
Teaching and Research Remits

Agrotechnology and Food Sciences Group

Part of the Wageningen University Chair Plan 2019-2022

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This is an annex to the Chair Plan of 2019-2022 of Wageningen University & Research with the teaching and research remits of all ninety-four regular chairs of Wageningen University standardized and collected between 2020 and 2021.

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1 Introduction

In the teaching and research remit the chair's specific domain is described within the framework of the mission and objectives of Wageningen University & Research (WUR). With this specific scientific domain the chair holder leads and directs the chair group. According to Article 18 of the WU Administrative and Management regulations for each regular chair teaching¹ and research remits should be formulated and centrally documented in the Chair Plan.²

This document is a collection of the standardized teaching and research remits of all ninety-four regular chairs and forms an annex to the Chair Plan of 2019-2022.

The teaching and research have been categorized by department and displayed in alphabetical order lead by their acronym. The teaching and research remits contain the name of the chair holder; the acronym, the English and when applicable the Dutch name of the chair; a summary of the remit; a description of the way the domain of the chair fits in the domain and mission of Wageningen University and the societal importance of the chair; and a description of the remit regarding teaching, research and value creation.

¹ Regular chairs are chairs with a chair holder. Personal, special and endowed chairs are embedded in a regular chair.

² WU Administrative and Management regulations Article 18

2 Agrotechnology and Food Sciences Group

2.1 Teaching and research remit Bio-based Chemistry and Technology (BCT)

Chair holder: Prof. Harry Bitter

1	<i>Name of the chair group (in English and Dutch)</i>	Bio-based Chemistry and Technology (BCT)
2	<i>Brief summary of the (teaching and research) remit in max 35 words</i>	To expand the potential of global resources, the BCT group enables the transition from a fossil-based to a circular/bio-based economy by developing efficient and sustainable (catalytic) conversion processes, products and chains.
3	<i>Brief description of the way the domain of the chair fits in the domain and mission of Wageningen University and the societal importance of the chair in max 35 words</i>	The chair focusses on the use of renewable feedstock to produce the molecules present in chemicals, materials and fuels. The feedstock molecules can be directly taken from nature or can be the side streams of food production and/or agricultural production.
4	<i>Concise description of the remit regarding teaching, research and value creation, max 150-200 words.</i>	<p>The chair's objective is to reduce industrial energy consumption on a global scale, to fully exploit available and as yet uncovered cheap resources of agricultural (waste) streams, and to decrease CO₂ emissions and pollution.</p> <p>Research themes are:</p> <ul style="list-style-type: none">• Conversion Environmental concerns, fluctuating oil prices and dwindling reserves are leading to the need for the production of bio-based chemicals, materials and fuels. Achieving this new biomass requires pre-treatments, (bio)chemical conversions and catalyst developments. These bio-based molecules offer opportunities for the production of novel and functional materials as well.• Multiscale modelling Creating a bio-based economy needs sustainable solutions for biomass conversion and separation. Knowledge of mechanisms of conversion and separation, and how to control these mechanisms is essential. Experimental and modelling work are combined to elucidate complex interactions in biomass conversion and to drive the interactions in the aimed direction.• Physical chemistry Nature offers natural constructs (oil bodies, protein aggregates, etc.) which offer great potential as bio-based functional materials. To give the materials target, desired properties (e.g. drug delivery) it is essential to understand the physico-chemical properties of these constructs and to understand their interaction with the environment in which they are applied. Physico-chemical studies of (modified) constructs is essential to achieve the desired understanding.
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2.2 Teaching and research remit Biochemistry (BIC)

Chair holder: Prof. Dolf Weijers

1	<i>Name of the chair group (in English and Dutch)</i>	Biochemistry (BIC) / Biochemie
2	<i>Brief summary of the (teaching and research) remit in max 35 words</i>	Biochemistry is the study of the chemistry of life processes. The chair's research focuses on how biomolecules form, function and degrade inside cells.
3	<i>Brief description of the way the domain of the chair fits in the domain and mission of Wageningen University and the societal importance of the chair in max 35 words</i>	Proteins are at the heart of any process in living cells, but are also key food components. Understanding their workings is of key importance to much of the biological and food domain of the university.
4	<i>Concise description of the remit regarding teaching, research and value creation, max 150-200 words.</i>	Cellular biochemistry is the central theme in which protein biochemistry, proteomics and structural biology are combined with molecular genetics, bioinformatics, cell biology and imaging to understand how key proteins and other biomolecules control biological processes in the living cell and organism. The evolutionary context is explicitly regarded, but experimental model organisms that allow genetic interventions are used. The biological processes that are studied are diverse and in flux, but for all of them the same philosophy is followed of integrating various approaches to arrive at deep functional insight into the function of biomolecules in their natural context. Current focus areas encompass plant development and hormone biology, receptor function and signalling and prokaryotic immunity mechanisms
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2.3 Teaching and research remit Biophysics (BIP)

