



DANISH
ramazzini
CENTRE
research in occupational
and environmental medicine

Occupational Medicine, Regional Hospital West Jutland
Occupational Medicine, Aarhus University Hospital
Occupational and Environmental Medicine, Aalborg University Hospital
Department of Public Health at Aarhus University

REPORT 2021

Front cover: Staff at the COVID-19 unit at Department of Intensive Care, Aarhus University Hospital, Central Denmark Region. From AUH press photos for download.
Healthcare workers and other employees of Central Denmark Region participate in the COBRA study of COVID-19.

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Preface

November 23–24 2021, 51 participants gathered at Sandbjerg Manor for the 10th Annual Ramazzini Seminar. Birgitte Hamann Laustsen, Karin Rosenkilde Laursen, Jesper Medom Vestergaard, Cecilie Rud Budtz, and Kirsten Pughdahl organized the seminar. The overarching theme was biomarkers in occupational and environmental epidemiology in accordance with a strategic priority following last year's external evaluation of the Danish Ramazzini Centre. Åse Marie Hansen and Peter Møller, both Inst. of Public Health, University of Copenhagen, Bertram Kjerulff, Dept. of Clinical Immunology, Aarhus University Hospital, and Karin Broberg, Inst. for Environmental Medicine, Karolinska Institute and Lund University gave highly relevant talks that excellently covered different aspects of the theme. According to the tradition, a young researcher from each of the centre's four departments presented ongoing projects. The seminar received financial support from Aarhus University Research Fund.

Signe Timm, Signe Hjuler Boudigaard and Karin Rosenkilde Laursen defended their PhD theses and 18 PhD students were attached to Danish Ramazzini Centre in 2021. No PhD students were enrolled. Since 2008 when the Danish Ramazzini centre was established, 44 candidates have received their PhD degrees.

102 peer-reviewed publications were published. the highest annual number since 2008. The publications covered a wide range of topics, for example: pesticides, airborne exposures and asthma; hypersensitive pneumonitis and other pulmonary effects; health effects of light and UV exposure level; mental health problems following electric injuries, violence and psychosocial work factors; silica exposure and autoimmune rheumatic diseases; employment and mental health in adolescence and early adulthood, transgenerational effects; safety at work; mechanical exposures and orthopaedic disorders; drinking water contaminants related health effect; and occupational SARS-CoV-2 infection. Six new and 45 ongoing projects received external funding.

Karin Broberg was appointed as guest professor at Danish Ramazzini Centre to strengthen the use of biomarker and omics data within occupational and environmental epidemiology. In June, the centre organised a seminar on this topic with good representation from external research groups.

At six online Ramazzini Forum meetings, several participants discussed ongoing projects, serving as an excellent example of the strength of online meetings for a geographically dispersed centre.

Aarhus, Aalborg and Herning, January 24, 2022

Danish Ramazzini Centre Coordination Board:

Henrik Kolstad, professor

Vivi Schlünssen, professor

Johan Hviid Andersen, professor

Jakob Hjort Bønløkke, consultant

Torben Sigsgaard, professor

Occupational Medicine, Aarhus University Hospital

Department of Public Health, Aarhus University

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Occupational and Environmental Medicine, Aalborg University Hospital

Department of Public Health, Aarhus University

Highlights

Electric Shocks in a Cohort of Danish Electricians

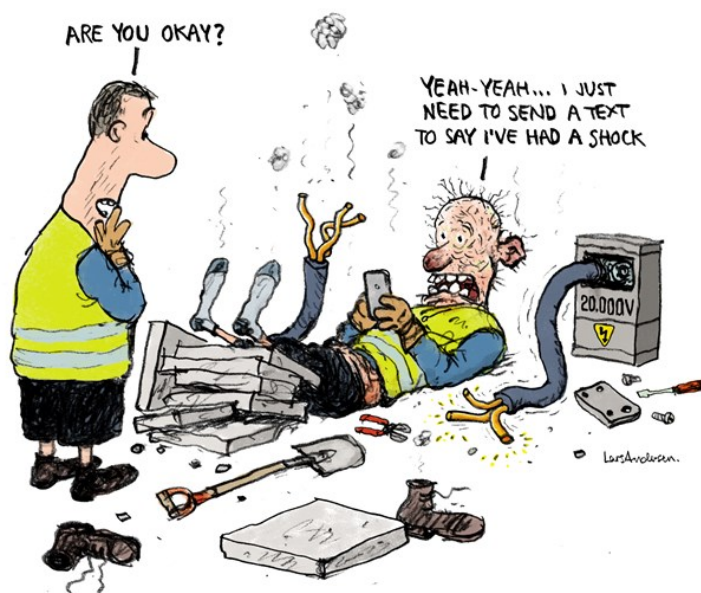
The health-related consequences of electrical shocks are mostly studied in patients from selected cohorts in hospital burn units, by making internal comparisons of subgroups, but without comparing them to unexposed individuals, or considering information regarding the preinjury health of the injured persons. Often, little is known about the details of the electrical shocks.

Our purpose was to do a longitudinal study of Danish electrical workers, to monitor exposure to electrical shocks weekly over a 6-month period (by responding on a short weekly questionnaire) and to determine whether these shocks have short-term, health-related consequences.

We designed a prospective cohort study with weekly measurements and invited 22284 members of the Danish Union of Electricians. 6960 electricians (31%) participated in the baseline data collection, and the participation rate in the weekly follow-up ranged from 61% to 81% during the 6-month follow-up period. The primary outcome measure was an electrical shock and secondary outcomes were the immediate health-related consequences of the shocks.

A total of 2356 electrical shocks were reported by 1612 (23%) of the participants during the 26-week follow-up. Alternating current and voltage below 1000 V were the most common forms of electricity. In most cases, the fingers/hands were the entry and exit points, but many were unable to specify the exit point. The participants categorized 73% of the electrical shocks as 'not at all severe', and most of the shocks did not cause any immediate physical damage. However, flashbacks

were more common than physical consequences. Only a few of the participants contacted health services following an electrical shock, and even fewer were absent from work.



In conclusion, nearly one-fourth of Danish electricians experienced one or more electrical shocks during a 26-week period, but most of the shocks are not perceived as severe and have only limited immediate consequences.

Next, we will compare physical and mental health symptoms before and after an electrical shock and look further into details regarding a small subgroup, who experienced a 'no-let-go' shock, where they were stuck to the power source.

Reference

Biering K, Kærgaard A, Carstensen O and Nielsen KJ. Incidence and immediate consequences of electrical shocks among Danish electricians: a cohort study. *BMJ Open* 2021;11:e046584.
doi: 10.1136/bmjopen-2020-046584

EPHOR: Exposome Project for Health and Occupational Research

Exposure in the workplace can lead to cancer, cardiovascular, respiratory and other chronic diseases. The total burden of chronic disease caused by occupational exposure is estimated at 5–7%, similar to the burden resulting from urban air pollution.

Although it is well known that occupational and non-occupational exposures contribute substantially to the burden of chronic disease, few have investigated the joint effect of several occupational and non-occupational exposures (the working life exposome). Evidence mainly originates from data based on the ‘one exposure, one disease’ approach, which severely hampers a valid estimation of the importance of the totality of occupational and related non-occupational exposures on chronic disease.

The overall objectives of EPHOR are to:

- Develop innovative methods for collection, storage, and interpretation of more complete and individual level working life exposome data
- Gain better knowledge on how the working life exposome relates to chronic diseases using data from existing cohorts and data collected in EPHOR.

Danish Ramazzini Centre and EPHOR

Danish Ramazzini Centre is involved in several Work packages in EPHOR:

In WP2 we contribute to the development

About EPHOR

- EU Horizon 2020 project 2020–2024. Headed by Anjoeka Pronk, TNO, NL.
- 19 partners from 12 countries. Part of European Human Exposome Network.

www.ephor-project.eu – www.humanexposome.eu

of EUROJEM; where several existing JEMs on chemical (e.g. silica, asbestos), physical (noise), psychosocial (e.g. job control) and ergonomic (e.g. heavy lifting) are harmonized across Europe. Danish Ramazzini Centre head the development of a new European JEM for solar UV radiation.

In WP5 we contribute with epidemiological analysis on existing occupational cohorts (MEGACOHORT) using the harmonized JEMs (EUROJEM).

Danish Ramazzini Centre head WP6 where new data are collected in existing multinational population-based cohorts (EC-RHS and CONSTANCES). Following an exposome approach, we will conduct analyses on associations between long- and short term working life exposome and respiratory health.

Perspectives

EPHOR (5-year EU project) will lay the groundwork for evidence-based and cost-effective prevention to improve health at work by developing a working life exposome toolbox. By joining forces in this large consortium of exposure, health and data scientists and technology partners, we will uniquely advance occupational health science to reduce the burden of disease.

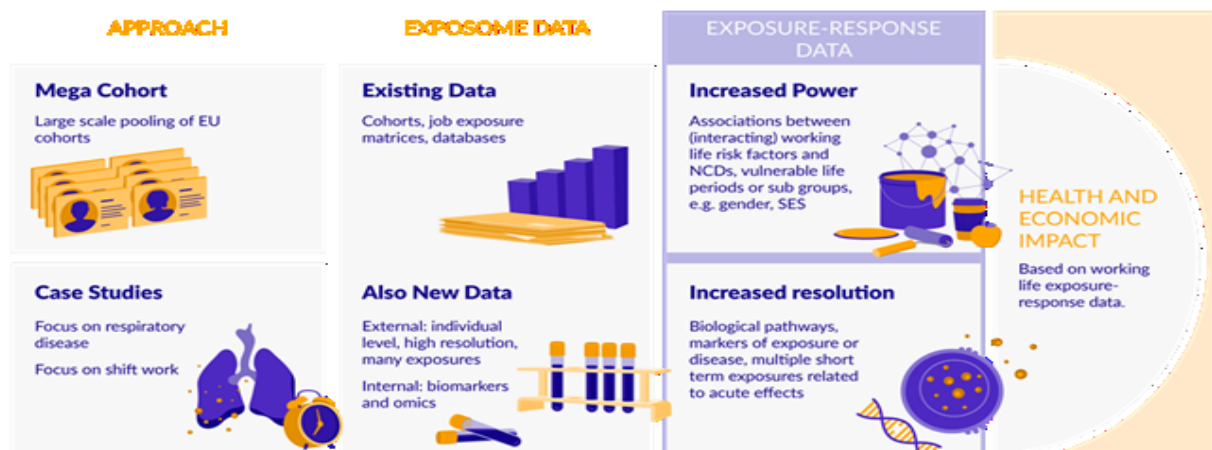


Figure 1. The use of existing data (occupational cohorts and Job Exposure Matrices, JEMs) are harmonized and combined with newly collected data in order to achieve both sufficient power and resolution in the analysis.

