Teaching and Research Remits

Part of the Wageningen University Chair Plan 2019-2022

Update 1 September 2023

Wageningen University & Research
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This is an update of the 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. Three names of chairs have been changed as of 1 September 2023.

Contents

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 teaching[1] and research remits should be formulated and centrally documented in the Chair Plan.[2]

This document is an update of 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 names of three chairs have been changed as of 1 September 2023.

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 Animal Sciences Group

2.1 Teaching and research remit Animal Breeding and Genomics (ABG)

Chair holder: Prof. Martien Groenen

1	*Name of the chair group (in English and Dutch)*	Animal Breeding and Genomics (ABG) / Fokkerij en Genomica
2	*Brief summary of the (teaching and research) remit in max 35 words*	The mission of ABG is to generate knowledge and provide education on the role and sustainable use of genetic variation in farm, companion and wild animals. By integrating quantitative genetics, genomics, bioinformatics and artificial intelligence, ABG aims to further our insight into the biological mechanisms underlying phenotypic variation in animals.
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*	ABG aims to contribute to sustainable genetic management of animal populations. Genetically healthy populations are a prerequisite for sustainable production in harmony with the living environment. Based on natural ecosystems, enable safe and healthy food of animal origin and safeguard the biodiversity of managed as well as wild populations.
4	*Concise description of the remit regarding teaching, research and value creation, max 150-200 words.*	ABG combines expertise in three closely related disciplinary domains: genomics, quantitative genetics, and breeding programmes. The focus of the research and education of ABG is on artificial and natural selection in farmed animals, companion animals, wild species and animals kept in zoos. Climate change and habitat loss have a strong effect on biodiversity. An important research question within ABG is how to keep small populations genetically healthy. ABG aims to unravel the molecular mechanisms underlying phenotypic variation and to move from understanding phenotypes towards predicting phenotypes. Climate change and different management systems force animals to adapt to changing environments. ABG therefore focuses on improving animals' resistance to stress and diseases while at the population level, the focus is on social interactions and genotype by environment interactions. In its research ABG uses techniques based on sensor technology, complex cell systems and artificial intelligence, combined with detailed genomic information.
5	*Date of adoption of this description (decision of the EB) (only for filing purposes)*	8 November 2021

2.2 Teaching and research remit Adaptation Physiology (ADP)

Chair holder: Prof. Bas Kemp

1	*Name of the chair group (in English and Dutch)*	Adaptation Physiology (ADP) / Adaptatiefysiologie
2	*Brief summary of the (teaching and research) remits in max 35 words*	The ADP chair focusses on research and education on ways to facilitate and support adaptation of animals to their changing and challenging environment in order to optimize their welfare and health.
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*	ADP contributes to sustainable future food systems by studying impacts of housing and management innovations (animal husbandry) on robustness, health and welfare of livestock and companion animals in perspective of societal concerns (animal stewardship).
4	*Concise description of the remit regarding education, research, and value creation in max 150-200 words.*	ADP provides courses in Adaptation Physiology, Health, Welfare and Management, Animals in Society and closely related basic domains/ areas like thermoregulation, animal reproduction, behaviour and immune competence for BSc, MSc and PhD students and postdoctoral training. ADP combines expertise in immunology, reproduction, energy metabolism and behavioural physiology using an interdisciplinary, whole animal physiology approach to study husbandry and management factors that support adaptation and resilience of animals exposed to environmental perturbations. Currently, key elements into research and education are long-term effects of early life conditions on adaptive capacity, health and welfare in later life, support of animals during critical transition periods and development of new (dynamic) indicators of health, welfare and resilience, in farm animals.
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2.3 Teaching and research remit Aquaculture and Fisheries (AFI)

Chair holder: Prof. Geert Wiegertjes

1	*Name of the chair group (in English and Dutch)*	Aquaculture and Fisheries (AFI) / Aquacultuur en Visserij
2	*Brief summary of the (teaching and research) remit in max 35 words*	To improve food and nutrition security worldwide, AFI educates and performs research on the sustainable harvest and production of animal food from marine and freshwater aquatic ecosystems including land-and sea-based aquaculture.
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*	AFI explores a large range of technologies and disciplines required for a sustainable and circular food system approach to both aquaculture and fisheries, supporting the provision of healthy food from aquatic animals for mankind.
4	*Concise description of the remit regarding teaching, research and value creation, max 150-200 words.*	Global consumption and demand for aquatic food will continue to increase. Climate change will affect life in oceans, North Sea and large rivers. AFI plays an important role in managing sustainable aquaculture systems of the future with a minimal impact on environment and positive effect on human and animal health. To protect biodiversity and ensure fish stocks are available for future generations, AFI plays an important role in managing sustainable approaches to fisheries. AFI integrates multidisciplinary approaches and provides courses on a broad range of disciplines relevant to Aquaculture and Fisheries. PhD education is a major focus area. The teaching and research scope of AFI encompass fish (and shellfish) physiology, nutrition, health and immunology which all closely interconnect with water quality and encompass fisheries ecology, adaptation of fish and studies on the composition of fish communities.
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2.4 Teaching and research remit Animal Nutrition (ANU)