Chair holder: Prof. Herbert van Amerongen

1	<i>Name of the chair group (in English and Dutch)</i>	Biophysics/ Biofysica (BIP)
2	<i>Brief summary of the (teaching and research) remit in max 35 words</i>	The chair advances light- and magnetic-resonance-based methods to study biological systems and food. BIP teaches the fundamentals of (bio)physics and the advanced methodologies together with their application in the life sciences.
3	<i>Brief description of the way the domain of the chair fits in the domain and mission of Wageningen University and the societal importance of the chair in max 35 words</i>	The chair develops new methodologies for the food and life sciences. BIP focuses on photosynthesis research for improving biomass/food production and research on analyzing composition/structure-property relationships of foods.
4	<i>Concise description of the remit regarding teaching, research and value creation, max 150-200 words.</i>	BIP develops and applies novel methods that use NMR/MRI or optical spectroscopy and imaging to study biological and food systems with ever-increasing spatiotemporal resolution. The research is organized into different areas: <ul style="list-style-type: none"> • biophysics of photosynthesis with special attention to photosynthetic light harvesting: regulation and acclimation. A variety of biophysical methods are developed and applied, for instance methods based on ultrafast (micro)spectroscopy; • NMR/MRI methods applied to porous (bio)systems, soft matter and foods, to assess their complex multiscale physico-chemical properties both under static and dynamic conditions (e.g. processing/reactivity, non-Newtonian flow, digestion); • development and application of single-molecule and super-resolution microscopy for application in the food and life sciences.
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2.4 Teaching and research remit BioNanoTechnology (BNT)

Chair holder: Prof. Aldrik Velders

1	<i>Name of the chair group (in English and Dutch)</i>	BioNanoTechnology (BNT) / BioNanoTechnologie
2	<i>Brief summary of the (teaching and research) remit in max 35 words</i>	The chair of Bionanotechnology is active in fundamental and applied research, teaching and valorization of (bio)inorganic and supramolecular chemistry, spectroscopy and imaging techniques, and technology of micro- and nanosystems.
3	<i>Brief description of the way the domain of the chair fits in the domain and mission of Wageningen University and the societal importance of the chair in max 35 words</i>	The chair's mission is to explore the potential of bionanotechnology to improve the quality of life. BNT applies fundamental knowledge of nanomaterials and technologies to environmental and plant monitoring, agro-food and health.
4	<i>Concise description of the remit regarding teaching, research and value creation, max 150-200 words.</i>	<p>Research interests of BNT range from dynamic supramolecular chemistry in solution and on surfaces, to biomedical use of nanomaterials, and from microfabrication to enabling technologies.</p> <p>Applications comprise the development of, for example, multimodal diagnostic and theragnostic agents, and the fabrication of microfluidics and sensing systems based on optical/fluorescence and magnetic resonance spectroscopy (NMR) and imaging (MRI).</p> <p>The main research topics within the chair are:</p> <ul style="list-style-type: none"> • nanoparticles and nanomaterials; • supramolecular assembly; • development and application of micro/nano-NMR and MRI; • sensor development and enabling technology. <p>The chair develops enabling technologies, that are open technologies, or result in specific patent applications. Besides, new (nano)materials find their way into a plethora of applications, in particular sensors.</p>
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2.5 Teaching and research remit Bioprocess Engineering (BPE)

Chair holder: Prof. René Wijffels

1	<i>Name of the chair group (in English and Dutch)</i>	Bioprocess Engineering (BPE) / Bioprocestechnologie
2	<i>Brief summary of the (teaching and research) remit in max 35 words</i>	The chair studies and develops photoautotrophic (microalgae and cyanobacteria) and heterotrophic production systems (bacteria, yeasts and fungi) for bio-based products, as well as high-quality processes for the production of biopharmaceuticals (mammalian, insect and sponge cells).
3	<i>Brief description of the way the domain of the chair fits in the domain and mission of Wageningen University and the societal importance of the chair in max 35 words</i>	The chair's objective is a sustainable and healthy future by engineering efficient bioprocesses for high quality products. It bridges basic research towards application for implementation of sustainable processes in industry
4	<i>Concise description of the remit regarding teaching, research and value creation, max 150-200 words.</i>	Research is organized in three lines: <ul style="list-style-type: none">• microbial biotechnology: studying and engineering efficient conversion of bioresources into chemicals and food ingredients using microorganisms;• microalgal biotechnology: studying and engineering conversion of sunlight or organic compounds into food, feed, chemicals and fuel ingredients with a focus on proteins and lipids by microalgae and cyanobacteria;• animal cell biotechnology: studying and engineering scalable processes for the production of biopharmaceuticals such as proteins, vaccines and sponge-derived products.
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2.6 Teaching and research remit Biological Recovery and Reuse Technology (ETE)