Quartz Project: Occupational Exposure to Crystalline Silica and Autoimmune Rheumatic Diseases

Crystalline silica (quartz) is present in sand, stones, rocks and products made hereof, for instance, concrete, bricks, and tiles. Workers within construction, farming, and the production industry are exposed to respirable crystalline silica. We have limited knowledge of current exposure levels in Denmark and determinants of exposure levels across occupations. Quartz is suggested as a risk factor for several autoimmune rheumatic diseases. However, this is based on a limited number of studies, in particular few studies with quantitative exposure assessment and analysis of exposure-response relation. The Quartz-project aimed to examine quartz exposure concentrations across occupations in Denmark and the association between quartz exposure and autoimmune rheumatic diseases.

We conducted an exposure study with 189 personal full-shift measurements of respirable dust and quartz dust (35% repeated measurements) among workers within 11 occupations and examined determinants for quartz exposure across occupations. Generally, we found that in 2018, the average quartz exposure concentrations were low ($<25 \mu\text{g}/\text{m}^3$) in several occupations in Denmark. A few of the included occupations had average exposure concentrations from $50\text{--}100 \mu\text{g}/\text{m}^3$. Only 15% of the study population reported the use of respirators. The use of power tools and quartz content in the material worked on were the main determinants for quartz exposure concentration and did also explain much of the difference in exposure between companies and between workers from the same occupation and company.

We used the Danish Occupational Cohort (DOC*X) to examine the association between quartz exposure and systemic sclerosis, rheumatoid arthritis, systemic lupus erythematosus, and small-vessel vasculitis. The study population consisted of all Danes born from 1956– and ever employed between 1977–2015. All persons were assigned a yearly exposure level based on job codes retrieved from national employment registers and a quan-

titative job-exposure matrix (JEM) modelled from measurements of quartz exposure at workplaces across Europe and Canada together with expert assessment. We identified cases in the national patient register and examined sex-specific incident rate ratios for autoimmune rheumatic diseases. Adjusted for age and calendar-year, comparing the highest exposed with non-exposed, we observed an increased risk of autoimmune rheumatic diseases combined of 1.53 (1.41–1.75) among men and of 1.09 (0.87–1.37) among women. The association was most evident for rheumatoid arthritis and systemic sclerosis. The association was less clear among women; however, few women were exposed. We found indications of exposure-response association, and furthermore our results suggest that exposure received more than 20 years earlier are most important for the association.



Combining the Danish registers with an international quantitative JEM resulted in new and more detailed knowledge on the association between quartz exposure and a number of rare autoimmune rheumatic diseases, adding to our understanding of the epidemiology of these diseases. The project adds information on current quartz exposure in Denmark and determinants across occupations, which can be used directly in preventive initiatives in the work environment.

Figure 1: Annual Publications 2008-2021

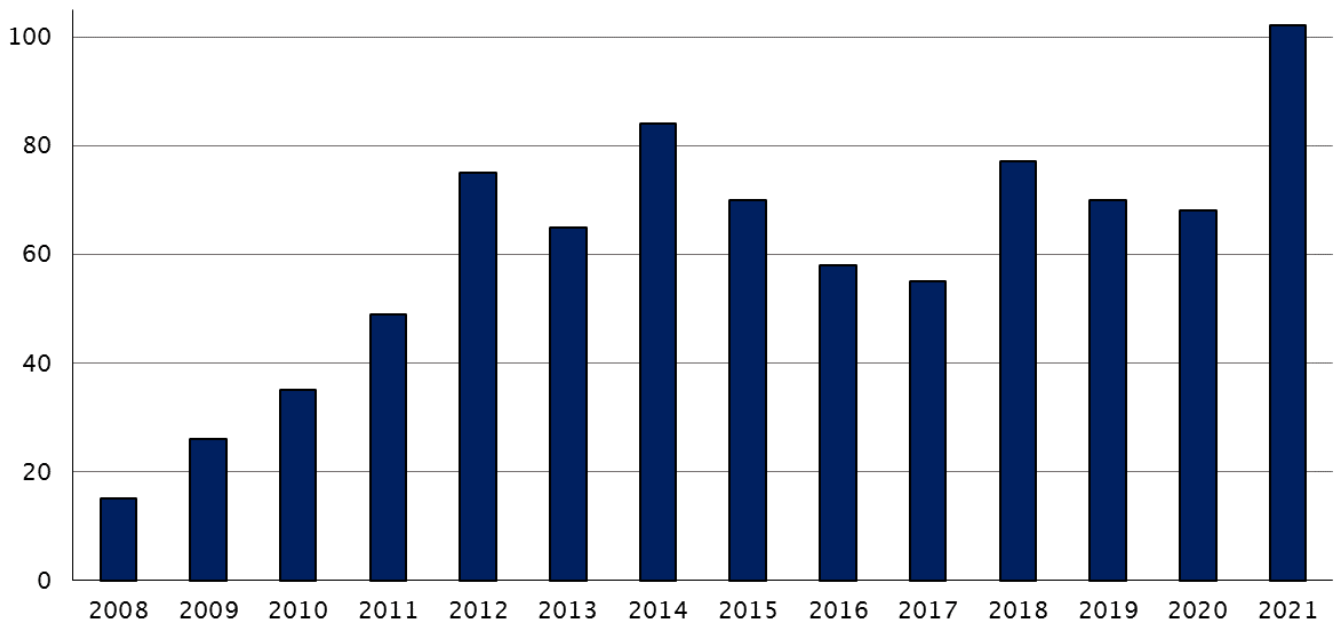
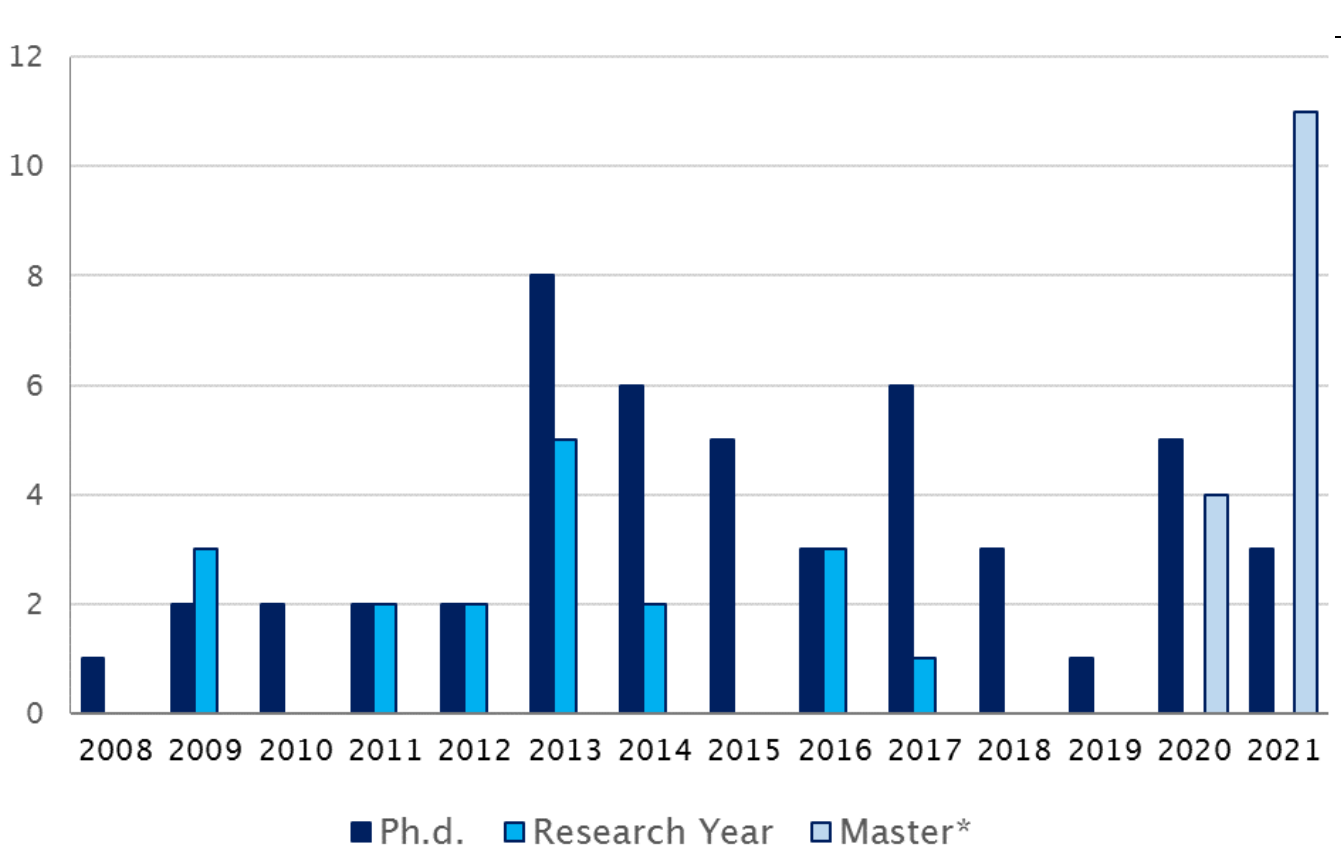


Figure 2: Annual Defences 2008-2021



* The number of Master's Theses before 2020 are not stated.

PhD dissertations

Signe Timm (Cand. scient. san. publ.)

Asthma and farm exposure in early life and across generations

Asthma prevalence has been rising world-wide during the latest century, and the underlying causes are still largely unknown. Numerous studies have shown a lower prevalence of asthma among people born and raised on a farm than their counterparts in the cities. Despite extensive research, it remains unanswered whether the farm effect is restricted to the people living on the farms, whether the next generation may benefit from the farm exposure in their parents' early life and whether the farm effect is just the result of selective migration and not a biological effect of the farming environment. The work conducted in this thesis aims to contribute to a better understanding of the early origin of asthma.

