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Editor-in-Chief Clinical Nutrition and Clinical Nutrition ESPEN
Director of Clinical Research, Human Clinical Research Facility
Director Center for Translational Research in Aging & Longevity
Chair, Kinesiology Division and Associate Department Head
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Education	
Resident, Department of Radiology, University of Amsterdam, The Netherlands	Feb 1988 - June 1988
Research Fellowship at Department of Experimental Medicine, University of Amsterdam (Ph.D.)	May 1984 - Jan 1988
Resident at the Neurosurgical Department, University of Amsterdam, The Netherlands	Sep 1983 - Apr 1984
Medical School, University of Amsterdam, The Netherlands (M.D.)	Sep 1976 - Sep 1983
Positions	
Chair, Kinesiology Division and Associate Department Head Department of Health & Kinesiology, Texas A&M University	June 2018 - present
Director of Clinical Research, Human Clinical Research Facility. Texas A&M University	Jan 2017 - present
Director of the Center for Translational Research in Aging & Longevity. Department of Health & Kinesiology, Texas A&M University	April 2012 - present
Professor, Ponder Endowed Chair. Department of Health & Kinesiology, Texas A&M University	April 2012 - present
Professor, Dept. of Geriatrics, College of Medicine, University of Arkansas for Medical Sciences, Little Rock, Arkansas	Dec 2006 - March 2012
Professor, Department of Dietetics and Nutrition, College of Health Related Professions, College of Medicine, University of Arkansas for Medical Sciences, Little Rock, Arkansas	Jan 2007 - March 2012
Professor, Department of Pediatrics, College of Medicine, University of Arkansas for Medical Sciences, Little Rock, Arkansas	July 2007 - March 2012
Visiting Professor of Center for Hepatology, University College London, United Kingdom	Jan 2001 - Nov 2006
Associate Professor, Department of Surgery, Maastricht University, The Netherlands	Jul 2000 - Nov 2006
Assistant Professor, Department of Surgery, Maastricht University, The Netherlands	Jul 1988 - Jun 2000
Honors/Awards	
Armstrong Scholar Award. Health and Kinesiology, Texas A&M University, College Station, TX	2014
Distinguished Lecture and Scholar Award. Nutrition, Aging and Longevity. Texas A&M University. College Station, Texas, USA	2014
Sir David Cuthbertson Lecture. Amino Acids between and within Organs, ESPEN – 2007 Prague, Czech Republic	Sep 2007
Service/Leadership	
Editor-in-Chief of the Elsevier Journals “Clinical Nutrition”, International	2005 - present
Editor-in-Chief of the Elsevier Journal “Clinical Nutrition ESPEN”, International	2005 - present

Associate Editor Clinical Nutrition Experimental	2014 - present
Member Editorial Board American Journal Physiology Endocrinology and Metabolism	2005 - present
Director and founder, Center for Translational Research in Aging & Longevity. Department of Health & Kinesiology, Texas A&M University	2012 - present
Director of LC-MS Laboratory. Center for Translational Research on Aging & Longevity. Dept. of Geriatrics, College of Medicine, University of Arkansas for Medical Sciences, Little Rock, Arkansas	2007 - 2012
Director of animal and clinical research lab in the field of Clinical Nutrition and Metabolism. Center for Translational Research on Aging & Longevity (CTRAL). Dept. of Geriatrics, College of Medicine, University of Arkansas for Medical Sciences, Little Rock, Arkansas	2007 - 2012
Director of animal and clinical research lab in the field of Nutrition and Metabolism, supervising 4-6 highly trained research assistants on a daily basis. Research was done studying gut, liver, muscle, kidney and brain metabolism in rats, pigs and (transgenic/knockout) mice and all necessary operations and techniques were done or managed. In addition, research was done in healthy volunteers and patients with various disease states. We have supported most of the animal and human research projects on protein and amino acid metabolism carried out at the Maastricht University Research Institute NUTRIM, The Netherlands	1988 - 2006
Director of the Metabolic Research Center, supervising 4 technical assistants. In the laboratory, determinations are done on a 24h basis using the following equipment: 3 HPLC, 1 FPLC, 1 Mira, 4 LC-MS systems (3 LCQ, 1 TSQ). The Center has supported most of the research on protein and amino acid metabolism at the Maastricht University Research Institute NUTRIM (collaboration with the departments of Surgery, Medicine, Pulmonology, Pediatrics, Psychology) and was actively involved in research projects carried out abroad London, Paris, Stockholm	1988 - 2006
Professional Affiliations	
National Institutes of Health, Review Panel member for Study Sections	2008 - present
Member of the scientific committee of the European Society of Parenteral and Enteral Nutrition (ESPEN), International	2008 - present
Chairman of the scientific committee of the European Society of Parenteral and Enteral Nutrition (ESPEN), International	2000 - 2004
Councilor American Physiology Society, E&M Section	2003 - 2007
Member of the scientific committee of the European Society of Parenteral and Enteral Nutrition (ESPEN), International	1998 - 2000
Treasurer of the Dutch section of Nutrition and Metabolism of the Dutch Society of Gastroenterology, The Netherlands	1998 - 2003
Secretary of the NWO (Netherlands Scientific Organization) group Liver Research, The Netherlands	1993 - 1998
Teaching/Mentoring	
Teaching Assistant and Associate Professors, PhD students and Graduate Students. Center for Translational Research on Aging & Longevity (CTRAL).	2007 - present
Supervise PhD student DA van Waardenbrug. Protein metabolism and nutritional requirements in critically ill children. Thesis Defense Maastricht University	2008
Supervise PhD student YLJ Vissers. Peri-operative arginine metabolism in cancer. Thesis Defense Maastricht University	2008
Supervise PhD student L Lutgens. Effects of radiation of gut function. Thesis Defense Maastricht University	2005

Supervise PhD student SWM Olde Damink. The effects of blood protein on human metabolism. Thesis Defense Maastricht University (Cum Laude)	2005
Supervise PhD student R Jalan. Hepatic Encephalopathy and brain function. Thesis Defense Maastricht University (Cum Laude)	2005
Supervise 4 PhD and 2-4 PhD students in Experimental and Clinical Research. Maastricht, The Netherlands	2004 - 2006
Supervise PhD student CKL Lieben. Serotonin and Behaviors: animal studies applying the method for acute tryptophan depletion. Thesis Defense Maastricht University	2004
Supervise PhD student MM Hallemeesch: Nitric Oxide and the gut. Thesis Defense Maastricht University	2001
Supervise PhD student WJ de Jonge: Implications of arginine deficiency for growth and organ development. Thesis Defense University of Amsterdam	2001
Supervise PhD student MJ Bruins: Nitric Oxide and the gut. Thesis Defense Maastricht University	2001
Supervise PhD student HMH van Eijk. Analytical aspects to the study of amino acid metabolism. Thesis Defense Maastricht University	1999
Co-organizer of the two week international postgraduate course "ESPEN Advanced Course on Clinical Nutrition", organized for students coming from all over Europe and abroad, Maastricht/Bonn, International	1998 - 2003
Co-Organizer of the post-graduate course "In vivo use of isotopes", The Netherlands	1996 - 2000
Supervisor PhD student CHC Dejong: Ammonia and glutamine metabolism during liver failure: Studies in rats. Thesis Defense Maastricht University	1993
Certifications and Licensure	
Physician Nutrition Specialist, ABPNS, USA	Dec 2008 - Dec 2018
Medical Physiologist	2000 - present
Medical Doctor. The Netherlands (BIG #69020621101)	Sep 1988 - present
Laboratory Animal Medicine (DLAM: #1850-07).	Jan 2007 - present
Arkansas State Medical License (#E-5637)	June 2008 - Mar 2012
National Provider Identifier (NPI: 1932369766)	June 2008 - present
Arkansas Department of Health (#AR050407-1)	Jan 2008 - Mar 2012
DEA Certification (#RD0361648)	Jan 2008 - present
Physician Nutrition Specialist (#2080350)	Dec 2008 - present
Professional Memberships and Activities	
Member of Clinical Nutrition Week 2010 Committee (ASPEN)	2009
Member of Scientific Committee ESPEN	2005 - present
Member of the American Society of Parenteral and Enteral Nutrition (ASPEN)	2008 - 2015
Member of the European Society of Clinical Nutrition and Metabolism (ESPEN)	1989 - present
Member of the American Physiological Society	2000 - present
Member of the American Society of Nutrition	2007 - present
Committee Assignments and Administrative Services	
Chair Promotion and Tenure Committee. Dept. Health and kinesiology. Texas A&M University	2016 - 2017
Clinical Trial Review Committee, Department of Health and Human Services	2011
Committee Clinical Research, University of Arkansas for Medical Sciences	Mar 2011 - Mar 2012
University of Arkansas for Medical Sciences, Research Council	2011 - 2012
University Hospital Institutes, The French National Research Funding Agency ANR, Paris, France	January 2011

