3rd Japan – Germany Symposium on Advanced Preventive Medicine 2021

Date: 4\textsuperscript{th}-6\textsuperscript{th} of March 2021

Place: Online
Table of Content

page 3  – Schedule for Thursday (4th of March)
page 4  – Schedule for Friday (5th of March)
page 5  – Schedule for Saturday (6th of March)
page 7  – Chairs and Speakers from Kanazawa University
page 29 – Chairs and Speakers from Chiba University
page 32 – Chairs and Speakers from Nagasaki University
page 40 – Chairs and Speakers from HHU / Düsseldorf University
### Thursday, March 4th

<table>
<thead>
<tr>
<th>Time Japan: 16:00~</th>
<th>Opening remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time Germany: 8:00~</td>
<td>Prof. Heiner FANGERAU (HHU)</td>
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</tbody>
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#### 1st Session: Preventive Medicine and Health Promotion
Chair: Prof. Chisato MORI (Chiba)

1. Association between levels of PCB in maternal serum with birth weight of newborn in C-MACH study  
   - Prof. Akifumi EGUCHI (15 min)

2. The tumor microenvironment in hepatocellular carcinoma: Interaction with cancer stem cells and therapeutic targets  
   - Prof. Tatsuya YAMASHITA (15 min)

3. Walkable Design in Practice  
   - Prof. Hiroaki YOSHIDA (15 min)

4. Association of FTO genotype with obesity and bone health  
   - Xiao XU (15 min)

Coffee Break  
(15 min)

#### Special Session: Covid-19 and Prevention
Chair: Prof. Hiroshi ICHIMURA (Kanazawa) and Prof. Heiner FANGERAU (HHU)

1. Ethical aspects of public health measures against Covid-19 in Germany  
   - Dr. Matthis KRISCHEL (25 min)

2. COVID-19 and Hygiene hypothesis  
   - Prof. Masaharu TOKORO (25 min)

3. How COVID-19 lockdown in China significantly influenced the air pollutants at the Wajima Air Monitoring Station of Japan  
   - Hao ZHANG (15 min)

Closing remarks  
Prof. Kiyoshi AOYAGI (Nagasaki)
### Friday, March 5th

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<th>Time Japan: 16:00~</th>
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<td>Time Germany: 8:00~</td>
<td>Prof. Shuichi KANEKO (Kanazawa)</td>
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#### 2nd Session: Immunology and Infection Session
**Chair:** Prof. Atsushi KAWAKAMI (Nagasaki)

1. **HTLV-1 infection and age-associated health problems**
   - Dr. Hiroto YAMANASHI (15 min)

2. **A prospective cohort study of rheumatic disease in a residential health checkup-based healthy population: prediction of rheumatoid arthritis and IgG4-related disease development**
   - Yoshika TSUJI (15 min)

3. **Current status and future prospects in the diagnosis and treatment of familial Mediterranean fever in Japan**
   - Dr. Tomohiro KOGA (15 min)

4. **ISGylation and de-ISGylation in HIV infection and inflammation**
   - Prof. Carsten MÜNK (25 min)

#### Special Lecture of Diabetes and Metabolism Session - PART 1
**Chair:** Prof. Michael Roden (DDZ / HHU) and Prof. Toshinari TAKAMURA (Kanazawa)

1. **Air pollution and complications of diabetes**
   - Prof. Christian HERDER (25 min)

#### Coffee Break
(15 min)

#### Special Lecture of Diabetes and Metabolism Session - PART 2
**Chair:** Prof. Michael RODEN and Prof. Toshinari TAKAMURA

2. **Precision medicine in metabolic diseases - Identifying subgroups of diabetes**
   - Prof. Michael RODEN (ca.25 min)

3. **Association between chronic pain and serum 25-hydroxyvitamin D concentrations**
   - Dr. Keita SUZUKI (25 min)

4. **Biomarkers of inflammation in novel subgroups of patients with recent-onset diabetes: German Diabetes Study**
   - Dr. Haifa MAALMI (15 min)

5. **Using statutory health insurance data to evaluate patterns of healthcare utilization and associated factors of patients with diabetes in Germany**
   - Ute LINNENKAMP (15 min)

#### Closing Remarks
Prof. Michael RODEN (HHU)
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<td>Dr. Tamara SCHIKOWSKI (IUF/HHU)</td>
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<th>3rd Session:</th>
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<td>Cell Biology and Immunology</td>
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<td>Chair: Prof. Yuji NAGAYAMA (Nagasaki)</td>
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1. Genetic and functional diversity of leukocyte immunoglobulin-like receptor family in humans
   - Prof. Kouyuki HIRAYASU (20 min)

