The Kiel University offers

15 PhD positions within the Research Training Group "DIVERSILIENCE – DIVERSification for Food Systems ResILIENCE"

The position is offered for 3,5 or 4 years (depending on the project) starting April 15th 2026. Remuneration follows the German public-sector pay scale (TV-L E13), based on qualifications. The regular weekly working hours correspond to 65% of a full-time employee (currently 25,155 hours).

Industrialization of food systems has led to a high degree of uniformity in agricultural landscapes, crops, food products, and dietary patterns - developments with far-reaching consequences for the environment, human health, and society.

The new Research Training Group (RTG) "DIVERSILIENCE" investigates how diversity along the entire food supply chain can be restored and strengthened in order to enhance the resilience of food systems to crises. It involves principal investigators from agricultural and ecological sciences, nutritional sciences, economics and social sciences.

The RTG offers a collaborative, ambitious international research environment with access to state-of-the-art infrastructure, strong national and international networks, and close collaboration with stakeholders from industry, policy, civil society and NGOs.

The working language of the RTG is English. Therefore, English language skills at C1 level are a prerequisite.

PhD projects cover the following topics:

1. Impact of carp aquaculture management on its stress resistance and ecosystem services
2. Functional diversity for ecological intensification and system resilience in agroecosystems
3. Resilience of diverse microbiomes against agricultural selection of antibiotic resistance genes
4. Impacts of land use diversity on resilience of water and matter balance on landscape scale
5. Impact of crop diversification on plant health and pathogen dispersal
6. Performance and resource-use efficiency of spatio-temporal diversified cropping systems
7. Re-diversification of supply chain management for a sustainable and resilient food industry
8. Impact of lock-ins and diversification on resilience of regional agricultural production systems
9. Food system policies, internalizing externalities and resilience
10. Impact of economic diversity of local food systems on performance and resilience to shocks
11. Understanding the link between diversity and consumer resilience
12. Effect of dietary diversity on energy balance and metabolic health
13. Impact of dietary diversity on the gut microbial contribution to human amino acid metabolism
14. Dietary diversification by secondary plant substances impacts processing and protein digestion
15. Impact of dietary flavonoid diversity on stress resilience in Drosophila melanogaster

Motivated and highly qualified candidates are welcome to apply. Applicants should hold a Master's degree or equivalent in a discipline related to one of the project areas and demonstrate strong interest in interdisciplinary research on food systems with the aim of transforming agricultural and nutritional systems. More information about the employment requirements with the project descriptions can be found below.

The deadline for applications is 20.2.26.

The selection days will be held from **02.03. - 20.3.**

The program itself starts on **April 15, 2026** (a later start date is possible).

Kiel University sees itself as a modern and cosmopolitan employer. We welcome your application regardless of your age, gender, cultural and social origin, religion, worldview, disability or sexual identity. We support gender equality. You can read more about our values in our Code of Conduct.

The University also supports the employment of disabled persons. Persons with disabilities will, with appropriate qualification and aptitudes, be employed preferentially.

We also support the application of people with a foreign background.

The University strongly encourages women with appropriate qualifications to apply for the position. Women with equivalent qualifications, competence and expertise will be given preference.

Applications should include: a letter of motivation (max. 1 page), curriculum vitae and transcripts of degree. We explicitly ask you to refrain from submitting photographs/application photos.

Please indicate clearly in your application which of the advertised doctoral projects you are applying for. Please apply with a single PDF via Email to Dr. Svenja Fedde (sfedde@nutrition.uni-kiel.de).

If you have any questions on the RTG program or individual projects, you may contact Dr. Svenja Fedde.

Join us for a PhD project in Kiel, an internationally connected university city offering outstanding research opportunities and an exceptional quality of life on Germany's Baltic Sea coast.

- Description of doctoral projects –

1. Impact of carp aquaculture management on its stress resistance and ecosystem services

(Prof. C. Schulz)

Duration: 3,5 years

Background

Carp pond systems act as nutrient sinks and biodiversity hotspots with similar benefits to biodiversity protection as natural wetlands. However, these effects depend on the implemented farming practices. The yearly drainage of the ponds, fertilization, and supplemental feed affect fish stress response, biodiversity and associated ecosystem services.