The PhD project is nested within the two large European cohorts ECRHS (European Community Respiratory Health Survey) and RHINESSA (Respiratory Health In Northern Europe, Spain and Australia). The results show a significant urban-rural gradient in asthma prevalence with decreasing levels of asthma across six levels of urbanisation ranging from the inner city to farm with livestock. The project showed no evidence, that farm exposure in prior generations influence the risk of asthma. In addition, the project shows that selective migration is not an important explanatory factor for the association between early-life farm exposure and lower asthma prevalence.



Date of defence: January 29, 2021

Assessment Committee:

Associate professor Dorte Rytter
(Chairman and moderator of the defence)
Dept. of Public Health
Aarhus University

Professor Jeroen Douwes
Centre for Public Health Research
Massey University, Wellington
New Zealand

Professor Tina Kold Jensen
Institute of Public Health
University of Southern Denmark

Professor Vivi Schlünssen
(main supervisor)
Dept. of Public Health
Aarhus University

Signe Hjuler Boudigaard (MD)

Occupational exposure to respirable crystalline silica, styrene and risk of autoimmune rheumatic disease

Autoimmune rheumatic diseases are a group of rare diseases, in which the body's immune system attacks and destroys its own cells, tissues and organs.

Several studies suggest occupational exposures such as respirable crystalline silica and organic solvents as potential risk factors. Workers are potentially exposed to respirable crystalline silica in occupations where products of sand and stone are handled. Styrene is an organic solvent used in the production of reinforced and other plastics.

The PhD project combines historical workplace measurements with information from the Danish comprehensive registers of employment and national patient registers. The project suggests an increased risk of autoimmune rheumatic diseases following exposure to respirable crystalline silica. There is only an indication of an association between styrene exposure and one of the studied diseases.

The PhD project also includes new air measurements of quartz across different occupations in Denmark. These are used to examine determinants of high quartz concentrations.



Date of defence: February 24, 2021

Assessment Committee:

Professor Ellen Margrethe Hauge
(Chairman and moderator of the defence)
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Aarhus University Hospital

Professor Noah S. Seixas
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USA

Professor Lars Alfredsson
Institute of Environmental Medicine
Karolinska Institutet, Solna
Sweden

Professor Henrik Kolstad
(main supervisor)
Dept. of Occupational Medicine
Aarhus University Hospital

Karin Rosenkilde Laursen (Cand. scient. san. publ.)

Acute health effects of fine and ultrafine particles in indoor air – Human exposure studies among vulnerable population sub-groups

As we spend up to 90% of our time indoors, our health and well-being are affected by our indoor climate. Especially, particle pollution is associated with a variety of adverse health effects ranging from inflammation to cardiopulmonary disease. Cooking, burning candles and electronic cigarettes (e-cigarettes) emit high amounts of fine and ultrafine particles. People with respiratory disease are known to be more susceptible to particulate air pollution than the background population due to chronic inflammation in the respiratory tract.

The PhD aimed to examine acute health effects from short-term exposure to cooking, burning candles and passive vape from e-cigarettes, respectively, among people with respiratory disease. In Project PASVAP, 16 individuals with COPD were exposed to passive vape from e-cigarettes and clean air as a control exposure. In the UltraFine Project, 36 young asthmatics were exposed to emissions from cooking, candles, and clean air. In both studies, a randomized double-blind crossover design was applied. Participants were exposed for several hours under controlled conditions in a full-scale exposure chamber. During exposures, particle characteristics were measured, and participants reported symptoms of irritation. Objective health outcomes were evaluated at baseline and at selected time points following exposure.

The results of the two studies are reported in three papers. Overall, the results demonstrate that short-term exposure to passive vape from e-cigarettes was associated with acute small responses in lungs and blood as well as throat irritation indicating inflammation in individuals with COPD. Exposure to emissions from cooking and burning



candles were associated with lower self-reported well-being in young individuals with mild asthma, while objective markers changed in the respiratory tract and blood pointing to the existence of mild inflammation. The findings add new perspectives of indoor particulate air pollution on health.

Date of defence: December 10, 2021

Assessment Committee:

Professor Thomas Vorup-Jensen
(Chairman and moderator of the defence)
Dept. of Biomedicine, Aarhus University

Professor Barbara Hoffmann
Institute for Occupational, Social and Environmental Medicine
Heinrich Heine University Düsseldorf
Germany

Associate professor Suzaynn Schick
Dept. of Medicine, University of California,
San Francisco
USA

Professor Torben Sigsgaard
(main supervisor)
Dept. of Public Health
Aarhus University

Meetings

Ramazzini Forum 2021

Ramazzini Forum was initiated in 2021. The aim is to gather the entire centre once a month for a one-hour virtual meeting. The topic is decided by the organising department and can cover all aspects of research, from discussion of project ideas to the presentation of final results.

Programme

12.02.2021: Inge Brosbøl Iversen, AUH

"Eksponering for støvende arbejde og tidlig lungesygdom. En undersøgelse af støv-
veauer og CT-skanninger"

12.03.2021: Trine Østergaard, AAU

"Asbest og Asbestose"

09.04.2021: Anne Mette Lund Würtz, AU

"Food substitutions and risk of cardiometabolic diseases – analysis of compositional data"

11.06.2021: Karin Biering og Elulykkesgruppen, HEV

"Følger efter elulykker"

10.09.2021: Anne Mette Lund Würtz, Christine Cramer, Jesper Medom Vestergaard, Karin
Biering, Kent Nielsen, Martin Byskov Kinnerup, Mette Wulf Christensen, Sorosh Taba, Hen-
rik Kolstad, AUH, AU, HEV

"Cobra-projektet"

15.10.2021: Birgitte Hamann Laustsen, AAU

"Astma og allergi i den grønlandske fiske- og skaldyrsindustri"

Biomarkører i miljø- og arbejdsmedicinsk epidemiologi

Fredag d. 11. juni 2021 kl. 14-16.10

Auditorium E1, bygning E (2624), lokale 127

Aarhus Universitet, Fuglesangs Allé 4, 8210 Aarhus V

Kan følges online på <https://aarhusuniversity.zoom.us/j/68196888934>

14:00 – 14:10 Velkomst ved professor Henrik A. Kolstad

Session 1. Oplæg fra inviterede foredragsholdere (Chair: Professor Vivi Schlünssen)

14:10 – 14:35 Inflammationsmarkører, immunologi og genetik ved infektionssygdomme

Trine Mogensen, professor

Infektionssygdomme, Aarhus Universitetshospital

14:35 – 15:00 Store plasma protein aggregater som inflammationsmarkører

Thomas Vorup-Jensen, professor

Institut for Biomedicin, Aarhus Universitet

15:00 – 15:10 Pause

Session 2. Oplæg fra Dansk Ramazzini center (Chair: Læge, PhD Zara Stokholm)

15:10 – 15:25 Brug af biomarkører i inhalationstoksikologiske studier

Torben Sigsgaard, professor

Institut for Folkesundhed, Aarhus Universitet

15:25 – 15:40 Korttidseffekter målt med biomarkører hos soldater eksponeret for røg og støv

Jakob Bønløkke, associate professor

Arbejds- og Miljømedicinsk Afdeling, Aalborg Universitetshospital

15:40 – 15:55 COVID-19: langvarige symptomer, almindelige vaccinebivirkninger og risikofaktorer blandt hospitalspersonale

Henrik A. Kolstad, professor

Arbejdsmedicin, Aarhus Universitetshospital

15:55 – 16:10 Diskussion med fokus på samarbejdsmuligheder

Tilmelding til Kirsten Pugdahl på kirpug@rm senest 8. juni

10th Annual Ramazzini Seminar

Program

Tirsdag den 23. november 2021

- 09.30–10.00 Registrering og kaffe
- 10.00–10.15 Velkomst og praktisk info
- 10.15–10.45 **Genanvend: Et forskningsprojekt om det kemiske og biologiske arbejdsmiljø i genanvendelsesbranchen**
Karoline Kærgaard Hansen
Arbejdsmedicin,
Aarhus Universitetshospital
- 10.45–12.15 **Stress-biomarkører i arbejdsmiljøforskning**
Ase Marie Hansen
Institut for Folkesundhedsvidenskab,
Københavns Universitet
- 12.15–13.15 Frokost
- 13.15–14.30 Fælles gåtur
- 14.30–15.00 **Elitesoldaters udsættelse for skadelige påvirkninger ved skyde- og sprængningsøvelser**
Emilie Lerche-Jørgensen
Arbejds- og Miljømedicinsk Afdeling,
Aalborg Universitetshospital
- 15.00–15.30 **Forskning i biomarkører på Institut for Folkesundhed**
Grethe Elholm, Torben Sigsgaard,
Karin Rosenkilde Laursen
Institut for Folkesundhed,
Aarhus Universitet
- 15.30–15.45 Kaffepause
- 15.45–17.00 **Biomarkører af DNA-oxidationsprodukter hos mennesker med udsættelse for forbrændingspartikler**
Peter Møller
Institut for Folkesundhed,
Københavns Universitet
- 17.00–18.30 Pause
- 18.30–19.00 Dry Ramazzini
- 19.00–? Middag

Onsdag den 24. november 2021

- 07.00–08.30 Morgenmad og tjek-ud
- 08.30–09.00 **Upper extremity exoskeletons to reduce shoulder strain in Danish slaughterhouses – a field study**
Jeppe Frost Andersen
Arbejdsmedicin,
Regionshospitalet Herning
- 09.00–10.00 **Biomarkører og det danske bloddonorstudie**
Bertram Kjørulff
Blodbank og Immunologi,
Aarhus Universitetshospital
- 10.00–10.15 Kaffepause
- 10.15–11.45 **Biomarkörer i arbetsmedicin – utmaningar och möjligheter**
Karin Broberg
Institutet för Miljömedicin,
Karolinska Institutet
- 11.45–12.00 Afrunding
- 12.00– Frokost

