge' of the American Journal of Clinical Nutrition;
- Subject Editor of Clinical Science;
- and others.

Awards and fellowships

- Award winner of the Prof. Den Hartog Award, a Dutch award granted by the Dutch Society of Dietetics and Food Technology (NVVL);
- Award winner of the SNS Bank Thesis Award;
- Dr. Gerritzen Prize for Diabetes Research;
- Recipient of a fellowship from the Royal Netherlands Academy of Arts and Sciences;
- and others.

Chairmanships, coordinatorships, directorships, and secretaryships

- Chairman of the Dutch Association for Diabetes Research;
- Chairman of the European Society of Paediatric Exercise Physiology;
- Chairman of the Individual Theme Group on the Cardiovascular System;
- Chairman of the Interfaculty Research Committee of the Faculties of Health Sciences and Medicine of Maastricht University;
- Chairman of the Scientific Committee on Nutrition of the International Life Science Institute (ILSI);
- Chairman of the Working Party of Pulmonary Rehabilitation of the European Respiratory society;
- Chairman of the Working Party Consensus Cardiovascular Diseases in Diabetes Mellitus;
- Coordinator of the European Community (EC)-granted research project titled 'The impact of dietary fat/carbohydrate ratio and simple/complex carbohydrate changes on long-term weight control in overweight subjects' within the FAIR programme (FAIR-CT95-0809);
- Director of the International Society for the Study of Fatty Acids and Lipids (ISSFAL);
- Leader of the Regional Diabetes Disease Management Programme;
- Secretary of the European Association for the Study of Obesity;
- Secretary of the Netherlands Association for the Study of Obesity;
- Secretary of the Motility Section of the Dutch Society of Gastroenterology;
- Secretary of the Working Party on Nutrition of the Netherlands Organization for

Scientific Research;
- and others.

Counsellorships

- Ad hoc advisor to the Dutch Council of Nutrition;
- Consultant for the EC Committee on Sport Nutrition;
- Consultant for several industrial partners like Gist-Brocades, Delft, The Netherlands; Hoffmann - La Roche Ltd., Basel, Switzerland; and Novartis/Nutrition Ltd., Bern, Switzerland;
- Consultant for the Health Council of the Netherlands;
- Medical Advisor of the International Skating Union (ISU);
- and others.

Funds from industry

- DMV International, Veghel, The Netherlands;
- Eli Lilly Nederland B.V., Nieuwegein, The Netherlands;
- Hoffmann - La Roche Ltd., Basel, Switzerland;
- Knoll Pharmacia, Nottingham, United Kingdom;
- Merck, Sharp & Dohme Europe, Brussels, Belgium;
- Novartis Nutrition Ltd., Bern, Switzerland;
- NUMICO, Wageningen, The Netherlands;
- Raisio Group, Raisio, Finland;
- Schwarz Pharma Benelux B.V., Arnhem, The Netherlands;
- Unilever Research Laboratories, Vlaardingen, The Netherlands;
- and others.

Grants

- Dutch Charity Funds like the Dairy Research Foundation on Nutrition and Health: (SZVG), Maarssen, The Netherlands; and the Dutch Heart Foundation (NHS), The Hague, The Netherlands;
- European Community (EC);
- National Institute of Public Health and Environmental Protection (RIVM), Bilthoven, The Netherlands;
- Netherlands Ministry of Health, Welfare and Sport, The Hague, The Netherlands;
- Netherlands Organization for Scientific Research;
- Netherlands Olympics Committee/Dutch Sports Federation (NOC/NSF), Arnhem, The Netherlands;
- University of Wollongong, Wollongong, Australia;
- Wageningen Centre for Food Sciences (WCFS), Wageningen, The Netherlands;
- and others.

Memberships

- Board member of the Vital Imaging Section of the Dutch Society of Biophysics and Biomedical Technology;
- Elected member of the British Biochemical Society;
- Elected member of the Working Group on Haemostasis and Thrombosis of the Dutch Medical Research Foundation of the Netherlands Organization for Scientific Research (NWO/MW);
- Fellow of the American College of Sports Medicine;
- Member of the Board of the Dutch Diabetes Federation;
- Member of the Board of the Dutch Nutrition Society;
- Member of the Board of the Faculty of Health Sciences of Maastricht University;
- Member of the Dutch Biochemical Society;
- Member of the Dutch Health Council;
- Member of the Dutch Nutrition Society;
- Member of the Dutch Society of Mass Spectrometry;
- Member of the Committee of the Macronutrient Metabolism Group of the British Nutrition Society;
- Member of the Dutch Society for Epidemiology;
- Member of the Editorial Board of Atherosclerosis, the international journal for research and investigation on atherosclerosis and related diseases;
- Member of the Editorial Board of the Journal of Sports Medicine and Physical Fitness;
- Member of the Editorial Board of Obesity Reviews;
- Member of the European Council Working Group of Science, focussed on doping in sport;
- Member of the European Diabetic Association;
- Member of the External Review Committee of the Copenhagen Muscle Research Centre,

Available manpower

Number of Scientific Staff (f.t.e.)

Department/Flow of Funds	Faculty of Health Sciences			Faculty of Medicine		
	1	2	3	1	2	3
Human Biology	7.30	3.00	1.60			
Human Movement Science	1.40		1.00			
Internal Medicine				0.45		0.50
Molecular Cell Biology & Genetics				0.10		
Neuro Sciences				0.20		
Paediatrics				0.40		
Pulmonology				0.30		
Statistics	0.05			0.10		
Surgery				0.05		
Total	8.75	3.00	2.60	1.60		0.50

Number of Scientific Researchers in Training in absolute numbers

Department/Flow of Funds	Faculty of Health Sciences			Faculty of Medicine		
	1	2*	3	1	2*	3
Human Biology	4	8	10			
Human Movement Science			1			
Paediatrics						1
Total	4	8	11			1

* Research Fellows financed by the Royal Netherlands Academy of Arts and Sciences

Copenhagen, Denmark (the former August Krogh Institute);

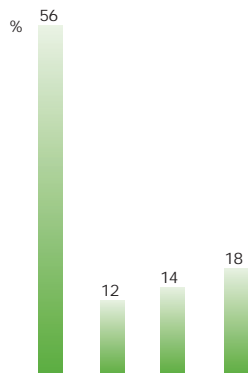
- Member of the Individual Theme Group on the Cardiovascular System;
- Member of the International Society for the Study of Fatty Acids and Lipids (ISSFAL);
- Member of the International Society for the Study of Hypertension in Pregnancy;
- Member of the Medical Commission of the International Olympic Committee (IOC);
- Member of several Editorial Boards of nutritional and physiological scientific journals;
- Member of the Scientific Committee of the Diabetes Research Foundation (DFN);
- Member of the Scientific Council of the Dutch Heart Foundation;
- Member of the Scientific Council of the Dutch Medical Research Foundation of the Netherlands Organization for Scientific Research;
- Member of the Working Party on Nutrition of the Netherlands Organization for Scientific Research;
- Member of various international Programme Committees of conferences in the field of lipids and health;
- Participator in the International Steering Committees of the HOPE and the ADDITION Study;
- and others.

Refereeships and reviewerships

- Peer reviewer for the British Diabetic Association;
- Peer reviewer of grants for the Netherlands Organization for Scientific Research;
- Peer reviewer of grants for the Wellcome Trust in the United Kingdom;
- Referee for many peer-reviewed journals like Biochimica et Biophysica Acta, the American Journal of Physiology, the European Journal of Physiology, and the Lancet;
- Referee for Nutrition;
- Reviewer for several international journals;
- and others.

External funding in Dutch guilders

Industry	Kf 3,500 (56%)
Non-profit organizations	Kf 715 (12%)
European Community	Kf 865 (14%)
Royal Netherlands Academy of Arts and Sciences/Netherlands Organization for Scientific Research	Kf 1,130 (18%)
Total	Kf 6,210 (100%)



2.2.2 Division 2 Clinical aspects of nutrition

Division Head

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 Department of Internal Medicine
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Research within Division 2

*Research Line:
 Chronic diseases and nutritional intervention*

Research Leader:
 A.M.W.J. Schols, MSc, PhD
 Associate Professor of Pulmonology

Within this domain, clinical intervention research is performed in which functional end points are applied as golden standards for measuring effects. Furthermore, more fundamental aspects are studied in order to come to more precise definitions of the individual intermediary phases in a hypothesis. In defining a patient population, for instance, the body composition needs to be determined although it will not be taken into account manifestly elsewhere since it is not a research aim.

*Research Line:
 Defence mechanism and metabolism*

Research Leader:
 P.P. Forget, MD, PhD
 Associate Professor of Paediatrics

Concerning this domain, research is performed into the regulation and nature of responses of the human organism to various endogenous factors, including disease, trauma, malnutrition, and kind of nutrition. The research also includes a study of factors which condition an adequate defence against endogenous factors. An important supplementary aspect is the intermediary metabolism (regarding amino acids and proteins in particular), which is also investigated in connection with the earlier mentioned aspects within this domain.

*Research Line:
 Metabolism and motility in intestinal diseases*

Research Leader: R.J.M. Brummer, MD, PhD
 Associate Professor of Gastroenterology

Research regarding this domain concerns intestinal diseases in a narrow sense. The epidemiology, the function, and the motility of the intestine in connection with cancer as well as bacterial flora are examples of important research subjects.

Research Line:**Metabolic aspects of cancer**

Research Leader: M.F. von Meyenfeldt, MD, PhD
Professor of Surgical Oncology

Within this domain, clinical and more fundamental research is carried out into the impact of cancer on the metabolism, in particular with respect to the impact on the defence mechanism. The research is linked up with the 'Oncology' Research Line of the University Hospital Maastricht.

Staff list of senior researchers

C.G.M.I. Baeten, MD, PhD
Professor of Colorectal Surgery
Department of Surgery

T.W.A. de Bruin, MD, PhD
Professor of Medicine and Endocrinology
Department of Internal Medicine

R.-J.M. Brummer, MD, PhD
Associate Professor of Gastroenterology
Department of Internal Medicine

W.A. Buurman, PhD
Professor of Metabolism and Immunity
Department of Surgery

N.E.P. Deutz, MD, PhD
Associate Professor of Surgery
Department of Surgery

M.P. van Dieijen-Visser PhD
Professor of Clinical Chemistry
Department of Clinical Chemistry

R.A.M.G. Donckerwolcke, MD, PhD
Professor of Paediatrics
Department of Paediatrics

P.P. Forget, MD, PhD
Associate Professor of Paediatrics
Department of Paediatrics

J.W.M. Greve, MD, PhD
Associate Professor of Surgery
Department of Surgery

G. Kootstra, MD, PhD
Professor of Surgery
Department of Surgery

B.K. van Kreel, MSc, PhD
Doctor of Clinical Chemistry
Department of Clinical Chemistry

P.P.C.A. Menheere, PhD
Associate Professor of Clinical Chemistry
Department of Clinical Chemistry

M.F. von Meyenfeldt, MD, PhD
Professor of Surgical Oncology
Department of Surgery

W.H.M. Saris, MD, PhD
Professor of Human Nutrition
Department of Human Biology

A.M.W.J. Schols, MSc, PhD
Associate Professor of Pulmonology
Department of Pulmonology

P.B. Soeters, MD, PhD
Professor of Surgery
Department of Surgery

R.W. Stockbrügger, MD, PhD
Professor of Gastroenterology
Department of Internal Medicine

A.J.M. Wagenmakers, PhD
Associate Professor of Human Biochemistry and Physiology
Department of Human Biology

E.F.M. Wouters, MD, PhD
Professor of Pulmonology
Department of Pulmonology

Doctoral theses

R.G.H. Beets-Tan
High resolution magnetic resonance imaging of the anorectum
Maastricht University, Maastricht
Promotor: J.M.A. van Engelsehoven, MD, PhD and C.G.M.I. Baeten, MD, PhD
Co-promotor: G.L. Beets, MD, PhD

Brauwier E.I.G.M. de
Standardisation and application of bronchoalveolar lavage cytology
Maastricht University, Maastricht 2000
Promotor: C.A. Bruggeman, PhD
Co-promotor J.A. Jacobs, MD, PhD and M. Drent, MD, PhD

M.P.K.J. Engelen
Muscle wasting in COPD: a metabolic and functional perspective
Maastricht University, Maastricht
Promotor: E.F.M. Wouters, MD, PhD
Co-promotor: A.M.W.J. Schols, MSc, PhD

Cooperation with national and international institutes

Dutch institutes

- Catholic University of Nijmegen
Department of Gastroenterology, Nijmegen, The Netherlands;
- Dutch Society of Gastroenterology (NVGE)
- Dutch Society of Surgery (NVHK), Utrecht, the Netherlands;
- Food and Nutrition Institute of the Netherlands Organization for Applied Scientific Research, Zeist, The Netherlands;
- Pulmonary Rehabilitation Centre Hornerheide, Horn, The Netherlands;
- University of Amsterdam, (UvA) University Medical Centre, Centre for Liver and Intestine Research (CLDO), Amsterdam, The Netherlands;
- Wageningen University
Department of Human Nutrition, Wageningen, The Netherlands;
- and others.

Institutes abroad

- Free University of Brussels (VUB) Department of Immunology, Brussels, Belgium;
- Harvard Medical School, Massachusetts General Hospital, Boston, Massachusetts, USA; International Federation for the Surgery of Obesity (IFSO);
- Ludwig Boltzmann Institute, Department of Experimental Traumatology, Vienna, Austria;
- Lund University, Malmö, Sweden;
- New York Hospital, Cornell Medical Center, Department of Surgery, New York, New York, USA;
- University Hospital Leuven, Department of Pulmonary Diseases, Leuven, Belgium;
- University Medical Center, Department of Pathology, Washington D.C., Washington, USA;
- University of Bari, Medical School, Institute of Clinical Medicine/Instituto di Medica Clinica, Bari, Italy;
- University of Dundee, Department of Anatomy and Physiology, Dundee, United Kingdom;
- University of Liège, Laboratory for Research into Biochemistry and General Physiology/Laboratoire de Biochimie et Physiologie Générale, Liège, Belgium;
- University of Padua, Institute of Clinical Medicine/Instituto di Clinica Medica, Padua, Italy;
- and others.

Indicators of esteem

Authorships, co-authorships, and editorships

- Author of numerous articles in the field of inflammation;
- Co-author of numerous articles in the field of inflammation;
- Editor-in-chief of Transplant International;
- Editor for Growth Hormone and IGF-I Research;
- Subject Editor of Clinical Science;
- and others.

Awards and fellowships

- Fellowship Royal Netherlands Academy of Arts and Sciences
- Winner of the Glaxo Award of the Dutch Society of Gastroenterology for the best thesis;
- Winner of the Schoemaker Award for the best thesis.

Chairmanships, coordinatorships, directorships, and secretaryships

- Chairman European Irritable Bowel Syndrome (IBIS)-Club for functional Gastro-Intestinal (GI)-diseases;
- Chairman European Collaborative Study on Inflammatory Bowel Disease (EC-IBD);
- Chairman of the European Society of Parenteral and Enteral Nutrition (ESPEN);
- Chairman of the Scientific Committee of the European Society of Parenteral and Enteral Nutrition (ESPEN);
- Chairman of the Surgical Association of The Netherlands;
- Chairman of the working Party of Pulmonary Rehabilitation of the European Respiratory Society;
- President of the Board of Bariatric Surgeons;
- Secretary of the European Society for Organ Transplantation;
- Vice- President of the European Society for Clinical Investigation;
- President of the International Association for Surgical Metabolism and Nutrition (IASMEN);
- Vice-President of the European Society for Clinical Investigation;
- and others.

Counsellorships

- Consultant for the EC Committee on Sport Nutrition;
- Consultant for several industrial partners like Nutricia Nederland B.V., Zoetermeer, The Netherlands; and Pharmacia & Upjohn AB, Stockholm, Sweden;
- Consultant for the Integraal Kankercentrum Limburg (Comprehensive Cancer Centre Limburg (IKL Cancer Registry)), Maastricht,

- The Netherlands;
- Consultant on industrial, biotechnical programmes for various companies like Celltech Ltd., Slough, Berkshire, United Kingdom;
- Expert Consultant for the Health Council of the Netherlands;
- and others.

Funds from the industry

- Agennix;
- ASTRA Pharmaceutica, Zoetermeer, The Netherlands;
- Byk Nederland B.V., Zwanenburg, The Netherlands;
- Celltech Ltd., Slough, Berkshire, United Kingdom;
- GlaxoWellcome, Zeist, The Netherlands;
- KNOLL Pharmaceutics, Amsterdam, The Netherlands;
- Limburg Institute for Radio Therapy;
- NUMICO, Wageningen, The Netherlands;
- Nutricia Nederland B.V., Zoetermeer, The Netherlands;
- Pharmacia, Woerden, The Netherlands;
- Pharmacia & Unjohn, Stockholm, Sweden;
- Solvay, Weesp, The Netherlands;
- and others.