Chair holder: Prof. Cees Buisman

1	<i>Name of the chair group (in English and Dutch)</i>	Biological Recovery and Reuse Technology (ETE) / Biologische Kringlooptechnologie
2	<i>Brief summary of the (teaching and research) remit in max 35 words</i>	This chair seeks to solve environmental problems by using bio-based technologies to recover energy and (in)organic compounds from residual streams.
3	<i>Brief description of the way the domain of the chair fits in the domain and mission of Wageningen University and the societal importance of the chair in max 35 words</i>	The chair develops innovative technologies and concepts to build bio-circular agrofood and material systems, which contribute to connected circularity.
4	<i>Concise description of the remit regarding teaching, research and value creation, max 150-200 words.</i>	Innovative research is on-going in the following areas: <ul style="list-style-type: none"> • production of electrical energy, fuels and sustainable heat from residual biomass. This type of biomass is left over after extraction of valuable (food) ingredients from agricultural products. The use of residual biomass enhances the economic and social potential of our processes; • application of the biological sulphur cycle in water and gas treatment; • biocrystallization: biological recovery and removal of metals and minerals from industrial wastewater and/or groundwater. • biological modification of (waste) materials to reduce the environmental impact or improve the efficiency of industrial processing ; • cities and their challenges are addressed in accordance with the principle of cyclic, rather than linear, thinking and analysis. The focus is on biorecovery integration in reuse of solid waste, in creating feedbacks of urban nutrients and organics to agriculture (fertilizers and organic reuse in agriculture) and integration of sustainable energy technologies in cities (renewable energy).
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2.7 Teaching and research remit Environmental Technology (ETE)

Chair holder: Prof. Huub Rijnaarts

1	<i>Name of the chair group (in English and Dutch)</i>	Environmental Technology (ETE) / Milieutechnologie
2	<i>Brief summary of the (teaching and research) remit in max 35 words</i>	This chair addresses sustainable cyclic water solutions for drinking, urban, industrial and agricultural purposes. Water quality factors such as organics, nutrients, micropollutants, pathogens, salts and colloids are tailored by bio-based and advanced technologies and system designs.
3	<i>Brief description of the way the domain of the chair fits in the domain and mission of Wageningen University and the societal importance of the chair in max 35 words</i>	The chair contributes to safeguarding water quality in water resources and recycling, and to metropolitan and urban-rural solutions connecting industrial and urban water for reuse in agriculture, and natural and engineered biodiverse systems.
4	<i>Concise description of the remit regarding teaching, research and value creation, max 150-200 words.</i>	<p>Environmental Technology offers an education and research programme that is focused on sustainable technological solutions for the worldwide environmental problems. It combines several disciplines (microbiology, environmental chemistry, physical chemistry, fluid dynamics, mathematical and computational system and grid theory, and system design) in order to achieve innovations for environmental solutions. social scientists.</p> <p>The research is divided into three working lines:</p> <ul style="list-style-type: none"> • micropollutants and pathogens, seeking to resolve water quality problems related to pharmaceutical, pesticide, and industrial chemical compounds in the water cycle (ground, drinking, waste, and reused water), using biological self-cleaning capacities in nature and engineered bio- and advanced technological systems; • physico-chemical water treatment, focusing on fluid dynamics and mass transfer processes in suspended and granular biosystems, electro-membrane reactors for specific ion separation, and light and chemical induced oxidation/reduction systems; • urban system engineering, focusing on development of concepts and integration of technologies for sustainable urban water, materials and energy cycles, with a focus on green infrastructure, and energy and resource grid modelling and design.
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2.8 Teaching and research remit Food Chemistry (FCH)