2. Transcription factor regulation of CD8 T cell differentiation
   - Prof. Makoto KURACHI (20 min)

3. Circadian clocks in senescent cells: a possible strategy to fight aging
   - Dr. Yasukazu NAKAHATA (15 min)

**Remark by the President of 4th Japan-Germany Symposium on Advanced Preventive Medicine 2022**
Prof. Yuji NAGAYAMA (Nagasaki)

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**Special Lecture:**
Atmospheric Environment and Health
Chair: Prof. Hirohito NAKAMURA (Kanazawa) and Dr. Tamara SCHIKOWSKI (IUF/HHU)


1. Effect of atmospheric particulate matters on respiratory symptoms in people with chronic cough
   - Akinori HARA (20 min)

2. Gene-environment interaction effects on respiratory health
   - Sara KRESS (20 min)

3. Skin aging in Indians living in highly polluted areas
   - Pia JAHAN (10 min)

4. The potential health effects of Temperature and Air Pollution interaction
   - Ashtyn AREAL (10 min)

5. Air pollution exposure and respiratory health of office workers in current China: a pilot survey in a heavy-polluted region
   - Xuan ZHANG (10 min)

**Special Session:**
Atmospheric Environment and Monitoring
Chair: Prof. Kazuichi HAYAKAWA (Kanazawa)


1. The unique source of polycyclic aromatic hydrocarbons on the northwestern highland of China
   - Lulu Zhang (10 min)
2. Characteristics of PM$_{2.5}$-bound polycyclic aromatic hydrocarbons at a roadside air pollution monitoring station at Yamashina, Kanazawa from 2017 to 2020  
   - Wanli XING (10min)

3. Seasonal characteristic and health risks of PM$_{2.5}$-bound polycyclic and nitro-polycyclic aromatic hydrocarbons in Shenyang, China  
   - Pengchu BAI (10min)

4. Atmospheric behavior comparison of polycyclic aromatic hydrocarbons (PAHs), Nitro-PAHs (NPAHs), and water-soluble inorganic ions (WSIIs) at two background sites in Japan  
   - Lu YANG (10min)

5. Analysis of compositional variation and source characteristics of Water-soluble ions in TSP at a remote background site in Japan (Wajima) from 2005 to 2015  
   - Yan WANG (10min)

**Closing Remarks**

Prof. Atsushi TAJIMA (Kanazawa)
Hiroshi ICHIMURA, MD & PhD
Professor, Department of Viral Infection and International Health;
Graduate School of Advanced Preventive Medical Sciences/
Graduate School of Medical Sciences, Kanazawa University
E-mail: ichimura@med.kanazawa-u.ac.jp
Web site: http://virus.w3.kanazawa-u.ac.jp/

Research projects:

1. Viral and host factors associated with disease progression in children with HIV infection
2. Impact of anti-retroviral therapy (ART) on the immune status and gut microbiota of HIV-infected children
3. Viral and host factors associated with the virulence of enterovirus 71 that causes Hand-Foot-and-Mouth disease
4. Monitoring of neutralizing antibody in the convalescent patients with COVID-19

Key publications:

Educational background & professional experience:

1974–1980  Yamaguchi University School of Medicine. License of Medical Doctor (No. 251554).
1980–1984  Tottori University Graduate School of Medical Sciences, Doctor of Medical Science.
1985–1987  Research Associate, Department of Biochemical Virology, Baylor College of Medicine, USA.
1991–1992  International Scholarship Doctor for 1991 of the Japan Ministry of Health, Labor and Welfare; Cancer Research Institute, University of California, San Francisco, School of Medicine, USA.
1994–1994  Assistant Professor, Department of Microbiology, Kyoto Prefectural University of Medicine.
1994–1999  Associate Professor, Department of Microbiology, Kyoto Prefectural University of Medicine.
1999–       Professor, Department of Viral Infection and International Health, School of Medicine, Kanazawa University
2018–2020  Dean, Graduate School of Advanced Preventive Medical Sciences, Kanazawa University.