Grants

- Dutch Charity Funds like the Dutch Heart Foundation, The Hague, The Netherlands; the Dutch Liver and Intestine Foundation (NLDS), The Hague, The Netherlands; and the Dutch Asthma Foundation, Leusden, The Netherlands; and the Dutch Kidney Foundation, Bussum, The Netherlands;
- European Community (EC);
- Health Research and Development Council (ZON), The Hague, The Netherlands;
- Netherlands Organization for Scientific Research;
- Royal Netherlands Academy of Arts and Sciences;
- and others.

Memberships

- Member of the American Society of Colon and Rectal Surgeons;
- Member of the Board of Bariatric Surgeons;
- Member of the Board of Directors of the National Quality Control Schemes of Immunochemical Analysis (LWBA);
- Member of the Board of the Dutch Association of Gastrointestinal Surgery;
- Member of the Board of the International Federation for the Surgery of Obesity (IFSO)
- Member of the Board of the Dutch Gastroenterology Association;
- Member of the Board of the Eurotransplant

- Foundation, Leiden, The Netherlands;
- Member of the British Society of Gastroenterology;
- Member of the Concilium Gastroenterologicum Neerlandicum;
- Member of the Dutch Society of Gastroenterology;
- Member of the Dutch Society of Infectious Diseases;
- Member of the Dutch Society of Medical Microbiology;
- Member of the Dutch Society of Surgery (NVHK)
- Member of the Dutch Society of Transplantation;
- Member of the Editorial Board of several international scientific journals;
- Member of the European Society for Surgical Research (ESSR);
- Member of the European Society of Parenteral and Enteral Nutrition (ESPEN);
- Member of the European Society of Transplantation;
- Member of the European Union of Medical Specialists (EUMS)
- Member of the Flemish Society of Infectious Diseases;
- Member of the Flemish Society of Medical Microbiology;
- Member of the German Society of Gastroenterology;
- Member of the International Society of Transplantation;
- Member of the Italian Society of Gastroenterology;
- Member of the Research and Telemedicine Committee of the World Organisation of Gastroenterology (WOG)
- Member of the Scientific Advisory Board of the Dutch Asthma Foundation;
- Member of the Scientific Advisory Committee European Cancer Prevention Organisation;
- Member of the Scientific Advisory Committee Gastroliga, Germany;
- Member of the Scientific Committee of the European Society of Parenteral and Enteral Nutrition (ESPEN);
- Member of the Society Surgery of the Alimentary Tract (SSAT);

Available manpower

Number of Scientific Staff in f.t.e.

Department/Flow of Funds	Faculty of Health Sciences			Faculty of Medicine		
	1	2	3	1	2	3
Human Biology	0.10					
Internal Medicine				0.55		1.00
Medical Microbiology				0.10		
Paediatrics				0.20		
Pulmonology				0.65		1.80
Surgery				2.55	1.00	
Total	0.10			4.05	1.00	2.80

Number of Scientific Researchers in Training in absolute numbers

Department/Flow of Funds	Faculty of Health Sciences			Faculty of Medicine		
	1	2*	3	1	2*	3
Internal Medicine				1		3
Pulmonology				2		4
Surgery				2	3	1
Total				5	3	8

* Research Fellows financed by the Royal Netherlands Academy of Arts and Sciences

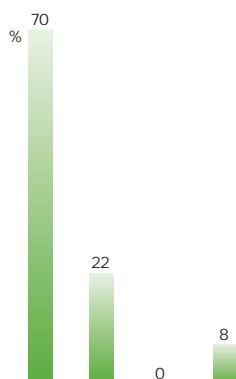
- Member of the Surgical Association of The Netherlands;
- Member of the Swedish Society of Gastroenterology;
- Member of various advisory boards on pulmonary rehabilitation;
- and others.

Refereeships and reviewerships

- Referee for the European Journal of Clinical Nutrition;
- Referee for the Journal of Pediatrics;
- Peer Reviewer for the Netherlands Organisation for Scientific Research;
- Referee for the Scientific Committee of the European Society of Parenteral and Enteral Nutrition (ESPEN) Congress;
- Reviewer for the British Diabetic Association;
- Reviewer for several international journals;
- Reviewer for the Wellcome Trust UK;
- and others.

External funding in Dutch guilders

Industry	Kf 2,000 (70%)
Non-profit organizations	Kf 625 (22%)
European Community	Kf 0 (0%)
Royal Netherlands Academy of Arts and Sciences/Netherlands Organization for Scientific Research	Kf 215 (8%)
Total	Kf 2,840 (100%)



2.2.3 Division 3 Epidemiological and behavioural-science nutrition research

Division Head

P.A. van den Brandt, MSc, SM, PhD
 Professor of Epidemiology
 Department of Epidemiology
 Phone: +31-(0)43-3882361
 Fax : +31-(0)43-3618685
 E-mail: PA.vandenBrandt@EPID.unimaas.nl

Research within Division 3

Research Line:

Nutritional epidemiology

Research Leader:

P.C. Dagnelie, MSc, PhD
 Associate Professor of Epidemiology

Relationships between nutrition and morbidity and mortality in a population are preeminently suited subjects for an epidemiological approach. Research is performed on the level of nutrients, foods, and nutritional patterns. Prospective cohort and case-control studies as well as intervention trials regarding the fields of cancer, atopy, and the cognitive function in particular are principal topics in this research domain. The role of food supplements in the aetiology and in the prognosis of diseases is also investigated.

Research Line:

Behavioural-science nutrition research

Research Leader:

P. van Assema, MPH, PhD
 Assistant Professor of Health Education and Promotion

Adequate preventive measures and interventions on population level require not only the identification of groups which run a clearly higher risk of suffering health damages, but also involve an insight in the prevalence and in determinants of risky behaviour in the entire population. An important part of the research within this domain is focused on registering nutritional patterns. Next to this, psychobiological research is performed on eating behaviour, especially with respect to obesity and extreme environmental circumstances. The development and validation of measuring methods as well as the evaluation of interventions in risky eating behaviours are especially investigated.

Staff list of senior researchers

P. van Assema, MPH, PhD

Assistant Professor of Health Education and Promotion
 Department of Health Education and Promotion

P.A. van den Brandt, MSc, SM, PhD

Professor of Epidemiology
 Department of Epidemiology

J. Brug, MSc, PhD

Professor of Nutrition Education
 Department of Health Education and Promotion

P.C. Dagnelie, MSc, PhD

Associate Professor of Epidemiology
 Department of Epidemiology

K.R. Westerterp, PhD

Professor of Human Energetics
 Department of Human Biology

M.S. Westerterp-Plantenga, PhD

Associate Professor of Human Biology
 Department of Human Biology

Doctoral theses

Botterweck A.

Diet and risk of stomach cancer
 Maastricht University, Maastricht 2000
 Promotor: P.A. van den Brandt, MSc, SM, PhD
 Co-promotor: R.A. Bausch-Goldbohm, MSc, PhD

Agteresch HJ.

Adenosine triphosphate in advanced lung cancer: a randomized clinical trial.
 Erasmus University, Rotterdam 2000
 Promotor: J.H.P. Wilson, MD
 Co-promotor: P.C. Dagnelie, MSc, PhD

Zuijdgeest-van Leeuwen SD

N-3 fatty acids, lipid metabolism and cancer
 Erasmus University, Rotterdam 2000
 Promotor: J.H.P. Wilson, MD
 Co-promotor: P.C. Dagnelie, MSc, PhD

Cooperation with national and international institutes

Dutch institutes

- Antoni van Leeuwenhoek Huis, Amsterdam, The Netherlands;
- De Wever Hospital, Heerlen, The Netherlands;
- Food and Nutrition Institute of the Netherlands Organization for Applied Scientific Research, Zeist, The Netherlands;

- Integraal Kankercentrum Amsterdam (Comprehensive Cancer Centre Amsterdam), Amsterdam, The Netherlands;
- Integraal Kankercentrum Limburg (Comprehensive Cancer Centre Limburg (IKL Cancer Registry)), Maastricht, The Netherlands;
- Integraal Kankercentrum Midden-Nederland (Comprehensive Cancer Centre Central Sector), Utrecht, The Netherlands;
- Integraal Kankercentrum Noord (Comprehensive Cancer Centre Northern Sector), Groningen, The Netherlands;
- Integraal Kankercentrum Oost (Comprehensive Cancer Centre Eastern Sector), Nijmegen, The Netherlands;
- Integraal Kankercentrum Rotterdam (Comprehensive Cancer Centre Rotterdam), Rotterdam, The Netherlands;
- Integraal Kankercentrum Stedendriehoek/Twente (Comprehensive Cancer Centre City Triangle/Twente), Enschede, The Netherlands;
- Integraal Kankercentrum West (Comprehensive Cancer Centre Western Sector), Leiden, The Netherlands;
- Integraal Kankercentrum Zuid (Comprehensive Cancer Centre Southern Sector), Eindhoven, The Netherlands;
- Interuniversity Reactor Institute, Delft, The Netherlands;
- Netherlands Institute for Preventive Health Care (Gaubius Institute) of the Netherlands Organization for Applied Scientific Research, (NIPG-TNO) Leiden, The Netherlands;
- Wageningen University Department of Human Epidemiology and Hygiene, Wageningen, The Netherlands;
- and others.

Institutes abroad

- Harvard School of Public Health, Department of Epidemiology, Boston, Massachusetts, USA;
- Imperial Cancer Research Fund (ICRF) Laboratories, Cancer Epidemiology Unit, Oxford, United Kingdom;
- Loma Linda University, Center for Health Research, Loma Linda, California, USA;
- State University of New York, Buffalo, New York, USA;
- University of Minnesota, Department of Epidemiology, Minneapolis, Minnesota, USA;
- University of Toronto, National Cancer Institute of Canada, Toronto, Canada;
- and others.

Indicators of esteem

Authorships, co-authorships and editorships

- Editorial Board member of several health education journals;
- Editor of a handbook on health education.

Awards and fellowships

- Award winner of the Edmond Hustinx Science Prize of Maastricht University;
- Catharina Pijls Award winner;
- Co-investigator in a pooling project of 7 large cohort studies sponsored by the US National Cancer Institute;
- Fellowship from the Dutch Cancer Foundation
- and others.

Chairmanships, coordinatorships, directorships, and secretaryships

- Chairman of the Dutch College of Professors of Epidemiology;
- and others.

Counsellorships

- Consultant for the Netherlands Institute for Health Promotion and Disease Prevention (NIGZ).

Funds from industry

- Friesland Coberco Dairy Foods, Leeuwarden, The Netherlands;
- Hoffmann - La Roche Ltd., Basel, Switzerland;
- NOVEM, Sittard, The Netherlands;
- and others.

Grants

- American Health Foundation, New York, New York, USA;
- Dutch Charity Funds like the Dutch Heart Foundation, The Hague, The Netherlands; the Queen Wilhelmina Foundation-Netherlands Organization for Cancer Control, The Hague, The Netherlands;
- the Dutch Asthma Foundation, Leusden, The Netherlands;
- Health Research and Development Council (ZON), The Hague, The Netherlands;
- Netherlands Organization for Applied Scientific Research (TNO), Zeist, The Netherlands;
- Netherlands Organization for Scientific Research;
- Netherlands Olympics Committee/Dutch Sports Federation (NOC/NSF), Arnhem, The Netherlands;
- Phoenix Foundation, Amsterdam, The Netherlands;
- Triados Foundation, Zeist, The Netherlands;
- and others.

Memberships

- Member of the Dutch Health Council's Committee on Natural and Synthetic (Anti)Carcinogens in the Diet;

Available manpower

Number of Scientific Staff in f.t.e.

Department/Flow of Funds	Faculty of Health Sciences			Faculty of Medicine		
	1	2	3	1	2	3
Epidemiology	3.00		0.30	0.90		
Health Education	1.00					
Human Biology	0.30					
Primary Health Care				0.20		
Statistics	0.40			0.20		
Total	4.70		0.30	1.30		

Number of Scientific Researchers in Training in absolute numbers

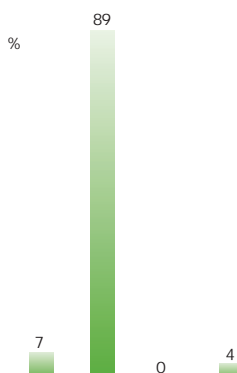
Department/Flow of Funds	Faculty of Health Sciences			Faculty of Medicine		
	1	2*	3	1	2*	3
Epidemiology	2	1	3	1		
Health Education			2			
Human Biology			3			
Statistics	1					
Total	3	1	3	1		

* Research Fellows financed by the Royal Netherlands Academy of Arts and Sciences

- Member of the Editorial Board of the international journal *Atherosclerosis*;
- Member of the Editorial Board of the *Journal of Clinical Epidemiology*;
- Member of the European Atherosclerosis Society;
- Member of the Dutch Food Habits Group;
- Member of the Food Choice Series;
- Member of the European Lipoprotein Club;
- Member of the Joint Committee of the Dutch Heart Foundation;
- Member of the National Advisory Committee on Nutrition Surveys;
- Member of the National Advisory Committee on Vegetables and Fruits;
- Member of the Scientific Advisory Board of various international conferences;
- Member of the Scientific Council of the Dutch Heart Foundation;
- and others.

External funding in Dutch guilders

Industry	Kf 90 (7%)
Non-profit organizations	Kf 1,100 (89%)
European Community	Kf 0 (0%)
Royal Netherlands Academy of Arts and Sciences/Netherlands Organization for Scientific Research	Kf 45 (4%)
Total	Kf 1,235 (100%)



2.2.4 Division 4 Health hazards in living environments and nutrition

Division Head

F.J. van Schooten, PhD
 Professor of Genetic Toxicology
 Department of Health Risk Analysis and Toxicology
 Phone : +31-(0)43-3881100
 Fax : +31-(0)43-3670924
 E-mail : F.vanSchooten@GRAT.unimaas.nl

Research within Division 4

The aim of the research within this Division is to evaluate the risk of suffering health damages due to exogenous factors in living environments and nutrition. Research is focused on facets varying from the development of biological markers to quantify the exposure to and the absorption of these factors and their early effects in man to the study of the cause and (chemo)prevention of certain syndromes as a reaction to such detrimental factors. Research is carried out on a number of levels, i.e. in vitro, experimentally (humans/ animals), clinically, and epidemiologically. Since study of the various facets requires specific contributions of a number of participating disciplines, an integration of the different disciplinary approaches is pursued. In this, (mathematical) modeling is an important factor. Presently, carcinogenic health hazards (chemical factors, radiation, particles), and risk perception are particularly emphasized in the research.

Research Line:

Health hazards in living environments

Research Leader:
 J.H.M. van Delft, PhD
 Associate Professor of Genetic and Molecular Toxicology

Research Line:

Health hazards in nutrition

Research Leader:
 A. Bast, PhD
 Professor of Human Toxicology

Staff list of senior researchers

A. Bast, PhD
 Professor of Human Toxicology
 Department of Pharmacology and Toxicology

J.H.M. van Delft, PhD
 Associate Professor of Genetic and Molecular Toxicology

Department of Health Risk Analysis and Toxicology
 C.T.A. Evelo, MSc, PhD
 Assistant Professor of Toxicology
 Department of Pharmacology and Toxicology

G.R.M.M. Haenen, RPh, PhD
 Associate Professor of Human Toxicology
 Department of Pharmacology and Toxicology

G.J. Hageman, MSc, PhD
 Assistant Professor of Human Nutrition and Toxicology
 Department of Health Risk Analysis and Toxicology

J.C.S. Kleinjans, PhD
 Professor of Environmental Health
 Department of Health Risk Analysis and Toxicology

J.M.S. van Maanen, PhD
 Associate Professor of Toxicology and Environmental Health Risk Assessment
 Department of Health Risk Analysis and Toxicology

R.M. Meertens, PhD
 Associate Professor of Health Education and Experimental Social Psychology
 Department of Health Education

W.F. Passchier, PhD
 Professor of Risk Analysis
 Department of Health Risk Analysis and Toxicology

J. Rotmans, MSc, PhD
 Professor of the Simulation of Human-Environment Relations
 Department of Mathematics (Faculty of General Sciences)

E.J. van Schooten, PhD
 Associate Professor of Genetic Toxicology
 Department of Health Risk Analysis and Toxicology

O.J. Vrieze, MSc, MD, PhD
 Professor of Mathematics
 Department of Mathematics (Faculty of General Sciences)

Doctoral theses

I.T.M. Vermeer
 Nitrate exposure and endogenous formation of carcinogenic nitrosamines in humans
 Maastricht University, Maastricht 2000
 Promotor: J.C.S. Kleinjans, PhD

A.A.M.G. Spooren
 Erythrotoxicity of aliphatic hydroxylamines: Mechanic aspects and parameters for biological effect monitoring

Maastricht University, Maastricht 2000

Promotor: A. Bast, PhD & H.A.J. Struijker Boudier, MD, PhD

Co-promotor: C.T.A. Evelo, MSc, PhD

Cooperation with national and international institutes

Dutch institutes

- Catholic University of Nijmegen, Department of Toxicology, Nijmegen, The Netherlands;
- Dutch Society of Toxicology;
- Food and Nutrition Institute of the Netherlands Organization for Applied Scientific Research, Zeist, The Netherlands;
- Free University of Amsterdam, Department of Pharmacology, Amsterdam, The Netherlands;
- Health Council of the Netherlands;
- National Institute of Public Health and Environmental Protection, Bilthoven, The Netherlands;
- Netherlands Cancer Institute, Amsterdam, The Netherlands;
- Wageningen University Department of Human Epidemiology and Hygiene, Wageningen, The Netherlands;
- and others.

