My primary research area is protein biochemistry with focus on obtaining a better understanding of the influence of protein functionality on food quality. This includes the functionality, modification and composition of the proteins in the raw material and how the proteins are modified during processing, storage or maturation during food production. I have mainly been working within the field of meat science investigating the influence of the protein changes and modification on meat quality with focus on protein degradation, phosphorylation and oxidation. My research also includes processing of side-streams from the meat industry into novel ingredients. I am an expert in the use of proteomics for protein characterization and have experience with different types of gel electrophoresis and mass spectrometry.

**Publications**

**Advanced glycation end products, protein crosslinks and post translational modifications in pork subjected to different heat treatments**

**Development of Volatile Compounds during Hydrolysis of Porcine Hemoglobin with Papain**
Bak, K. H., Petersen, M. A., Lametsch, R., Hansen, E. T. & Ruiz Carrascal, J. 2018 In : Molecules. 23, 2, 9 p., 357

**Exploration of collagen recovered from animal by-products as a precursor of bioactive peptides: Successes and challenges**

**Pork proteins oxidative modifications under the influence of varied time-temperature thermal treatments: A chemical and redox proteomics assessment**

**Proteomic profiling of oxidized cysteine and methionine residues by hydroxyl radicals in myosin of pork**

**Quantitative Proteomics and Phosphoproteomics Analysis Revealed Different Regulatory Mechanisms of Halothane and Rendement Napole Genes in Porcine Muscle Metabolism**

**Rheological and sensory properties and aroma compounds formed during ripening of soft brined cheese made from camel milk**

**Structural characteristics of low bitter and high umami protein hydrolysates prepared from bovine muscle and porcine plasma**
The effect of protein-to-alginate ratio on in vitro gastric digestion of nanoparticulated whey protein

Novel Variants of Streptococcus thermophilus Bacteriophages Are Indicative of Genetic Recombination among Phages from Different Bacterial Species

The first characterized phage against a member of the ecologically important sphingomonads reveals high dissimilarity against all other known phages
Nielsen, T. K., Carstens, A. B., Browne, P., Lametsch, R., Neve, H., Kot, W. & Hansen, L. H. 2017 In : Scientific Reports. 7, 10 p., 13566

Angiotensin I-converting enzyme-inhibitory peptides from bovine collagen: insights into inhibitory mechanism and transepithelial transport

Characterisation of a novel enterobacteria phage, CAjan, isolated from rat faeces

Grating-based X-ray tomography of 3D food structures

Prediction of total fatty acid parameters and individual fatty acids in pork backfat using Raman spectroscopy and chemometrics: understanding the cage of covariance between highly correlated fat parameters

Revalorisation of bovine collagen as a potential precursor of angiotensin I-converting enzyme (ACE) inhibitory peptides based on in silico and in vitro protein digestions

Accurate determination of endpoint temperature of cooked meat after storage by Raman spectroscopy and chemometrics

Antioxidant capacity of hydrolyzed animal by-products and relation to amino acid composition and peptide size distribution

Novel X-ray phase-contrast tomography method for quantitative studies of heat induced structural changes in meat

Phosphoproteome analysis of sarcoplasmic and myofibrillar proteins in bovine longissimus muscle in response to postmortem electrical stimulation

The effects of eating marine- or vegetable-fed farmed trout on the human plasma proteome profiles of healthy men
Water and fat mobility in myofibrillar protein gels explored by low-field NMR

Analysis of micro-structure in raw and heat treated meat emulsions from multimodal X-ray microtomography

Influence of lipid type on water and fat mobility in fermented sausages studied by low-field NMR

Antioxidant capacity of hydrolyzed porcine tissues

Effect of dietary fat level on the gross fatty acid profile of pork backfat: Raman spectroscopic study

Increased protein-thiol solubilization in sweet wort by addition of proteases during mashing

Quantitative phosphoproteomic analysis of porcine muscle within 24 h postmortem

Raman spectroscopic study of effect of the cooking temperature and time on meat proteins

Application of X-ray phase-contrast tomography in quantitative studies of heat induced structural changes in meat

Application of proteomics for analysis of protein modifications in postmortem meat

Challenges and applications of proteomics for analysis of changes in early postmortem meat

Effect of fat type and heat treatment on the microstructure of meat emulsions

Effect of the type of fat on the physicochemical, instrumental and sensory characteristics of reduced fat non-acid fermented sausages

Physicochemical properties of lard-based diacylglycerols in blends with lard
Acid stress response and protein induction in *Campylobacter jejuni* isolates with different acid tolerance  