Objectives

Specific plants from the wildflower strips will be used as supplements for feed and pond fertilizers to study the immune response of common carp and increase the biodiversity of the surrounding ecosystem. Additionally, nutrient balances will be measured to evaluate the pond's ability to act as a nutrient sink under specific management practices, including the new feeding and fertilizing regime and different drainage methods.

Employment requirements

- Master (or equivalent): Aquaculture; Animal, Veterinary or Environmental Science; Biology
- Familiarity with empirical in vivo animal studies
- Fish/animal nutrition and physiology are desirable
- Knowledge about experimental design is considered an advantage

PIs Homepage:

https://www.uni-kiel.de/de/aef/fakultaet/institute/tierzucht-tierhaltung/marine-aquakultur

2. Functional diversity for ecological intensification and system resilience in agroecosystems

(Prof. T. Diekötter)

Duration: 4 years

Background

Ecological intensification builds on the promotion of wild species and their associated ecosystem services in agroecosystems. We suggest, that future agroecosystems need to be more specifically designed in their spatio-temporal structure at the local and landscape scale in order to lift the potential of biodiversity in contributing to more sustainable and resilient agricultural production.

Objectives

In this PhD project, we will assess the potential of an innovative relay-strip intercropping system at the local and multifunctional land-use scenarios at the landscape scale to promote the diversity of flower-visiting insects and ground-dwelling arthropods and their associated ecosystem services.

Employment requirements

- Master (or equivalent): Biology, Ecology, Agricultural Science, Environmental Sciences or similar
- Familiarity with agroecological methods in the field, insect determination and ecological production functions
- R and GIS proficiency would be an advantage

PIs Homepage:

https://www.uni-kiel.de/en/aef/faculty/institutes/natural-resource-conservation/landscape-ecology

3. Resilience of diverse microbiomes against agricultural selection of antibiotic resistance genes

(Prof. C. Hölzel)

Duration: 3,5 years

Background

Livestock manure is a major source of antimicrobial resistance genes (ARG) even in organic farming, and resident soil microbiota may be affected by both organic and agrochemical inputs. Pesticides, including fungicides, harbour the risk of ARG co-selection. While research is well aware of the environmental risks of agricultural treatments, little is known about whether soil microbiome diversity might mitigate those risks, enhancing the resilience of microbiomes to the spread of ARG.

Objectives

In this PhD-project, we will systematically investigate the linkage between crop diversity, environmental diversity and microbiome diversity and its effect on resilience to spread of ARG in a controlled field experiment with and without exposure to agricultural treatments (manure, pesticides) using molecular biological and bioinformatic methods.

Employment requirements

- Master (or equivalent): Agriculture, Environmental Science, Agrigenomics or related field
- Microbiological & molecular biological knowledge, solid laboratory skills (PCR, DNA-extraction)
- Keen interest in experimental design (field & laboratory)
- Willingness to acquire bioinformatics skills during the project
- Supportive attitude towards both staff and students involved

PIs Homepage:

https://www.uni-kiel.de/en/aef/faculty/institutes/animal-breeding-husbandry/animal-hygiene-animal-health-food-hygiene

4. Impacts of land use diversity on resilience of water and matter balance on landscape scale

(Prof. N. Fohrer)

Duration: 3,5 years

Background

Hydrological resilience is increasingly important under climate change but remains difficult to quantify. Ecohydrological models, particularly SWAT+, are effective tools for assessing the impacts of land-use change on water and matter balances. This project uses SWAT+ to model different land-use scenarios and evaluate their influence on hydrological resilience.

Objectives

1. How can suitable ecohydrological indicators be derived to characterize resilience of water and matter balance on catchment scale?