Institutes abroad

- Centre for Preventive Medicine/Centre du Médecine Préventive, Nancy, France;
- INERIS, Verneuil-en-Halatte, France;
- International Agency for Research on Cancer (IARC), Lyon, France;
- Napier University, Department of Biological Sciences, Edinburgh, United Kingdom;
- Pasteur Institute, Lille, France;
- Royal Prince Alfred Hospital, Institute of Respiratory Medicine, Sydney, Australia;
- University of Vermont, Department of Pathology, Burlington, Vermont, USA;
- University of Vermont, Department of Pharmacology, Burlington, Vermont, USA;
- World Health Organization (WHO);
- and others.

Indicators of esteem

Authorships, co-authorships, and editorships

- Editor-in-chief of the international journal Environmental Models and Assessment;
- and others.

Awards and fellowships

- Award winner of the Jaap Swieringa Award for the best thesis in lung research;
- Shell Award winner
- and others.

Chairmanships, coordinators, directorships, and secretaryships

- Chairman of the Section Genetic Toxicology of the Dutch Society of Toxicology;
- Coordinator of the Dutch Postdoctoral Toxicology Training;
- Deputy Executive Director of the Health Council of the Netherlands;
- and others.

Counsellorships

- Advisor to the Dutch Minister of Environment (Dutch Health Council);
- Advisor to the Dutch Minister of Health;
- Advisor to the European Committee on the Validation of Alternative Methods (ECVAM);
- Advisor to the International Agency for Research on Cancer (IARC) of the World Health Organization (WHO);
- Advisor to various Dutch provincial and municipal governments;
- and others.

Funds from industry

- DSM Acrylonitril B.V., Geleen, The Netherlands;
- DSM Special Products, Geleen, The Netherlands;
- Gastec N.V., Apeldoorn, The Netherlands;
- Heineken Technical Services B.V., Zoeterwoude, The Netherlands;
- Novartis, Bern, Switzerland;
- NOVEM, Sittard, The Netherlands;
- NOVEM, Utrecht, The Netherlands;
- Unilever Nederland B.V., Vlaardingen, The Netherlands;
- and others.

Grants

- Dutch Charity Funds like the Dairy Research Foundation on Nutrition and Health, Maarsse, The Netherlands;
- European Community (EC);
- Health Council of The Netherlands, Rijswijk, The Netherlands;
- Health Research and Development Council (ZON), The Hague, The Netherlands;
- Netherlands Organization for Applied Scientific Research (TNO), Zeist, The Netherlands;
- Netherlands Organization for Scientific Research;
- Royal Netherlands Academy of Arts and Sciences;
- and others.

Memberships

- Member of the Advisory Council for Research on Nature and Environment (RMNO);
- Member of the American Association for Cancer Research (AACR);

- Member of the American Conference of Governmental Industrial Hygienists;
- Member of the Board of Environmental Studies and Toxicology of the US National Research Council;
- Member of the Dutch Health Council;
- Member of the Dutch Health Council's Committee on Criteria Documents;
- Member of the Dutch Health Council's Committee on the Evaluation of Occupational Health Risks;
- Member of the Dutch Society of Toxicology (NVT);
- Member of the Editorial Board of the European Journal of Pharmaceutical Sciences;
- Member of the Editorial Board of Food and Chemical Toxicology;
- Member of the Editorial Board of the Journal Free Radical Research;
- Member of the European Environmental Mutagen Society (EEMS);
- Member of the Interuniversity Committee for Environmental Sciences of the Society of Cooperating Dutch Universities (VSNU);
- Member of the Membership Committee of the AACR-Molecular Epidemiology Group;
- Member of the Risk Assessment and Policy Association;
- Member of the Royal Dutch Chemical Society (KNCV);
- Member of the Society for Risk Analysis;
- Member of the Steering Committee of the European Forum on Integrated Environmental Assessment (EFIEA);
- Member of the US Environmental Mutagen Society (EMS);
- and others.

Refereeships and reviewerships

- Invited referee for the US Health Effects Institute;
- Peer reviewer of papers submitted to various international journals and of Research proposals;
- Peer reviewer for several scientific journals like Chest; Thorax; the European Respiratory Journal;
- and others.

Available manpower

Number of Scientific Staff in f.t.e.

Department/Flow of Funds	Faculty of Health Sciences			Faculty of Medicine		
	1	2	3	1	2	3
Epidemiology	0.10					
Health Education	0.50		0.40			
Health Risk Analysis and Toxicology	4.90					
Pharmacology				1.80		
Pulmonology				0.50		
Total	5.50		0.40	2.30		

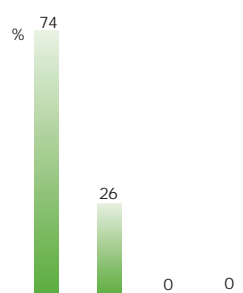
Number of Scientific Researchers in Training in absolute numbers

Department/Flow of Funds	Faculty of Health Sciences			Faculty of Medicine		
	1	2*	3	1	2*	3
Health Education	1					
Health Risk Analysis and Toxicology	3					
Pharmacology				2		2
Total	4			2		2

* Research Fellows financed by the Royal Netherlands Academy of Arts and Sciences

External funding in Dutch guilders

Industry	Kf	400 (74%)
Non-profit organizations	Kf	140 (26%)
European Community	Kf	0 (0%)
Royal Netherlands Academy of Arts and Sciences/Netherlands Organization for Scientific Research	Kf	0 (0%)
Total	Kf	540 (100%)



2.3 Participation in the Graduate School VLAG (Food Technology, Agrobiotechnology Nutrition and Health Sciences)

NUTRIM participates in the Graduate School VLAG. The Graduate School VLAG is a co-operative endeavour of Wageningen University, Utrecht University, the Catholic University Nijmegen, Maastricht University, Nutrition and Toxicology Research Institute Maastricht (NUTRIM), DLO Agrotechnological Research Institute (ATO), DLO State Institute for Quality Control of Agricultural Products (RIKILT), NIZO Food Research, TNO Nutrition and Food Research and the National Institute of Public Health and Environment (RIVM), the Netherlands. VLAG is accredited by the Royal Netherlands Academy for Arts and Sciences (KNAW). NUTRIM's initiative to join VLAG reflects the increasing integration of research efforts, an integration in which the clinical, medical-biological and health sciences aspects of nutrition and metabolism are made to interact with each other. The significance of nutrition to public health becomes evident from the relationships which by means of epidemiological and experimental research were found to exist between nutrition on the one hand and cardiac and vascular diseases, various types of cancer, a number of disabling chronic diseases (such as diabetes) and aspects of the process of ageing on the other. Next to this there is a strong relationship between nutrition and diseases of digestive tract. Diseases of the digestive organs are of frequent occurrence. The aim of VLAG as a national and international centre of excellence is to perform research and to provide postgraduate training in the area of food. This area encompasses the processing of agricultural products into high quality foods and

the effects of the consumption of these foods on health. Processing of non-food products may also be studied where a clear relationship with the processing of food products is evident.

VLAG aims at establishing strong interdepartmental and / or inter-institutional cooperation through:

- coordinating scientific research in the fields of nutrition and health sciences, food technology and agrobiotechnology;
- a multidisciplinary approach towards problems and a joint approach toward new developments;
- a joint training and supervision programme for PhD students.

2.4 The Stable Isotope Research Centre (SIRC)

2.4.1 Introduction

At the start in 1982 of the research programme within Division 1, the development of the use of stable isotopes for measuring energy expenditure under free-living conditions was one of the research priorities. This programme turned out to be very successful under the leadership of K.R. Westerterp, PhD. Based on these experiences and the growing knowledge that stable isotopes are a prerequisite for fundamental nutrition research in humans, in 1991 it was decided to combine the expertise, manpower, and equipment in a special research centre. In such a service unit, researchers from the various Divisions of NUTRIM and from other research institutes would be able to benefit from the existing experience and equipment. In a relatively short period of time (2 years), NUTRIM was able to get support from various agencies in acquiring the required extra equipment (a total of 1,5 million Dutch guilders) and infrastructure (technical personnel and housing facilities). The extra funding for the equipment was made available by the Netherlands Organization for Scientific Research, the Dutch Heart Foundation, the University Hospital Maastricht, and NUTRIM. On October 1, 1993, the efforts resulted in the opening of the Stable Isotope Research Centre (SIRC) as an ultramodern mass-spectrometer laboratory for the benefit of metabolic nutrition research performed within NUTRIM (Divisions 1 and 2) and the University Hospital Maastricht. In 1997, NUTRIM again received funding for extra equipment from the University Hospital Maastricht. These contributions made it possible to extend the equipment pool of SIRC with no fewer than two mass spectrometers.

2.4.2 Management

The management of the daily affairs of the laboratory rests with A.J.M. Wagenmakers, PhD, Associate Professor at the Department of Human Biology of Maastricht University, and B. K. van Kreel, MSc, PhD, who is in the employ of the Department of Clinical Chemistry of the University Hospital Maastricht.

2.4.3 Scientific research

The stable isotope technology, which is of great importance to scientific research in general, can also contribute a lot to the quality of metabolism research in Maastricht in particular by widening the scope of the research field. Especially researchers working in the fields of nutrition and metabolism research benefit greatly from the use of stable isotopes. In contrast to radioactive isotopes, compounds marked with stable isotopes can be administered to healthy and diseased humans in all phases of the life cycle (babies and pregnant women inclusive). This creates new possibilities to deepen the ongoing research and to answer questions which previously could not be investigated in man. With compounds (nutrients, metabolites) which are marked with ^{13}C , for example, the rate of oxidation can be measured in living human beings by following the occurrence of $^{13}\text{CO}_2$ in breath during breath tests. This approach can also be used in tracing acquired and/or congenital metabolic defects. By keeping track of an isotope label of a compound in end products, researchers can clarify unknown metabolic reactions and can measure the rate of transformation of the compound. By labeling body water with deuterium and oxygen-18 and measuring the rate of disappearance of both stable isotopes, for example, the turnover rate of the body can be assessed. In addition, it can be studied whether a marked compound is capable of passing through biological barriers (the mother-placenta-fetus barrier or the blood-brain barrier, for example), and the rate with which this happens can be measured. In combination with a tissue biopsy and blood samples taken from the supplying and draining blood vessel of an organ, the approach essentially enables the *in vivo* quantification of every biological reaction. Just like their radioactive counterparts, stable isotopes in addition can be used as metabolic tracers in experiments with animals, isolated organs, and cells. In contrast to their radioactive counterparts, stable

isotopes can be used without having to abide by legal restrictions concerning the experiment site, without having to fear radiation, and without the production of radioactive waste.

2.4.4 Patient-oriented research

Because of the wide multidisciplinary basis of the researchers involved, right from the start the activities of SIRC were integrated well into the patient-oriented research which resulted in the fact that SIRC is directly involved in the research into mechanisms of disease and health. Within SIRC, research among other things is performed into the cause of the fast loss of muscular mass and general tissue degradation (cachexia) occurring in patients after extensive surgery and in certain forms of cancer. By means of nutrients (fats) marked with stable isotopes, it is investigated which nutrients of the mother are transported via the placenta to the fetus and whether there are any restrictions to this transport which give rise to adjustments in the nutrition of pregnant women. Within SIRC, research is also carried out into the disturbed amino acid metabolism in the defective human heart. As a result of an obstruction in the cardiac arteries, the heart can experience a shortage of oxygen which in turn causes an increase in the use of amino acids. This is also observed in the period of time following open-heart surgery. SIRC also participates in research into the cause of damage to the heart after the blood supply has been resumed following open-heart surgery (reperfusion damage) and into possible interventions aimed at limiting this damage. The utilization of substrates in physical exertion (the nutrition of athletes) and in patients with obesity and diabetes is also being investigated with the help of stable isotopes. By using stable isotopes, it has become possible to make a distinction between the oxidation of nutritional carbohydrates and fats and the oxidation of carbohydrates and fats which are present in energy supplies available in the body. By means of the research performed into the described fields, SIRC has become an important service within NUTRIM and other research institutes within the Faculties of Medicine and Health Sciences of Maastricht University and the University Hospital Maastricht.



Plaque NUTRIM-Lecture C. Sproncken

I History of NUTRIM

Organizational structure of research at Maastricht University

Right at its establishment in 1976, Maastricht University, which at that time was known as the University of Limburg, chose a project-oriented way of organizing its scientific research. At the end of the initiation phase of the Faculty of Health Sciences in 1984, this also led to the decision to include research at both the Faculty of Medicine and the Faculty of Health Sciences in a project-oriented organization. In contrast to the way in which scientific research usually is organized at other universities, i.e. departments with own research programmes, the research in Maastricht is organized interdisciplinary. This structure implies that the departments do not constitute the organizational units but that these units are formed by research themes.

Each research theme consists of several programmes within which researchers from different departments are working on similar research questions. The management rests with the Scientific Director. The various programmes within a research theme are all headed by a Programme Leader. The Scientific Director together with the Programme Leaders are responsible for managing the research.

Both the Faculty of Medicine and the Faculty of Health Sciences provide budgets for personnel, research equipment and operating costs. In this, a guarantee of continuity is strived for by means of making multiple-year arrangements about the available means. In this matrix model, the departments furnish the institutes with expertise. The biggest advantages of this organizational structure are the facts that the interdisciplinary nature of research can take full effect and that it is possible after all to invest on a larger scale despite the cuts in means (especially equipment) for research at universities.

Development of NUTRIM

Nutrition research in Maastricht dates from before 1980, and started off with research into clinical nutrition, especially protein metabolism, performed at the Department of Surgery and psychosocial research into alcohol use carried out at the Department of Medical Sociology. After the Department of Human Biology was established in September 1981 and

the decision was taken to aim the research at nutrition and health, it became possible to extend the sphere of work with research in the field of energy and fat metabolism. The following years, research programmes were also initiated in the fields of nutrition epidemiology and nutrition toxicology. In 1985, this extension resulted in the establishment of the research theme 'Nutrition'. With reference to an internal evaluation, this theme was extended into the research theme 'Nutrition and Toxicology' in 1989 because of the fact that a toxicology programme was added. In 1992, this theme in turn was extended with an environment and health programme. The entire research theme was transformed into a research institute, The Nutrition and Toxicology Research Institute Maastricht (NUTRIM). NUTRIM was formally established by the University Council of the Maastricht University on November 26, 1992.

In the course of the year 1999 epidemiological studies on health conditions at work, part of division three, were transferred from NUTRIM to the research institute Health. Next to this, the research line 'Health hazards in working environments', part of division four, was stopped. These did not fit anymore into NUTRIM's core research objectives, i.e. nutrition and toxicology. Instead the research line 'Health hazards in nutrition', as a new research line within division four, was started.

NUTRIM's efforts in the past years were described in the annual Reports published since 1993, which can be obtained from the Managing Director.

II 2000 manpower composition tables

Available manpower of the Scientific Staff in f.t.e.