Tilmeldingsfrist 20. september 2021

Kirsten Pugh: kirpu@rm.dk

Dansk Ramazzini Center

Arbejds- og Miljømedicinsk Afdeling
Aalborg Universitetshospital

Sektion for Miljø, Arbejde og Sundhed
Institut for Folkesundhed, Aarhus Universitet

Arbejdsmedicin, universitetsklinik,
Regionshospitalet Herning

Arbejdsmedicin,
Aarhus Universitetshospital

Ramazzini Group at Sandbjerg Gods
November 23, 2021



Projects

Ongoing PhD Projects 2021

PhD student	Project title	Main supervisor	Department	Enrolled	Funding
Karoline Kjærgaard Hansen	The chemical and biological work environment when recycling municipal waste: The RECYCLE-project	Henrik Kolstad	AUH	01.12 2020	AMFF
Vivi Just-Nørregaard	The role of psychosocial stressors and social inequality in adolescence and young adulthood and later risk of prediabetes or type 2 diabetes	Johan Hviid Andersen	HEV	01.09 2020	IKM, AU
Inge Brosbøl Iversen	Occupational dust exposure and early pulmonary diseases. A study of dust levels and CT findings, the EkSACT-study	Henrik Kolstad	AUH	01.06 2020	AMFF
Signe Frederiksen	Effects of ambient air pollution on birth outcomes and risk of non-communicable diseases – A nationwide register-based study.	Torben Sigsgaard	AU	01.06 2020	Novo Grand Challenges, BERTHA
Asbjørn Kloppenborg	How to synchronize Big Data in health care research in an ethically acceptable manner?	Torben Sigsgaard	AU	01.09 2019	Novo Grand Challenges, BERTHA
Christine Cramer	AiRMA – the Airborne and the Respiratory Microbiome and Allergic Diseases	Vivi Schlünssen	AU, AUH	01.07 2019	AU Health
Birgitte Hamann Laustsen	Occupational asthma and allergy in the Greenlandic fish processing industry	Jakob Bønløkke	AAUH	01.06 2019	Polar Seafood, Royal Greenland, Grønlands Sundheds-videnskabelige Forskningsråd, Arbejds-markedets parter, Arbejdsmiljørådet, Grønlands-banken, AMFF
Mia Klinkvort Kempel	The impact of social inequality and insecurity on the risk of early signs of cardiovascular and metabolic disease in young adults	Johan Hviid Andersen	HEV	01.05 2019	Karen Elise Jensens Fond, RMs sundhedsvidenskabelige forskningsfond
Cecilie Rud Budtz	Physiotherapists' use of red flags as a screening method for detection of serious pathology in primary care	David Høyrup Christiansen	HEV	01.02 2019	Danske Fysioterapeuters Fond for forskning, uddannelse og praksisudvikling, Fysioterapi-praksisfonden, RMs Praksis-forskningsfond, Forskningsfond Hospitalsenheden Vest og Aarhus Universitet

PhD student	Project title	Main supervisor	Department	Enrolled	Funding
Birgith Engelst Grove	Anvendelse af patientens egne oplysninger (PRO) til ambulant opfølgning hos patienter med kronisk nedsat nyrefunktion	Niels Henrik Hjørlund	HEV	01.09 2018	Karen Elise Jensens Fond, Trygfonden, Helsefonden
Søren Mose	Trajectories of health care service utilisation in people with musculoskeletal disorders in Denmark	Johan Hviid Andersen	HEV	01.08 2018	VIA University College, Gigtforeningen, NIDO, HEV
Alexandra Golabek Christiansen	Sikkert arbejde med epoxy – kan visualisering reducere hudkontakten og risikoen for eksem?	Henrik Kolstad	AUH	01.05 2018	AMFF
Charlotte Gabel	Health effects from dwelling retrofitting projects in Denmark – A real-life longitudinal intervention study in an interdisciplinary framework.	Torben Sigsgaard	AU	01.06 2017	Innovationsfonden, Realdania
Mette Jørgine Kirkeby	Unge introduktion på arbejdsmarkedet og arbejdsmarkedstilknytning – betydningen af sårbarhed, arbejdsmiljø og arbejde-privatliv konflikter.	Johan Hviid Andersen	HEV	01.04 2014	AMFF
Linda Christie Andrea	Impingement-related shoulder disorders – prognosis and choice of treatment: a prospective cohort study	Susanne Wulff Svendsen	HEV	01.08 2012	AMFF

Completed PhD Projects 2009-2021

Candidate	Thesis title	Main supervisor	Department	Defence	Funding
Karin Rosenkilde Laursen	Acute health effects of fine and ultrafine particles in indoor air – A human exposure study among vulnerable population subgroups	Torben Sigsgaard	AU	10.12 2021	Realdania, AU
Signe Hjuler Boudigaard	Occupational Exposure to Respirable Crystalline Silica, Styrene and risk of Autoimmune Rheumatic Diseases.	Henrik Kolstad	AUH	24.02 2021	AMFF
Signe Timm	Asthma and farm exposure in early life and across generations.	Vivi Schlünssen	AU	29.01 2021	Sektion for Miljø, Arbejde og Sundhed, AU
Martin Rune Hansen	VEctor Control, Asthma and Diabetes in Uganda (VECADU)	Vivi Schlünssen	AU	16.06 2020	AU, NFA
Kristoffer Norheim	Physical fitness among older manual workers	Pascal Madeleine	AAUH, AAU	12.06 2020	AMFF
Liv Marit Valen Schougaard	Liv efter apopleksi	Niels Henrik Hjørlund	HEV	04.06 2020	RM
Kathrine Pape	Stress faktorer på arbejde og i privatliv hos gravide kvinder: Betydning for astma og andre allergiske sygdomme hos børnene	Vivi Schlünssen	AU	15.05 2020	AMFF
Per Høgh Poulsen	Social inequality in childhood and later effects on mental health and overweight	Johan Hvid Andersen	HEV	24.02 2020	Karen Elise Jensens fond og Herning kommune
Sofie Büneman Dalsgaard	Environmental Asbestos Exposure During Childhood and Cancer Risk Later in Life – A Long-term Register-based Cohort Study.	Øyvind Omland	AAUH	30.04 2019	Health, AU
Sorosh Tabatabaeifar	Carpal tunnel syndrome and work: time course of nerve impairment, incidence rates as sentinels of harmful occupational exposure, and prognosis	Poul Frost	AUH	30.11. 2018	AMFF
Marie Vestergaard Vad	Predictors of inguinal hernia repair and chronic postoperative pain – impact of occupational mechanical exposures	Poul Frost	AUH	29.10. 2018	AMFF
Dorte Raaby Andersen	Fængselsbetjentes håndtering af følelsesmæssige krav og belastninger i arbejdet	Thomas Lund	HEV	18.04 2018	AMFF

Candidate	Thesis title	Main supervisor	Department	Defence	Funding
Stine Daugaard	Occupational light exposure, melatonin, and vitamin D	Henrik Kolstad	AUH	15.12 2017	KI
Pia Viuf Ørby	Cross-Disciplinary studies on pollen in health and environmental sciences	Vivi Schlünssen	AU	13.12 2017	AU
Anita Eskildsen	Work-related stress and cognitive impairments – a longitudinal clinical study	Johan Hviid Andersen	HEV	05.05 2017	AMFF
Ligaya Dalgaard	Treating patients on sick leave due to work-related stress – Two randomized controlled trials of a stress-management intervention	Johan Hviid Andersen	HEV	07.04 2017	AMFF
Thomas Winther Frederiksen	Occupational Noise Exposure and Individual Risk Factors for Hearing Loss and Tinnitus	Henrik Kolstad	AUH	24.03 2017	AMFF
Anneli Clea Bolund	Change in lung function – The impact of organic dust exposure as well as associations with DNA methylation signatures	Vivi Schlünssen	AU	20.01 2017	AU
Mette Skovgaard Christensen	Styrene exposure and cancer risk in reinforced plastics workers – A long-term cohort study	Henrik Kolstad	AUH	02.9 2016	AMFF
Mette Lausten Hansen	Sick leave in pregnancy – risk factors and prognosis – Studies among Danish employed women	Cecilia Ramlau-Hansen	AUH	23.05 2016	Ramazzini, AU
Louise Pape Larsen	Life after Stroke – Self-rated health and return to work in a Danish cohort following stroke	Niels Henrik Hjørlund	HEV	02.03 2016	AU
Helene Tilma Vistisen	Short term effects of night shift work on risk of overall breast cancer and breast cancer classified by oestrogen and HER2 receptor status	Henrik Kolstad	AUH	18.12 2015	AMFF
Charlotte Rasmussen	Interpersonal behaviour and risk of workplace violence and threats	Annie Høegh	HEV	17.11 2015	AMFF
Annett Dalbøge	Occupational cumulative mechanical exposures as risk factors for surgery for subacromial impingement syndrome	Johan Hviid Andersen	AUH	25.04 2015	Ramazzini, AMFF, GRASPH, Gigtforeningen, Forsknings-Apparatur-fonden
Else Toft Würtz	Occupational Exposure and COPD – A Danish population-based study	Øyvind Omland	AAUH	24.03 2015	Region Nordjylland
Tanja Kirkegaard	Stress as a sociocultural phenomenon – Exploring the distributed nature of stress in an organizational context	Svend Brinkmann	HEV	06.01 2015	AMFF