Chair holder: Prof. Jean-Paul Vincken

1	Name of the chair group (in English and Dutch)	Food Chemistry (FCH) / Levensmiddelenchemie
2	Brief summary of the (teaching and research) remit in max 35 words	The FCH chair generates knowledge on the analysis, molecular properties and interactions of key components within the food matrix during industrial processing and digestion of foods, and develops biochemical tools for improving their quality and healthiness.
3	Brief description of the way the domain of the chair fits in the domain and mission of Wageningen University and the societal importance of the chair in max 35 words	By providing knowledge on food constituents at the molecular level, the chair contributes to making healthier, more palatable foods and utilizing raw materials to the full extent.
4	Concise description of the remit regarding teaching, research and value creation, max 150-200 words.	<p>Research themes are:</p> <ul style="list-style-type: none"> • food proteins: analysing the various protein characteristics; understanding physico-chemical properties of proteins with respect to foam/emulsion stability and gelling; understanding the reactivity of proteins during processing; understanding and predicting enzymatic protein degradation, in relation to their functional properties and nutritional aspects; • phytochemicals: studying a broad range of plant-derived, small molecules with respect to their analysis, reactivity (oxidation / reduction / prenylation) and properties (colour formation / (bitter) taste / health (hormone look-alikes) / antimicrobial activity); • carbohydrates: analysing the structure of carbohydrates in detail to relate distribution of substituents to functional properties (e.g. gelling), and to understand their prebiotic and immune-modulatory effect; • lignocellulosics: studying oxidative enzymes to understand the degradation of crystalline polysaccharides and recalcitrant lignin; • food lipids: detailed compositional analysis of the various lipid species, and understanding lipid oxidation which is key to understand off-flavour formation in foods; • plant bioactives: employing computational approaches to recognize structural motifs underlying bioactivity (e.g. antimicrobial) and predict bioactivity upon analysing food composition
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2.9 Teaching and research remit Food Microbiology (FHM)

Chair holder: Prof. Marcel Zwietering

1	<i>Name of the chair group (in English and Dutch)</i>	Food Microbiology (FHM) / Levensmiddelenmicrobiologie
2	<i>Brief summary of the (teaching and research) remit in max 35 words</i>	The chair generates and disseminates genetic, physiological and ecological knowledge, fermentation and quantitative methods to understand and predict microbial behaviour in foods and to propose intelligent interventions, to assure microbiological food safety, quality and nutritional value.
3	<i>Brief description of the way the domain of the chair fits in the domain and mission of Wageningen University and the societal importance of the chair in max 35 words</i>	The chair explores the potential of microorganisms to improve the quality of foods, thereby contributing to healthy living, sustainability, food safety and security and to enjoyment of food by linking knowledge from molecule to management.
4	<i>Concise description of the remit regarding teaching, research and value creation, max 150-200 words.</i>	<p>In Food Microbiology both positive (fermentation) and negative aspects (spoilage, disease) of micro-organisms are studied.</p> <p>The four main fields of the research programme are:</p> <ul style="list-style-type: none">• quantitative risk assessment;• quantitative ecology of pathogens;• food fermentation;• physiology and genomics. <p>Aspects at the molecular level, at the process level, in food products and through the supply chain are studied to get mechanistic understanding of and insight into ecological behaviour of microorganisms to optimize food safety management and fermentation control.</p>
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2.10 Teaching and research remit Food Process Engineering (FPE)

Chair holder: Prof. Remko Boom

1	<i>Name of the chair group (in English and Dutch)</i>	Food Process Engineering (FPE) / Levensmiddelenproceskunde
2	<i>Brief summary of the (teaching and research) remit in max 35 words</i>	The FPE chair aims at finding processes that are significantly more sustainable, producing products that combine excellent taste with better nutrition.
3	<i>Brief description of the way the domain of the chair fits in the domain and mission of Wageningen University and the societal importance of the chair in max 35 words</i>	The chair focuses on food which fits squarely in the WUR domain. It explores the potential of natural food materials to create the best quality in product (nutrition, taste, acceptability) and process (efficiency in material, energy, water use).
4	<i>Concise description of the remit regarding teaching, research and value creation, max 150-200 words.</i>	Research themes are: <ul style="list-style-type: none">• food structure engineering and characterization, which comprises the creation of structured semi-solid foods by deformation-based processing, precision engineering and characterization of dispersions, emulsions and foams, and drying and additive assembly (3D printing);• molecular conversions, namely enzymatic conversions, and understanding and steering gastric digestion;• new separation principles, which includes new drying technology, solid-state separations, electrically driven processes, and membrane-based methods.
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2.11 Teaching and research remit Physics and Physical Chemistry of Foods (FPH)