Division/Flow of Funds	Faculty of Health Sciences			Faculty of Medicine		
	1	2	3	1	2	3
1	8.75	3.00	2.80	1.60		0.20
2	0.10			4.05	1.00	3.25
3	4.70		0.30	1.30		0.20
4	5.50		0.80	2.30		
Central Services	0.20			0.10		
Reserve	0.50			1.25		
Total	19.75	3.00	3.90	10.60	1.00	3.65

Available manpower of the Scientific Researchers in Training in absolute numbers

Division/Flow of Funds	Faculty of Health Sciences			Faculty of Medicine		
	1	2*	3	1	2*	3
1	4	8	11			1
2				5	3	8
3	3	1	8	1		
4	4			2		2
Total	11	9	19	8	3	11

* Research Fellows of the Royal Netherlands Academy of Arts and Sciences

Available manpower of the departments of the Faculty of Health Sciences in f.t.e. - First Flow of Funds

Department/Division	1	2	3	4	Central Srv	Reserve	Total
Epidemiology			3.00	0.10			3.10
Health Education			1.00	0.50			1.50
Health Risk Analysis and Toxicology				4.90			4.90
Human Biology	7.30	0.10	0.30				7.70
Human Movement Science	1.40						1.40
Statistics	0.05		0.40		0.20		0.65
Reserve						0.50	0.50
Total	8.75	0.10	4.70	5.50	0.20	0.50	19.75

Available manpower of the departments of the Faculty of Medicine in f.t.e. - First Flow of Funds

Department/Division	1	2	3	4	Central Srv	Reserve	Total
Epidemiology			0.90				0.90
Internal Medicine	0.45	0.55					1.00
Medical Microbiology		0.10					0.10
Molecular Cell Biology & Genetics	0.10						0.10
Neuro Sciences	0.20						0.20
Paediatrics	0.40	0.20					0.60
Pharmacology				1.80			1.80
Primary Health Care			0.20				0.20
Pulmonology	0.30	0.65		0.50			1.45
Statistics	0.10		0.20		0.10		0.40
Surgery	0.05	2.55					2.60
Reserve						1.25	1.25
Total	1.60	4.05	1.30	2.30	0.10	1.25	10.60

III Staff profiles

P. van Assema, MPH, PhD

*Assistant Professor of Health Education and Promotion
Department of Health Education and Promotion*

Dr. van Assema studied health sciences at Maastricht University. In 1985 she graduated, specializing in Health Education. She was awarded a research fellowship in social oncology by the Dutch Cancer Foundation for 1986-1987. During that period, she worked at the Department of Health Education and Promotion of Maastricht University, specializing in public education in primary prevention of cancer. In 1988, she became a Research Associate at this Department. Her research activities then focused on the development, implementation and evaluation of a local health project aimed at changing risk behaviours such as smoking and a high fat diet. She obtained her PhD for a thesis on this subject at Maastricht University in 1994. From 1993-1997 she worked as a postdoc and developed and co-ordinated a research programme on social scientific nutrition research. The grant for this programme was given by the Dutch Organization for Scientific Research. In 1996, she received the Catharina Pijls Award for her outstanding dissertation in the field of health science. She is now Assistant Professor and project leader of several research projects regarding determinants of nutrition behaviours, the development and evaluation of nutrition education programmes and factors influencing programme implementation.

M.A. van Baak, PhD

*Associate Professor of Human Biology
Department of Human Biology*

Dr. Van Baak studied biology at the University of Amsterdam. She obtained her PhD at the Catholic University of Nijmegen in 1979, and received the Sports Medicine Award for her thesis. From 1979 until 1988, she worked as a Research Fellow at the Department of Pharmacology of Maastricht University, where her research focused on the effects of antihypertensive agents during exercise. Since 1988, she has been a staff member at the Department of Human Biology of the same University. Dr. Van Baak is a member of the Editorial Board of the Journal of Sports Medicine and Physical Fitness and Obesity Reviews, chairperson of the Netherlands Association for the Study of Obesity, and Secretary of the European Association for the Study of Obesity. Currently, her main field of interest in research is the pathophysiology of obesity with special emphasis on the role of the sympathetic nervous system in energy metabolism at rest and during exercise. She is also Vice Dean for Education of the Board of the Faculty of Health Sciences of Maastricht University.

C.G.M.I. Baeten, MD, PhD

*Professor of Colorectal Surgery
Department of Surgery*

Prof. Baeten studied medicine at the Catholic University of Nijmegen, where he graduated in 1976. He received his surgical training at the Annadal Hospital in Maastricht. In 1982, he was in the employ of Harvard Medical School, Massachusetts General Hospital, Boston, USA. That year, he was registered as a surgeon. In 1985, he obtained his PhD at Maastricht University for his thesis 'Haemorrhoids: Evaluation of methods of treatment'. Prof. Baeten has been a staff member at the Department of Surgery and the Working Group on Endoscopy of the Maastricht University since 1982. He is copromotor of six theses and author of many publications. His main field of interest in research is colorectal surgery. His main research programme deals with continence surgery and more specifically dynamic graciloplasty artificial bowel Sphincter and sacrale nerve stimulation. Major results of his research were published in the June 1995 issue of the New England Journal of Medicine. Prof. Baeten serves on the Board of the Dutch Association of Gastrointestinal Surgery, and is a member of the American Society of Colon and Rectal Surgeons. He also is a consultant for the Comprehensive Cancer Centre Limburg (IKL Cancer Registry) and the Bakken Research Center (Medtronic) in Maastricht. On 1 December 1997, he was appointed Professor of Colorectal Surgery at the University Hospital Maastricht.

A. Bast, PhD

*Professor of Human Toxicology
Department of Pharmacology and Toxicology*

Prof. Bast studied chemistry at the Free University in Amsterdam, where he graduated in 1978. His PhD study was done at Erasmus University of Rotterdam (Faculty of Medicine) and at the University of Utrecht (Faculty of Pharmacy), and was finished in 1981. Subsequently he became assistant professor of Pharmacology at the University of Utrecht. He was appointed Associate Professor of Molecular Pharmacology at the Department of Pharmacology at the Free University in Amsterdam in 1985, and became professor in 1998. On July 1 1998 he started to work as professor of Human Toxicology at Maastricht University. His main field of interest is the role of free radicals in drug toxicity and pathologies of the lung, the cardiovascular system and in diabetes. Moreover the possibilities for therapeutic intervention with antioxidants (from food or as drugs) are explored. He is registered in the Netherlands as an experimental pharmacologist and toxicologist. He (co-)authored over 300 papers and book chapters. Professor Bast serves on the Editorial Board of the European Journal of Pharmaceutical Sciences and of the journal Free Radical Research.

P.A. van den Brandt, MSc, SM, PhD*Professor of Epidemiology**Department of Epidemiology*

Prof. Van den Brandt studied human nutrition at Wageningen University. After his graduation in 1983, he was awarded a research fellowship in cancer epidemiology by the Dutch Cancer Foundation for 1983-1985. During that period, he worked at the Department of Epidemiology of Maastricht University and the Food and Nutrition Institute of the Netherlands Organization for Applied Scientific Research in Zeist. He obtained a MSc degree in epidemiology at Harvard School of Public Health, Boston, USA, in 1984. In 1985, Prof. Van den Brandt became a Research Associate at the Department of Epidemiology of Maastricht University. In 1986, he was appointed Assistant Professor at this Department. His research activities focus on the large-scale Netherlands Cohort Study on Diet and Cancer. He obtained his PhD at Maastricht University in 1993 for a thesis on this subject. Since that year, he is head of NUTRIM's Division 3 on epidemiological and behavioural-science nutrition research. In 1994, he was awarded the Edmond Hustinx Science Prize of Maastricht University. He was appointed Associate Professor at the Department of Epidemiology in 1995 and Professor in 1997. From 1987 onwards, he has been working as a consultant on epidemiology for the Comprehensive Cancer Centre Limburg (IKL Cancer Registry) in Maastricht. He is a member of the National Advisory Committee on Nutrition Surveys, the US Society for Epidemiological Research, the American Association for Cancer Research, and the International Epidemiological Association.

J. Brug, MSc, PhD*Professor of Nutrition Education**Department of Health education and Promotion*

Prof. Brug obtained a degree in Human Nutrition at Wageningen University in 1989 and a degree in Epidemiology from the Dutch Epidemiology institute after a post graduate education program in 1993. He worked for the TNO-Nutrition Institute in Zeist from 1989-1991. He was granted a fellowship from the Dutch Cancer Society and worked for this Society until 1994 after which he started his PhD research at the Department of Health Education and Promotion of Maastricht University. He obtained his PhD in 1997 and subsequently worked as associate professor in health psychology and dean of the faculty of social sciences at the Netherlands Open University. Since 2000 he is back at Maastricht University as Professor of Nutrition Education. His main research interests are the development and evaluation of nutrition education interventions, covering the scope from studies into the determinants of dietary behaviors, small-scale experimentation with innovative interventions, and larger-scale field experiments in which the external

validity of healthy diet promoting interventions is tested. Brug is a consultant for the Netherlands Institute for Health Promotion and Disease Prevention (NIGZ) and is a member of the Food Choice Series and the Dutch Food Habits group (WeVo). He serves on the editorial board of several health education journals and is the editor of a recent handbook on health education.

T.W.A. de Bruin, MD, PhD*Professor of Medicine and Endocrinology**Department of Internal Medicine*

Prof. De Bruin studied medicine at the University of Leiden, where he graduated in 1979. For the next three years, he was in the employ of the Experimental Endocrinology Laboratory of this University. Here, he finished his PhD thesis 'Thyrotrophin receptors and anti-thyrotrophin receptor antibodies in Graves 'disease'. On the basis of this thesis, he graduated 'cum laude' and obtained his PhD in 1982. From 1982 until 1987, Prof. De Bruin was a resident in internal medicine at the University Hospital Leiden. He continued his training in endocrinology on a fellowship from the Netherlands Organization for Scientific Research at the University of Massachusetts, Boston, USA, in 1985 and 1986. From 1987 until 1997, he worked as an internist and later as Associate Professor at the Departments of Medicine and Endocrinology of the University of Utrecht, where he headed the Laboratory of Lipid Metabolism. Here, his research activities focused on genetic and metabolic aspects of hyperlipidaemia in insulin resistance using genetic hyperlipidaemias as a model. Prof. De Bruin was a Senior Clinical Research Associate at the Dutch Heart Foundation from 1991 through 1995, and received a personal grant (PIONIER) from the Netherlands Organization (NWO) for Scientific Research for his research. Presently, his research focuses on mechanisms of insulin resistance on the cellular level, including adipose tissue, liver and the vessel wall, in hyperlipidaemia and diabetes mellitus. This research includes studies on genetics and metabolism.

R.-J.M. Brummer, MD, PhD*Associate Professor of Gastroenterology**Department of Internal Medicine*

Dr. Brummer studied medicine at the Catholic University of Nijmegen in The Netherlands. During the last part of his study, he was a Research Fellow at the Department of Clinical Nutrition, Sahlgrenska Hospital Göteborg, University of Göteborg, Sweden. After having received his MD in 1983, he was appointed junior staff member at the same Department and obtained a degree as a clinical nutritionist. From July 1986 onwards, he continued his clinical training at the Department of Internal Medicine, University Hospital Maastricht, The Netherlands, and was registered as an internist and later as a gastroenterologist. In 1992, he got his PhD

at the University of Göteborg, Sweden, for his thesis 'Body composition in acromegaly - A clinical and methodological study'. On behalf of NUTRIM and Maastricht University Dr. Brummer is a member of the Advisory Board of the Nutrition Centre (voedingscentrum) in the Hague, the Netherlands. Dr. Brummer is a senior staff member at the Department of Internal Medicine/Gastroenterology of the University Hospital Maastricht, co-ordinator of the Metabolic Ward Department and co-head of the MedPsych Department. His main field of interest in research is the metabolic interface between gastrointestinal disease (especially motility disorders, chronic irritable bowel syndrome, inflammatory bowel disease) and nutrition. He is a regular workshop organizer of the European Society of Clinical Investigation and editor for Growth Hormone and IGF-I Research. He supervised and supervises several PhD students, and is head of the GI-Motility Laboratory.

W.A. Buurman, PhD

Professor of Metabolism and Immunity

Department of Surgery

After graduating in biology at the University of Leiden, Dr. Buurman continued his education with a hematological/immunological doctoral study at Erasmus University of Rotterdam. He obtained his PhD degree for a thesis on bone marrow transplantation. Dr. Buurman joined the Transplantation Group of the Department of Surgery of Maastricht University in 1977. In recent years, his scientific research is focused on the regulation of innate immunity and on the influence of the immune response on metabolism. The laboratory headed by Dr. Buurman collaborates with many internationally renowned scientific institutes and scientists from all over the world pay working visits to the lab. Dr. Buurman is author or co-author of numerous articles in the field of inflammation. He is a member of a number of national and international societies, member of the Editorial Board and a referee of several international scientific journals. He is a consultant on industrial biotechnical programmes for various companies. Biotechnical products developed at the laboratory have reached a stage in which these products are tested in clinical trials.

P.C. Dagnelie, MSc, PhD

Associate Professor of Epidemiology

Department of Epidemiology

Dr. Dagnelie studied human nutrition at Wageningen University. After his graduation in 1979, he worked in the field of human nutrition in the Federal Republic of Germany for several years. In 1984, he returned to the Department of Human Nutrition of Wageningen Agricultural University to work on a population-based, mixed-longitudinal PhD project on the nutritional status and the growth

of children fed macrobiotic diets. After completing his thesis in 1988, he obtained a fellowship from the Dutch Cancer Society (1989-1991) concerning his research into the relationship between liver metabolism and cancer cachexia at the Department of Surgery of the University Hospital Maastricht and the Robert Steiner MRI Unit of the Royal Postgraduate Medical School in London. On his return to The Netherlands in 1991, Dr. Dagnelie received a fellowship from the Royal Netherlands Academy of Arts and Sciences for his continued research into the aetiology and the prognosis of cancer cachexia at Erasmus University of Rotterdam, magnetic resonance spectroscopy and stable isotope tracers being the main research tools utilized. In 1997, he was appointed Associate Professor at the Department of Epidemiology of Maastricht University. Here, his research focuses on the development and evaluation of novel nutrition intervention strategies in the prevention and treatment of chronic diseases. Current topics of interest are bioactive compounds such as ATP in the prevention and treatment of cancer, diabetes and cardiovascular disease and in the biomarkers of vegetable and fruit intake. He is a member of the European Society of Parenteral and Enteral Nutrition (ESPEN) and of the International Society of Magnetic Resonance in Medicine.

J.H.M. van Delft, PhD

Associate Professor of Genetic and Molecular Toxicology

Department of Health Risk Analysis and Toxicology

Dr. van Delft studied biology at the University of Leiden, The Netherlands, where he specialised in cell biology and molecular genetics and graduated in 1982. In 1987 he obtained his PhD in Biochemistry at the State University of Leiden on the thesis "Regulation of expression of the tRNA-tufB-operon from Escherichia coli". Hereafter, Dr. van Delft joined the Department of Genetic Toxicology of TNO Medical Biological Laboratory. Until 1995 he focussed on the analyses of DNA adducts and their mutagenic effects. From 1995 to 1999 Dr. van Delft was Product Manager Genetic Toxicology at the Toxicology Division of TNO Nutrition and Food Research Institute, involved in regulatory genotoxicity testing. As of 1998 Dr. van Delft is a registered toxicologist for the Dutch and European Societies of Toxicology, with specialisation in genetic toxicology and occupational toxicology. In 1999 he was appointed Associate Professor at the Department of Health Risk Analysis and Toxicology, of Maastricht University. His research interests are in unraveling nutrition-gene interactions with respect to the process of cancer induction. Currently, he focuses on modulation of gene expression profiles by food (components) to unravel their protective mechanisms against cancer, on alteration of gene expression profiles induced by genotoxic carcinogens and the counteraction by cancer-protecting compounds, and on identification of the common

genetic polymorphisms that influence susceptibility to cancer and carcinogenesis-related biomarkers of effect. Dr. van Delft is member of the European Environmental Mutagen Society (EEMS), the European Environmental Mutagen Society (EMS) and the Dutch Society of Toxicology (NVT). For the latter, he currently chairs the Section Genetic Toxicology. Dr. van Delft is also a member of the editorial board of Food and Chemical Toxicology, and frequently acts as a peer reviewer of papers submitted to various international journals and of research proposals.

N.E.P. Deutz, MD, PhD

*Associate Professor of Surgery
Department of Surgery*

Dr. Deutz studied medicine at the University of Amsterdam and obtained his MD in 1983. After a short period of being a Clinical Fellow at the Department of Neurosurgery in Amsterdam, he initiated his basic neurochemical research at the University of Amsterdam and Delft University of Technology (TUD). He received his PhD on a thesis titled 'Pathophysiological aspects of acute hepatic encephalopathy in the rat; An electroencephalographic, biochemical and in vivo brain NMR spectroscopic study' in 1988. Next, he joined the Metabolism and Nutrition Group of the Department of Surgery of Maastricht University. From then on, he focused his research on (inter)organ protein and amino acid metabolism in various disease states (cancer, the compromised gut, and liver diseases, for example). He is supervising several PhD students, laboratory facilities, and personnel. He is an active member of the Board of the Dutch Liver Society and the Liver Research Section of the Netherlands Organization for Scientific Research. He is Chairman of the Scientific Committee of the European Society of Parenteral and Enteral Nutrition (ESPEN). He is visiting Professor at the Institute of Hepatology, University College London.

M.P. van Dieijen-Visser, PhD

*Professor of Clinical Chemistry,
Department of Clinical Chemistry*

Professor Van Dieijen studied chemistry at the University of Leiden, where she graduated in 1977, specialising in biochemistry. In 1981 she obtained her PhD at Maastricht University for a thesis titled 'Behaviour of tissue enzymes in the circulation'. From 1981 till 1985 she specialized in clinical chemistry at the Atrium Hospital in Heerlen and was registered as a clinical chemist in 1985. Until 1985 she worked as a clinical chemist in Heerlen. In 1993 she became head of the Department of Clinical Chemistry of the University Hospital Maastricht. Her major field of interest in research is protein chemistry, especially cardiobiochemistry.