Changes in phosphorylation of myofibrillar proteins during postmortem development of porcine muscle  

Effect of pasteurization on the protein composition and oxidative stability of beer during storage  

Electrical stimulation affects metabolic enzyme phosphorylation, protease activation and meat tenderization in beef  

Phosphoproteomics analysis of postmortem porcine muscle with pH decline rate and time difference  

Use of Raman spectroscopy to study effect of cooking temperature and time on meat proteins  

Analysis of acid-soluble glucogenin pork extracts of two PRKAG3 genotypes by $^1$H liquid-state NMR spectroscopy and biochemical methods  

Application of pork fat diacylglycerols in meat emulsions  

Gel-based phosphoproteomics analysis of sarcoplasmic proteins in postmortem porcine muscle with pH decline rate and time differences  

Investigation on CAST, CAPN1 and CAPN3 porcine gene polymorphisms and expression in relation to post-mortem calpain activity in muscle and meat quality  

Mechanical stimuli on C2C12 myoblasts affect myoblast differentiation, focal adhesion kinase phosphorylation and galectin-1 expression: a proteomic approach  

Phenotypic, proteomic, and genomic characterization of a putative ABC-transporter permease involved in *Listeria monocytogenes* biofilm formation  

Influence of early pH decline on calpain activity in porcine muscle  

Postmortem Changes in Phosphorylation of Metabolic Enzymes in Relation to the RN-genotype  
Compensatory growth response as a strategy to enhance tenderness in entire male and female pork *M. longissimus thoracis*


Injection of marinade with actinidin increases tenderness of porcine *M. biceps femoris* and affects myofibrils and connective tissue


Meatomics


**Protein Oxidation and Regulation of u-Calpain: Implications for Meat Quality**


**Protein oxidation in meat during chill storage in high-oxygen atmosphere**


**Proteome analysis of *Aspergillus niger*: lactate added in starch-containing medium can increase production of the mycotoxin fumonisin B2 by modifying acetyl-CoA metabolism**


**Analytical methods for authentication of fresh vs. thawed meat - a review**


**Determination of changes in protein conformation caused by pH and temperature**


**Disulfide bond within µ-calpain active site inhibits activity and autolysis**


**Effect of enzymes on meat quality**

Lametsch, R. 2008 1 p.

**Effects of tetracycline administration on the proteomic profile of pig muscle samples (*L. dorsi*)**


**Evidence for post-mortem m-calpain autolysis in porcine muscle**


**Genetic disruption of calpain correlates with loss of membrane blebbing and differential expression of RhoGDI-1, cofilin and tropomyosin**


**Oxidation results in formation of an intramolecular disulfide bond in µ-calpain**

Post harvest processes that influence myofibrillar protein degradation and meat quality

Acute effects of trout on cardiovascular risk markers and plasma proteome

Determination of changes in protein conformation caused by pH

Effect of modified atmosphere packaging on breaking strength of single muscle fibres from beef and pork

Healthy, nutritious and tasty fish for the future

High oxygen atmosphere packaging affects meat tenderness and protein oxidation

High-oxygen packaging atmosphere influences protein oxidation and tenderness of porcine longissimus dorsi during chill storage

IS m-CALPAIN ACTIVE POST-MORTEM IN PORK?

Is m-Calpain active post-mortem in pork?

Novel method for determination of myofibril fragmentation post-mortem

Changes in the muscle proteome after compensatory growth in pigs

A novel role of Calpain in membrane ruffling involves deregulation of Cofilin 1, Tropomyosin 1 and RhoGDI-1

A novel role of Calpain in membrane ruffling involves deregulation of cofilin 1, tropomyosin 1 and RhoGDI-1

Application of proteomics in meat research

Investigation of the influence of calpain on membrane ruffling

Identification of myofibrillar substrates for u-calpain
UDP-glucose pyrophosphorylase is upregulated in carriers of the porcine RN-mutation in the AMP-activated protein kinase

Postmortem proteome changes of porcine muscle related to tenderness

Extracting information from two-dimensional electrophoresis gels by partial least squares regression

Identification of protein degradation during post-mortem storage of pig meat
Lametsch, R., Roepstorff, P. & Bendixen, E. 2002 In : Journal of Agricultural and Food Chemistry. 50, 20, p. 5508-5512

Identification of protein degradation during post-mortem storage of pig meat

Proteome analysis applied to meat sciences: characterizing Post mortem changes in porcine muscle

Structural Characterization of the fibroblast growth factor-binding protein purified from bovine prepartum mammary gland secretion.