Member Data and Safety Monitoring Board (DSMB), National Institute of Aging (NIA) For DSMB Members participating in oversight of SBIR Grant "Nutritional Intervention for Age-Related Muscular Function and Strength Losses" PI Dr. John A. Rathmacher, 1 R44 AG034722-01A1.	May 2010 - Aug 2013
University of Arkansas for Medical Sciences, Dept. of Geriatrics, RIOA Vertical Expansion Space Committee	2009 - 2011
University of Arkansas for Medical Sciences, Medical Student Interviews	2009
Foundation for Liver Research, External Peer Reviewer	2008
Government based NWO (Netherlands Scientific Organization)	1990 - 2001
ESPEN research fellowships, International	1996 - present
European commission program on Research applications, International	2001
Editorial Management and Boards	
Editor-in-Chief of the Elsevier Journal "Clinical Nutrition", International	2005 - present
Editor-in-Chief of the Elsevier Journal "Clinical Nutrition ESPEN, International	2005 - present
American Journal of Physiology - Endocrinology and Metabolism	2008 - present
Associate Editor Clinical Nutrition Experimental	2014 - present
Ad Hoc Peer Reviewer Journals (selection)	
Am J Physiology	
J Physiology	
J Applied Physiology	
Lancet	
PLOSone	
Clinical Nutrition	
Clinical Nutrition ESPEN	
Am J Clin Nutrition	
J Par Ent Nutrition	
Metabolism	
Br. J Nutrition	
Food, Science and Nutrition	
Nutrition and Metabolism	
Annual Review Nutrition	
Educational Activities	
Special Topics: Methods in Human Clinical Research - KINE 689, Texas A&M University	Fall 2017 - present
Critical Review of Manuscripts in Clinical Research - KINE 681, Texas A&M University	Spring 2017 - present
Special Topics: Introduction in Human Clinical Research - KINE 689, Texas A&M University	Spring 2017 - present
Fractional Protein Breakdown and transorgan protein kinetics. Intensive Course in Tracer Methodology in Metabolism, CTMM 2017. College Station, Texas	April 2017
New developments, pulse tracer approaches. ESPEN Tracer Course. Intensive Course in Tracer Methodology in Metabolism, CTMM 2017. College Station, Texas	April 2017
Examples of the use of stable tracers in chronic disease. Maastricht Symposium on stable tracers. Maastricht, Netherlands	Sept 2017
Planning and Conduct of Human Clinical Research - KINE 482, Texas A&M University	Spring 2017
Fractional Protein Breakdown and transorgan protein kinetics. Intensive Course in Tracer Methodology in Metabolism, CTMM 2016. Derby, England.	June 2016
Critical Review of Manuscripts in Clinical Research - KINE 681	2016

Net Protein Anabolism and Chronic Disease in the Older Adult. Texas A&M, ANSC/NUTR 613.	Apr 2016
Protein Synthesis and Breakdown. Intensive Course in Tracer Methodology in Metabolism, CTMM 2014, Stockholm, Sweden	June 2014
Misc Topics in the Isotope World. Intensive Course in Tracer Methodology in Metabolism, CTMM 2014, Stockholm, Sweden	June 2014
Arkansas Geriatric Education Center (AGEC) NUTRITION & AGING XXVI: Nutrition in Chronic Disease	Sep 2013
Arkansas Geriatric Education Center (AGEC) NUTRITION & AGING XXVI: Nutrition in Chronic Disease	Sep 2011
UAMS, College of Medicine, Geriatrics Grand Rounds	Aug 2011
Abbott Nutrition Journal Writing Workshop, Writing a Good Nutrition Manuscript That Gets Published. Insights on Publication/Common mistakes in submitted manuscripts that lead to rejection/Discussion on published papers	Jul 2011
Reynolds Institute on Aging Advisory Board, Everything I Wanted to Know About Eating Right and Staying Fit, Little Rock, Arkansas	May 2011
Arkansas Research Alliance "Healthy Arkansas" Research Conference to initiate UAMS-related Research Companies	Apr 2011
UAMS, College of Medicine, Geriatrics Grand Rounds	May 2009
Faculty member: Annual NIDDK/MMPC Course on Isotope Tracers in Metabolic Research	2008 - 2011
Organizer of the International ESPEN Post-Graduate Course in Tracer Methodology in Metabolism.	2003 - present
Organizer of the Post-Graduate education for PhD Students in NUTRIM on "Protein and amino acid metabolism in health and disease: methodology and interpretation.	2001
Organizer of the Post-Graduate education for PhD Students in NUTRIM on "Analytical techniques".	1999 - 2004
Organizer of the ESPEN European Intensive Course on Clinical Nutrition (Maastricht/Bonn, 2 weeks).	1998 - 2002
Organizer of the Post-Graduate education for PhD Students in MENU Education school on "In vivo use of isotopes".	1994 - 1998
Post-Graduate education for PhD Students in MENU Education school on "Regulation of metabolism".	1994 - 1998
Tutor for several courses for Medical students.	1991 - 2006
Supervisor for Medical students and students Health sciences.	1988 - 2006
Counselor for Medical students.	1988 - 1994
Annual oral presentations for students Medicine and Health Sciences, University Maastricht on "Gut and liver metabolism".	1988 - 2001
Presenting and tutoring during the Erasmus/ESPEN European Intensive Course on Clinical Nutrition in Maastricht.	1988 - 1996
Presenting lectures on nutrition and metabolism at the scientific nutritional training course in Maastricht.	1988 - 1996
Supervising medical students in scientific research, University of Amsterdam.	1983 - 1988
Teacher Neurology at the Academy of Physiotherapy, "J. van Essen", Amsterdam, The Netherlands.	1979 - 1981
Grant and Contract Awards	
Current Federal Projects. Total funding = \$202,698	