Chair holder: Prof. Erik van der Linden

1	<i>Name of the chair group (in English and Dutch)</i>	Physics and Physical Chemistry of Foods (FPH) / Fysica en fysische chemie van levensmiddelen
2	<i>Brief summary of the (teaching and research) remit in max 35 words</i>	To teach and conduct research on formulating quantitative physical and physico-chemical relations between molecular, mesostructural and macroscopic properties of food relevant systems, during their processing, storage, transport and consumption.
3	<i>Brief description of the way the domain of the chair fits in the domain and mission of Wageningen University and the societal importance of the chair in max 35 words</i>	The chair provides understanding and control of food transitions in relation to constraints imposed by the according environment and its natural potential, ensuring tasty, healthy, affordable and sustainably produced food, and improving quality of life.
4	<i>Concise description of the remit regarding teaching, research and value creation, max 150-200 words.</i>	Quantitative physical and physico-chemical relations between properties on length scales ranging from molecular to macroscopic, during transitions in processing, storage, transport, and consumption, are essential to the teaching and research by the chair. Phenomena that are studied in two and three dimensions range from supramolecular assembly, phase changes due to changes in temperature, volume, pressure, concentration and/or externally applied fields, non-equilibrium mesostructural evolution by externally applied fields (like flow, temperature gradients), non-equilibrium behaviour of mesostructured soft and hard surfaces and interfaces, friction, fracture to viscoelasticity. Theoretical and computer simulation methodologies range from statistical mechanics, information theory, scaling, non-equilibrium thermodynamics, molecular dynamics, to coarse grained models.
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2.12 Teaching and research remit Food Quality and Design (FQD)

Chair holder: Prof. Vincenzo Fogliano

1	<i>Name of the chair group (in English and Dutch)</i>	Food Quality and Design (FQD)
2	<i>Brief summary of the (teaching and research) remit in max 35 words</i>	The FQD chair investigates food quality from a technological, social and human well-being perspective. The chair provides education and research on food design and food system management combining advanced food technology with an interdisciplinary, consumer-oriented approach.
3	<i>Brief description of the way the domain of the chair fits in the domain and mission of Wageningen University and the societal importance of the chair in max 35 words</i>	The overall aim of the FQD chair is to improve the quality of food and all the aspects connected to it: high-quality production, consumers' pleasure and human health.
4	<i>Concise description of the remit regarding teaching, research and value creation, max 150-200 words.</i>	<p>The chair's projects encompass different food production steps, selection of raw material (primary production), transformation (technological aspects), and formulation (bioactive ingredients), and combine them with consumer perception, quality management, and human behaviour. FQD applies the latest food science discoveries to industrial product development and to management of food quality. The chair aims to be a catalyst of trans- and interdisciplinary research to ensure societal embedding of results from scientific research.</p> <p>Research is clustered according to the needs of stakeholders, namely society, consumer and human body.</p> <p>Food quality can be efficiently improved by using mathematical modelling tools to study and predict the effects of composition and processing conditions. Designing active and intelligent food packaging can enhance shelf life and reduce food waste.</p> <p>The FQD chair studies several topics on dairy product quality including processing of immune-active proteins for formula, glycation of milk proteins and cow's milk allergy, casein composition and casein micelle properties.</p> <p>The FQD chair investigates food digestion from the oral cavity through the stomach and the intestine. The aim is to understand the mechanisms of interaction between food components and the gastrointestinal system.</p>
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2.13 Teaching and research remit Global Nutrition (HNH)

Chair holder: Prof. Edith Feskens

1	<i>Name of the chair group (in English and Dutch)</i>	Global Nutrition (HNH) / Voeding en gezondheid in mondiaal perspectief
2	<i>Brief summary of the (teaching and research) remit in max 35 words</i>	The chair in Global Nutrition aims to understand the causal pathways of malnutrition in all its forms (over- and under-nutrition), and to prevent malnutrition at the global and European level and in low and middle income countries by studying the effects of nutrition-sensitive and nutrition-specific interventions.
3	<i>Brief description of the way the domain of the chair fits in the domain and mission of Wageningen University and the societal importance of the chair in max 35 words</i>	The chair actively contributes to several of the sustainable development goals such as Zero Hunger, and Good Health and Well-being, Reduced Inequalities, and Sustainable Cities and Communities – all key to the mission of WUR.
4	<i>Concise description of the remit regarding teaching, research and value creation, max 150-200 words.</i>	<p>The chair addresses the following research themes:</p> <ul style="list-style-type: none"> • Sustainable food systems and healthy diets (ecological entry) - Research focuses on improving the quality and sustainability of diets in settings where the risks of negative health consequences of both under- and overnutrition are rapidly increasing. Food-based dietary guidelines and dietary quality are important outcomes of this theme. • Aetiology of malnutrition in the lifecycle (physiological entry) - This research area focuses on unravelling determinants of malnutrition in vulnerable population groups, such as infants, children, adolescents and women of reproductive age, mostly but not exclusively in low- and middle-income countries. In this research area diets are the exposure and the approach is based on physiological and biological insights with consequences for public health. • Innovations in dietary assessment - Innovations in dietary assessment using apps, sensors and wearables, and their validation and application, are developed to improve monitoring intake and evaluate the impact of dietary advice.
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2.14 Teaching and research remit Nutrition and Disease (HNH)