2. How does landscape diversification impact hydrological resilience towards extreme events?

3. How are water-related ecosystem services affected by diversification and landscape patterns?

Employment requirements

- Master (or equivalent): Environmental Science, Geoecology, Water Science or related field
- Keen interest in hydrological modelling, GIS
- Knowledge about land use in rural landscape and impact on water and matter balance

PIs Homepage:

https://www.uni-kiel.de/en/aef/faculty/institutes/natural-resource-conservation/hydrology-water-resources-management

5. Impact of crop diversification on plant health and pathogen dispersal

(Prof. E. Stukenbrock)

Duration: 3,5 years

Background

Plant pathogenic fungi have devastating impact on crop production. Fungicides are widely used to reduce disease burden; however, a major challenge is the rapid evolution and spread of fungicide resistance in populations of pathogenic fungi. Rapid evolution of pathogens in agricultural fields is fueled by the easy dispersal and reproduction of virulent fungi in mono-culture fields. In this project we aim to investigate how cultivar mixtures influence the reproduction, dispersal and evolution of pathogenic fungi in wheat fields. Further, we will investigate the impact of increased plant diversity on microbiome composition and function.

Objectives

In this project we will test two main hypotheses: (1) increased diversity in agricultural fields can slow down pathogen spread and evolution and (2) the use of cultivar mixtures increases soil microbial diversity with beneficial effects on plant health.

Employment requirements

- Master (or equivalent): Biology or a related field
- Background in plant/crop science with prior experience in plant pathology
- Experience with the handling of plant-pathogenic fungi
- Skills in basic molecular biology methods such as DNA extraction and PCR
- Prior experience with field sampling is an advantage
- Excellent writing and presentation skills

PIs Homepage:

https://www.environmental-genomics.de

6. Performance and resource-use efficiency of spatio-temporal diversified cropping systems

(PD I. Kühling)

Duration: 4 years

Background

Intercropping systems are known to enhance ecosystem services via an increase in environmental heterogeneity and through complementary resource utilisation. However, these results were mostly gained under low intensity small-scale production systems. Thus, we want to evaluate, if/how those principles can be implemented in typical German high intensity production systems.

Objectives

This PhD project will investigate in relay-strip intercropping field trials with winter wheat, silage maize and faba bean abiotic resource-use efficiencies (radiation, water, nitrogen) and agronomic performance (yield, quality, land equivalent ratio, transgressive overyielding index) under varying production intensities.

Employment requirements

- Master (or equivalent): Agronomy, Agricultural Sciences with plat production profil, Crop Science or similar
- Familiarity with agronomic field trials, field data sampling and data analysis (preferably with R)
- Driver's license (Klasse B) would be an advantage

PIs Homepage:

https://www.uni-kiel.de/en/aef/faculty/institutes/crop-science-plant-breeding/agronomy-crop-science

7. Re-diversification of supply chain management for a sustainable and resilient food industry

(Prof. F. Meisel)

Duration: 3,5 years

Background

The food industry is very much characterized by economies of scale from efficiently processing huge volumes of a restricted set of agricultural raw materials. Re-diversification of input factors will thus cause complexities across the procurement, production and distribution stages of food supply chains. This calls for new supply chain designs and management solutions to successfully reshape the industry.

Objectives

The PhD project investigates how supply chain concepts and decision making on vertical integration, capacity pooling, transportation, risk hedging etc. impact the cost and benefits (esp. regarding sustainability and resilience) from re-diversifying the agricultural inputs of food supply chains.

Employment requirements

- Master (or equivalent): Business Administration, Agricultural Economics, Business Informatics or Industrial Engineering
- Familiarity with supply chain management, logistics management
- Knowledge about quantitative methods in the fields of Operations Research/Management Science/Machine Learning considered an advantage

PIs Homepage:

https://www.scm.bwl.uni-kiel.de/de/team/meisel

8. Impact of lock-ins and diversification on resilience of regional agricultural production systems

(Prof. R. Hassink)

Duration: 3,5 years

Background

Due to economies of scale some rural and semi-rural regional economies are characterized by a high degree of specialization in certain agricultural products. These regional economies are dominated by so-called specialized regional agricultural production systems, which are prone to path dependence and lock-ins, which potentially can be overcome by diversification and regionalization.

Objectives

The overall objective is to analyze how path dependence, lock-ins and the relatedly institutional context affect diversification, resilience and regionalization of two specialized regional agricultural production systems, from a multi-scalar perspective.