University of Vermont (sub award 1R01HL132887-01A1). Nutrition and Exercise in Critical Illness (The NEXIS Trial): A Randomized Trial of Combined Cycle Ergometry and Amino Acids in the ICU. Role in project: Col.	2017 - 2022
NSF-EEC-1648451 . Engineering Research Center for Precise Advanced Technologies and Health Systems for Underserved Populations (PATHS-UP). Role in Project: Co-PI.	2017 - 2022
Foundation-Sponsored Projects. Total funding = \$470,000	
Abbott Nutrition. Effects of low dose of Fish Oil (EPA+DHA) vs. combined EPA+DHA and HMB or curcumin supplementation on protein metabolism, muscle mass and functional capacity in moderate to severe COPD. Role in Project: PI.	2018
Abbott Nutrition. Preclinical study in pig sepsis model to evaluate the efficacy of HMB on whole body protein turnover using pulse labeling methodology. Role in Project: PI.	2018
ESPEN. Role of metabolic phenotyping, changes in gut function and the response to a meal to explain the variability in weight loss induced by Very Low Caloric Diet in (morbidly) obese adults. Role in Project: PI.	2017 - 2018
Industry-Sponsored Projects. Total funding = \$134,400	
Abbott Nutrition. Measure HMB and amino acid levels in BL01 baseline blood samples. Role in project: PI.	2017
Measure HMB and amino acid levels in BL20 blood samples. Abbott Nutrition. Role in project: PI.	2017
Projects Under Review	
Flipping Type II Diabetes and Protein Storage: Mechanisms of Skeletal Muscle Hypertrophy with Calorie Dense Food in Young Mice. American Diabetes Association. Role in project: Co-PI.	2017 - 2020
FI:ErgoSleepFit: A Smart Sleep Assessment System for Diversifying Sleep Care Services. National Science Foundation. Role in Project: Co-PI.	2017 - 2018
SCH: INT: SleepInformant: Preventing Severe Sleep Apnea Through Early Detection. National Science Foundation. Role in project: Co-PI.	2018 - 2021
Preserving Skeletal Muscle Morphology in Ground-based Microgravity with FDA Approved Interventions: Targeting Oxidative Stress, Astronaut Age, and Synergism with Exercise. NASA. Role in Project: Co-PI.	2017 - 2020
Center for Translational Environmental Health Research. Baylor College of Medicine (prime sponsor NIH). Role in Project. Co-PI.	2017-2022
Completed Projects. Total Lifetime funding = \$14,192,000	
ESPEN. Exercise induced gut dysfunction and the anabolic response to feeding in patients with Chronic Obstructive Pulmonary Disease and Chronic Heart Failure. ESPEN. Role in Project: PI.	2016 - 2017
National Institutes of Health (P30-ES023512-01). Integrated Health Science Facility Core. Role in project: PI	2014 - 2019
Development of Well-Characterized Mini-Pig Models of GI-ARS and H-ARS. Henry Jackson Foundation. Role in Project: PI	2016 - 2017
Abbott Nutrition. Evaluation of AN777 on Lean Body Mass in Healthy Older Subjects During Bed Rest and Recovery. Role in Project: PI.	2014 - 2017
Abbott Nutrition. Human Metabolism of HMB: A Feasibility Study. Role in Project: PI.	2016 - 2017
Abbott Nutrition. Feasibility of novel laboratory methods for use in nutrition studies. Role in Project: PI.	2016

ICAAS. Methionine Tolerance Experiment. Role in Project: PI.	2015 - 2016
Triheptanoin Treatment And Restoring Intermediary Metabolism In Type 2. ESPEN. Role in Project: Co-PI.	2015 - 2016
Ocera Therapeutics Inc. Human Metabolism of Ornithine Phenylacetate. Role in Project: PI	2015
Abbott Nutrition. A Randomized Double Blinded Controlled Trial of an Oral Nutritional Supplement Containing AN 777 in Older Hospitalized Patients. Role in project: PI	2013 - 2014
3R01GM084447-03S1 – National Institutes of Health. Optimal Amino Acid Nutrition in Sepsis – Collaborative Research with Karolinski Institute. Role in Project: Co-PI	2010 - 2012
3R01GM08447-02S1 National Institute of Health. Optimal Amino Acid Nutrition in Sepsis – Equipment – LCMS detector. Role in Project: Co-PI	2010 - 2011
R01 - HL095903 National Institutes of Health. Eicosapentaenoic acid and protein modulation to induce anabolism in COPD. Role in project: Co-PI	2009 - 2013
R01 - GM084447 National Institutes of Health. Optimal Amino Acid Nutrition in Sepsis. Role in project: PI	2008 - 2012
Arkansas Center for Clinical and Translational Research/ National Institute on Health - Development of an innovative panel of methods to measure intestinal macronutrient digestion, absorption, and function. Role in project: PI	2010 - 2012
S10 - RR027047 National Institute of Health - TSQ Vantage Bundle with Acquity UltraPerformance LC. Role in project: PI	2010 - 2011
Nestle. RES-DZ-01-03 Study in Septic-shock ICU Patients in which arginine was infused to improve their condition. Role in project: PI	2007 - 2010
Arkansas Children's Hospital Research Institute, ABI Competitive Research Grant Program. Amino acid intake to counteract muscle wasting. Role in project: PI	2008 - 2010
Unilever-Nutreco. Nutrition of the Gut. Feed/Food solutions for the infected gut. Role in project: PI	2007 - 2010
Arkansas Children's Hospital Research Institute, CUMG Award. Development and applicability of a new stable isotope method to determine protein requirements in critically ill children. Role in project: Co-I	2006 - 2010
Unilever R&D Vlaardingen. Absolute Bioavailability of Hoodia Seroidal Glycosides in Pigs # 06D7X. Role in project: PI	2007 - 2008
Absorption kinetics of peptides in pigs. Unilever/DSM. Role in project: PI	2004 - 2006
WCFS-A012. Role protein in Obesity. 4 year 1.3 Lab Technician. 0.3 senior researchers. Role in project: PI	2005 - 2008
Top Institute Food and Nutrition. Pig SCFA transport over colonic epithelium & Mouse n-Butyric acid to amino acid transfer. Role in project: PI	2007 - 2008
ESPEN NESTLE research fellowship: "The effect of cancer and surgery on the inter-organ protein response to feeding". Role in project: Co-I	2005 - 2007
Burn wounds and treatment with Arginine. Kootstra fellowship to Kim Wehrens. Role in project: Co-I	2006
Chronic Tryptophan depletion and cerebral function. Kootstra fellowship for Cindy Lieben. Role in project: Co-I	2005 - 2006
Cerestar. Measurement of portal production of glucose of 5 wheat-based cereal foodstuffs in pigs. Role in project: PI	2004
WCFS. Homocysteine tracer kinetics. Role in project: PI	2003 - 2005
NWO AGIKO 920-03-240 for Mrs. YLJ Vissers. Arginine. Peri-operative depletie en repletie bij kanker. Role in project: PI	2003 - 2005
ESPEN NESTLE research fellowship: "Effects of glutamate ingestion on protein metabolism and exercise capacity in COPD patients at rest and during exercise". Role in project: Co-I	2003
British Journal of Surgery Research Bursaries 2002. Role in project: Co-I	2003