Chair holder: Prof. Ellen Kampman

1	<i>Name of the chair group (in English and Dutch)</i>	Nutrition and Disease (HNH) / Voeding en Ziekte
2	<i>Brief summary of the (teaching and research) remit in max 35 words</i>	The chair conducts research on nutrition in disease aetiology, during treatment and for prognosis. Teaching encompasses concepts and methods of human research, and on nutrition and specific diseases.
3	<i>Brief description of the way the domain of the chair fits in the domain and mission of Wageningen University and the societal importance of the chair in max 35 words</i>	The chair contributes to the domain and mission of WUR by aiming to decrease the risk of (chronic) disease and improving the health and quality of life of those with a disease through better nutrition.
4	<i>Concise description of the remit regarding teaching, research and value creation, max 150-200 words.</i>	The chair comprises a multidisciplinary team of epidemiologists, nutritionists, physicians, biostatisticians and medical biologists working on two main themes: <ul style="list-style-type: none">• disease aetiology and prevention: healthy and sustainable nutrition, genetic susceptibility and lifestyle factors in the aetiology and prevention of chronic nutrition-related diseases;• nutrition in care and disease prognosis: recovery of diseases and improving quality of life during and after treatment through healthy, sustainable diets and foods, in combination with physical activity.
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2.15 Teaching and research remit Sensory Science and Eating Behaviour (HNH)

Chair holder: Prof. Ciaran Forde

1	<i>Name of the chair group (in English and Dutch)</i>	Sensory Science and Eating Behaviour (HNH) / Sensoriek en Eetgedrag
2	<i>Brief summary of the (teaching and research) remit in max 35 words</i>	The chair focuses on the meaning of sensory signals for nutrition and health, i.e. food choice, food and nutrient intake, and health/well-being/quality of life.
3	<i>Brief description of the way the domain of the chair fits in the domain and mission of Wageningen University and the societal importance of the chair in max 35 words</i>	Sensory science is a bridge between food and health/quality of life. The focus on the meaning of sensory signals for nutrition is relevant for societal issues like obesity, nutrition and growth, nutrition in the elderly.
4	<i>Concise description of the remit regarding teaching, research and value creation, max 150-200 words.</i>	The chair focuses on the psychobiology of food choice and eating behaviour with two main research themes: <ul style="list-style-type: none">• food structure, oral processing, sensory perception and food intake;• food-gastrointestinal tract-brain focusing on sensory (e.g. taste, smell, reward) and metabolic drivers (e.g. gastric emptying, hormones) of eating behaviour. It deals with the impact of sensory and nutritional properties of foods, diets on physiological, psychological, and neurobiological mechanisms underlying eating behaviour.
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2.16 Teaching and research remit Nutritional Biology (HNH)

Chair holder: Prof. Renger Witkamp

1	Name of the chair group (in English and Dutch)	Nutritional Biology (HNH)
2	Brief summary of the (teaching and research) remit in max 35 words	The chair focusses on the interplay between nutrition and functional health, defined as the ability to adapt to physical and psychological challenges, in particular during ageing.
3	Brief description of the way the domain of the chair fits in the domain and mission of Wageningen University and the societal importance of the chair in max 35 words	In line with the mission of WUR, the chair aims to make a substantial and internationally recognized contribution to understanding and developing effective lifestyle strategies. These should improve health and quality of life during ageing or resulting from physical or psychological stress.
4	Concise description of the remit regarding teaching, research and value creation, max 150-200 words.	As an overarching theme the chair strives to better understand how nutrition modulates the balance between ageing and degeneration on the one hand, and regeneration and recovery on the other hand. The research is predominantly centred around three organ systems: brain (in relation to cognition), the musculoskeletal system, and the gastro-intestinal tract. Next to ageing itself, comprising a series of processes that basically start long before people grow old in a literal sense, the chair focuses on the outcome of other potentially stressful events, including strenuous exercise, undernutrition and severe illness. In terms of models and methods, the focus is on (individual) humans and intervention studies. At the same time, the chair also applies other methods, ranging from <i>in vitro</i> /biochemical techniques to observational studies.
5	Date of adoption of this description (decision of the EB) (only for filing purposes)	8 November 2021