Candidate	Thesis title	Main supervisor	Department	Defence	Funding
Susanne Lund Kristensen	Reproductive function of young Danish women – Long-term effects of prenatal exposure to persistent environmental pollutants	Erik Ernst	AUH	17.11 2014	DSF, Beckett-Fonden, Div. legater og fonde
Birgit Bjerre Høyer	Prenatal exposure to persistent organic pollutants and physical, mental and motor development in young children	Gunnar Toft	AUH	31.10 2014	Ramazzini, AU, FP7
David Høyrup Christiansen	Physiotherapy and shoulder surgery – Exercise treatment before and after decompression surgery in patients with subacromial impingement syndrome	Susanne Wulff Svendsen	HEV	28.10 2014	Ramazzini, DSF
Trine Nøhr Winding	The transition from school to work life – Educational attainment and work environment in a Danish youth cohort	Johan Hviid Andersen	HEV	10.10 2014	AMFF
Zara Ann Stokholm	Occupational Noise Exposure, Physiological Stress, and Cardiovascular Health	Henrik Kolstad	AUH	21.02 2014	AMFF
Anne Vested	Reproductive health of young Danish men following prenatal exposure to persistent organic pollutants	Gunnar Toft	AUH	29.01 2014	FSS
Regine Grytnes	Tryghed i nuet – Arbejdssikkerhed blandt tømrerlæringer i Danmark	Anne Line Dalsgård	HEV	22.10 2013	AMFF
Matias Grynderup	Psychosocial working conditions, physiological stress, and the risk of depression	Henrik Kolstad	AUH	20.08 2013	Ramazzini, Lundbeck A/S
Grethe Elholm	The Effect of Farming Exposure on Allergy and Atopy	Øyvind Omland	AU	10.07 2013	Ramazzini, AU
Simon Grandjean Bamberger	Globalization, pressure to change and psychosocial work environment: the implication of management on mental health	Øyvind Omland	AAUH	25.06 2013	AMFF
Stine Yde Nielsen	Q fever in pregnancy and fetal health: Epidemiological studies	Niels Henrik Hjørlund	HEV	21.06 2013	Ramazzini, AMFF
Louise Møller Pedersen	Integreret ulykkesforebyggelse, delprojekt C	Peter Nielsen	HEV	05.06 2013	AMFF
Berit Hvass Christensen	Maternal occupational exposure during pregnancy and the risk of allergic disease in the children	Vivi Schlünssen	AU	03.06 2013	AAMF, AU

Candidate	Thesis title	Main supervisor	Department	Defence	Funding
Karin Biering	Life after Heart Disease – Patient-reported health measures and prognosis following PCI treatment	Niels Henrik Hjørlund	HEV	31.05 2013	AMFF, Hjerterforeningen
Jens Christian Jensen	Predictors of care-seeking in general practice for back pain and upper extremity pain – A Danish population-based study	Johan Hviid Andersen	HEV	09.11 2012	AMFF
Morten Søndergaard Jensen	Cryptorchidism in Denmark: Studies of Registry Validity, Disease Etiology, and Timing of Corrective Surgery	Ane Marie Thulstrup	AUH	17.08 2012	AU
Ioannis Basinas	Dust and endotoxin exposure in animal farming populations – Formulating the basis for a model-based exposure assessment approach	Torben Sigsgaard	AU	01.11 2011	AU, GRASPH
Morten Vejs Willert	Measures against work-related stress – results from a randomized, wait-list controlled trial of a group-based, cognitive behavioural stress management intervention	Ane Marie Thulstrup	AUH	01.10 2011	AMFF
Tine Rubak	Cumulative physical exposure in the work environment as a risk factor for primary osteoarthritis leading to total hip replacement	Poul Frost	AUH	28.05 2010	AMFF
Claus Dalsgaard Hansen	En sociologisk fortælling om sygefravær	Lisbeth B. Knudsen	HEV	09.04 2010	AMFF
Tine Halsen Malling	Glutathione Peroxidase 1 and asthma. A cross-sectional analysis of associations between genetic polymorphism, enzymatic activity, selenium concentration, oxidative stress and inflammatory disease in a population sample	Øyvind Omland	AAUH	29.06 2009	
Torsten Munch-Hansen	Prevention of Sickness Absence – A study of associations between psychosocial work conditions and health outcomes in a large public services population	Jens Peter Bonde	AUH	12.02 2009	AMFF

Completed Master Projects 2021

Candidate	Faculty	Thesis title	Supervisors	Department
Fredrik Brix	Medicine	Work participation in a cohort of patients with occupational skin disease and the effect of job change. A 5 year follow up study.	Marianne Kyndi and David H. Christiansen	HEV
Kirstine Fisker Sandholm Jensen	Public Health	Associations between the physical and psychosocial work environment and labour market participation in early adulthood: a follow-up study.	Trine Nøhr Winding	HEV
La My Hoa Møller	Public Health	Subjective social status in adolescence and mental health in young adulthoods association with educational plans and highest education attained as an adult: a longitudinal study with register-based follow-up.	Karin Biering	HEV
Marie Frydendahl and Theresa Møller Kynde	Public Health	Occupational wood dust exposure levels and risk of sinonasal cancer.	Inge Brosbøl Iversen and Henrik Kolstad	AUH
Mette Roost and Sofie Bech Vestergaard	Public Health	Association between potential determinants and dropout in outpatient follow-up based on Patient-Reported Outcome.	Liv Marit Valen Schougaard and David H. Christiansen	HEV
Merete Ajstrup	Public Health	The association between musculoskeletal health climate and sickness absence among female eldercare workers: a prospective cohort study.	Cecilie Rud Budtz and David H. Christiansen	HEV
Sandra Ileby Rokkedrejer	Public Health	Risk of heart disease among pigeon breeders – a long term follow-up study	Christine Cramer and Henrik Kolstad	AUH
Stine Malling Søndergaard	Public Health	The association between sustained physical activity during adolescence and cardiometabolic risk markers in early adulthood: a 15-year prospective cohort study.	Trine Nøhr Winding	HEV
Susanne Vilsbøl	Public Health	Long-term change in the number of musculoskeletal pain sites – which factors are important? A 12-year prospective cohort study.	Søren Mose and David H. Christiansen	HEV

Ongoing Research Projects 2021

Title	Aim	Materials and Methods	Internal	External collaboration partners	Funding	Time period
Reducing shoulder complaints in employees with high occupational shoulder exposures. A cluster-randomised controlled study (The Shoulder-Café Study).	To examine the effect of two shoulder interventions in occupations with high shoulder exposure and shoulder pain.	A two-arm, parallel-group, cluster-randomised design with randomisation at the company level is used. 12 café-courses with 10–12 participants and a similar number of individual counselling courses. Assessment of shoulder pain level and force measurements are done before and after the intervention period.	AUH (Annett Dalbøge)	Silkeborg Regional Hospital: Elective Surgery Centre. Bispebjerg Hospital: Department of Occupational and Environmental Medicine.	RM, AU, Danske Fysioterapeuter, Forsknings-sundhed i Midten, Gigtforeningen, Savværks-ejer Juhl og hus-trus mindelegat, Helga og Peter Kornings Fond, Udviklings- og forskningspul-jen. 5.533.946	2018–2022
AiRMA: Airborne Microbiome and Allergic diseases.	The study explores the relationship between the airborne and respiratory microbiome and their relation to the occurrence of respiratory allergy.	The study is designed as a cross-sectional study among 600 men; 200 homing pigeon breeders, 200 farmers, and 200 urbanites. From all, swaps from tonsils and nose and airborne dust from sleeping rooms are collected for microbiome analysis. They will also answer questionnaires and have a clinical exam.	AUH (Christine Cramer, Henrik Kolstad) AU (Christine Cramer, Vivi Schlünssen, Torben Sigsgaard, Grethe Elholm)	AU: Department of Biology, Section for Microbiology. AUH: Department of Otorhinolaryngology, Head and Neck Surgery.	AU. Ørelæge Hans Skouby's og Hustru Emma Skouby's Fond. 1.800.000	2019–2023
ALFA IV quantitative study.	To obtain a deeper understanding of the challenges experienced by craftsmen in the building and construction industry following the pension reform from 2012, requiring them to stay longer at the labour market.	A systematic review and qualitative interview study.	AAUH (Jakob Bønløkke)	AAU: Department of Health Science and Technology.	AMFF 1.114.930	2020–2023

Title	Aim	Materials and Methods	Internal	External collaboration partners	Funding	Time period
Allergy and airway disease among seafood processing workers in Greenland.	To explore exposures as well as the extent and causes of asthma, allergy and other airway diseases in the seafood industry in Greenland.	Cross-sectional study with historical occupational anamnesis with 1-year follow-up for 1/3 of the participants. Exposure measurements and development of JEM based on the cross-sectional study. Prick test, RAST test, lung function test, inspection, person worn and stationary measurements of particles, proteins, and allergens.	AAUH (Birgitte Laustsen, Jakob Bønløkke) AU (Torben Sigsgaard, Kirsten Østergaard, Vivi Schlünsen) HEV (Ole Carstensen).	Bispebjerg Hospital: Department of Occupational and Environmental Medicine.	AMFF, Fonde i Grønland, Aalborg Universitet 3.500.000	2016–2022
Arm elevation and shoulder complaints.	The aim is to examine the relationship between work with arms elevated and the risk of shoulder disorders.	The project comprises four epidemiologic studies, that uses an existing cohort of app 2½ million Danes. The outcome is surgery for subacromial impingement syndrome. Data about work with elevated arms are obtained by linking individual job information (1993–now) to a validated shoulder database with exposure targets based on technical measurements. The exposure-response relationship is examined by logistic regression controlled for other risk factors.	AUH (Annett Dalbøge) HEV (Johan Hviid Andersen)	Bispebjerg Hospital: Department of Occupational and Environmental Medicine. Washington University. IRSET. University of Angers.	AMFF. Gigtforeningen. 2.163.364	2020–2022
ARMIE: Arrhythmia, Myocardial infarction & the Environment	The main aim of ARMIE is to examine the effect of fluctuating levels in air pollution on cardiovascular patients' risk of various cardiovascular outcomes.	The studies are mainly conducted using the case-crossover method. We include two cohorts. The first one is a cohort of ICD patients with an outcome of arrhythmias. The other cohort includes 14.000 cases of acute myocardial infarction.	AU (Asbjørn Kloppeborg, Torben Sigsgaard, Rasmus Østergaard Nielsen)	AUH: Department of Cardiology Christoffer Witt, Jens Cosedis, Michael Mæng)	Karen Elise Jensens Fond 3.170.000	2021–2024