Danone-Cerestar. Measurement of the rate of absorption of glucose of 5 wheat-based cereal foodstuffs in pigs. Role in project: PI	2003
European Whey Protein Association and European Dairy Association. Role in project: PI	2002 - 2004
The role of arginine during Cancer: ESPEN Award. Role in project: Co-I	2002 - 2004
ESPEN research fellowship: Citrulline, a quantitative biological marker for small bowel mucosal mass in patients treated with radiation therapy to pelvic and/or abdominal cancer. Role in project: Co-I	2000 - 2002
ESPEN research fellowship: Glutathione synthesis in the intestine, liver, kidney and muscle of well and undernourished patients. Role in project: Co-I	2000 - 2002
Nutricia: Perioperative nutrition. Role in project: Co-PI	1998 - 2002
Fresenius-KABI: Glutamine and Glutamine-dipeptides. Role in project: Co-PI	1998 - 2001
NWO AGIKO 920-03-036 for Mr. SWM Olde Damink. The effects of isoleucine supplementation during simulated upper gastrointestinal tract bleeding. Role in project: Co-I	1997 - 1998
NWO equipment funding 902-23-239. LCQtm Benchtop MSn System for HPLC. Role in project: PI	1997 - 2000
European Dairy Association: Protein quality of CASEIN vs. SOY, part II. Role in project: PI	1997 - 1999
Dutch Gut-Liver foundation WS 96-20: The labile gut protein pool and its role during disease. Role in project: PI	1997 - 1999
Industry-related project: Nutricia: Glutamine-enriched proteins use in depleted and critically ill patients. Role in project: Co-PI	1996 - 1998
NWO program 902-23-098. Intestinal arginine and nitric oxide metabolism in development and disease. Role in project: PI	1995 - 2005
Assilec: Protein quality of CASEIN vs SOY. Role in project: PI	1995
Dutch Gut-Liver foundation WS 91-29. The role of enteral nutrition on adaptation after small bowel resection in the growing individual. Role in project: PI	1993 - 1995
Nutricia: Biological availability of Glutamine-enriched proteins in pigs: Role in project: PI	1993 - 1996
ESPEN research fellowship: Glutamine supplemented enteral nutrition during adaptation to short bowel syndrome in the pig: effects on protein kinetics and transmembrane transport Role in project: Co-I	1993 - 1994
NWO project 900-562-125. Characterization of altered amino acid metabolism in cancer and the relation with cytokines. Role in project: Co-PI	1992 - 1996
DMV-Campina: Absorption characteristics of protein: Role in project: PI	1990 - 1993
Maastricht University, the Netherlands. Nutrim "Liver coma research". Role in project: PI	1988 - 2003
Patents and Technology Transfer	
<u>Deutz NE</u> , Ligthart-Melis, G, Engelen MP, Ten Have, GA. <u>Methods for Diagnosing Impaired Absorption of Amino Acids, Monosaccharides and Fatty Acids</u>	2015
<u>Deutz NE</u> , Engelen MP, <u>Methods of Metabolic Kinetic Phenotyping and Uses of Thereof.</u> US 15/180,571.	2015
<u>Deutz NE</u> , Engelen MP, Com G, Thaden JJ, inventors; Google Patents, assignee. <u>Methods of Measuring Protein and/or Fat Digestibility and Uses Thereof.</u> US 14/031,921.	2014
Wolfe RR, Troup J, <u>Deutz NEP</u> . Compositions and methods for increasing muscle mass, strength, and functional performance in the elderly. <i>European patent application. UNITED STATES PATENT AND TRADEMARK OFFICE GRANTED PATENT. Patent cooperation treaty application.</i>	2010

Ferrando AA, Wolfe RR, Troup JP, <u>Deutz NEP</u> . Compositions and methods for sparing muscle in renal insufficiency and during hemodialysis. <i>Patent cooperation treaty application</i> .	2010
<u>Deutz NEP</u> , Troup JP, Wolfe RR. Composition and methods to manage the inflammatory basis of chronic disease conditions and maintain an optimal immune response in elderly. <i>Patent cooperation treaty application</i> . 140/1686 us	2010
Wolfe RR, Troup JP, <u>Deutz NEP</u> . Systems for and Methods of use of Therapeutic Nutrition for the Management of Age-Associated and Age-Specific Health Conditions of the Elderly. <i>UNITED STATES PATENT AND TRADEMARK OFFICE PRE-GRANT PUBLICATION</i> . <i>Patent cooperation treaty application</i> .	2009
Wolfe RR, Troup J, <u>Deutz NEP</u> . Determination of tissue-specific profile of amino acid requirements form the relationship between the amounts of tRNAs for individual amino acids and the protein-bound amino acid profile of the tissue. <i>UNITED STATES PATENT AND TRADEMARK OFFICE PRE-GRANT PUBLICATION</i> .	2009
Wolfe RR, Troup J, <u>Deutz NEP</u> . Compositions and methods for improving cardiovascular health. <i>Patent cooperation treaty application</i> . <i>UNITED STATES PATENT AND TRADEMARK OFFICE PRE-GRANT PUBLICATION</i> . 140/1641 US	2009
Edens I, <u>Deutz NEP</u> , Dekker PJT. Peptidylarginine deiminase and uses thereof in the production of citrullinated proteins and peptides. <i>European patent application</i> . <i>Patent cooperation treaty application</i> . Patent: PCT/EP2007/056310. Patent: PCT/EP2007/056310	2009
<u>Deutz NEP</u> , Greenberg NA, Kaspar KM, Kvamme C, Luiking YC. Treatments using citrulline. <i>United States patent and trademark office pre-grant publication</i> . <i>Patent cooperation treaty application</i> .	2009
Engelen MPKJ, <u>Deutz NEP</u> , Schols AMWJ, Wouters EFM. Compositions and methods for improving the condition of patients suffering from COPD and other diseases. <i>UNITED STATES PATENT AND TRADEMARK OFFICE PRE-GRANT PUBLICATION</i> . <i>European patent application</i> . <i>Patent cooperation treaty application</i> . Pct/ep 04/00151	2006
Invited Presentations & Seminars	
β -hydroxy β -methylbutyrate (HMB) to stimulate anabolism in acute and chronic disease. ESPEN-SENPE Symposium, Madrid. Spain.	Oct 2018
Association between baseline levels of amino acids and their metabolites and clinical outcomes in malnourished, hospitalized older patients. ESPEN 2018, Madrid, Spain	Sept 2018
Specialized Amino Acid kinetic Measurements with Stable Tracers. ESPEN 2018 Madrid, Spain	August 2018
Fractional Protein Breakdown and transorgan protein kinetics. Intensive Course in Tracer Methodology in Metabolism, CTMM 2018. Maastricht, The Netherlands	June 2018
Muscle loss and its amelioration in patients on bed-rest or in hospital. Strength Ambassador, Hong Kong	April 2018
The Nourish Study. Hong Kong Hospitals	April 2018
β -hydroxy β -methylbutyrate (HMB) to stimulate anabolism in acute and chronic disease. 2018 ASPEN Nutrition Science and Practice Conference, Las Vegas, USA	Jan 2018
Nutritional intervention strategies in ICU patients. Cachexia Meeting, Rome, Italy	Dec 2017
Nourish The Muscle, Impact Survival: New Evidence On The Role Of Specialized Nutrition In Improving Patient Outcomes. Symposium PENSA Annual Clinical Nutrition Meeting, Manila	Oct 2017
Reducing Readmission and Mortality in Malnourished Hospitalized Elderly Patients: New Evidence From the NOURISH Trial. Symposium. Singapore	Oct 2017
Can You Nourish Your Way Out of Hospital Faster, and Stay Out for Longer? Symposium. Singapore	Oct 2017