R.A.M.G. Donckerwolcke, MD, PhD

*Professor of Paediatrics
Department of Paediatrics*

Prof. Donckerwolcke studied medicine at the Catholic University of Leuven (Belgium) where he graduated in 1965. He received his training in paediatrics at Wilhelmina Childrens Hospital in Utrecht and was registered as a paediatrician in 1970. He obtained his PhD at the University of Utrecht in 1983. He specialized in paediatric nephrology at Wilhelmina Childrens Hospital Utrecht and at the Childrens Hospital of Los Angeles (USA). He was head of the Division of Paediatric Nephrology at Wilhelmina Childrens Hospital in Utrecht from 1989 till 1995. In 1995 he became head of the Division of Paediatric Nephrology at Alberta Childrens Hospital in Calgary, Alberta, Canada. From June 1997 till May 1998 he was acting regional clinical department head of the Calgary Regional Health Authority and acting chairman of the Department of Paediatrics of the University of Calgary. From June 1998 he is head of the Department of Paediatrics of the University Hospital Maastricht and Chairman of the Department of Paediatrics at Maastricht University. His major fields of interest in research are nutrition and growth in renal diseases (chronic renal failure; nephrotic syndrome) and disorders of renal tubular transport. Prof. Donckerwolcke (co-)authored over 150 papers and book chapters.

C.T.A. Evelo, MSc, PhD

*Assistant Professor of Toxicology
Department of Pharmacology*

Dr. Evelo graduated in molecular sciences (biochemistry and toxicology) at Wageningen University in 1983. Until 1989, he worked as a toxicologist at the Catholic University of Nijmegen, and from then on at Maastricht University. Here, he obtained his PhD degree for his thesis 'Toxicological stress indicators in human red blood cells'. From 1991 until 1998 he headed the Toxicology Section of the Department of Pharmacology. His main field of interest in research concerns the biological effects of the exposure to electrophilic compounds and oxidative stress in the human red blood cell, including the biokinetics involved in such processes. Dr. Evelo also is an expert in the use of physiologically based modeling of the biokinetics of xenobiotic compounds. Starting January 2001 Dr. Evelo will be heading the new Bioinformatics Group (BiGCaT).

P.P. Forget, MD, PhD

*Associate Professor of Paediatrics
Department of Paediatrics*

Dr. Forget studied at the University of Brussels, Belgium, where he graduated in 1968. He was trained as a paediatrician at Sophia Children's Hospital and Erasmus University of Rotterdam, where he obtained his PhD for his thesis 'Aspects of plasma triglyceride metabolism in children' in 1975. Dr. Forget subsequently worked in clinical practice

and pursued his research work at the Catholic University of Leuven, Belgium. After that, he was appointed Paediatric Gastroenterologist at the University of Liège, Belgium, where he obtained the title of 'Agrégé de l'enseignement supérieur' for a thesis titled 'Contribution à l'étude des entéropathies chez l'enfant' in 1988. He pursued research work concerning the influence of polyamines on the maturation of the neonatal rat intestine. Since 1992, he has been working full time at the Department of Paediatrics of the University Hospital Maastricht. He supervised and supervises several PhD students and is a co-promotor of four theses. Currently, his main field of interest in research is the evaluation of interventions with the aim to improve the nutritional condition, body composition and protein metabolism of children with chronic diseases (cystic fibrosis, inborn errors of metabolism, congenital heart disease, etc.) as well as acute diseases. His research interests also include the mucosal immune activation of celiac disease and the effects of polyamines on the intestinal integrity and function.

W.J.M. Gerver, MD, PhD

Associate Professor of Paediatrics

Department of Paediatrics

Dr. Gerver studied medicine at the University of Groningen, where he graduated in 1978. After his graduation, he worked as an Assistant to Prof. Dr. J. Fernandes at the same University until 1983, specializing in paediatrics. That year, he was registered as a paediatrician. In 1986, he finished a further training in endocrinology at the Institute of Child Health of the University of London. He continued his training in endocrinology on a fellowship from the University of Utrecht in 1987. The next year, he obtained his PhD at the University of Groningen. Presently, Dr. Gerver is Associate Professor at the Department of Paediatrics of the University Hospital Maastricht. He is actively involved in the education of students of health sciences. In his research, he focuses on growth and growth disorders. He is specifically interested in anthropometric research and in the relationship between metabolism and growth in children. He was the co-author of a book titled 'A reference manual of paediatric morphometrics'. Since its publication in 1997, this book has become the standard on anthropometric reference values in paediatric circles in The Netherlands and is also widely used in other countries. Dr. Gerver furthermore is the author of numerous publications and a regular speaker at (inter)national conferences. He is a member of the Dutch Society of Paediatrics (NVKG), the Royal Dutch Society of Medicine, the European Society of Paediatric Endocrinology, the Dutch Society of Endocrinology, the Dutch Working Group on Growth Hormones, the Advisory Committee on Diabetes Mellitus in Children, and the European Anthropological Association.

J.W.M. Greve, MD, PhD

Associate Professor of Surgery

Department of Surgery

Dr. Greve studied medicine at the Catholic University of Leuven, Belgium where he graduated in 1981. He received his surgical training at the University Hospital Maastricht (formerly the Annadal Hospital). In 1990 he obtained his PhD at Maastricht University for a thesis titled 'Complications in obstructive jaundice: an experimental study on etiology and prevention'. In 1991 he received the Glaxo Award for the best thesis from the Dutch Society of Gastroenterology and in 1992 the Schoemaker Award for the best thesis from the Dutch Society of Surgery. He is co-promotor of three theses and author of many publications. His main field of interest is surgery in the upper gastrointestinal tract (with pancreas, bile ducts and liver in particular) and bariatric surgery including research in this area. His main fields of interest in research are basic mechanisms in inflammatory response in particular from the digestive tract, treatment modalities of morbid obesity and research into the cytokine network and causal factors of this disease. Dr. Greve is a member of the Board of the Dutch Society of Gastroenterology, is currently president and member of the board of Bariatric Surgeons and member of the board of the International Federation for the Surgery of Obesity (IFSO). He is also a consultant for the Comprehensive Cancer Centre Limburg (IKL Cancer Registry) and member of the National Working Group of IKL Cancer Centre consultants for Gastro-intestinal cancers. He was appointed Associate Professor of Surgery in 1993.

G.R.M.M. Haenen, RPh, PhD

Associate Professor of Human Toxicology

Department of Pharmacology and Toxicology

Dr. Haenen studied pharmacy at the University of Utrecht where he graduated in 1984 cum laude. He was registered as pharmacist in 1985, and he obtained his PhD in medicinal chemistry at the Free University in Amsterdam in 1989. He was awarded the 'Shell prize' for his thesis 'Thiols in Oxidative Stress'. From 1989 until 1998 he was employed at the Free University in Amsterdam and the Food and Nutrition Institute of the Netherlands Organization for Applied Scientific Research in Zeist. In 1998 he joined the Department of Pharmacology and Toxicology as Associate Professor. His research activities focus on the role of free radical processes in disease and the modulation of free radical toxicity by drugs and nutrients.

G.J. Hageman, MSc, PhD

Assistant professor of Toxicology and Human Nutrition

Department of Pharmacology and Toxicology

Dr. Hageman studied agricultural sciences at Wageningen University. She graduated in 1985, having specialized in human nutrition and food

science. She received her PhD at Maastricht University for her thesis 'Heat-processed fats: analysis of genotoxicity' in 1990. She was affiliated with the department of Health Risk Analysis and Toxicology of the University of Maastricht from 1990 to 2000 and was involved in research on antimutagenic and anticarcinogenic activity of food components. Dr. Hageman joined the department of Pharmacology and Toxicology in 2000. She is currently involved in research on the role of oxygen free radicals in chronic diseases and aging. More specifically her research focuses on the cellular stress response to reactive oxygen species, its consequences for cellular metabolism and function, and new approaches to reduce adverse effects of oxidative stress. Presently her research activities range from fundamental to clinical studies. Dr. Hageman is a member of the Dutch Society for Toxicology and the American Association for Cancer Research.

J.W.M. Heemskerck, PhD

Assistant Professor of Human Biology

Departments of Human Biology and Biochemistry

Dr. Heemskerck studied chemistry and biology at the Catholic University of Nijmegen. He graduated in both studies in 1981, and received his PhD on biochemical research of lipid biosynthesis at the same University in 1986. The same year, he joined the Department of Biochemistry of Maastricht University as a Postdoctoral Research Fellow to study the effects of dietary fats on blood platelet activation. He carried out postdoctoral research at the Universities of Grenoble, Hamburg, and Cambridge. Dr. Heemskerck is now working as a senior staff member at the Departments of Human Biology and Biochemistry, where he studies signal transduction and cell-cell communication in blood cells in relation to nutrition, haemostasis, and thrombosis. He is the author or co-author of numerous articles and books in the fields of biomembranes, haemostasis, nutrition and signal transduction. He chairs the Unit of Fluorescence Imaging and Microphotometry at Maastricht University. Dr. Heemskerck is an elected member of the Working Groups on Haemostasis and Thrombosis of the Netherlands Organization for Scientific Research and of the British Biochemical Society. He is a member of the Board of the Vital Imaging Section of the Dutch Society of Biophysics and Biomedical Technology.

M.H. Hofker, PhD

Professor of Molecular Genetics

Department of Genetics and Molecular Cellbiology

Marten Hofker studied Biology in Leiden, where he received his PhD degree in 1987 on the basis of the development of genetic markers for the detection of inherited diseases, and in particular the application in the diagnosis of X-linked diseases such as Duchenne muscular dystrophy. During 1987-1989 he

received a fellowship of the Medical Research Council of Canada, and worked at the genetics department of the Hospital for Sick Children, Toronto. At the end of 1989, he returned to the department of Human and Clinical Genetics in Leiden. During 1989-1994, he received a fellowship of the Royal Dutch Society of Arts and Sciences which allowed him to start his work on cardiovascular diseases using transgenic mice. Subsequently, he became an Established Investigator of the Dutch Heart Association (1997). In 2000, he became a staffmember at Maastricht University.

G. Hornstra, PhD

Professor of Experimental Nutrition

NUTRIM

Prof. Hornstra studied Medicine at Erasmus University, Rotterdam and at the State University of Leiden, where he graduated 'cum laude'. He received his professional training in the field of Experimental Nutrition at the Unilever Research Laboratories in Vlaardingen. In 1981 he obtained a PhD degree in Medicine at Maastricht University. His thesis, entitled 'Dietary fats and arterial thrombosis' contains a compilation of 15 years of active research at the Unilever Laboratories in the field of dietary lipids, prostanoids and arterial thrombosis. In 1980 he joined the Biochemical Department of Maastricht University where, as a senior scientist, he continued research on the role of dietary lipids in arterial thrombosis and atherosclerosis. In 1989, he switched to the Department of Human Biology of the same University, where he investigates bioregulatory aspects of nutrients and non-nutrients, first as Associated Professor of Nutritional Biochemistry, and since 1995 as Professor of Experimental Nutrition.

Prof. Hornstra is the recipient of the "Servier Award 1981" for original research in the field of atherosclerosis. He is a member of the European Atherosclerosis Society and an ad-hoc advisor to the Dutch Heart Foundation and to the Dutch Nutrition Center. Furthermore he serves as a regular reviewer for Journals like Arteriosclerosis and Thrombosis, Thrombosis and Haemostasis, Lipids, American Journal of Clinical Nutrition, etc. At present, his personal research interest concerns the role of essential and other fatty acids in pregnancy and pregnancy complications, early human development (with special emphasis on cognitive- and motor development and coronary heart disease).

A.C. van Houwelingen, MD, PhD

Assistant Professor of Human Biology

Department of Human Biology

Dr. Van Houwelingen studied medicine at Maastricht University, where she graduated 'cum laude' in 1983. In the same year, she joined the Department of Human Biology of that University as a Research

Assistant to the group of Prof. Dr. G. Hornstra, investigating the role of fatty acids in health and disease. In 1984, she was registered as an epidemiologist. She received her PhD at Maastricht University in 1988 for her thesis 'Fish against thrombosis; Dietary fish and cardiovascular risk profile'. Since 1989, Dr. Van Houwelingen is a senior staff member at the Department of Human Biology of Maastricht University. She also is a member of the International Society for the Study of Fatty Acids and Lipids (ISSFAL), the Working Party on Nutrition of the Netherlands Organization for Scientific Research, the Dutch Nutrition Society, and the Dutch Society for Epidemiology. Since 1995, she has been a registered Medical Consultation Bureau Doctor.

H.A.Keizer, MD, PhD

Associate Professor of Endocrinological and Exercise Physiology

Department of Movement Sciences

Dr. Keizer obtained his degree in physical education in 1966. Four years thereafter he began with his medical studies at the University of Utrecht and qualified as a physician in 1977. He obtained his PhD in Medicine at the Maastricht University in 1983 on his research into the influence of physical exercise and training on sex hormone metabolism in women. From 1970 to 1980 he was an assistant professor at the Department of Physiology of the Utrecht University. In 1980 he joined the Department of Physiology of the Maastricht University, whereas in 1992 he switched to the Department of Movement Sciences. He is currently involved in experimental and clinical research on the mechanisms and therapeutic strategies of training-induced changes in muscle metabolism (glucose- and fat transporters), with special emphasis on type 2 diabetes and (over)training in athletes. Dr. Keizer is on the editorial board of several national and international scientific journals. He is a member of the Dutch and American College of Sports medicine, and the Dutch and European Diabetic Association.

J.C.S. Kleinjans, PhD

Professor of Environmental Health

Department of Health Risk Analysis and Toxicology

Prof. Kleinjans studied biology at the Catholic University of Nijmegen and took a training in general biology and further trainings in physiological psychology, pharmacology, neuro-anatomy, and chemical cytology. Immediately after his graduation in 1979, he started working as a PhD student at the Department of Pharmacology of the Faculty of Medicine of Maastricht University. In 1983, he obtained his PhD degree for his thesis 'Stimulation of renal adrenergic mechanisms as a model for the development of hypertension'. A few months before, he had started to work as a Postdoctoral Research Fellow at

the Department of Biological Health Science of the Faculty of Health Sciences of the same University. His research interests were project development in relation to human nutrition and project development and project management concerning nutritional toxicology. In addition, he was involved in the development of curricula and training courses in biological health. In 1986, he was appointed Associate Professor at the Department of Biological Health Science, where he performed research tasks of programme management in nutritional toxicology and programme development regarding environmental health sciences as well as educational tasks described earlier extended with the development of curricula concerning environmental health sciences. In 1991, he was appointed Full Professor of Environmental Health Science, head of the Department of Health Risk Analysis and Toxicology, and director of the interfaculty research programme Health and Environment of the Faculties of Health Sciences and Medicine. Prof. Kleinjans was acknowledged as a pharmacologist by the Concilium Pharmacologicum on behalf of the Foundation for the training of Medical-Biological Scientific Researchers (SMBWO) in 1985 and as a toxicologist in 1988. He is a member of the Netherlands Society of Toxicology (Genetic Toxicology Section and In Vitro Toxicology Section), the Netherlands Society of Environmental Medicine, the Netherlands Society of Environmental Sciences, the Belgian Society of Toxicology, the European Environmental Mutagen Society, the Interuniversity Commission for Environmental Sciences of the Society of Cooperating Dutch Universities, and the Commission on Criteria Documents of the Dutch Health Council. Prof. Kleinjans, furthermore, is a consultant for governmental and non-governmental organizations on an incidental basis and author of national and international training courses in toxicology.

G. Kootstra, MD, PhD

Professor of Surgery

Department of Surgery

Prof. Kootstra studied medicine at the University of Groningen. He graduated in 1965. After having performed his military duty, he continued his education at the University Hospital Groningen in a training position for surgeon. He obtained his PhD degree in 1973. In 1974, he was a Clinical Fellow in the transplant programme in Denver, USA, under guidance of Prof. Th. Starzl. There, he learned the technique of liver transplantation which he helped to introduce at the University of Groningen. In 1980, he was appointed Professor of Surgery at the University Hospital Maastricht, where he started a kidney and pancreas transplant programme. In 1991, he became chairman of the Department of Surgery. He held his chair until May 2000. Prof. Kootstra was editor-in-chief of *Transplant International* and is a reviewer for several outstanding journals. He was chairman of the Surgical Association of The

Netherlands. He, furthermore, was secretary of the European Society for Organ Transplantation and the organizer of the Vth International Meeting of this Society. He is also an advisor to several companies. His main research interests are transplantation and preservation. Since November 1999 he is Dean of the Faculty of Medicine.