Title	Aim	Materials and Methods	Internal	External collaboration partners	Funding	Time period
ASBYG: Is there harmful exposure to asbestos in the building industry in Denmark? Optimised methods for quantification and health monitoring.	Collect samples and measure asbestos exposure in a representative part of work tasks within demolition and renovation of buildings in Denmark. To optimise and if possible partly automatize measurement and registration methods. To estimate the occurrence of fibrosis on CT scans of construction workers.	Wearable and stationary measurements at the construction sites. Development of app and lab techniques.	AAUH (Jakob Bøn-løkke) AU (Vivi Schlünssen, Torben Sigsgaard) AUH (Henrik Kolstad, Inge Iversen)	Joblife Kolding. AMI.	AMFF 3.000.000	2019–2022
BE-READY: Health, measured and felt indoor climate before and after renovation of social housing areas.	The study explores how environmental exposures affect the respiratory health of residents. In addition how housing renovation affects these conditions.	Prospective longitudinal natural experiment, where the participants are their own control and the renovation is done independently. The data collection is done in the heating and non-heating season. Self-reported data of demography, health, lifestyle and felt climate. Lung function test and indoor climate measurements over 14 days.	AU (Charlotte H Gabel, Grethe Elholm, Søren Kjærgaard)	Boligforeningen Ringgården. Helhedsplanen Trigeparken. Fyns Almennyttige boligselskab Institut. AU: Department of Engineering.	Realdania 4.000.000	2015–2021
BERTHA (Big Data Centre for Environment and Health).	BERTHA aims to explore the environment's (air, water and soil) effect on somatic disorders.	Studies of the Danish population via registers, including health-, social-, and environmental registers.	AU (Vivi Schlünssen, Torben Sigsgaard, Signe Frandsen, Jörg Schullehner, Rasmus Østergaard, Asbjørn Kloppenborg)	AU: ENVS CIRRAU. AUH: DBDS, Heart. Utrecht University. Harvard School of Public Health.	Novo Nordisk Fonden 15.000.000	2019–2024
Importance of psychosocial stressors and social inequality in adolescence and early adulthood for the risk of developing prediabetes (PD) and type 2 diabetes (T2D).	1) To examine the relationship between psychosocial stress in adolescence and early adulthood and the risk of PD and T2D. 2) To examine the importance of loneliness and stigmatisation for weight in adolescence and early adulthood. 3) To identify psychosocial risk	All sub-studies in this ph.d.-project use data from the Vestliv cohort, including data from a new collection round in 2021. Register data will also be applied. Information of the participants' PD or T2D status is collected	HEV (Vivi Just-Nørregaard, Trine Nøhr Winding, Johan Hviid Andersen)	AU: Department of Psychology and Behavioural Sciences. Steno Diabetes Center Aarhus.	Klinisk medicin, AU 1.800.000	2020–2023

Title	Aim	Materials and Methods	Internal	External collaboration partners	Funding	Time period
	factors in adolescence and early adulthood as predictors of PD and T2D.	via blood tests, measuring the HbA1c level etc.				
Utility of health services among persons with muscle and joint pain.	The project establishes how patients with muscle and joint pain use and experience the Health system. The project also explores the possibility of changing long-lasting examination- and treatment courses.	A cohort study and a qualitative sub-study. The project compares register- and questionnaire data from 5068 patients, who in 2008 answered several questions regarding their work-life, doctor visits and health, including pain in muscles and joints. Attachment to the labour market, use of medicine, and health services over 10 years are analysed. These data are complemented by focus group interviews and questionnaires from selected patients.	HEV (Søren Mose, David Høyrup Christiansen, Johan Hviid Andersen)	VIA University College. AU Health. Curtin University.	VIA University College. NIDO Danmark. Gigtforeningen. RM Forskningsfond. 2.077.220	2018-2022
CANDLE (Candle Developed for Low Emission).	In the CANDLE project, we examine the health consequences of two different candles: a standard candle and a candle with low particle emission.	A randomised controlled double-blind, crossover study among 20 young asthmatics. The test persons are exposed to a standard candle and a low emission candle for 5 hours 14 days apart. Their health is measured before, after, and 24 hours following exposure.	AU (Søren Kjærgaard, Karin Rosenkilde Laursen, Torben Sigsgaard)	AU: Department of Chemistry, KU: Department of Public Health. Technological Institute, Aarhus, ASP Holmblad, Coop Danmark, Danwax, Lund University, Liljeholms Stearinfabrik, Promol, European Candle Association.	Innovationsfonden 1.000.000	2019-2021

Title	Aim	Materials and Methods	Internal	External collaboration partners	Funding	Time period
CARDit: Shift work and risk of cardiovascular disease and breast cancer, a 10-year follow-up study based on daily work hour recordings.	To explore the relationship between shift work and cardiovascular disease and breast cancer, the importance of duration and intensity of work time patterns and potentially vulnerable groups of workers.	Follow-up study of 260.000 regional employers 2007–2015. Daily data about work time from Danish Working Hour Database, outcome data from the National Patient Register. Rate ratios are estimated in Poisson models adjusted for a series of covariates.	AUH (Jesper Medom Vestergaard, Annett Dalbøge, Henrik Kolstad)	Finnish Institute of Occupational Health. NFA. KU: Department of Public Health. The Danish Cancer Society. AUH: Department of Plastic and Breast Surgery. Bispebjerg Hospital: Department of Occupational and Environmental Medicine. Bispebjerg Hospital: Department of Occupational and Environmental Medicine. AUH: Departments of Infectious Diseases, Clinical Immunology, and Clinical Microbiology.	AMFF 2.820.000	2019–2022
COBRA: COVID-19 among Regional Employers.	The aim is to identify risk factors for SARSCov-2 infection among hospital workers.	A longitudinal study with daily questionnaires linked to PCR and serology for SARS-CoV-2 and other register-based information of health and work.	AUH HEV AU		Region Midtjylland 525000. AMFF 1.800.000	2020–2025
Intermittent sickness absence in four large organisations.	The aim is to identify patterns in and reasons for repeated episodes of intermittent sickness absence in four large Danish organisations (Siemens, Danfoss, Odense municipality and the Prison Service) to develop guidelines for leaders/organisations to help them find a more appropriate approach for this type of sickness absence.	Questionnaires and qualitative interviews.	HEV (Regine Grytnes)	AU: Department of Psychology and Behavioural Sciences. AAU: Department of Sociology and Social Work	AMFF 2.600.000	2020–2022
DWB: Drinking Water and Birth Outcomes.	DWB aims to explore the effect of drinking water on negative birth outcomes.	Studies of the Danish population via registers, including health-, social-, and environmental registers.	AU (Torben Sigsgaard, Jörg Schullehner)	AU: GEUS, CIRRAU. KU. UIC. NCI	NIEHS R01 6.000.000	2018–2021

Title	Aim	Materials and Methods	Internal	External collaboration partners	Funding	Time period
EKSACT: Occupational dust exposure and early pulmonary diseases.	The study aims to analyse the relationship between dust levels and early COLD and lung fibrosis and to determine the occurrence of early COLD and lung fibrosis in professions and fields in the Danish labour market.	A cross-sectional study of 25.000 employers who have had a lung CT scan. The extent of lung changes is decided by CT-analysis software. Dust exposure is estimated from the participants' work history and job exposure matrices.	AUH (Inge Brosbøl Iversen, Henrik Kolstad, Else Toft Würtz, Zara Ann Stokholm) AU (Vivi Schlünssen). AAUH (Jakob Bønløkke)	Bispebjerg Hospital: Department of Occupational and Environmental Medicine. AUH: Departments of Radiology, Respiratory Diseases and Allergy, Medical Technology. Herlev and Gentofte Hospital: Department of Radiology Utrecht University: Institute for Risk Assessment Sciences.	AMFF 3.600.000	2020–2023
EPHOR: Exposome project for health and occupational research.	Overall, this EU project seeks to explore the relationship between all work-related exposures (working life exposome) and chronic diseases. DRC is involved in more work packages, the most important being WP6 (Working life exposome, lung function and COPD), WP2 (Standardized assessment of multiple exposures in large populations), and WP5 (EPHOR mega cohort).	EPHOR applies existing data from cohorts with occupational information in combination with the collection of new data of both exposure and outcome focusing on night work (WP7) and respiratory disease (WP6). JEMs are central in EPHOR, including the development of a EuroJEM.	AU (Anne Mette Lund Würtz, Theresa Kynde Møller, Kirsten Østergaard, Christine Cramer, Vibeke Heitmann Gutzke, Torben Sigsgaard, Vivi Schlünssen) AUH (Henrik Kolstad, Annett Dalbøge, Else Toft Würtz, Kirsten Pugdahl, Morten Vejs Willert, Mette Wulf Christensen).	18 European partners. The coordinating centre is TNO from Holland.	Horizon 2020. SCI-BHC–2018–2020 8.600.000	2020–2024
EPOXY VISION: Working safely with epoxy – can visualisation reduce skin contact and risk of eczema?	To examine if UV-visualisation of skin contact with epoxy can reduce the risk of skin exposure, epoxy sensitization, and eczema.	A randomised controlled study of 200 workers in the wind turbine industry. All participants have quantified epoxy-fluorescence, but only the intervention group gets to know the result. Outcomes are later epoxy-fluorescence and skin sensitization determined by a patch test.	AUH (Alexandra Gølabek Christiansen, Henrik Kolstad) AU (Vivi Schlünssen) HEV (Ole Carstensen). AAUH (Jakob Bønløkke).	AUH: Department of Dermatology. NFA. Lund University. Siemens-Gamesa.	AMFF 3.399.035	2018–2021