Age and Disease-Related Muscle Loss: Implications for Clinical Practice and Evidence for Action. Symposium. Singapore	Oct 2017
New stable tracer approaches to measure human metabolism. Radiation Research Society. Cancun, Mexico.	Oct 2017
Nourish the Muscle, Impact Survival: New Evidence on the Role of Specialized Nutrition in Improving Patient Outcomes. Annual Swiss Clinical Nutrition Meeting, Zurich, Switzerland	July 2017
Nourish the Muscle, Impact Survival: New Evidence on the Role of Specialized Nutrition in Improving Patient Outcomes. Annual Italian Clinical Nutrition Meeting, Florence, Italy	July 2017
Evolving Concepts in Nutrition Care in Hospitalized Patients. Canadian Nutrition Society. Montreal, Canada.	May 2017
Fractional Protein Breakdown and transorgan protein kinetics. Intensive Course in Tracer Methodology in Metabolism, CTMM 2017. College Station, USA.	Apr 2017
Protein turnover and the response to nutrition in cancer. KEPAN Meeting, Antalya, Turkey	
Protein turnover and the response to nutrition in respiratory disease. KEPAN Meeting. Antalya. Turkey	Mar 2017
Specialized oral nutritional supplement (ONS) improves nutrient intake of Hospitalized, malnourished older adults without decreasing regular food intake. ESPEN Congress, Copenhagen, Denmark.	Sep 2016
Nourish the muscle, impact survival: New evidence on the role of specialised nutrition in improving patient outcomes. ESPEN Congress, Copenhagen, Denmark.	Sep 2016
Protein turnover and the response to nutrition in muscle wasting in cancer. PENSMA Congress. Kuala Lumpur, Malaysia	Aug 2016
The Importance of Lean Body Mass & Muscle in Healthy Ageing: Latest Evidence. PENSMA Congress. Kuala Lumpur, Malaysia	Aug 2016
Protein turnover and the anabolic response to nutrition in Respiratory diseases. PENSMA Congress. Kuala Lumpur, Malaysia	Aug 2016
Fractional Protein Breakdown and transorgan protein kinetics. Intensive Course in Tracer Methodology in Metabolism, CTMM 2016. Derby, England.	June 2016
The Importance of Lean Body Mass & Muscle in Healthy Ageing: Latest Evidence. POLSPEN Congress. Krakow, Poland.	June 2016
Leucine and HMB containing nutritional supplements to reduce the effects of Cancer Cachexia. Ganepao 2016. Sao Paulo, Brazil.	June 2016
Net Protein Anabolism and Chronic Disease in the Older Adult. ASPEN Clinical Nutrition Week. Austin, TX, USA.	Jan 2016
Protein turnover and the response to nutrition in muscle wasting in cancer. Cachexia Meeting. Paris, France	Dec 2015
The Importance of Lean Body Mass & Muscle in Healthy Ageing: Latest Evidence. Amsterdam, The Netherlands (via SKYPE)	Nov 2016
NOURISH Trial. Nutrition effect On Unplanned Readmissions and Survival in Hospitalized patients. Dallas, TX, USA	Nov 2015
The Importance of Lean Body Mass & Muscle in Healthy Ageing: Latest Evidence. CEHD Development Board, College Station, TX, USA	Oct 2015
Use of tracer approaches to measure metabolism. NUTRIC, Toronto, Canada	Sep 2015
Strategies to optimize protein synthesis. ESPEN Lisboa. Portugal	Sep 2015
The Importance of Lean Body Mass & Muscle in Healthy Ageing: Latest Evidence. ESPEN Lisboa. Portugal	Sep 2015
Which Biomarkers are Used to Evaluate Muscle Mass & Function. ESPEN Lisboa. Portugal	Sep 2015

Relation Intake and Net Protein Anabolism. ESPEN Lisboa. Portugal	Sep 2015
Protein Anabolism and metabolic kinetic phenotyping in older adults with chronic disease and cancer. Sao Louis, Brazil	Sep 2015
Nitric Oxide and Arginine Metabolism in Critical Illness, SHOCK, Denver	June 2015
Protein Anabolism and metabolic kinetic phenotyping in older adults with chronic disease and cancer, AGE, Marina Del Rey	May 2015
Metabolic Kinetic Phenotyping, UT Austin, TX	April 2015
Protein Requirements in Chronic Diseases, Sigma Xi Symposium, College Station, TX	Mar 2015
Special nutritional issues to consider in trials, SCWD, Washington	Dec 2014
Use of protein tracer studies to measure anabolism, NUTRIC, Toronto	Nov 2014
Targeted fluxomics in humans to measure the synthesis and breakdown of biological molecules. ISHEN, London, UK	Sept 2014
Obtaining protein anabolism in Cancer, COPD and other diseases. POLSPEN, Warsaw, Poland	June 2014
Protein Synthesis and Breakdown. Intensive Course in Tracer Methodology in Metabolism, CTMM 2014, Stockholm, Sweden	
Misc Topics in the Isotope World. Intensive Course in Tracer Methodology in Metabolism, CTMM 2014, Stockholm, Sweden	June 2014
Nutrition, Aging and Longevity. HLKN Distinguished Lecture, College Station, TX	April 2014
Protein Requirements during Chronic Disease States. Institute for Arctic Biology, Fairbanks, AK	April 2014
Nutrition and cancer cachexia. MD Anderson, Houston, TX	March 2014
Nutritional interventions with proteins. Davisco, Minneapolis, MN	March 2014
Arginine, Citrulline and Sepsis in Animals and Humans. TAMHSC, Temple, TX	Feb 2014
Nutritional intervention in cancer cachexia. A.S.P.E.N. Research Workshop, Savannah, GA	Jan 2014
Nutritional intervention in cancer cachexia. Cachexia Meeting, Kobe, Japan	Dec 2013
Protein Requirements during Chronic Disease States. ESPEN Expert Meeting. Dubrovnik, Croatia	Oct 2013
Geriatric Nutrition in Acute Care. UAMS Center on Aging, Little Rock, AR	Sept 2013
Clinical Nutrition Editors in Chief. ESPEN Leipzig, Germany	Sept 2013
Protein transorgan and fractional synthesis and breakdown rates. Intensive Course in Tracer Methodology in Metabolism, CTMM 2013, College Station, USA	April 2013
Model to measure net protein synthesis after bolus meal. The American Federation for Aging Research (AFAR) Protein Panel. New York, USA	April 2013
Arginine and Protein metabolism in Lung Disease. ESPEN Barcelona, Spain	Sept 2012
Clinical Results from the Use of HMB to Prevent Muscle Loss During Bed Rest. ESPEN Barcelona, Spain	Sept 2012
Special formulations of EAA and LEU in Cancer. Ganapao San Paulo, Brazil	June 2012
Arginine metabolism in ICU. Ganapao San Paulo, Brazil	June 2012
Protein Supplements to overcome anabolic resistance in Cancer. Clinical Nutrition Week. Orlando	Jan 2012
Nutrition and Lung Disease. Arkansas Geriatric Education Center (AGEC) NUTRITION & AGING XXVI: Nutrition in Chronic Disease, Double Tree Hotel, Little Rock	Sep 2011
Malnutrition. UAMS, 12 th Annual Geriatrics and Long Term Care Update, Donald W. Reynolds Institute on Aging, UAMS, Little Rock	Sep 2011
Fractional Protein Synthesis and Breakdown rate. Intensive Course in Tracer Methodology in Metabolism, CTMM 2011, Athens, Greece	May 2011
Regulation of NO production in Health and Disease. Turkish Clinical Nutrition Society, Antalya, Turkey (KEPAN)	Apr 2011