B.K. van Kreeel, MSc, PhD

Doctor of Clinical Chemistry

Department of Clinical Chemistry

Dr. Van Kreeel received his MSc degree in chemistry at the University of Groningen, The Netherlands. After this, he served for two years in the Royal Navy and was stationed at the State Defence Organisation. He then entered the Department of Chemical Pathology of the University of Rotterdam. He received a PhD degree and followed a course in clinical chemistry. In 1984, he obtained a Bachelor degree in Electronics and, in 1988, he became a Clinical Chemist at Maastricht University, where he became involved in clinical nutrition. His main interest involves the application of chemical and physical measuring methods in medicine.

H. Kuipers, MD, PhD

Professor of Human Movement Sciences

Department of Movement Sciences

Prof. dr. Kuipers studied medicine at Groningen University and obtained his medical degree in 1976. In 1983 he obtained the PhD degree in physiology on a dissertation entitled: 'Variability of physiological responses to exercise' at Maastricht University, The Netherlands. From 1984 till 1985 he worked as a post-doctoral fellow in the Human Performance Laboratory directed by Prof. dr. David L. Costill, at Ball State University, Muncie, Indiana, U.S.A. In 1985 he became Assistant Professor at the Department of Physiology, Maastricht University and in 1987 he became Associate Professor in the same department. In 1992 he was appointed full Professor at the Department of Movement Sciences, Faculty of Health Sciences and Head of the Department of Movement Sciences of Maastricht University. His research activities cover a broad area in exercise physiology: Muscle use, disuse and overuse (rhabdomyolysis), metabolic myopathies, endocrine aspects of exercise, ergogenic aids and physical performance, energy metabolism and nutrition during exercise, limits of physical performance, training and overtraining. Prof. Kuipers is author and co-author of over 100 scientific publications, authored and edited books on exercise physiology such as: "Banned substances in sport". He was editor-in-chief from the International Journal of Sports Medicine from 1989 until 2000, and is reviewer for several scientific journals. He is a fellow of the American College of Sports Medicine and invited speaker at various international scientific meetings. From 1993 he is a member of the Medical

Commission of the International Olympic Committee (IOC) and since 2000 medical advisor of the International Skating Union (ISU). He is also a member of the Working Group of science from the European Council, focussed on doping in sport.

J.M.S. van Maanen, PhD

Associate Professor of Toxicology and Environmental Health Risk Assessment

Department of Health Risk Analysis and Toxicology

Dr. Van Maanen studied pharmacochimistry at the Free University in Amsterdam. He graduated in 1977, having specialized in organic chemistry and pharmacology. He was granted a 3.5-year fellowship for postgraduate education from the Queen Wilhelmina Foundation - Netherlands Organization for Cancer Control (KWF) in the line of which he spent 2 years at the Institute of Cancer Research in London and 1.5 years at the Netherlands Cancer Institute in Amsterdam. During his fellowship, he studied the metabolism and mechanism of action of several anticancer drugs. He continued to work at the Netherlands Cancer Institute and the Free University of Amsterdam, receiving several research grants from the Dutch Cancer Foundation. In 1988, he obtained his PhD degree at the Free University of Amsterdam for his thesis 'Metabolic activation of the antitumor agent VP-16'. In 1987, he became a member of the American Association for Cancer Research. From 1989 onwards, he has been working at the Faculty of Health Sciences of Maastricht University. Here, he performs studies on environmental health risk assessment, including the development of biomarkers for human exposure to environmental pollutants. He was acknowledged as a toxicologist on behalf of the Foundation for the training of Medical-Biological Scientific Researchers in 1991 and on behalf of the Netherlands Society of Toxicology in 1997. In 1996, he became a member of the International Society for Preventive Oncology. In 1998 he became an eurotox registered toxicologist.

W.D. van Marken Lichtenbelt, PhD

Assistant Professor of Human Biology

Department of Human Biology

Dr. Van Marken Lichtenbelt studied biology at the University of Groningen, where he graduated in 1983, having specialized in animal physiology and ecology. In 1983 and 1984, he took a postdoctoral course in rural surveys in developing countries at the ITC in Enschede. He was appointed staff member at the Carmabi Foundation on Curaçao in the Netherlands Antilles from 1984 until 1989. Here, he conducted the fieldwork for his PhD study on the nutrition and the reproduction of green iguanas. After obtaining his PhD at the University of Groningen (1991), he was appointed staff member at the Department of Human Biology of Maastricht University. His current fields of interest in research are body composition, substrate utilization, and

energy expenditure in humans in health and disease with special emphasis on body temperature regulation. Since 1995, he has been Research Coordinator of a project which is carried out in cooperation with Moi University in Kenya, and, as such, is involved in studies on rural nutrition and health.

R.M. Meertens, PhD

*Associate Professor of Health Education and Experimental Social Psychology
Department of Health Education*

Dr. Meertens studied Psychology at the University of Amsterdam in The Netherlands, where she graduated in 1984. She received a grant of the Netherlands Organization for Scientific Research for a project concerning attributional self-presentation at the University of Groningen. In 1991, she obtained her PhD at the Catholic University of Nijmegen. In recent years, she has (co)supervised PhD projects on a variety of topics, including asthma education for preschool children, burns in children, determinants of visiting a general practitioner, influencing attributions of success and failure, risk perception, goal setting, and the diffusion of energy-efficient innovations. Her current field of interest in research concerns the social influences on (environmental) risk perception and risk communication. Dr. Meertens is a member of the Dutch Health Council.

P.P.C.A. Menheere, Ph.D.

*Associate Professor of Clinical Chemistry
Department of Clinical Chemistry*

Dr Menheere studied analytical chemistry at the Technical University of Eindhoven, where he graduated in 1974. Starting before his graduation, he worked almost two years at the "Ecole polytechnique" in Paris. From 1977 he specialized in clinical chemistry at the St Annahospital in Geldrop. He was registered as clinical chemist in 1983 and as nuclear specialist in 1984. In 1989 he obtained his Ph.D. at the University of Maastricht for a thesis titled "Sensitive estimations of pituitary glycoproteins". From 1982 till 1985 he worked as clinical chemist/nuclear specialist in the association of Sazinon hospitals in Meppel, Hoogeveen, Coevorden and Hardenberg. Since 1985 he is responsible for the immunochemical analysis in the department of clinical chemistry at the University Hospital Maastricht and he assumes equally the responsibility for the chemistry within the department of nuclear medicine. He is specialised in endocrinology, allergy and oncology constituting his clinical fields of interest. His major field of interest in research is the development and the clinical application of immunochemistry within endocrinology and psychiatry. He is member of the board of directors of the national quality control schemes for immunochemical analysis (LWBA) and in this function he is responsible for the production of the control sera.

R.P. Mensink, MSc, PhD

*Professor (endowed chair) of Molecular Nutrition with emphasis on lipid metabolism
Department of Human Biology*

Dr. Mensink received a MSc degree in human nutrition at Wageningen University in 1985. His major subject was human nutrition; epidemiology and statistics were his supplementary subjects. He spent his practical training period of six months at Canberra Blood Pressure Trial in Canberra, Australia. In 1990, he was promoted to Doctor of Agricultural and Environmental Sciences at Wageningen University. His thesis 'Effect of monounsaturated fatty acids on high-density and low-density lipoprotein cholesterol levels and blood pressure in healthy men and women' describes the results of three well-controlled dietary experiments. In addition Dr. Mensink carried out epidemiological studies in Crete. In 1990, he became a staff member at the Department of Human Biology of Maastricht University. He obtained a MSc degree in epidemiology in 1992. His primary research interests are the relationship between nutritive and nonnutritive components in diet including functional foods and risk markers for cardiovascular disease (serum lipoproteins and hemostatic function), effects of oxidative stress on lipid peroxidation and the anti-oxidant status, and determinants of elongation and desaturation of essential fatty acids. In his studies, Dr. Mensink not only investigates possible effects, but also tries to unravel the biochemical and physiological mechanisms which underlie these effects. To this end, he initiated experiments with stable isotopes and studies on gene-environment (diet) interactions. Dr. Mensink, furthermore, is an ad hoc advisor to the Dutch Health Council.

M.F. von Meyenfeldt, MD, PhD

*Professor of Surgical Oncology
Department of Surgery*

Prof. Von Meyenfeldt studied medicine at the University of Utrecht. After receiving his MD he started his formal training in surgery at the University Hospital Maastricht in February 1976. During this training, he spent two years at the Department of Surgery of the University of Cincinnati, USA, as a Research and Clinical Fellow. In 1983, he obtained a PhD for his thesis 'Anorexia and cachexia in cancer; A study with special emphasis on central tryptophan and serotonin metabolism'. He is now working as a staff member at the Department of Surgery of the University Hospital Maastricht, where he was appointed Professor of Surgical Oncology in August 1993. His main research interests lay in the fields of metabolism, surgical oncology, and nutrition.

W.F. Passchier, PhD

*Professor of Risk Analysis
Department of Health Risk Analysis and Toxicology*

Prof. WF Passchier is Deputy Executive Director of the Health Council of the Netherlands. The Health Council is the scientific advisory body of the Netherlands Government on matters related to health care, public health, food and nutrition, occupational hygiene and environmental protection. Passchier co-ordinates projects of the Council in the domain of environment and health. Since August 1998 Passchier is special professor of Health Risk Analysis at Maastricht University, The Netherlands. Prof. Passchier took his PhD in physical chemistry. Before taking a position at the Health Council secretariat in 1983 he served as a radiation protection officer at a research reactor institute. His special fields of interest are: risk assessment, cumulative health effects and health physics. Passchier participates in the Board of Environmental Studies and Toxicology of the US National Research Council. He is a member of the Royal Dutch Chemical Society, the Society for Risk Analysis, the Risk Assessment and Policy Association and the American Conference of Governmental Industrial Hygienists.

J. Rotmans, MSc, PhD

Professor of the Simulation of Human-Environment Relations

Department of Mathematics (Faculty of General Sciences)

Jan Rotmans (1961) is one of the founders of Integrated Assessment (IA), and has extensive experience in IA modelling, scenario-building, indicator development and management of uncertainty. He studied mathematics at the Technical University of Delft, where he got his master degree in 1986. His PhD involved the first integrated assessment model on climate change (IMAGE) at Maastricht University and the Dutch Institute for Public Health and Environment (RIVM). For this PhD research, he got the SNS Bank prize for the best thesis of Maastricht University in 1991. Since 1992, Jan Rotmans has had a professorship at Maastricht University as chair of 'Integrated Assessment'. Since 1986 Jan Rotmans was affiliated with RIVM, where he initiated a number of integrated assessment projects and activities which were highly multidisciplinary, such as the IMAGE-project, the ESCAPE project, the TARGETS project and the Global Environmental Assessment. From 1996 to 1997, Jan Rotmans was scientific advisor at the Department of Policy Coordination for Sustainable Development (DPCSD). In this position, he was responsible for the 'Rio+5' assessment, which aimed to evaluate the progress since the international conference on Sustainable Development in Rio de Janeiro. This assessment led to the Trends-report 'Critical Trends: Global Change and Sustainable Development'. Jan Rotmans has (co-)developed both the IMAGE, ESCAPE and the TARGETS models. During the past ten years he has initiated numerous innovative and cross-cutting

research initiatives, such as climate and malaria, plural perspectives and uncertainty, modelling of demographic and epidemiological processes, modelling of consumer behaviour, models and indicators, modelling of adaptive behaviour, and optimization techniques such as heuristics in system dynamics modelling. Jan Rotmans has been involved in numerous international assessments, such as the Climate Change Assessment of the International Panel on Climate Change (lead author), Human Choice and Climate Change (lead author), the RIO+5 evaluation (lead author), the Global Environmental Assessment (contributor), and the European Environmental Assessments (contributor). In November 1997 Rotmans founded the International Centre for Integrative Studies (ICIS) together with Marjolein van Asselt and in October 1999 ICIS-BV, a consultancy firm that has been developed as a spin-off from the ICIS research activities was founded. Jan Rotmans is leading a number of innovative research projects within ICIS, and plays a leading role in the IA consultancy. Jan Rotmans hosted several international workshops and he attended numerous national and international conferences and workshops, often as keynote speaker. He has written more than hundred scientific articles and publications.

W.H.M. Saris, MD, PhD

Professor of Human Nutrition

Department of Human Biology

Prof. Saris obtained his degree in human nutrition at Wageningen University in 1974 and his MD at the Catholic University of Nijmegen in 1979. He got his PhD in medicine at the latter University in 1982 on his research into physical activity and fitness in children. In 1982 he joined the Department of Human Biology of Maastricht University where he was appointed Full Professor of Human Nutrition at the Faculty of Health Sciences in 1988. Later, he became chairman of the Department of Human Biology. Since 1992 he has been Scientific Director of NUTRIM. His main fields of interest in research concern energy metabolism and substrate utilization under various conditions, such as athletic performance, obesity and cancer, with special emphasis on the relation between daily physical activity and the energy balance. Prof. Saris is author or co-author of numerous books and articles in the fields of exercise physiology, nutrition, obesity, and cancer cachexia. He serves on the Editorial Board of several nutritional and physiological scientific journals. He also is a member of the Dutch Health Council. He chaired the Dutch Nutrition Recommended Allowance Committee, and is/was a member of the scientific councils of the Dutch Heart Foundation, the Dutch Medical Research Foundation of the Netherlands Organization for Scientific Research, chairman of the Scientific Committee on Nutrition of the International Life Science Institute

(ILSI) the European Society of Paediatric Exercise Physiology and the Scientific Committee on Food of the European Commission. Prof. Saris is a consultant for Novartis Ltd., Benelux.

A.M.W.J. Schols, MSc, PhD

Associate Professor of Pulmonology

Department of Pulmonology

Dr. Schols studied human nutrition at Wageningen University. She graduated in 1985 having specialized in clinical nutrition and statistics. From 1985 until 1987 she worked as a Research Fellow at the University of Sherbrooke, Quebec, Canada, on a grant from the Canadian Government. In 1991 Dr. Schols received her PhD at Maastricht University for her thesis 'Nutritional depletion in relation to physical impairment in patients with chronic obstructive pulmonary disease'. She is currently involved in experimental and clinical research into the mechanisms and therapeutic strategies of cachexia in chronic diseases. She supervises the nutritional and metabolic research at the Department of Pulmonology of Maastricht University and at the Pulmonary Rehabilitation Centre Hornerheide, Horn, The Netherlands. Dr. Schols furthermore is the scientific director of the MINT Institute for Post Graduate Education in Clinical Nutrition, and involved in postgraduate education concerning nutrition and metabolism at the European School of Respiratory Medicine. She was a member of the PhD Education Committee of the Graduate School MENU and is NUTRIM's PhD students co-ordinator. Dr. Schols is a member of the American Thoracic Society, the European Respiratory Society and the European Society of Parenteral and Enteral Nutrition (ESPEN).

F.J. van Schooten

Professor of Genetic Toxicology

Department of Health Risk Analysis and Toxicology

Prof. van Schooten studied biology at the Free University of Amsterdam, The Netherlands, where he specialised in immunology, molecular microbiology and molecular toxicology and graduated in 1985. In 1991 he obtained his PhD in Molecular Carcinogenesis at the University of Leiden on the thesis "Polycyclic aromatic hydrocarbon-DNA adducts in mice and humans".

Prof. van Schooten worked from 1985 until 1991 as a staff member at the Department of Molecular Carcinogenesis from the Netherlands Cancer Institute in Amsterdam focussed on the relation between inhalatory carcinogenic exposures and pulmonary carcinogenicity. During this period he performed his PhD research. In 1991 he joined as an Assistant Professor the Department of Health Risk Analysis and Toxicology, of the Maastricht University and was in 1994 appointed as an Associate Professor. Since 1999 he is Head of the Department and since 2000 leader of the Division IV

within the Nutrition Toxicology and Environment Research Institute Maastricht (NUTRIM). In 2001 he became Full Professor of Genetic Toxicology at the Faculty of Health Sciences of the Maastricht University. The general approach of his research is within the field of molecular epidemiology, applying biomarkers for dietary or environmentally exposure and for early biological effects, ultimately to identify certain groups of subjects at a higher risk for disease. These biomarkers may be indicators of exposure, early pathogenesis or genetic susceptibility for disease. The overall aim is to better understand disease aetiology and to develop opportunities for disease prevention; the current emphasis is on the causes and prevention of cancer and coronary heart disease. Prof. van Schooten is member of the American Association of Cancer Research (AACR) and is active as a member of the membership committee of the AACR-Molecular Epidemiology Group. He is a member of the Dutch Society of Toxicology (NVT) and frequently acts as a peer reviewer of papers submitted to various international journals and of research proposals.