Chair holder: Prof. Wouter Hendriks

1	*Name of the chair group (in English and Dutch)*	Animal Nutrition (ANU) / Diervoeding
2	*Brief summary of the (teaching and research) remit in max 35 words*	Education and research into fundamental and practical aspects of nutrition, feedstuffs and feed formulation on health, growth, welfare and longevity of various animal species for the betterment of society
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*	Nutrition is essential for the health and welfare of all animals in our society, for sustainable animal agri-food systems to provide high quality and nutritious foods, and to ensure global food security
4	*Concise description of the remit regarding teaching, research and value creation, max 150-200 words.*	The contribution to University courses and research into the nutrition of various animal species encompass the utilization of nutrients/components in feed/feed ingredients and their impact on animal health, growth, welfare and longevity. Knowledge is actively communicated to various societal actors. The research also encompasses the use of model animals for human nutrition. Dietary nutrients/components as they are broken down (digested or fermented), absorbed and metabolized by animals are part of the remit. Nutrient analysis, feed technology, digestion and absorption, fermentation, nutrient metabolism and the effects of nutrients on gene expression are core areas of research. *In vitro* simulation methods for digestion/fermentation processes and mechanistic modelling of nutrient utilisation are instrumental to provide further insight into nutrient metabolism by animals. Epigenetics and transgenerational effects of feeds/nutrients are part of the remit of the chair
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2.5 Teaching and research remit Animal Production Systems (APS)

Chair holder: Prof. Simon Oosting

1	*Name of the chair group (in English and Dutch)*	Animal Production Systems (APS) / Dierlijke Productiesystemen.
2	*Brief summary of the (teaching and research) remits in max 35 words*	To provide an integrated analysis of existing and innovative animal production systems to design a sustainable future, with a special focus on the environment, animal welfare and the livelihood of people. A systems approach is vital to the chair's integrated analyses.
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*	Building healthy and sustainable food systems requires (radical) changes in the way our food, in particular animal-source food, is produced, processed, prepared and consumed. APS aims to work with nature and use technology to determine and strengthen the role of farm animals in such sustainable food futures.
4	*Concise description of the remit regarding education, research, and value creation in max 150-200 words.*	The chair's education and research generates knowledge that enhances a transparent societal and political debate about future options and limitations of farm animals in sustainable food systems across the world. We acknowledge that eating well within our planetary boundaries requires building deep partnerships across disciplines, and beyond academic boundaries. Achieving this aim, however, is highly context specific, and we therefore focus on regional food systems. To this end, our research and education is rooted in systems analysis, and combines a diverse set of qualitative and quantitative approaches to explore the role of farm animals in regional food systems (e.g. food systems modelling, stakeholder power analysis, participatory scenario analysis). Our work yields tools and insights that can be used by diverse food actors (e.g. farmer, industry, retailers, government, NGOs) to improve the sustainability of animal production systems.
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2.6 Teaching and research remit Behavioural Ecology (BHE)

Chair holder: Prof. Marc Naguib

1	*Name of the chair group (in English and Dutch)*	Behavioural Ecology (BHE) / Gedragsecologie
2	*Brief summary of the (teaching and research) remit in max 35 words*	The chair maintains education and several research lines on wild animals and on companion animals with specific attention to animal social interactions.
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*	Understanding behaviour of animals in their social and ecological context is relevant to our fundamental understanding and for assessing and improving nature conservation, biodiversity and animal welfare, and thus the quality of our living environment.
4	*Concise description of the remit regarding teaching, research and value creation, max 150-200 words.*	Behavioural ecology is the branch of ecology that focuses on the evolutionary causes of variation in behaviour among individuals, populations and species. It is thus concerned with the adaptiveness of behaviour, the ultimate questions of why animals behave as they do. In this field of science, the principles of natural selection are applied to behaviour with the underlying assumption that, within the constraints of their evolutionary histories, animals behave in such a way that they maximize their genetic contribution to future generations. BHE runs several research lines in behavioural ecology with a focus on behavioural ecological aspects of the social interactions of animals. These research lines cover topics such as animal communication, sociality, cooperation, cognition, and animal conservation, mainly using birds and fish as model species and knowledge is also applied to companion animals. Overall, the contributions to understanding animal behaviour are at the core of understanding how evolution acts on organisms and at the same time core to understand how humans impact animal life and well-being.
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2.7 Teaching and research remit Cell Biology and Immunology (CBI)