Role specific Amino Acids. International Symposium: Dietary Protein for Human Health, Auckland, New Zealand	Mar 2011
Clinical Nutrition in the Elderly. 12 th Annual Geriatrics and Long Term Care Conference, Little Rock, AR.	Sep 2010
Transorgan amino acid kinetics. Intensive Course in Tracer Methodology in Metabolism, CTMM 2010, Stockholm, Sweden	Jun 2010
Conference Citrulline: a tool to measure intestinal radiation damage. CONTREC. Petit-Jean	Apr 2010
Protein Metabolism. Isotope Tracer in Metabolic Research Course, Little Rock, AR	Apr 2010
Cachexias: Similarities and Differences. Novartis Strategic Advisory Board on Muscle Diseases, Cambridge, MA	Mar 2010
Leucine-enriched essential amino acid intake to optimize protein anabolism in pediatric subjects with Cystic Fibrosis. Presentation Cystic Fibrosis Research, site visit Arkansas Children's Hospital, Little Rock, AR	Feb 2010
Amino Acid supplements, inflammation, and muscle metabolism. Protein Summit, Maastricht. The Netherlands	Oct 2009
Amino Acid supplements, inflammation, and muscle metabolism. Do we know enough to effectively intervene? – Bedside to Bench, NIH Symposium, Bethesda.	Oct 2009
Gut and its requirements. Benjamin Franklin- Lafayette Symposium. Frejus, France	Jun 2009
Measuring Metabolic Fluxes in vivo. Experimental Biology, New Orleans	Apr 2009
Scientifically-based Clinical Nutrition for the Elderly. Dept. of Geriatrics, Institute on Aging Board Meeting. Little Rock, AR.	Dec 2007
Interorgan exchange of Amino Acids: What is the driving force? ISEP 2007, Vichy, France,	Sep 2007
Sir David Cuthbertson Lecture. Amino Acids between and within Organs, ESPEN – 2007 Prague, Czech Republic	Sep 2007
Clinical Nutrition in the Elderly. 9 th Annual Geriatrics and Long Term Care Conference, Little Rock. AR.	Oct 2007
Is There a Place for Arginine in ICU Patients? Seminar Series, Dietetic and Nutrition, Little Rock, AR.	Mar 2007
Biomarkers of Arginine and Lysine excess. Ajinomoto ICAAS meeting, Budapest, Hungary.	Nov 2006
Glutamate and Clinical Nutrition. ESPEN Istanbul, Turkey.	Oct 2006
NO and oxidative stress. SINPE Spring Event- Maratea, Italy.	Jun 2006
Interorgan amino acid kinetics. ESPEN Brussels.	Oct 2005
Arginine metabolism during cancer. Nutrition Week, Orlando, U.S.A.	Feb 2005
Nitric oxide turnover in vivo. Amino-Acid/Protein Metabolism in Health and Disease, 6 th International Congress, Milano, Italy.	Oct 2004
Nitric oxide production: A good or a bad phenomenon: ESPEN Lisboa, Portugal.	Sep 2004
Studies on the role of nitric oxide in porcine sepsis. 6th World Congress on Trauma, Shock, Inflammation and Sepsis, Munich, Germany.	June 2004
Organ protein and carbohydrate metabolism during sepsis. Geneva Symposium for Nutrition, Geneva, Switzerland.	June 2004
In vivo interorgan Arginine Metabolism. Symposium on Arginine, Bermuda.	Apr 2004
Arginine therapy in septic shock. Nutrition Week, Las Vegas U.S.A.	Jan 2004
Tracer methods in gut amino acid metabolism during sepsis. 9 th International Symposium on Digestive Physiology in Pigs. Banff, Canada.	June 2003
The role of Arginine during sepsis. Nutrition Week, San Antonio U.S.A.	Jan 2003
Plasma Plasma protein synthesis measurements using a proteomics strategy. Amino acid Safety and Adequacy, Hawaii, U.S.A.	Oct 2002
Plasma Proteomics. ESPEN, Glasgow, United Kingdom.	Sep 2002

Regulation of protein breakdown by nutrition. ESPEN, Madrid, Spain.	Sep 2000
Intestinal metabolism and absorption during enteral nutrition in the pig. 7th Int.Symp.Dig.Phys.Pigs, Saint Malo, Frankrijk.	Jun 1997
Interorgan ammonia and glutamine metabolism in liver failure. International Symposium on Ammonia, Newcastle upon Tyne, United Kingdom.	Apr 1996
Glutamine supplementation in critically-ill patients. ESPEN, Rome, Italy.	Oct 1995
Modellen voor acute hepatische encephalopathie. Symposium Ned.Ver. Hepatologie, Utrecht, The Netherlands.	Oct 1993
MR spectroscopy for study of brain amino acid metabolism in liver failure. ESPEN, Wenen, Austria	Sep 1992
The muscle-gut-liver axis of ammonia and amino acids. Int. Symposium on Metabolism, Bologna, Italy.	Aug 1992
Influence of isoleucine infusion on urea production after enteral ingestion of blood in pigs. Symposium "Research in Nutrition and Metabolism". Maastricht, The Netherlands.	Nov 1990
Intravenous isoleucine administration after blood ingestion in the pig improves nitrogen economy. Academic Surgical Departments Europe, Ulm, Germany	Oct 1990
Intravenous isoleucine (ILE) administration after blood ingestion in the pig improves nitrogen economy. International Symposium on Ammonia, Lund, Sweden.	May 1990
In vivo brain 1H-NMR spectroscopy in the rat. ESPEN, Helsinki, Finland.	Sep 1989
Hyperammonemic syndromes, including acute hepatic encephalopathy (HE), studied by simultaneous EEG spectral analysis and in vivo 1H-NMR spectroscopy (NMRS). EASL, Leuven, Belgium.	Apr 1988
In vivo brain 1H-NMR spectroscopy (1H-NMRS) during acute hepatic encephalopathy (HE). International Symposium on Ammonia. Maastricht, Netherlands.	May 1987

Contributions to Science

Complete List of Published Work in MyBibliography

<http://scholar.google.com/citations?user=1BqO3HoAAAAJ> . orcid.org/0000-0001-5845-6447

A. My early publications were mainly focussing on the **metabolic changes when the liver is failing**. In rodents, we found that acute liver failure is related to major changes in organ metabolism and responses to food. Specifically, gastro-intestinal bleeding and digestion of blood proteins is a major nitrogen load that could be reduced by infusion with the amino acid isoleucine. We found that mainly the increase in the plasma ammonia level is related to the complex metabolic disturbances during liver failure. On the basis of our work in animals, we were able to translate this to humans. In collaboration, we found that the uptake of ammonia by the human brain could be reduced by moderate hypothermia and that this enabled the patients to bridge until liver transplantation was possible.