Employment requirements

- Master (or equivalent): Human Geography or related discipline
- Knowledge of economic geography and agri-food geographies is desirable
- Knowledge about qualitative research methods is considered an advantage

PIs Homepage:

https://www.wigeo.uni-kiel.de/en

9. Food system policies, internalizing externalities and resilience

(Prof. M.-C. Riekhof)

Duration: 3,5 years

Background

Food systems closely interact with the natural environment and can be interpreted as social-ecological systems. Resilience in social-ecological systems relates to not crossing a tipping-point towards a less preferred state and to sustain and recover from unanticipated shocks. Ecosystems are more efficient and function more stable when they have a high level of biodiversity. Food production is closely related to biodiversity, both by impacting and benefiting from it. Many of the positive services from biodiversity and the negative impacts of human actions on biodiversity can be classified as externalities, i.e. as "unaccounted-for consequences for others, including future people, of actions taken by one or more persons". Policies try to correct for the externalities and enhance biodiversity, but success is mixed. **Objectives**

We aim to 1) understand the status-quo of existing food system policies in Germany related to externalities, 2) operationalize a resilient German food system by defining boundaries not to be crossed, 3) develop a theoretical social-ecological model to analyze policy options, 4) evaluate policy options to increase diversity and resilience

Employment requirements

- Master (or equivalent): Environmental Economics, Agricultural Science, or similar
- Experience in document search, interviews or surveys, and statistical analysis is of advantage
- German language is a requirement to analyze German documents and conduct interviews with stakeholders

PIs Homepage:

https://www.uni-kiel.de/en/aef/faculty/institutes/agricultural-economics/resource-management

10. Impact of economic diversity of local food systems on performance and resilience to shocks

(Prof. A. Niebuhr)

Duration: 3,5 years

Background

The effects of economic diversity on local food systems are ambiguous from a theoretical perspective. Diversity might enhance local growth and promote resilience to shocks. However, diversity may also involve a loss of benefits from specialization and hamper economic performance. Empirical evidence on the impact of economic diversity on local food systems is so far lacking

Objectives

In this PhD project we will examine whether economic diversity of local food systems impacts their economic performance and resilience and investigate how diversity influences labor market outcomes of workers employed in local food systems.

Employment requirements

- Master (or equivalent): Economics or Economic Geography
- Extensive knowledge of quantitative methods and econometric techniques
- Knowledge of regional economics and/or labor economics and familiarity with participatory research (citizen science) is desirable

PIs Homepage:

https://iab.de/en/employee/niebuhr-annekatrin/

11. Understanding the link between diversity and consumer resilience

(Prof. U. Orth)

Duration: 3,5 years

Background

Consumer researchers have only recently started to show interest in resilience at the individual level. While scholars have suggested that contact to nature and healthy nutrition may aid people in building and maintaining resilience, concrete empirical evidence for diversity's capacity to enhance resilience is still missing. Particularly lacking are studies linking resilience with (1) ecosystem diversity and (2) dietary diversity.

Objectives

This PhD project will generate insights on consumers' perception and understanding of and response to "diversity" in the contexts of nutrition and the biosphere. Adopting a mixed-methods approach (qualitative and quantitative methods), we will identify consumer lay theories of diversity and the cues used to infer diversity, measure the restorative capacity of biodiversity, assesses the overall resilience-building capacity of diversity, including downstream effects on individual and business well-being.

Employment requirements

- Master (or equivalent, grade of at least “good” (<=2.5)) in Agribusiness, Business Management, Nutritional and Food Science, Nutritional and Consumer Economics, Psychology or similar
- Familiarity with consumer research (qualitative and quantitative) and statistical analyses (i.e., SPSS, PROCESS), experimental knowledge is desirable
- Knowledge about restorativeness is considered an advantage

PIs Homepage:

https://www.uni-kiel.de/en/aef/faculty/institutes/agricultural-economics/agricultural-food-marketing

Please visit us also on Instagram: https://www.instagram.com/af_marketing_cau/

12. Effect of dietary diversity on energy balance and metabolic health

(Prof. A. Bosy-Westphal)

Duration: 3,5 years

Background

Impaired dietary diversity could explain the association between ultra-processed food consumption and noncommunicable diseases. However, the underlying mechanisms remain unclear and the prevalent assessment of dietary diversity ignores the effects of food processing, resulting in a poor relation to health outcomes.