Chair holder: Prof. Mangala Srinivas

1	*Name of the chair group (in English and Dutch)*	Cell Biology and Immunology (CBI) / Celbiologie en Immunologie
2	*Brief summary of the (teaching and research) remit in max 35 words*	To integrate fundamental knowledge on the immune system of animals and humans, with applications in dietary-based immunomodulation, development of immunotherapies, and vaccination strategies to maintain or improve health.
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*	CBI works on understanding basic mechanisms of preventive health of animals and humans as inappropriate regulation leads to enhanced disease susceptibility. Activities fit in the WUR strategic themes of Preventive Health, One Health, and Resilience.
4	*Concise description of the remit regarding teaching, research and value creation, max 150-200 words.*	CBI uses a multi-species approach (mice, chickens, pigs, and humans) to study immune responses to infection, diet, environmental challenges and modulations (e.g. vaccines). The chair provides a solid molecular and cellular basis to generate tools and novel mechanistic insights into the prevention and immunotherapeutic treatment of disease, for example through rational vaccine development, applications in food-related diseases by applicable dietary immunomodulatory approaches (e.g. in allergy), and in other diseases involving the immune system (e.g. cancer, inflammatory disorders). CBI works on the translation of findings into important immune modulation strategies for the benefit of animals and humans. The focus is also on the development of non-invasive and quantitative means of studying the immune landscape in vitro and in vivo, with and without modulating therapy, using imaging modalities such as Magnetic Resonance Imaging (MRI) and photoacoustics.
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2.8 Teaching and research remit Experimental Zoology (EZO)

Chair holder: Prof. Florian Muijres

1	*Name of the chair group (in English and Dutch)*	Experimental Zoology (EZO) / Experimentele Zoölogie.
2	*Brief summary of the (teaching and research) remits in max 35 words*	The chair investigates and teaches the relationships between form and function in animals, across behavioural, developmental, and evolutionary contexts. Research and teaching share an integrated focus on experimentation, modelling, and biology-inspired design.
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 fundamental research translates into new and improved technological applications and better understanding of animals and their evolution and development. This contributes to the quality of life and trains graduates in interdisciplinary thinking.
4	*Concise description of the remit regarding education, research, and value creation in max 150-200 words.*	Animals evolve, develop, and behave in a complex and dynamic world. To understand their structure and function, an interdisciplinary approach is researched and taught combining physics, engineering, and molecular techniques to analyse carefully chosen cases of interest. The resulting quantitative models provide crucial insights into organismal development and behaviour, and frequently reveal unexpected strategies and structural solutions devised by natural selection, which can overcome superficially intractable physical constraints. Reverse engineering these solutions can help to solve problems of societal relevance. Current examples are the development of novel instruments for minimally invasive surgery, efficient traps for disease vectors, and novel flapping drones. To facilitate the uptake of such fundamental insights into applied science, the chair cooperates with technical universities, research institutes, and industrial partners. The tight coupling between theory and experiments and the particular attention to engineering applications is also reflected in teaching, which equips students with a versatile analytical and experimental skillset for a career in both science and industry.
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2.9 Teaching and research remit Human and Animal Physiology (HAP)

Chair holder: Prof. Jaap Keijer

1	*Name of the chair group (in English and Dutch)*	Human and Animal Physiology (HAP) / Fysiologie van Mens en Dier
2	*Brief summary of the (teaching and research) remits in max 35 words*	HAP studies and teaches human and animal physiology and molecular/biochemical physiology. The research focus is on metabolism and how it affects health in humans and animals. We aim for improved mechanistic understanding and for preventive human health.
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 chair provides essential training in human and animal physiology, a core component of life sciences. Research to understand and (nutritionally) target metabolism and mitochondria provides knowledge and tools to improve functioning of individuals and to treat and prevent human chronic and age-related disease.
4	*Concise description of the remit regarding education, research, and value creation in max 150-200 words.*	Human and Animal Physiology (HAP) studies and teaches physiology, nutritional physiology, and molecular/biochemical physiology of humans and animals. The goals are i) to improve mechanistic understanding of mammalian physiology and organ/tissue functioning, and ii) to significantly contribute to improvement of metabolic health and organ/tissue function and to prevention and treatment of chronic and age-related disease of humans and to iii) to solidly train BSc, MSc and PhD students in physiology and in experimental research. The research focus is on metabolism, including energy metabolism, intermediary and redox metabolism, and mitochondria. Results are obtained by experimental research in humans, animal models (including invertebrates), organs/tissues, and cells, using state-of-the-art physiological, functional, biomolecular and related bioanalysis tools in an integrated manner. The aim is to go for i) new mechanistic insights in how metabolism affects health and organ/tissue functioning of humans and animals, ii) comparative physiological understanding of metabolism and, iii) new concepts, methods and data to substantiate the efficacy of interventions, compounds and foods to improve human health and functioning, together with society and industry, ensuring healthy lives at all ages.
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2.10 Teaching and research remit Host-Microbe Interactomics (HMI)