- a. Jalan R, SW OD, Deutz NE, Lee A, Hayes PC. Moderate hypothermia for uncontrolled intracranial hypertension in acute liver failure. *Lancet*. 1999;354(9185):1164-8. Epub 1999/10/08. PubMed PMID: 10513710.
- b. Olde Damink SW, Jalan R, Redhead DN, Hayes PC, Deutz NE, Soeters PB. Interorgan ammonia and amino acid metabolism in metabolically stable patients with cirrhosis and a TIPSS. *Hepatology* (Baltimore, Md. 2002;36(5):1163-71. Epub 2002/10/24. doi: 10.1053/jhep.2002.36497. PubMed PMID: 12395326.
- c. Jalan R, Olde Damink SW, Deutz NE, Hayes PC, Lee A. Moderate hypothermia in patients with acute liver failure and uncontrolled intracranial hypertension. *Gastroenterology*. 2004;127(5):1338-46. Epub 2004/11/03. PubMed PMID: 15521003.
- d. Tsien C, Davuluri G, Singh D, Allawy A, Ten Have GA, Thapaliya S, Schulze JM, Barnes D, McCullough AJ, Engelen MP, Deutz NE, Dasarthy S. Metabolic and molecular responses to leucine enriched branched chain amino acid supplementation in the skeletal muscle of alcoholic cirrhosis. *Hepatology* (Baltimore, Md. 2015. doi: 10.1002/hep.27717. PubMed PMID: 25613922

B. After establishing in animals that **glutamine supplementation** had positive effects on gut function, we translated this approach to humans and found that glutamine supplementation also improved gut function. We hypothesized that this was related to arginine metabolism and therefore initiated translational research in pigs with sepsis to observe effects of **arginine supplementation** on gut and other organs. I served as the primary investigator in all of these studies.

- a. van der Hulst RR, van Kreel BK, von Meyenfeldt MF, Brummer RJ, Arends JW, **Deutz NE**, Soeters PB. Glutamine and the preservation of gut integrity. *Lancet*. 1993;341(8857):1363-5. Epub 1993/05/29. PubMed PMID: 8098788.
- b. Bruins MJ, Soeters PB, Lamers WH, Deutz NE. L-arginine supplementation in pigs decreases liver protein turnover and increases hindquarter protein turnover both during and after endotoxemia. *Am J Clin Nutr*. 2002;75(6):1031-44. Epub 2002/05/31. PubMed PMID: 12036810.
- c. Bruins MJ, Soeters PB, Lamers WH, Meijer AJ, Deutz NE. L-arginine supplementation in hyperdynamic endotoxemic pigs: effect on nitric oxide synthesis by the different organs. *Crit Care Med*. 2002;30(3):508-17. doi: 10.1097/00003246-200203000-00003. PubMed PMID: 11990907.

C. In addition to the contributions described above, we directly documented the effectiveness of arginine supplementation to improve gut and muscle function in pigs with sepsis. Subsequently, we translated these results and conducted studies in **critically-ill intensive care (ICU) patients**. We demonstrated that sepsis is an arginine-deficient state also in ICU patients, caused by the deficiency of the amino acids citrulline. We performed phase 1 and phase 2 trials to establish whether arginine infusion can be used in ICU patients. I served as the primary investigator in all of these studies.

- a. Luiking YC, Poeze M, Ramsay G, Deutz NE. Reduced citrulline production in sepsis is related to diminished de novo arginine and nitric oxide production. *Am J Clin Nutr*. 2009;89(1):142-52. doi: 10.3945/ajcn.2007.25765. PubMed PMID: 19056593.
- b. de Betue CT, Joosten KF, Deutz NE, Vreugdenhil AC, van Waardenburg DA. Arginine appearance and nitric oxide synthesis in critically ill infants can be increased with a protein-energy-enriched enteral formula. *Am J Clin Nutr*. 2013;98(4):907-16. Epub 2013/08/16. doi: 10.3945/ajcn.112.042523. PubMed PMID: 23945723; PMCID: 3778863.
- c. Luiking YC, Poeze M, Deutz NE. Arginine infusion in patients with septic shock increases nitric oxide production without haemodynamic instability. *Clin Sci (Lond)*. 2015;128(1):57-67. doi: 10.1042/CS20140343. PubMed PMID: 25036556.

- d. de Betue CT, Garcia Casal XC, van Waardenburg DA, Schexnayder SM, Joosten KF, Deutz NE, Engelen MP. 24-Hour protein, arginine and citrulline metabolism in fed critically ill children - A stable isotope tracer study. *Clin Nutr.* 2017. doi: 10.1016/j.clnu.2016.12.023. PubMed PMID: 28089618.

D. In collaboration with neuroscientists, I developed animal models to stimulate or depress **serotonin metabolism** which were subsequently translated to human models. We were able to reduce the plasma tryptophan concentration negatively affecting memory and cognition via lowering brain serotonin concentrations. The data provided the basis of more in-depth mechanistic research into the role of serotonin in cognition in health and disease as well as in translational studies to improve cognition via nutritional modulation.

- a. Riedel WJ, Klaassen T, Deutz NE, van Someren A, van Praag HM. Tryptophan depletion in normal volunteers produces selective impairment in memory consolidation. *Psychopharmacology (Berl).* 1999;141(4):362-9. Epub 1999/03/25. PubMed PMID: 10090643.
- b. Lieben C, Blokland A, Westerink B, Deutz N. Acute tryptophan and serotonin depletion using an optimized tryptophan-free protein-carbohydrate mixture in the adult rat. *Neurochemistry International.* 2004;44(1):9-16. doi: 10.1016/S0197-0186(03)00102-5. PubMed PMID: WOS:000185556200002.
- c. Evers EAT, Van Der Veen FM, Van Deursen JA, Schmitt JAJ, Deutz NEP, Jolles J. The effect of acute tryptophan depletion on the BOLD response during performance monitoring and response inhibition in healthy male volunteers. *Psychopharmacology.* 2006;187(2):200-8.
- d. Lieben CK, Blokland A, Deutz NE, Jansen W, Han G, Hupperts RM. Intake of tryptophan-enriched whey protein acutely enhances recall of positive loaded words in patients with multiple sclerosis. *Clin Nutr.* 2018;37(1):321-8. Epub 2017/02/06. doi: 10.1016/j.clnu.2016.12.029. PubMed PMID: 28153503.

E. As the metabolic approaches using concentration and isotope ratio measurements, I needed to supervise and develop a large array of **LC-MS/MS and GC-MS/MS methods**. These new methods are now used by many researchers in our field. I served as the primary leader in all of these studies.

- a. van Eijk HM, Suylen DP, Dejong CH, Luiking YC, Deutz NE. Measurement of amino acid isotope enrichment by liquid chromatography mass spectroscopy after derivatization with 9-fluorenylmethylchloroformate. *Journal of chromatography B, Analytical technologies in the biomedical and life sciences.* 2007;856(1-2):48-56. Epub 2007/06/15. doi: 10.1016/j.jchromb.2007.05.020. PubMed PMID: 17561452.
- b. Meesters RJ, Wolfe RR, Deutz NE. Application of liquid chromatography-tandem mass spectrometry (LC-MS/MS) for the analysis of stable isotope enrichments of phenylalanine and tyrosine. *Journal of chromatography B, Analytical technologies in the biomedical and life sciences.* 2009;877(1-2):43-9. Epub 2008/11/28. doi: 10.1016/j.jchromb.2008.11.018. PubMed PMID: 19036645.
- c. Walker DK, Thaden JJ, Deutz NEP. Application of gas chromatography-tandem mass spectrometry (GC/MS/MS) for the analysis of deuterium enrichment of water. *Journal of Mass Spectrometry.* 2015;50(6):838-43. doi: 10.1002/jms.3593.
- d. Walker DK, Thaden JJ, Wierchowska-McNew A, Engelen MP, Deutz NE. Determination of beta-hydroxy-beta-methylbutyrate concentration and enrichment in human plasma using chemical ionization gas chromatography tandem mass spectrometry. *Journal of chromatography B, Analytical technologies in the biomedical and life sciences.* 2017;1040:233-8. doi: 10.1016/j.jchromb.2016.11.010. PubMed PMID: 27856194; PMCID: PMC5191936.