Objectives

In this PhD project we will investigate the effect of dietary diversity (defined by the number of plant species and the level of food processing) on the resilience of body weight regulation and metabolic resilience.

Employment requirements

- Master (or equivalent): Human Nutrition and Dietetics and/or Food Science
- Familiarity with human studies, food processing and nutritional value calculation is desirable
- Knowledge about participatory research (citizen science) is considered an advantage

PIs Homepage:

https://www.uni-kiel.de/en/aef/faculty/institutes/human-nutrition-food-science/human-nutrition

13. Impact of dietary diversity on the gut microbial contribution to human amino acid metabolism

(Prof. S. Waschina)

Duration: 3,5 years

Background

It has been hypothesized that increased average intake of UPF in industrialized countries contributes to the reduction of gut microbiome diversity, impacting the metabolism in the microbial community. The molecular basis of how UPF impacts human health via microbiome modulation remains unknown.

Objectives

This project will examine how ultra-processed food (UPF) consumption and processed proteins alter the gut microbiome and host serum metabolome, particularly immunomodulatory metabolites. We aim to uncover host–microbiome mechanisms underlying the health effects of UPFs.

Employment requirements

- Master (or equivalent): Bioinformatics or Human Nutrition and Dietetics and/or Food Science
- Experience or working knowledge in human studies and bioinformatics/data science is preferred.
- Familiarity with the human gut microbiome and its metabolic functions is considered a plus

PIs Homepage:

https://www.uni-kiel.de/en/aef/faculty/institutes/human-nutrition-food-science/nutritional-informatics

14. Dietary diversification by secondary plant substances impacts processing and protein digestion

(Prof. K. Schwarz)

Duration: 3,5 years

Background

Secondary plant substances (SPS) alter protein functionality and affect their digestibility. SPS can protect or enhance protein degradation, influence peptide release and bioavailability. They modulate protease activity, shape peptide profiles that may exert hormone-like effects.

Objectives

In this PhD project we will investigate the pattern of the diets and compare high processed vs. low processed foods. The interaction and reaction of SPS with proteins will be investigated during food processing and in vitro digestion.

Employment requirements

- Master (or equivalent): Food Science, Food Chemistry, Food Technology
- Experience in chemical analyses of foods and/or metabolomics
- Knowledge in statistical analysis

PIs Homepage:

https://www.uni-kiel.de/en/aef/faculty/institutes/human-nutrition-food-science/food-technology

15. Impact of dietary flavonoid diversity on stress resilience in Drosophila melanogaster

(Prof. G. Rimbach)

Duration: 3,5 years

Background

Plant-rich diets are strongly associated with improved health and healthy ageing, largely attributed to bioactive compounds such as flavonoids. While experimental studies often focus on isolated compounds, natural diets consist of complex mixtures of plant bioactives. Drosophila melanogaster, which naturally feeds on flavonoid-rich fruits and decaying plant material, represents a powerful model to study such dietary complexity. Flavonoids modulate foraging behavior, gut microbiota composition, and gut barrier function, and may enhance resilience to environmental and microbial stressors. However, the impact of dietary flavonoid diversity, rather than single compounds, on host stress resilience has not yet been systematically investigated.

Objectives

The project aims to systematically vary flavonoid diversity in defined Drosophila diets and to assess its effects on gut health and stress resilience under bacterial and environmental challenges. The overarching goal is to identify nutritional phenotypes associated with enhanced host resilience and microbial tolerance.

Employment requirements

- Master (or equivalent): Biology, Nutrition or related discipline
- Independent planning and execution of Drosophila melanogaster feeding, infection, and stress-resilience experiments
- Phenotypic, physiological, and gut-related analyses, including survival, stress tolerance, and microbiota-associated readouts
- Data analysis, documentation, and contribution to scientific publications
- Documented hands-on experience with Drosophila models is mandatory

PIs Homepage:

https://www.uni-kiel.de/en/aef/faculty/institutes/human-nutrition-food-science/food-science