Title	Aim	Materials and Methods	Internal	External collaboration partners	Funding	Time period
Prevention of cattle handling related accidents – Development of measurable indicators.	This project aims to develop measurable indicators for safe work with dairy cattle in farming with a special focus on the physical environment, the behaviour of the animals, and interaction between humans and animals.	Analyses of earlier accidents, technology assessment, video recordings of the handling of cattle.	HEV (Kent Nielsen)	SEGES. AU: Department of Engineering and Danish Centre For Food and Agriculture.	AMFF 2.300.000	2020–2022
The chemical and biological work environment when recycling municipal waste: The RECYCLE-project.	The study aims at documenting exposure levels and early health effects by recycling the municipal waste in Denmark. Furthermore, the study aims at identifying factors in production that can lead to increased exposure levels by recycling municipal waste.	The study is designed as a cross-sectional study among 150 selected workers from 30 small and large, private and municipal sorting- and recycling companies. Exposure levels are estimated from person worn measurements and blood samples, and early health effects by lung function test and questionnaire etc.	AUH (Karoline Kærgaard Hansen, Henrik Kolstad) AU (Vivi Schlünssen, Torben Sigsgaard)	NFA. Karolinska Institutet. 3F. Dansk Industri. Dansk Kompetencecenter for Affald (DAKOFA).	AMFF 4.000.000	2020–2023
Pregnancy and well-being.	The project aims to start and evaluate an intervention focusing on work organisation for pregnant employees at AUH via tripartite dialogue, and thus possibly reduce the sickness absence.	The intervention is conducted in a cluster randomised design with the participation of departments at AUH. Half of the departments receive the intervention while the other half follows usual procedures. The primary effect of the intervention is measured by the number of days with sickness absence in the intervention and control groups.	AUH (Jane Bjerregaard Lauridsen, Mette Lausten Hansen, Ane Marie Thulstrup) HEV (Dorte Raaby Andersen).	AUH: Department of Obstetrics and Gynaecology.	Sundhedsstyrelsen, AMFF, RM Folkesundhed i Midten, Jorde-moderforeningen 6.064.175	2019–2022
Health effects of smoke during soldiers' shooting training.	Determine the short-time respiratory health effects of soldiers when exposed to emissions during indoor shooting practices.	Collection of lung function tests and blood samples before and after 3-hour shooting practice. Measurement of exposure components.	AAUH (Jakob Bøn-løkke, Birgitte Laustsen, Emilie G S Lerche-Jørgensen) AU (Torben Sigsgaard)	AAU BUILD. The Danish Armed Forces, Aalborg, Danish Defence.	50.000 i lokale AAUH midler	2019–2021

Title	Aim	Materials and Methods	Internal	External collaboration partners	Funding	Time period
Mechanical exoskeletons to reduce shoulder strain in Danish slaughterhouses – a field study.	The aim is to examine the use of mechanical exoskeletons in industrial slaughterhouses, including the ability of the exoskeletons to reduce shoulder strain, as well as possible barriers for their use in the daily work at Danish slaughterhouses.	The project is conducted as a mixed-methods-study, where reduction in physical shoulder exposures and possible applications of exoskeletons are examined by both a quantitative study (EMG and accelerometer) and a qualitative sub-study (observations and interviews).	HEV (David Høyrup Christiansen, Regine Grytnes, Jeppe Frist Andersen) AUH (Annett Dalbøge)	Danish Crown Ringsted. Université Laval Canada.	AMFF 2.462.830	2020–2021
Muscle- and skeletal problems – Impacted by the workplace culture?	The aim is to explore how the workplace culture affects the approach of muscle- and skeletal problems (MSP-culture), and how the MSB-culture impacts workability and sickness absence in professions with high physical work demands.	The project is conducted as a mixed-method study, where quantitative (questionnaires) and qualitative (observation and interview) methods are combined. The study is done among workers in two fields with high physical work demands: Slaughterhouse workers and employees in the nursing sector.	HEV (David Høyrup Christiansen, Johan Hviid Andersen, Dorte Raaby Andersen, Kent J. Nielsen)	Danish Crown. Tican. Ringkøbing-Skjern municipality.	AMFF 2.999.860	2018–2021
Measuring precarious work among young Danish employees.	The overall aim is to develop and validate a Danish questionnaire to measure precarious work among young employees in the Danish labour market. The aim is also 1) to explore the organisational work environment and the mental health of precarious workers, and 2) to identify psychological and social risk factors in adolescence and early adulthood for precarious work among young employees.	Method: Literature search, Operationalisation and adaptation of the term precarious work via theoretical discussions with sociologists and the labour market parties, Formulation of questions and answer scales based on above and available validated measuring tools, a Pilot test of a new measurement tool, Distribution of a questionnaire in the existing cohort study VestLiv year 1983+1989. Examine the reliability and validity of the developed questionnaire.	HEV (Johan Hviid Andersen, Trine Nøhr Winding, Karin Biering, Per Høgh Poulsen)	AAU: Department of Sociology and Social Work (Rasmus Juul Møbjerg)	Velliv Foreningen 2.400.000	2021–2023

Title	Aim	Materials and Methods	Internal	External collaboration partners	Funding	Time period
Detection of severe disease in physiotherapy practice.	The project aims to examine the knowledge of Danish practice physiotherapists regarding severe diseases, as this can be of major importance for patient safety.	The three studies in the project are designed as a cohort study, cross-sectional study, and comparative pre- and post-test study. Data are obtained from national health registers (Public Health Insurance Register, National Patient Register and the Cancer Register) and a questionnaire survey among practice physiotherapists.	HEV (Cecilie Rud Budtz, David Høyrup Christiansen)	AAU: Center for General Practice. Medical consultant and practice consultant for physiotherapy from Region Midt.	Fysioterapipraksisfonden, Danske Fysioterapeuters fond, AU, Hospitalsenheden Vest, RM Forskningsfond. 2.183.500	2019–2023
Translation of safety.	The aim is to develop a method for translating the work environment legislation. The translation should not result in the new wording, but in new meaningful approaches to reach the goal of improving safety procedures and reducing accidents in the building- and construction industry. The project aims to test the effect of the initiatives.	The project is a mixed-methods multi-case study conducted at three building sites. The development project is done in an effect-driven participatory design. The effect is not evaluated statistically but by assessing the development and testing based on more methods (triangulation) providing a 'thick descriptions of the test itself and its context.	HEV (Regine Grytnes, Lars Peter Andersen)	RUC.	AMFF 2.900.000	2019–2021
PASVAP: Acute health effects following exposure to passive vapour from e-cigarettes. A randomised controlled crossover study among COLD patients.	PASVAP aims to examine if passive vapour from e-cigarettes affects the health of COLD patients.	A randomised controlled double-blind crossover study among 16 COLD patients was done at the climate chambers at Aarhus University. The subjects are exposed for respectively pure air and passive vapour for 4 hours with 14 days in between. Their health is measured before, after and 24 hours following exposure.	AU (Karin Rosenkilde Laursen, Torben Sigsgaard) AAUH (Jakob Bønløkke)	AU: Department of Chemistry. AUH: Department of Respiratory Diseases and Allergy. Göteborg Universitet.	–	2016–2021

Title	Aim	Materials and Methods	Internal	External collaboration partners	Funding	Time period
PEXADU: Pesticide Exposure, Asthma and Diabetes in Uganda.	PEXADU aims to examine the possible relationship between exposure to specific pesticides, decreased lung function and increased blood sugar/diabetes.	A short-time cohort study among Ugandan smallholder farmers from September 2018 to February 2019.	AU (Martin Rune Hansen, Vivi Schlünssen, Erik Jørs, Anelli Sandbæk, Daniel Sekabojja, John Ssempebwa, Ruth Mubeezi, Philipp Staudacher, Samuel Fuhrmann)	AU, NFA, OUH, Steno Diabetes Center Aarhus, Makerere University School of Public Health, Uganda National Association of Community and Occupational Health, Swiss Federal Institute of Aquatic Science and Technology, Inst. of Biogeochemistry and Pollutant Dynamics	AU, NFA 2.300.000	2017–2020
PRO-MENTA: Consequences of organisational changes for productivity and mental health.	The project aims to examine the consequence of major organisational changes for employee sickness absence and mental health and workplace productivity and staff turnover to identify risk factors for negative consequences.	A cohort study based on all employees at Aarhus University Hospital in the period 2013–2020. The persons are embedded in their departments and the departments are set equal at an index month 0 defined by moving time. The cohort is followed-up in regional and national registers from 2 years before and 2 years after the move. The exposure is divided into move, move+division, and move+merging.	AUH (Morten Vejs Willert, Lea Nørgaard Sørensen) HEV (Marianne Kyndi)	AU: Department of Psychology and Behavioural Sciences. Bispebjerg Hospital: Department of Occupational and Environmental Medicine.	Velliv Foreningen 2.120.134	2021–2022

Title	Aim	Materials and Methods	Internal	External collaboration partners	Funding	Time period
PRO-RISK: Prognosis for future work life and health and identification of groups at risk for work-related disorders	Aim: 1) To establish a national occupational medicine cohort. 2) To explore the long-term prognosis for the major patient groups. 3) To develop prognostic models for work and health for patients with occupational mental health problems.	The cohort is established in collaboration with DOC*X and includes an app. 160.000 patients examined at the occupational medicine clinics from the year 2000 and forwards. Register data are obtained from 5 years before inclusion and forwards from the National Patient Register, the Public Health Insurance Register and DREAM and other registers. Furthermore, matrices of mental work environment, lifestyle etc. developed by DOC*X is used. The project is solely register-based.	AUH (Morten Vejs Willert) HEV (David Høyrup Christiansen)	AU: Department of Psychology and Behavioural Sciences.	AMFF 1.647.000	2019–2022
QUARTZ: Occupational Exposure to Respirable Crystalline Silica, Styrene and risk of Autoimmune Rheumatic Diseases	To explore the relationship between occupational respirable crystalline silica exposure and systemic scleroderma, rheumatoid arthritis, systemic lupus erythematosus and small-vessel vasculitis and to uncover work conditions leading to high exposure levels of quartz.	Follow-up study of 3 million employees followed from their debut on the labour market, 1979–2015. Quartz levels are estimated using the SYNERGY-JEM, and cases are identified in the National Patient Register.	AUH (Signe Hjuler Boudigaard, Henrik Kolstad) AU (Vivi Schlünssen)	AUH: Departments of Rheumatology and Dermatology. Bispebjerg Hospital: Department of Occupational and Environmental Medicine. Utrecht University. Göteborg Universitet.	AMFF 3.150.545	2017–2021
ReVALUE: Health measured and felt indoor climate before and after renovation of social housing areas.	The study explores how indoor climate exposures affect the respiratory health of the occupiers and finds potential for added value, besides energy efficiency, in housing renovation. Furthermore, how housing renovation affects these conditions.	The study is designed as a prospective longitudinal natural experiment, where the participants are their own control and the renovation is done independently. The data collection is done in the heating and non-heating season. Self-reported data of demography, health, lifestyle and felt climate. Lung function test	AU (Charlotte H Gabel, Grethe Elholm, Søren Kjærgaard)	AART, AIRMASTER, Amplex, Alexandra instituttet, Brabrand boligforening, Develco Products, DEAS, Ene-mærke & Petersen A/S, Helhedsplanen for Gellerup og Tørveshøj, Idealcombi, MTHøjgaard, RACELL og Wicotec Kirkebjerg.	Innovationsfonden 3.500.000	2016–2021