P.B. Soeters, MD, PhD

Professor of Surgery

Department of Surgery

Prof. Soeters studied medicine at the Municipal University in Amsterdam. After he graduated he started his training in surgery in 1970. From 1974 until 1976, he worked as a Research and Clinical Fellow at Harvard Medical School, Massachusetts General Hospital in Boston, USA. In 1977 he was registered as a surgeon. In 1979, he obtained his PhD at Maastricht University on the thesis 'Hepatic encephalopathy: A new perspective for therapy'. Since 1976 he has been working at the Department of Surgery of the University Hospital Maastricht; from 1979 onwards, as a staff member. He was appointed Associate Professor of Surgery in 1984 and Professor of Surgery especially in the fields of gastroenterology and clinical nutrition in 1988. Prof. Soeters was chairman of the European Society of Parenteral and Enteral Nutrition (ESPEN), and is president of NUTRIM's Board of Directors, was director of the Division on Acute Interventions of the University Hospital Maastricht and is a consultant for Nutricia and Pharmacia. He furthermore served on the Board of the Dutch Gastroenterology Association. He is/was a member of the Interfaculty Science Committee, SSAT, the Dutch Surgical Association, the Dutch Society of Gastroenterology, the Dutch Society for Hepatology, the European Society of Parenteral and Enteral Nutrition (ESPEN), the European Society for Surgical Research (ESSR), and the Netherlands Organization for Scientific Research. He is President of the International Association for Surgical Metabolism and Nutrition (IASMEN). Prof. Soeters is (co-)author of several books and numerous articles;

he also serves on the Editorial Board of several international scientific journals.

R.W. Stockbrügger, MD, PhD

Professor of Gastroenterology

Department of Internal Medicine

Prof. Stockbrügger studied medicine at the Universities of Münster, Germany, and Uppsala, Sweden. He graduated in Münster in 1969. He was trained in internal medicine and gastroenterology at a number of hospitals in Sweden, and was registered as a physician and gastroenterologist at the Sahlgrenska Hospital Göteborg, Sweden, in 1976. In the same year, he received his PhD at the University of Göteborg for his thesis 'Aspects of chronic atrophic gastritis - with special reference to serum gastrin and antral gastrin cells'. He spent the next two years at the Middlesex Hospital in London, United Kingdom, where he attended several postdoctoral studies. In 1978, he was appointed Associate Professor and head of the Department of Endoscopy of the Sahlgrenska Hospital Göteborg, Sweden. In 1985, he was appointed head of the Clinical Rehabilitation Centre for Gastrointestinal and Metabolic Diseases in Bad Kissingen, Germany. In 1990, he was appointed in his present position at Maastricht University. Prof. Stockbrügger is a member of the national Societies of Gastroenterology in Sweden, England, Germany, Italy, and The Netherlands and various other scientific societies. His research interests in gastric acid secretion, peptic diseases, achlorhydria, gastrointestinal bacterial overgrowth, precancerous conditions, gastrointestinal motility, malabsorption, functional gastrointestinal diseases, and inflammatory bowel disease have resulted in numerous publications, contributions to textbooks, and a monograph about peptic ulcer disease. Prof. Stockbrügger serves on the Editorial Board of several scientific journals. He is a member of the European Board of Gastroenterology, of the European Union of Medical Specialists (EUMS) and of the Research and Telemedicine Committee of the World Organisation of Gastroenterology.

O.J. Vrieze, MSc, MD, PhD

Professor of Mathematics

Department of Mathematics (Faculty of General Sciences)

Prof. Vrieze graduated in mathematics at Delft University of Technology and in medicine at the University of Amsterdam. From 1985 until 1987 he was affiliated with the National Institute of Public Health and Environmental Protection in Bilthoven. From 1987 he has been chairman of the Department of Mathematics of Maastricht University. His work covers both the theoretical developments of mathematical theories and practical applications of mathematical models. His theoretical work focuses on the area of operations research with special emphasis on stochastic multiperson decision problems. The domains of his practical work concern

both public health and environmental problems. In the public health domain, he establishes dynamic models which aim at supporting the scenario analysis of future developments. In the domain of environmental problems, he studies mathematical properties of models which deal with atmospheric pollutions. He is editor-in-chief of the international journal *Environmental Models and Assessment*.

A.J.M. Wagenmakers, PhD

Associate Professor of Human Biochemistry and

Physiology

Department of Human Biology

Dr. Wagenmakers studied chemistry (organic chemistry and biochemistry) at the Catholic University of Nijmegen from 1972 until 1979. In 1984, he obtained his PhD degree at the same University on his thesis 'Branched-chain amino acid degradation in muscle'. From 1984 until 1988, Dr. Wagenmakers was a Senior Research Fellow at the Muscular Dystrophy Group of Great Britain in Liverpool (University of Liverpool, Department of Medicine, Muscle Research Centre, Liverpool, United Kingdom). In 1988, he started working at the Department of Human Biology of the Faculty of Health Sciences of Maastricht University, where he was appointed Associate Professor in 1996. Dr. Wagenmakers' main research interests are amino acid, carbohydrate and fat metabolism in health (rest and exercise) and disease. He has been co-operating with international experts in stable isotope methodology (Prof. Dr. D. Halliday and Prof. M. Rennie) and exercise physiology (Prof. Dr. B. Saltin). Dr. Wagenmakers is Scientific Co-ordinator of the Stable Isotope Research Centre (SIRC) of Maastricht University and as such occupies a central position in the metabolism-related and the nutrition-related research within several Divisions of NUTRIM. He is a member of the Working Group on Nutrition and the Working Group on Diabetes and Metabolism of the Netherlands Organization for Scientific Research. Dr. Wagenmakers is an international expert in amino acid biochemistry and physiology. He is Subject Editor of *Clinical Science* and referee for many peer-reviewed journals like the *Journal of Physiology* (United Kingdom), the *American Journal of Physiology*, the *Journal of Applied Physiology*, *Biochimica et Biophysica Acta*. He furthermore is a peer reviewer for the Netherlands Organization for Scientific Research the Wellcome Trust (UK) and the British Diabetic Association in the United Kingdom. He is a member of the External Review Committee of the Copenhagen Muscle Research Centre, Copenhagen, Denmark (the former August Krogh Institute) and of the Committee of the Macronutrient Metabolism Group of the British Nutrition Society. Dr. Wagenmakers has been appointed Expert Consultant for the Health Council of the Netherlands and for the EC Committee on Sport Nutrition.

K.R. Westerterp, PhD*Professor of Human Energetics**Department of Human Biology*

Prof. Westerterp studied biology at the University of Groningen, where he graduated in 1971. In 1976, he received his PhD at the same University for his thesis 'Animal physiology: How rats economize energy loss in starvation' (FUNGO grant of the Netherlands Organization for Scientific Research). He was awarded a postdoctorate research fellowship in 'Energy metabolism in Hirundinidae' (NERC grant) at the University of Stirling, Scotland, for 1977-1979 and a postdoctorate research fellowship in 'Animal ecology: Energy metabolism in starlings and tits' at the University of Groningen (BION grant of the Netherlands Organization for Scientific Research) for 1980-1981. Since 1982, Prof. Westerterp has been a Senior Lecturer at Maastricht University. Among his present fields of interest in research are energy metabolism and body composition (physical activity, eating behaviour and energy balance), and energy and water balance at high altitude. In his research he puts special emphasis on observations in daily living conditions using accelerometers for measuring physical activity and labeled water for measuring body composition and energy expenditure. Prof. Westerterp is a member of the Editorial Board of the British Journal of Nutrition. From 1999 he heads the Department of Human Biology.

M.S. Westerterp-Plantenga, PhD*Associate Professor of Human Biology, Faculty of Health Sciences*

Dr. Westerterp-Plantenga studied biology at the University of Groningen. She graduated in 1972 having specialized in behavioural physiology, behavioural ecology, and population genetics. From 1983-1998 Dr. Westerterp-Plantenga was affiliated with the Department of Natural Sciences of the Open University of the Netherlands (OUNL). She was responsible for the courses in Biology (Physiology, Ecology, Applied Ecology, Behavioural Biology, Genetics, Conservation Biology) and Nutrition, as parts of the MSc programmes Environmental Sciences, and Nutrition and Toxicology respectively, and for the Health and Environment programme. Moreover, she designed and co-ordinated the European ICT teaching project Food in Europe, a European SOCRATES programme. She has chaired the Faculty of Natural Sciences as well as the Natural Sciences (Science and Technology) committee of the European Association of Distance Teaching Universities. Since 1984, she performs research on the Behavioural Physiology of Food Intake in Humans, at Maastricht University, where she obtained her PhD in 1991. The research includes long-term projects on food intake regulation related to energy metabolism in the context of obesity treatment and weight maintenance. Food intake regulation and energy

metabolism is studied under various conditions, e.g. with different macronutrient compositions, during exercise, at high altitude, and with different ambient temperatures. From 1998-1999 she joined the Novartis Nutrition Research Unit at Maastricht University, where she was responsible for the research on food intake regulation and energy balance, in the context of obesity treatment and weight maintenance. Since 1999 she is a full staff member at Maastricht University, all research continues within NUTRIM.

B.H.R. Wolffenbuttel, MD, PhD*Associate Professor of Internal Medicine and**Endocrinology**Department of Internal Medicine*

Dr. Wolffenbuttel graduated in medicine at Erasmus University of Rotterdam in 1980. He was a Research Fellow at the Experimental Cardiovascular Research Department of the Thorax Centre before he started his residency at the Department of Internal Medicine III/Endocrinology of the University Hospital Rotterdam in January 1983. In December 1987, he was registered as an internist, and was appointed endocrinologist at the Division of Endocrinology of the University Hospital Maastricht/Maastricht University. At this University, he finished his PhD thesis in 1991 on the basis of studies concerning complications and treatment of type 2 diabetes mellitus. His research focused on the effects of insulin therapy on glucose and lipid metabolism in diabetic patients. For this work, he was awarded the Dr. Gerritzen Prize for Diabetes Research in 1992. At the start of 1993, he was appointed Associate Professor of Medicine and Endocrinology. His present fields of interest in research are derangements of glucose and intermediary metabolism in diabetes and effects of dietary and pharmacological interventions. Other research interests are the biochemical factors responsible for the development of structural and functional microvascular and macrovascular abnormalities in both human and experimental diabetes, and treatments which prevent the development or delay the progression of these complications. Dr. Wolffenbuttel is leader of the Regional Diabetes Disease Management Programme, chairman of the Dutch Association for Diabetes Research, member of the Board of the Dutch Diabetes Federation and of the Scientific Committee of the Diabetes Research Foundation (DFN). He also participates in the International Steering Committee of the HOPE and the ADDITION Study.

E.F.M. Wouters, MD, PhD*Professor of Pulmonology**Department of Pulmonology*

Prof. Wouters studied medicine at the Catholic University of Leuven, Belgium, where he graduated in 1978. He was trained in internal medicine at Annadal Hospital in Maastricht and the University Hospital Leuven. In 1981, he started his residency at the Department of Pulmonology of the University Hospital Maastricht and was registered as a pulmonologist in July 1984. He received his PhD at the same University in 1987 for his thesis 'Bronchial response in COPD measured by forced oscillation technique'. After his appointment to Associate Professor of Pulmonology in 1988, he became Full Professor at and chairman of the Department of Pulmonology of the University Hospital Maastricht in 1992. He is currently involved in research into intermediary and energy metabolism and the modulation of inflammatory processes in patients with chronic lung diseases like COPD, cancer, and cystic fibrosis. He is chairman of the Interfaculty Research Committee of the Faculties of Health Sciences and Medicine and chairman of the Thorax Treatment and Care Unit, which is a co-operation between the Department of Cardiology, Cardiopulmonary Surgery, Pulmonology, and the Heart-Lung Function Laboratory of the University Hospital Maastricht. He is chairman of the Research Council of the Dutch Asthma Foundation. Prof. Wouters, furthermore, is a member of the Research Council of the Netherlands Organization for Scientific Research and of various scientific boards and task forces in pulmonology. He is chairman of the working group of pulmonary rehabilitation of the European Respiratory Society and programme coördinator of the Graduate School VLAG II.

IV Scientific publications in international journals

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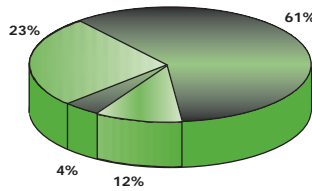
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V NUTRIM's external funding

Every year a significant part of NUTRIM's research programme is supported by non-profit organizations and industry. In addition expertise present in NUTRIM is made available to industrial partners in the form of consultancies. Over the last four years, there has been a remarkable increase in benefits from grants (non-profit organizations, e.g.) and contracts (industry). In 1994, external funding was about 30% of the total level; in 2000, external funds made up about 60% of NUTRIM'S total budget.

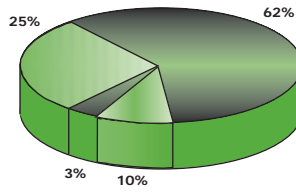
Not only the total amount of external funding is increasing. Most of the individual categories also are showing an upward tendency. As mentioned last year there was an increase in grants from the European Community and the Netherlands Organization for Scientific Research in 2000 due to the participation of NUTRIM in a lot of Fifth Framework projects and two Priority programmes.

External funding 1998 in %



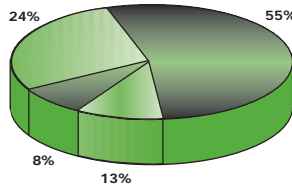
Industry	61%
Non-profit organizations	23%
European Community	4%
Royal Netherlands Academy of Arts and Sciences/ Netherlands Organization for Scientific Research	12%

External funding 1999 in %



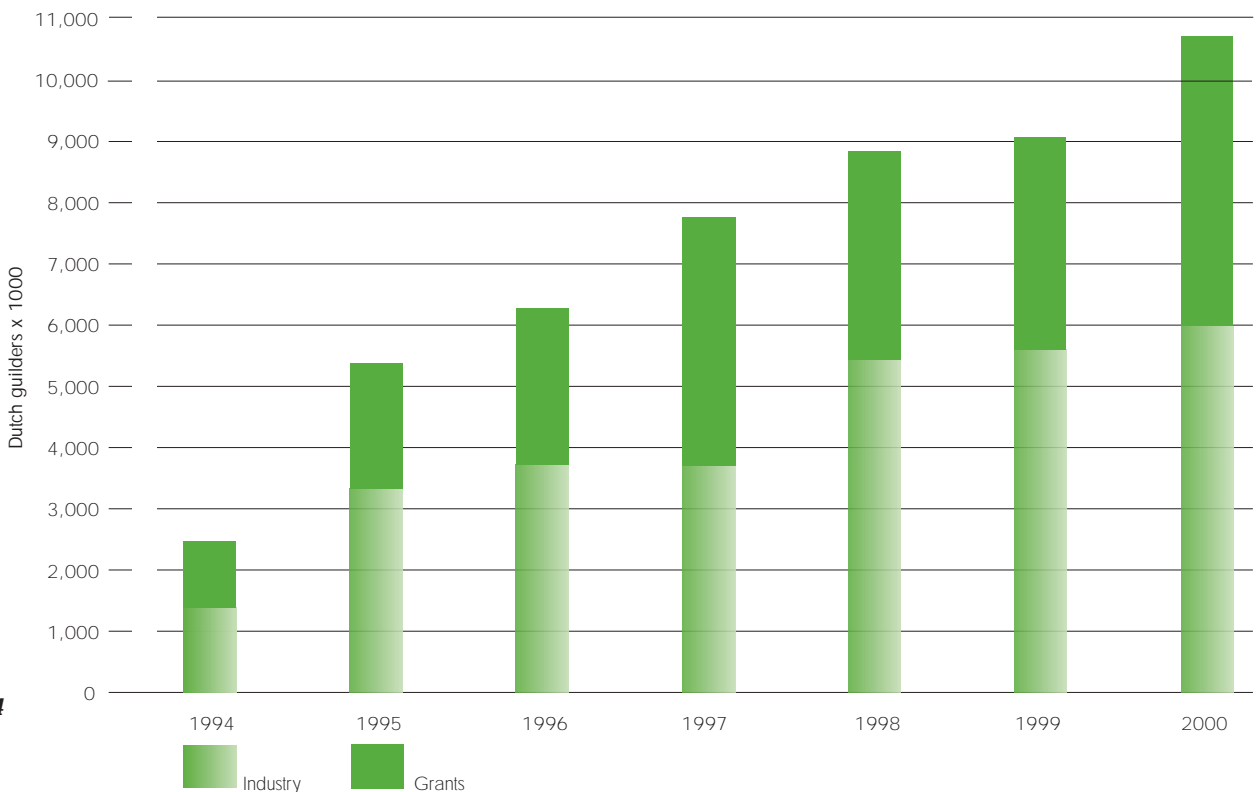
Industry	62%
Non-profit organizations	25%
European Community	3%
Royal Netherlands Academy of Arts and Sciences/ Netherlands Organization for Scientific Research	10%

External funding 2000 in %



Industry	55%
Non-profit organizations	24%
European Community	8%
Royal Netherlands Academy of Arts and Sciences/ Netherlands Organization for Scientific Research	13%