2.17 Teaching and research remit Nutrition, Metabolism and Genomics (HNH)

Chair holder: Prof. Sander Kersten

1	<i>Name of the chair group (in English and Dutch)</i>	Nutrition, Metabolism and Genomics (HNH) / Voeding, Metabolisme en Genomics
2	<i>Brief summary of the (teaching and research) remit in max 35 words</i>	The chair contributes to a better understanding of the molecular mechanism of action of dietary nutrients and their impact on human health and metabolism. Particular attention is given to dietary lipids and fibre.
3	<i>Brief description of the way the domain of the chair fits in the domain and mission of Wageningen University and the societal importance of the chair in max 35 words</i>	Healthy nutrition is important for maintaining a high quality of life. The chair helps to understand how certain diets, foods, nutrients and food components impact on health and disease.
4	<i>Concise description of the remit regarding teaching, research and value creation, max 150-200 words.</i>	Research covers the following main themes: <ul style="list-style-type: none"> • molecular regulation of lipid metabolism, aiming at further understanding the molecular regulation of lipid metabolism in liver, adipose tissue, and intestine, partly via elucidating the functional role of specific genes; • immunometabolism, adipose tissue, and metabolic health, aiming at better understanding the role of the adipose tissue and the immune system in metabolic dysregulation caused by overnutrition and characterizing the underlying mechanisms using molecular and omics tools; • nutritional regulation of intestinal health, focusing on the nutritional programming and systems biology of intestinal health, with special interest in dietary fibre, the gut microbiome, food digestion, transcriptomics, and epigenetics.
5	<i>Date of adoption of this description (decision of the EB) (only for filing purposes)</i>	8 November 2021

2.18 Teaching and research remit Microbiology (MIB)

Chair holder: Prof. Thijs Ettema

1	Name of the chair group (in English and Dutch)	Microbiology (MIB) / Microbiologie
2	Brief summary of the (teaching and research) remit in max 35 words	The chair is engaged in research and education focusing on fundamental and applied aspects of the diversity, physiology, ecology and evolution of microorganisms and their viruses.
3	Brief description of the way the domain of the chair fits in the domain and mission of Wageningen University and the societal importance of the chair in max 35 words	The generated fundamental knowledge is exploited in areas of health and food, bioproducts and energy, and the natural environment and sustainability, and contributes to explore the potential of nature and improve the quality of life.
4	Concise description of the remit regarding teaching, research and value creation, max 150-200 words.	<p>The general scientific objectives of the chair are:</p> <ul style="list-style-type: none"> • to discover fundamental aspects of selected microbe-based model systems at ecological, cellular and molecular levels; • to understand the molecular basis of key processes in bacteria, archaea and their viruses; • to apply the obtained insights to develop and optimize processes related to improving human quality of life. <p>The research is organized into four complementary research themes:</p> <ul style="list-style-type: none"> • <i>microbial ecology</i> aims at understanding and exploring the functioning of microorganisms in natural and man-made ecosystems, including interdependencies with their living and non-living environments; • <i>microbial physiology</i> studies the physiology of anaerobic microorganisms and communities that play important roles in environmental biotechnological processes, such as wastewater treatment, soil remediation, production of chemicals and biofuels and recovery of metals; • <i>bacterial genetics</i> focuses on studying prokaryotic host-virus interactions, as well as on unravelling relevant features of the central metabolism of thermophilic bacteria and archaea; • <i>microbial evolution aims to gain insight into the diversity and evolution of microbial lineages through phylogenomics, comparative genomics and advanced cultivation approaches.</i>
5	Date of adoption of this description (decision of the EB) (only for filing purposes)	8 November 2021

2.19 Teaching and research remit Organic Chemistry (ORC)

Chair holder: Prof. Han Zuilhof

1	<i>Name of the chair group (in English and Dutch)</i>	Organic Chemistry (ORC) / Organische Chemie
2	<i>Brief summary of the (teaching and research) remit in max 35 words</i>	The research conducted by the ORC chair is directed towards the structure, reactivity, properties and analysis of organic molecules, specifically at the overlap of nanotechnology, chemical biology and organic synthesis.
3	<i>Brief description of the way the domain of the chair fits in the domain and mission of Wageningen University and the societal importance of the chair in max 35 words</i>	The 'exploration of nature' focusses increasingly on the molecular aspects of nature. Organic chemistry not only fits precisely in this development of expansion of the potential of nature.
4	<i>Concise description of the remit regarding teaching, research and value creation, max 150-200 words.</i>	Research focuses on the study, development and analysis of organic reactions, and of (bio-)organic molecules and materials at or relevant for surfaces. The chair's three research themes: synthesis of (bio-) active molecules, surface-bound analytical chemistry, and interactive surfaces, are developed in various research focus points: <ul style="list-style-type: none">• active organic surfaces;• advanced materials for chemical selectivity;• analytical chemistry;• bio-organic synthesis;• dynamic polymers;• nanochemical biology;• surface-bound analytical chemistry;• theoretical surface chemistry.
5	<i>Date of adoption of this description (decision of the EB) (only for filing purposes)</i>	8 November 2021