Chair holder: Prof. Jerry Wells

1	*Name of the chair group (in English and Dutch)*	Host-Microbe Interactomics (HMI)
2	*Brief summary of the (teaching and research) remits in max 35 words*	HMI's research and teaching domains are focused on host-pathogen interactions and microbiota-host interactions.
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 domain of the chair is to explore the interactions of bacteria, viruses, archaea and fungi with each other their hosts and provide knowledge and understanding to prevent and treat diseases in humans and animals (Global One Health).
4	*Concise description of the remit regarding education, research, and value creation in max 150-200 words.*	HMI develops and applies genomics, advanced genetic approaches and organoid models to enhance the understanding of host-microbe interactions in humans and animals. It also develops knowledge to underpin the development of strategies to prevent and treat infections, including development of novel antimicrobials, cross-protective vaccines and biomarkers of risk to target control measures. In this domain other research topics include understanding of host mechanisms associated with disease resistance and resilience. Furthermore, the research and education tasks of HMI involve understanding of the interplay between host-associated microbiomes and the role of specific species/groups of bacteria and their bioactive metabolites (e.g. short-chain fatty acids and natural products) on microbiota ecology, host physiology using organoid models and studies *in vivo*. HMI develops knowledge and understanding to underpin microbiota-based strategies for the management of health and combat negative consequences of microbiota imbalance (dybiosis) observed in many diseases and disorders. The research contributes to the one health approach of attaining optimal health for people, animals and our environment.
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2.11 Teaching and research remit Marine Animal Ecology (MAE)

Chair holder: Prof. Tinka Murk

1	*Name of the chair group (in English and Dutch)*	Marine Animal Ecology (MAE) / Mariene dierecologie
2	*Brief summary of the (teaching and research) remit in max 35 words*	MAE studies and teaches how marine animals adapt to their (changing) environment and anthropogenic activities. This includes eco-physiology, early development, population genomics, and community responses. This understanding facilitates managing ecosystem services and biodiversity.
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 primary research and education fields of MAE support conservation management, understanding natural and anthropogenic factors governing biodiversity, understanding and mitigating consequences of climate change, reef rehabilitation and creation, closing nutrient cycles, natural resource management, understanding ecological resilience, and nature-based solutions.
4	*Concise description of the remit regarding teaching, research and value creation, max 150-200 words.*	In the next decennia the growing world population and its consumption is expected to increase the pressure on marine ecosystems as a source of food and feed, energy, transport, space, recreation, functional chemicals, etc. Marine ecosystems can only support these and other functions in a sustainable way when combinations of ecosystem services are smartly chosen to make them strengthen instead of hamper each other, while seriously respecting and managing the health and biodiversity of natural ecosystems. The primary research and education of MAE focusses on marine animals and the communities of which they are part, with an emphasis on the relationship between the animal and its abiotic and biotic environment. This understanding is applied to contribute to developing a nature inclusive ecosystem services approach for different environmental conditions and contexts (e.g. North Sea, tropical, polar) and thus contributes to socio-ecological health, wellbeing and resilience.
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2.12 Teaching and research remit Quantitative Veterinary Epidemiology (QVE)

Chair holder: Prof. Mart de Jong

1	*Name of the chair group (in English and Dutch)*	Quantitative Veterinary Epidemiology (QVE) / Kwantitatieve Veterinaire Epidemiologie
2	*Brief summary of the (teaching and research) remit in max 35 words*	Teaching and research on management of infections within and between populations of animals and humans, by studying transmission mechanisms and by estimating transmission rates and effect of interventions on the transmission.
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 field is important to animal and public health in that epidemiology of infection dynamics and interventions is often used as the basis for implementing control measures both by governments and individuals managing animals.
4	*Concise description of the remit regarding teaching, research and value creation, max 150-200 words.*	QVE combines population dynamics of infections and epidemiological techniques. Emphasis is on studying the transmission routes and their quantitative contribution to overall transmission under different circumstances and with and without particular interventions. The chair uses stochastic modelling to study transmission, and we teach statistical and modelling skills. This quantitative skill set is important in basic epidemiological research, risk assessment and risk management. The chair is involved in designing methods to quantify different relevant parameters not only as a modeller and statistician but also thinking about the biology of transmission. In that way we contribute to improving animal and human health by finding better methods to control and manage infectious diseases.
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Wageningen University & Research
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.