External funding 1993-2000 in Dutch guilders



List of English translations and their Dutch acronyms or abbreviations

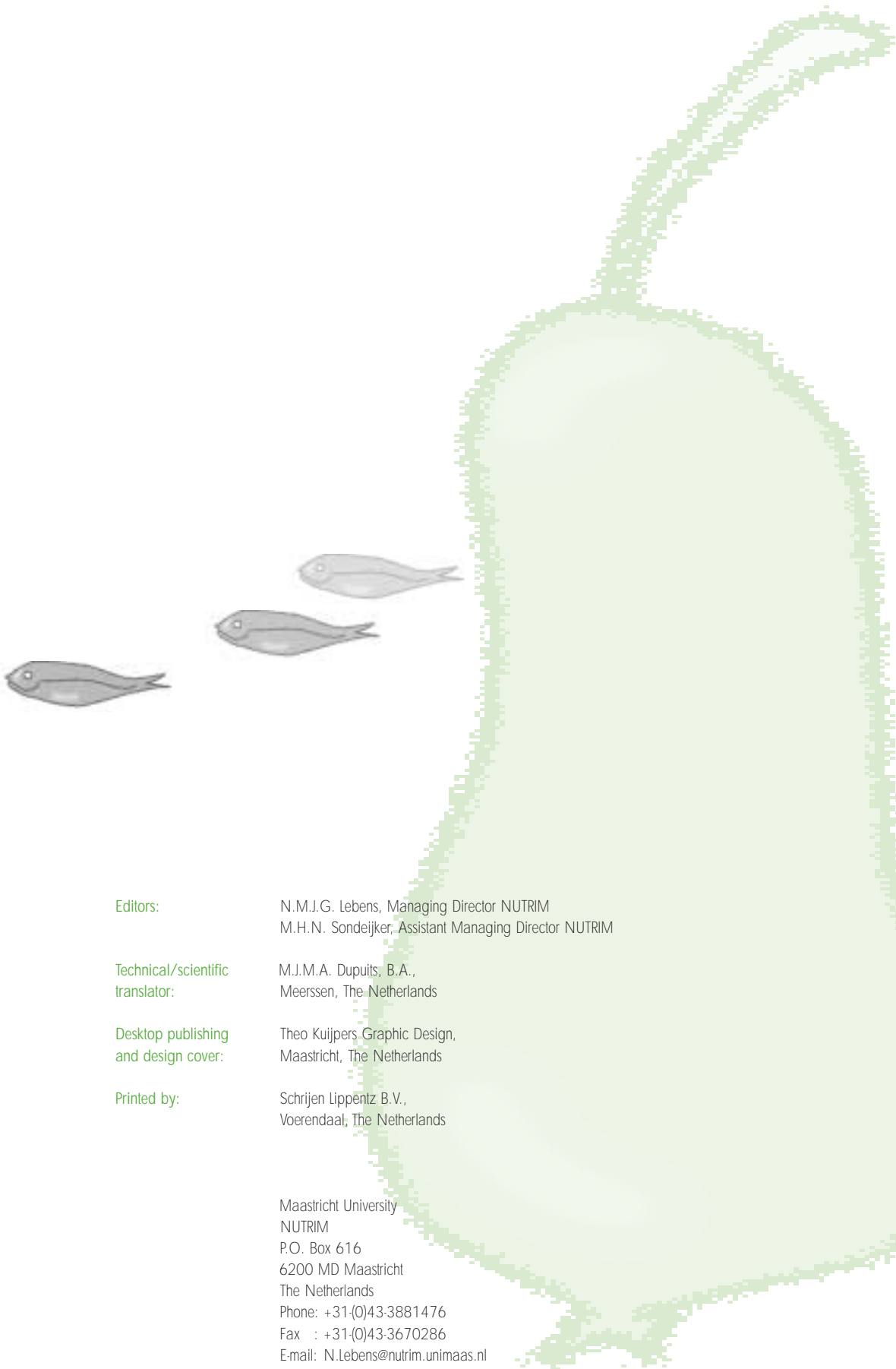
Administrative and support staff	-	OBP (ondersteunend en beheerspersoneel)
Advisory Council for Research on Nature and Environment	-	RMNO (Raad voor Milieu- en NatuurOnderzoek)
Agricultural Research Institute (DLO)	-	DLO (Dienst Landbouwkundig Onderzoek)
Agrotechnological Research Institute (ATO)	-	ATO (Agrotechnologisch Onderzoeksinstituut)
American Association for Cancer Research	-	AACR (American Association for Cancer Research)
Assistant Professor Syn.: University Lecturer	-	UD (Universitair Docent)
Associate Professor Syn.: Senior University Lecturer	-	UHD (Universitair HoofdDocent)
Bioinformatics Group	-	BiGCaT (Bioinformaticagroep van de UM)
BIOMEDICAL and health research (BIOMED) programme	-	Onderzoeksprogramma BIOMED (BIOMEDical and health research; BIOMEDisch en Gezondheidsonderzoek)
Catholic University of Leuven	-	KUL (Katholieke Universiteit Leuven)
Catholic University of Nijmegen	-	KUN (Katholieke Universiteit Nijmegen)
Center of Disease Control (CDC)	-	CDC (Center of Disease Control; Centrum voor Ziektenbeheersing (in de Verenigde Staten))
Company Health Service	-	BGD (BedrijfsGeneeskundige Dienst)
Comprehensive Cancer Centre Limburg Syn.: IKL Cancer Registry	-	IKL (Integraal Kankercentrum Limburg)
Dairy Research Foundation on Nutrition and Health	-	SZVG (Stichting Zuivel, Voeding en Gezondheid)
Delft University of Technology	-	TUD (Technische Universiteit Delft)
deoxyribonucleic acid (DNA)	-	DNA (de(s)oxyribonucleinezuur)
Doctor of Medicine (MD)	-	MD (Doctor of Medicine)
Doctor of Philosophy (PhD)	-	PhD (Doctor of Philosophy)
Dutch Food Habits	-	WeVo (Werkgemeenschap Voedingsgewoonten)
Dutch Heart Foundation	-	NHS (Nederlandse HartStichting)
Dutch Liver and Intestine Foundation	-	NLDS (Nederlandse Lever- en DarmStichting)
Dutch Medical Research Foundation of the Netherlands Organization for Scientific Research	-	NWO/MW (Nederlandse Organisatie voor Wetenschappelijk Onderzoek/Medische Wetenschappen)
Dutch Society of Dietetics and Food Technology	-	NVVL (Nederlandse Vereniging voor Voedingsleer en Levensmiddelentechnologie)
Dutch Society of Gastroenterology	-	NVGE (Nederlandse Vereniging voor GastroEnterologie)
Dutch Society of HepatologyDutch Society of	-	NVH (Nederlandse Vereniging voor Hepathologie)

Paediatrics	-	NVKG (Nederlandse Vereniging voor KinderGeneeskunde)
Dutch Society of Surgery	-	NVHK (Nederlandse Vereniging voor Heelkunde)
Dutch Society of Toxicology (NVT)	-	NVT (Nederlandse Vereniging voor Toxicologie)
Eindhoven University of Technology	-	TUE (Technische Universiteit Eindhoven)
Erasmus University of Rotterdam	-	EUR (Erasmus Universiteit Rotterdam)
European Collaborative Study on Inflammatory Bowel Disease (EC-IBD)	-	Europese gezamenlijke Studie op het gebied van Inflammatoire Darmziekten
European Committee on the Validation of Alternative Methods (ECVAM)	-	ECVAM (European Committee on the Validation of Alternative Methods; Europese Commissie voor Validatie van Alternatieve Methoden)
European Irritable Bowel Syndrome (IBIS) Club for functional Gastro-Intestinal (GI) diseases	-	IBIS (Europese Vereniging van Geprikkeld Darm Syndroom voor functionele maag-darm stoornissen)
European Community (EC)	-	EG (Europese Gemeenschap)
European Environmental Mutagen Society (EEMS)	-	EEMS (Europese Milieumutagenen Vereniging)
European Forum on Integrated Environmental Assessment (EFIEA)	-	EFIEA (European Forum on Integrated Environmental Assessment; Europees Forum inzake Geïntegreerd MilieuOnderzoek)
European Irritable Bowel Syndrome Club (ISIS) for functional Gastro-Intestinal (GI) diseases	-	Europese Vereniging Geprikkeld Darm Syndroom voor functionele maag-darm stoornissen
European Respiratory Society	-	Europese Respiratie Vereniging
European Society for Surgical Research (ESSR)	-	ESSR (European Society for Surgical Research; Europese Vereniging voor HeelkundeOnderzoek)
European Society of Parenteral and Enteral Nutrition (ESPEN)	-	ESPEN (European Society of Parenteral and Enteral Nutrition; Europese Vereniging voor Parenterale en Enterale Voeding)
European Union of Medical Specialists (EUMS) Syn.: Union Européenne des Médecins Spécialistes (UEMS)	-	EUMS (European Union of Medical Specialists; Europese Unie van Medisch Specialisten)
Fisheries and Agri-Industrial Research (FAIR) programme	-	Onderzoeksprogramma FAIR (Fisheries and Agri-Industrial Research; Landbouw, Agro-Industrie en Visserij)
Food Choice Series	-	Voedselkeuze Conferentie
Food and Nutrition Institute of the Netherlands Organization for Applied Scientific Research	-	TNO-Voeding (Instituut Voeding van de Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek)
Foundation for the training of Medical-Biological Scientific Researchers	-	SMBWO (Stichting ter bevordering van Medisch-Biologisch Wetenschappelijk Onderzoekers)
Free University Amsterdam	-	VU (Vrije Universiteit (Amsterdam))
Free University of Brussels	-	VUB (Vrije Universiteit Brussel)
full-time equivalent (f.t.e.)	-	f.t.e. (full-time equivalent; voltijds-equivalent)

Graduate School VLAG (Food Technology, Agrobiotechnology, Nutrition and Health Sciences)	-	Onderzoekschool VLAG (Voeding, Levensmiddelentechnologie, Agrobiotechnologie en Gezondheid)
Health Council of the Netherlands	-	Gezondheidsraad
Health Research and Development Council (ZON)	-	ZON (Health Research and Development Council; ZorgOnderzoek Nederland)
Higher Education and Research Act	-	WHW (Wet op het Hoger Onderwijs en Wetenschappelijk Onderzoek)
IMAGE ('Integrated Modelling to Assess the Greenhouse Effect') project	-	project IMAGE (project 'Integrated Modelling to Assess the Greenhouse Effect'; project 'Geïntegreerde Modelbouw ter Bepaling van het BroeikasEffect')
Imperial Cancer Research Fund (ICRF)	-	ICRF (Imperial Cancer Research Fund; Staatsfonds voor Kankeronderzoek (in het Verenigd Koninkrijk))
International Agency for Research on Cancer (IARC)	-	IARC (International Agency for Research on Cancer; Internationaal Agentschap voor Kankeronderzoek)
International Association for Surgical Metabolism and Nutrition (IASMEN)	-	IASMEN (Internationale Vereniging voor Chirurgisch Metabolisme en Voeding)
International Centre for Integrative Studies (ICIS)	-	ICIS (International Centre for Integrative Studies; Internationaal Centrum voor Integreerende Studies)
International Federation for the Surgery of Obesity (IFSO)	-	IFSO (International Federation for the Surgery of Obesity; Internationale Federatie voor Heelkunde bij Obesitas)
International Life Science Institute (ILSI)	-	ILSI (International Life Science Institute; Internationaal Instituut voor Menswetenschappen)
International Olympic Committee (IOC)	-	IOC (Internationaal Olympisch Comité)
International Skating Union (ISU)	-	ISU (Internationale SchaatsUnie)
International Society for the Study of Fatty Acids and Lipids (ISSFAL)	-	ISSFAL (International Society for the Study of Fatty Acids and Lipids; Internationale Vereniging voor Onderzoek naar Vetzuren en Lipiden)
Maastricht University (UM);	-	UM (Universiteit Maastricht)
Master of Public Health (MPH)	-	MPH (Master of Public Health)
Master of Science (MSc) Syn.: S.M. (Scientiae Magister)	-	MSc (Master of Science)
Medical Assistant in Clinical Training	-	AGIKO (Assistent-Geneskundige In Klinische Opleiding)
Municipal Health Service	-	GGD (Gemeentelijke Geneeskundige Dienst)
National Institute of Environmental Health Sciences (NIEHS)	-	NIEHS (National Institute of Environmental Health Sciences; Nationaal Instituut voor Milieugezondheidswetenschappen (in de Verenigde Staten))
Netherlands Institute for Health Promotion and Disease Prevention	-	NIGZ (Nederlands Instituut voor Gezondheidsbevordering en Ziektepreventie)
National Institute of Public Health and Environmental Protection	-	RIVM (RijksInstituut voor Volksgezondheid en Milieuhygiëne)

National Quality Control Schemes for Immunochemical Analysis	-	LWBA (Landelijke Werkgroep Bindings-Analyse (Sectie van de SKZL - Stichting Kwaliteits bewaking Ziekenhuis Laboratoria))
Netherlands Institute for Preventive Health Care (Gaubius Institute) of the Netherlands Organization for Applied Scientific Research	-	NIPG-TNO (Nederlands Instituut voor Preventieve Gezondheidszorg (Gaubius Instituut) van de Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek)
Netherlands Olympics Committee/Dutch Sports Federation (NOC/NSF)	-	NOC/NSF (Nederland's Olympisch Comité/Nederlandse Sport Federatie)
Netherlands Organization for Applied Scientific Research	-	TNO (Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek)
Netherlands Organization for Scientific Research	-	NWO (Nederlandse Organisatie voor Wetenschappelijk Onderzoek)
Non-Trainee Medical Assistant	-	AGNIO (Assistent-Geneskundige Niet In Opleiding)
nuclear magnetic resonance (NMR)	-	NMR (nuclear magnetic resonance; kernmagnetische resonantie)
Nutrition and Toxicology Research Institute Maastricht (NUTRIM)	-	NUTRIM (Nutrition and Toxicology Research Institute Maastricht; Instituut Voeding en Milieu)
Open University (OU)	-	OU (Open Universiteit)
Queen Wilhelmina Foundation - Netherlands Organization for Cancer Control	-	KWF (Koningin Wilhelmina Fonds - Nederlandse Organisatie voor KankerBestrijding)
Royal Dutch Chemical Society (KNCV)	-	KNCV (Koninklijke Nederlandse Chemische Vereniging)
Royal Netherlands Academy of Arts and Sciences	-	KNAW (Koninklijke Nederlandse Akademie van Wetenschappen)
Scientific Staff	-	WP (Wetenschappelijk Personeel)
Society of Cooperating Dutch Universities	-	VSNU (Vereniging van Samenwerkende Nederlandse Universiteiten)
Society Surgery of the Alimentary Tract (SSAT)	-	SSAT (Vereniging voor Chirurgie van de Tractus Digestivus)
Stable Isotope Research Centre (SIRC)	-	SIRC (Stable Isotope Research Centre; Stabiele Isotopen OnderzoeksCentrum)
State Institute for Quality Control of Agricultural Products (RIKILT)	-	RIKILT (RijksKwaliteitsInstituut voor Land- en Tuinbouwproducten)
Trainee Medical Assistant	-	AGIO (Assistent-Geneskundige In Opleiding)
Trainee Researcher Syn.: PhD student (financed by a 2nd flow of funds)	-	OIO (Onderzoeker In Opleiding)
Trainee Research Assistant Syn.: PhD student (financed by 1st and 3rd flows of funds)	-	AIO (Assistent In Opleiding)
United Nations (UN)	-	VN (Verenigde Naties)
University Education Act	-	WVO (Wet op het Wetenschappelijk Onderwijs; thans: Wet op de Modernisering Universitair Bestuur (MUB))
University Hospital Maastricht (azM)	-	AZM (Academisch Ziekenhuis Maastricht)

University of Amsterdam (UvA)	-	UvA (Universiteit van Amsterdam)
University of Ghent (RUG)	-	RUG (RijksUniversiteit Gent)
University of Utrecht (UU)	-	UU (Universiteit Utrecht)
US Environmental Mutagen Society (EMS)	-	EMS (VS Milieumutagenen Vereniging)
VLAG (Food Technology, Agrobiotechnology, Nutrition and Health Sciences)	-	VLAG (Voeding, Levensmiddelentechnologie, Agrobiotechnologie en Gezondheid)
Wageningen University (WU)	-	WU (Wageningen Universiteit)
World Health Organization (WHO)	-	WGO (World Health Organisation; WereldGezondheidsOrganisatie)
World Organisation of GastroEnterology (WOG) Syn.: Organisation Mondiale de GastroEnterologie (OMGE)	-	WOG (World Organisation of GastroEnterology; WereldOrganisatie voor Gastroenterologie)



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