2.20 Teaching and research remit Physical Chemistry and Soft Matter (PCC)

Chair holder: Prof. Jasper van der Gucht

1	<i>Name of the chair group (in English and Dutch)</i>	Physical Chemistry and Soft Matter (PCC)
2	<i>Brief summary of the (teaching and research) remit in max 35 words</i>	The PCC chair aims at understanding how macroscopic properties of systems or materials follow from the chemical nature of matter and interactions on the nanoscale.
3	<i>Brief description of the way the domain of the chair fits in the domain and mission of Wageningen University and the societal importance of the chair in max 35 words</i>	The chair provides fundamental knowledge of complex systems of macromolecules, colloids, and surfactants, which is relevant for different WUR domains
4	<i>Concise description of the remit regarding teaching, research and value creation, max 150-200 words.</i>	PCC is interested in phenomena on the nanoscale, where creative chemistry is essential, complex physics is a rule rather than an exception and biology comes to life. The research covers a wide range of topics from fundamental to applied, and typically involves a combination of innovative experimental studies and a complementary theoretical analysis. Topics of study include phase behaviour and self-assembly of macromolecules, mechanics of polymeric materials, colloidal materials, protein self-assembly, rheology of granular materials and emulsions, and self-assembly of amphiphiles. A lot of effort is also made to develop novel experimental and theoretical tools.
5	<i>Date of adoption of this description (decision of the EB) (only for filing purposes)</i>	8 November 2021

2.21 Teaching and research remit Systems and Synthetic Biology (SSB)

Chair holder: Prof. Vitor Martins dos Santos

1	<i>Name of the chair group (in English and Dutch)</i>	Systems and Synthetic Biology (SSB) / Systeem- en Synthetische Biologie
2	<i>Brief summary of the (teaching and research) remit in max 35 words</i>	SSB contributes to elucidating mechanisms underlying basic cellular processes, evolution and interactions among microbes and between microbes and their environment (including humans) and to translate this knowledge into applications of biotechnological, medical and environmental interest.
3	<i>Brief description of the way the domain of the chair fits in the domain and mission of Wageningen University and the societal importance of the chair in max 35 words</i>	The chair's activities lie broadly within the living environment focus of WUR, which is relevant for different WUR domains.
4	<i>Concise description of the remit regarding teaching, research and value creation, max 150-200 words.</i>	<p>The chair addresses critical issues and novel biotechnological applications in the areas of health and food, biobased products and environment in an integrated way.</p> <p>The chair's strategy is to develop and apply theoretical frameworks supporting (and relying on) experimental research towards the understanding of the various processes and hierarchies of cellular networks and circuitry.</p> <p>Four major areas are covered:</p> <ul style="list-style-type: none">• computational systems biology;• microbial systems and synthetic biology;• systems health and disease;• big data ad semantic systems biology.
5	<i>Date of adoption of this description (decision of the EB) (only for filing purposes)</i>	8 November 2021

2.22 Teaching and research remit Toxicology (TOX)

Chair holder: Prof. Ivonne Rietjens

1	<i>Name of the chair group (in English and Dutch)</i>	Toxicology (TOX) / Toxicologie
2	<i>Brief summary of the (teaching and research) remit in max 35 words</i>	The chair concentrates on gaining insight into mechanisms through which toxic compounds induce adverse effects on the health of humans and environmental organisms, either via food or via different exposure pathways related to environmental pollution.
3	<i>Brief description of the way the domain of the chair fits in the domain and mission of Wageningen University and the societal importance of the chair in max 35 words</i>	TOX develops the scientific underpinning of safe use of chemicals in food and environment. Scientific progress contributes to healthy, versatile, adequate and safe food and healthy environment and living conditions.
4	<i>Concise description of the remit regarding teaching, research and value creation, max 150-200 words.</i>	Teaching and research activities include: <ul style="list-style-type: none">• risk assessment of food-borne genotoxic carcinogens;• mode of action of foodborne natural toxins;• alternatives to animal testing, developing novel <i>in vitro</i> bioassays and translating <i>in vitro</i> data to the <i>in vivo</i> situation using physiologically based kinetic computer modelling;• the role of the gut microbiota in the toxicity of foodborne chemicals;• environmental toxicology: effects of low, chronic exposure of organisms to contaminants and to mixtures of environmental chemicals, with an emphasis on non-standard effect endpoints (behaviour, immunomodulation) and model development.
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Corporate Governance & Legal Services

The mission of Wageningen University & Research is "To explore the potential of nature to improve the quality of life". Under the banner Wageningen University & Research, Wageningen University and the specialised research institutes of the Wageningen Research Foundation have joined forces in contributing to finding solutions to important questions in the domain of healthy food and living environment. With its roughly 30 branches, 6,500 employees (5,500 fte) and 12,500 students, Wageningen University & Research is one of the leading organisations in its domain. The unique Wageningen approach lies in its integrated approach to issues and the collaboration between different disciplines.