Title	Aim	Materials and Methods	Internal	External collaboration partners	Funding	Time period
		and indoor climate measurements over 14 days.				
RHINE: Risk factors for asthma in adults.	RHINE aims to analyse risk factors for respiratory disease and allergy.	Cohort study based on questionnaires and clinical evaluations.	AU (Vivi Schlünssen, Torben Sigsgaard, Signe Timm, Kathrine Pape Madsen)	Nordic Multicentre study, 7 centres.	Træstøvsfonden 460.000	2010–2023
RHINESSA: Trans-generational study of asthma, allergy and inflammatory bowel disease.	RHINESSA aims to analyse risk factors for respiratory disease and allergy in generations.	Cohort study based on questionnaires and clinical evaluations.	AU (Vivi Schlünssen, Torben Sigsgaard, Signe Timm, Kathrine Pape Madsen)	International multicentre study, 12 centres.	AU Træstøvsfonden 2.000.000	2013–2023
Long-term health consequences of electrical shocks.	This study aims to explore the extent and severity of late complications after electrical shocks.	A retrospective register-based matched cohort study exploring permanent complications, disease, use of health services, and occupational prognosis following electrical shocks. A prospective cohort study exploring the incidence and characteristics of electrical injuries among 70.000 electricians, and consequent development of symptoms and diseases.	HEV (Anette Kærgaard, Karin Biering, Ole Carstensen, Kent Nielsen)	The Danish Union of Electricians.	AMFF 3.000.000	2017–2021
SERMAB: Styrene Exposure and Risk of Malignant Blood diseases.	To examine if exposure to styrene, a versatile plastic, increases the risk of malignant blood diseases in humans.	Follow-up study of 100.000 persons, who since 1947 have worked in 762 fibre-glass companies in Finland, Italy, Great Britain, USA and Denmark. Malignant blood diseases are identified in national registers of causes of death and cancer registers. Exposure levels are determined using an industry-specific quantitative JEM.	AUH (Mette Wulf Christensen, Henrik Kolstad) AU (Vivi Schlünssen)	AUH: Department of Haematology, Finnish Cancer Registry, San Martino Teaching Hospital, Liguria Mesothelioma Registry, Emilia-Romagna University Hospital, Turin MRC, Life Course Epidemiology Unit Southampton, IOM, NIOSH, IsGloba, University of Nebraska, IARC, STAMI.	Karen Elise Jensens Fond 2.500.000	2021–2023

Title	Aim	Materials and Methods	Internal	External collaboration partners	Funding	Time period
Safe farms.	The aims are to develop and pilot test a multifaceted intervention for improving safety on farms and preventing work accidents, including developing an observation tool for a systematic analysis of the safety level on farms and identifying focus areas.	Randomised controlled pilot study on 12 farms (6 intervention, 6 control).	HEV (Ole Carstensen, Kent Nielsen, David Christiansen)	NFA. SEGES.	AMFF 2.500.000	2018– 2021
Shoulder-review	The aim is to identify occupational strains leading to shoulder injuries and decide when the strain itself or in combination with other strains are sufficient for causing shoulder injuries.	A systematic review of the existing literature. The literature search strategy includes MEDLINE (PubMed), Web of Science and Embase. Potentially relevant papers are transferred to Covidence, where exclusion of papers is done by 2 reviewers. Selected papers are presented in tables and quality assessed using formal quality systems by 2 reviewers. Meta-analyses are done if possible. For each occupational strain, arguments for and against a possible causality be evaluated by GRADE.	AUH (Annett Dalbøge, Alexander Jahn Jensen) HEV (Johan Hviid Andersen)	Bispebjerg Hospital: Department of Occupational and Environmental Medicine.	AMFF 359.144	2021– 2022
The impact of social inequality and insecurity on the risk of early signs of cardiovascular and metabolic disease in young adults.	To examine which psychosocial factors in adolescence are mediating factors for socioeconomic status' influence on cardiovascular risk markers in young adults. Significance of social inequality and insecurity for development of overweight in 12 years.	This ph.d.-project is based on the VestLiv cohort, a longitudinal epidemiological study. This project follow-up when the participants are 27/28-years old with a new questionnaire, and 300 are selected for clinical evaluations of early signs of cardiovascular and metabolic	HEV (Mia Klinkvort Kempel, Trine Nøhr Winding, Johan Hviid Andersen)	Hjerteforskningsklinikken, Kardiologisk Afdeling, Regionshospitalet i Herning.	Karen Elise Jensens Fond 2.200.00	2017– 2021

Title	Aim	Materials and Methods	Internal	External collaboration partners	Funding	Time period
		disease, with a particular focus on cardiovascular risk factors and overweight.				
SPRINT: Sustainable plant protection products and their effects on ecosystems, plants, animals and humans	SPRINT aims at exploring pesticides (plant protection products) in humans, animals, plants and ecosystems in 11 European countries and Argentina.	Among conventional and ecological farms, neighbours and families living close by will examine the occurrence of pesticides. Based on these results we will develop a tool to evaluate the pros and cons of pesticide use in the EU.	AU (Anne Vested, Kirsten Østergaard, Vibeke Heitmann Gutzke, Torben Sigsgaard, Vivi Schlünssen)	21 European partners. The coordinating centre is Wageningen University in Holland.	Horizon 2020. H2020-SFS-2018-2020. 1.567.000	2020-2024
A systematic review of dose-response relation in the development of asbestosis for AMFF/AES.	Evaluation (report and paper) of existing knowledge on causes and diagnosis of asbestosis, including assessing dose-response relations.	Literature review.	AAUH (Trine Østergaard, Jakob Bønløkke) AU (Vivi Schlünssen) AUH (Henrik Kolstad)	Bispebjerg Hospital: Department of Occupational and Environmental Medicine. Odense University Hospital: Occupational and Environmental Medicine and Respiratory Medicine Gentofte Hospital.	AMFF 540.000	2020-2021

Title	Aim	Materials and Methods	Internal	External collaboration partners	Funding	Time period
After all – working with a smile. Workplace protection of employees against stress reactions and high emotional demands.	1. To identify workplace protective factors for reducing the relation between emotional demands and mental health problems. 2. To explore how workplaces with high emotional demands effectively at the individual, group, and workplace level prevent mental health problems as a consequence of high emotional demands, and the factors impacting the success of the preventive initiatives 3. Based on the results obtained, to develop and validate guidelines for the prevention of mental health problems in occupations with high emotional demands.	3 rounds of questionnaires in professions with high work demands. Qualitative interviews at selected workplaces with successful preventive strategies.	HEV (Lars Peter Andersen, Dorte Raaby Andersen)	Odense University Hospital: Occupational and Environmental Medicine.	AMFF 2.132.000	2020–2023
Cross-organisational intervention against stress.	The project aims to conduct and evaluate an intervention to prevent organisational stress.	The intervention is conducted at 3 large companies. The effect of the intervention is evaluated both quantitatively in an interrupted time-series design and qualitatively by interviews and observations.	HEV (Trine Nøhr Winding)	AU: Department of Psychology and Behavioural Sciences. NFA.	AMFF 2.100.000	2019–2022
Ultrafine – Acute health effects following exposure to fine and ultrafine particles from candles and cooking smoke. A randomised controlled crossover study in young asthmatics.	The ultrafine project I designed to clarify if exposure to fine and ultrafine particles from candles and cooking smoke causes health problems in young asthmatics.	A randomised controlled double-blind crossover study among 36 young asthmatics. The subjects are exposed to clean air, candles and cooking smoke for 5 hours. The exposures are done with 14 days in between. The subjects' health is measured before, after, and 24 hours following exposure.	AU (Karin Rosenkilde Laursen, Torben Sigsgaard)	AU: Departments of Chemistry and Clinical Medicine KU: Department of Public Health.	Realdania 2.800.000	2017–2021

Title	Aim	Materials and Methods	Internal	External collaboration partners	Funding	Time period
Mental wellbeing of young people in their first job. Impact of performance, work environment and temporariness.	The aim is to clarify how temporariness, performance culture and work environment impact the mental wellbeing of young people in their first job.	The youth cohort 'Vestliv' is used to explore the significance of mental health in youth about mental health in the early working life, as well as the significance of temporary employment and work environment strain on the development of mental health problems. Additionally, 50 interviews of young people in their first job in professions characterised by temporariness, mental health problems and performance pressure.	AU (Trine Nøhr Winding, Regine Grytnes, Luna Marie Nielsen, Mette Toft Rønberg)	Cefu. AAU.	Velliv Foreningen 2.194.654	2020–2022
Violence in psychiatric departments in the Region of Southern Denmark.	A study of short- and long-term stress and trauma reactions following severe violence and threat incidents in psychiatric workplaces and protecting effect of social support at the workplace.	1. To clarify the frequency and extent of short- and long-term stress and trauma reactions following severe workplace violence and threat incidents. 2. To explore if social support at the workplace after exposure to severe violence is protective for the development of stress and trauma reactions.	HEV (Lars Peter Andersen)	Odense University Hospital: Occupational and Environmental Medicine.	Region Syddanmark 500.000	2019–2021

Title	Aim	Materials and Methods	Internal	External collaboration partners	Funding	Time period
Violence, threat and harassment against public school teachers.	To explore the frequency of violence, threat and harassment against school teachers. To identify risk and protective factors in the work environment concerning violence, threats and harassment. To analyse the relationship between violence, threats and harassment and the teachers' mental health and work commitment. To identify protective factors for teachers' mental health and work commitment following exposure to violence, threats and harassment. To develop preventive initiatives for school leaders, school directing boards and work environment representatives based on the results obtained in the project.	2 questionnaire studies among teachers and leaders at 98 schools with one year in between. 3 short questionnaire studies with 3 months in between. Qualitative interviews with teachers, leaders, and work environment representatives (AMIR) at 13 schools.	HEV (Lars Peter Andersen, Trine Nørh Winding)	NFA (Birgit Aust).	AMFF 3.000.000	2018– 2021

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