F. In collaboration with pulmonologists, I introduced the stable isotope approaches in several studies to unravel the metabolic changes in patients with **Chronic Obstructive Pulmonary Disease**. This research led to new insights in protein and amino acid kinetics in COPD and resulted in specific nutritional supplements to treat muscle wasting. Recently, we extended these approaches to Cystic fibrosis and found new dietary approaches to improve anabolism in severely wasted patients.

- a. Engelen MP, Rutten EP, De Castro CL, Wouters EF, Schols AM, Deutz NE. Supplementation of soy protein with branched-chain amino acids alters protein metabolism in healthy elderly and even more in patients with chronic obstructive pulmonary disease. *Am J Clin Nutr.* 2007;85(2):431-9. PubMed PMID: 17284740.

- b. Engelen MP, Com G, Wolfe RR, Deutz NE. Dietary essential amino acids are highly anabolic in pediatric patients with cystic fibrosis. *J Cyst Fibros*. 2013;12(5):445-53. doi: 10.1016/j.jcf.2012.12.011. PubMed PMID: 23357545; PMCID: 3640686.
- c. Jonker R, Deutz NE, Erbland ML, Anderson PJ, Engelen MP. Alterations in whole-body arginine metabolism in chronic obstructive pulmonary disease. *Am J Clin Nutr*. 2016. doi: 10.3945/ajcn.115.125187. PubMed PMID: 27146652
- d. Jonker R, Deutz NE, Harrykissoon R, Zachria AJ, Veley EA, Engelen M. A critical evaluation of the anabolic response after bolus or continuous feeding in COPD and healthy older adults. *Clin Sci (Lond)*. 2018;132(1):17-31. Epub 2017/12/01. doi: 10.1042/CS20171068. PubMed PMID: 29187513.

G. I have published throughout my career multiple animal and human studies focussing on the **nutritional value of certain protein and amino acid mixtures**.

- a. Luiking YC, Engelen MP, Soeters PB, Boirie Y, Deutz NE. Differential metabolic effects of casein and soy protein meals on skeletal muscle in healthy volunteers. *Clin Nutr*. 2011;30(1):65-72. Epub 2010/08/06. doi: 10.1016/j.clnu.2010.06.012. PubMed PMID: 20685015.
- b. Deutz NE, Wolfe RR. Is there a maximal anabolic response to protein intake with a meal? *Clin Nutr*. 2013;32(2):309-13. doi: 10.1016/j.clnu.2012.11.018. PubMed PMID: 23260197; PMCID: 3595342.
- c. Kim IY, Schutzler S, Schrader A, Spencer H, Kortebein P, Deutz NE, Wolfe RR, Ferrando AA. Quantity of dietary protein intake, but not pattern of intake, affects net protein balance primarily through differences in protein synthesis in older adults. *American journal of physiology*. 2015;308(1):E21-8. doi: 10.1152/ajpendo.00382.2014. PubMed PMID: 25352437.
- d. Schooneman MG, Ten Have GA, Van Vlies N, Houten SM, Deutz NE, Soeters MR. Transorgan fluxes in a porcine model reveal a central role for liver in acylcarnitine metabolism. *American journal of physiology*. 2015;ajpendo 00503 2014. doi: 10.1152/ajpendo.00503.2014. PubMed PMID: 26037250.
- e. Deutz NE, Simbo SY, Ligthart-Melis GC, Cynober L, Smriga M, Engelen MP. Tolerance to increased supplemented dietary intakes of methionine in healthy older adults. *Am J Clin Nutr*. 2017;106(2):675-83. doi: 10.3945/ajcn.117.152520. PubMed PMID: 28637772.

H. Recently I started to study the anabolic effects of specialized nutritional supplements in different **chronic diseases and models of disease**. The used translational approaches are a logical extension of the body of my research in the field of protein and amino acids metabolism.

- a. Engelen MP, Safar AM, Bartter T, Koeman F, Deutz NE. High anabolic potential of essential amino acid mixtures in advanced nonsmall cell lung cancer. *Annals of oncology : official journal of the European Society for Medical Oncology / ESMO*. 2015. doi: 10.1093/annonc/mdv271. PubMed PMID: 26113648.
- b. Engelen MP, Safar AM, Bartter T, Koeman F, Deutz NE. Reduced arginine availability and nitric oxide synthesis in cancer is related to impaired endogenous arginine synthesis. *Clinical Science*. 2016. doi: 10.1042/cs20160233.
- c. Deutz NE, Matheson EM, Matarese LE, Luo M, Baggs GE, Nelson JL, Hegazi RA, Tappenden KA, Ziegler TR, Group NS. Readmission and mortality in malnourished, older, hospitalized adults treated with a specialized oral nutritional supplement: A randomized clinical trial. *Clin Nutr*. 2016. doi: 10.1016/j.clnu.2015.12.010. PubMed PMID: 26797412.
- d. Deutz NE, Thaden JJ, Ten Have GAM, Walker DK, Engelen M. Metabolic phenotyping using kinetic measurements in young and older healthy adults. *Metabolism: clinical and experimental*. 2018;78:167-78. Epub 2017/10/08. doi: 10.1016/j.metabol.2017.09.015. PubMed PMID: 28986165; PMCID: PMC5732887.

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1. **Deutz NE**, Bovee WM, Chamuleau RA. Brain 31P NMR spectroscopy in the conscious rat. *J Neurosci Methods* 1986;16:151-61.
2. **Deutz NE**, Chamuleau RA, Bovee WM, Van der Werf AJ. Effects of nimodipine on EEG and 31P-NMR spectra during and after incomplete forebrain ischemia in the rat. *Eur J Pharmacol* 1986;125:429-35.
3. Chamuleau RA, **Deutz NE**, de Haan JG, van Gool J. Correlation between electroencephalographic and biochemical indices in acute hepatic encephalopathy in rats. *J Hepatol* 1987;4:299-306.
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9. van Eijk HM, **Deutz NE**, Wagenmakers AJ, Soeters PB. 3-Methylhistidine determined in plasma by "high-performance" lipid chromatography. *Clin Chem* 1990;36:556-9.
10. de Graaf AA, **Deutz NE**, Bosman DK, Chamuleau RA, de Haan JG, Bovee WM. The use of in vivo proton NMR to study the effects of hyperammonemia in the rat cerebral cortex. *NMR Biomed* 1991;4:31-7.
11. Dejong CH, **Deutz NE**, Soeters PB. Inter-organ nitrogen exchange during prolonged starvation in the rat. *Journal Clinical Nutrition & Gastroenterology* 1991;6:176-183.
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