Award:     2016 "Medal for People's Health" from the Ministry of Health, Vietnam.
            2011 Honorary Professor of Hanoi Medical University, Vietnam (No. 156/QD-DHYHN)
            2012 Honorary Professor of Hai Phong Medical University, Vietnam (No. 720/QD-DHYHP)
Fig. Epidemiology for life-style related diseases in Shika town in Japan

Research projects:
1. Basic and epidemiologic research on the effects of ambient chemicals on allergic diseases
2. Epidemiology on the effects of lifestyles on non-communicable disease including obesity, diabetes, vertebral and cardiovascular, renal, and respiratory diseases and musculoskeletal systems
3. Effects of physical and chemicals and stress assessment in workplaces

Key publications:
1) Suzuki F et al., PLoS One. 2021Feb 26;16(2)
2) Suzuki K et al., J Pain Res. 2020 Nov 19;13:2987-2996
4) Hara A et al, Biomarkers. 2020 Nov;25(7):587-593
5) Miyagi S et al, J Diabetes Investig. 2020 Sep 10
6) Tsujiguchi H et al, Nutrients. 2020 Jul 28;12(8)
8) Nakamura H et al, Nutrients. 2019 Apr 23;11(4)
9) Tsujiguchi H et al, Nutrients. 2019 Apr 3;11(4)
10) Thi Thu Nguyen T et al, Nutrients. 2019 Feb 13;11(2)
11) Hirota R et al., Allergy. 2019 May;74(5):996-999
16) Anyenda EO et al, 2016 Atmospheric Environment. 140, 34-41
18) Ogino K et al, 2016 Free Radic Res. 50 (11) 1165-1172
20) Fukutomi Y et al, 2014 Allergy. 69 (10) 1405-11
21) Higashi T et al, 2014 Atmospheric Environment. 92, 506-513
22) Higashia T et al., 2014 Atmospheric Environment. 97, 537-543

Educational background & professional experience:
1985 Graduate from Kanazawa University School of Medicine
1988-86 Researcher at Johannes Gutenberg-Universität Mainz. FRG
1989 Graduated from Kanazawa University Graduate School of Medicine (PhD)
2003-07 Professor of Kochi University School of Medicine (Department of Environmental Medicine)
2007- Professor of Kanazawa University School of Medicine (Department of Environmental and Preventive Medicine
2016-18 Dean, Graduate School of Advanced Preventive Medical Sciences, Kanazawa University
2017- Director of Center of Advanced Preventive Medical Sciences, Kanazawa University
2018- Dean, School of Medical, Pharmaceutical and Health Sciences, Kanazawa University

Awards:
1991: Incentive Award from Japanese Hygiene Society
2004: Prize of the Society of Fitness, Nutrition and Immunity
Toshinari TAKAMURA, MD & PhD
Professor, Department of Endocrinology and Metabolism, Kanazawa University Graduate School of Medical Sciences
E-mail ttakamura@med.kanazawa-u.ac.jp
Web site https://metabology.w3.kanazawa-u.ac.jp/english/

Research projects:
1. Basic and clinical research on pathophysiology and treatment of diabetes, obesity, and their complications
2. Pathological trajectories of non-alcoholic fatty liver disease
3. Hepatokine-mediated inter-organ networks in diabetes and obesity

Key publications:
1. Cell Host Microbe 25:588-601.e7, 2019
2. Sci Rep 8:16727, 2018
7. Diabetes 63:1649-64, 2014
17. Diabetologia 47:638-647, 2004

Educational background & professional experience:
1988~ Kanazawa University Graduate School of Medical Science
1992 Awarded the degree of PhD in Internal Medicine)
1993~ Department of Biochemistry, Tohoku University (Prof. Hiroshi Okamoto)
1994~ Special Researcher, Japan Society for the Promotion of Science
1997~ Assistant Professor, Department of Endocrinology and Metabolism, Kanazawa University Hospital
2001~ Associate Professor
2014~ Professor, Department of Endocrinology and Metabolism, Kanazawa University Graduate School of Medical Sciences

Award: 2018 Commendation for Science and Technology by the Minister of Education, Culture, Sports, Science and Technology
Shuichi Kaneko, MD

Professor, Department of system biology,
Kanazawa University Graduate School of Medical Sciences
Director, WHO Collaborating Center for Chronic Hepatitis and Liver Cancer
E-mail: skaneko@med.kanazawa-u.ac.jp

Research projects:
1. Research on clinical epidemiology of hepatitis and HCC.
2. Understanding of carcinogenesis of HCC.
3. Development of new diagnosis and treatment for HCC.

Key publications:

Education:
1982 Graduate from Kanazawa University School of Medicine (MD)

Honors:
2004 Industry-Academia-Government Collaboration Service Award from Minister
2014 Science and Technology Award from Japanese Ministry of Education, Culture, Sports, Science and Technology
2015 The “Khubilai Khan” Gold Medal of the Mongolian Academy of Sciences
2015 Industry-Academia-Government Collaboration Service Award Minister Award of Japanese Ministry of Economy, Trade and Industry
COVID-19 and Hygiene hypothesis

Masaharu TOKORO, MD & PhD
Associate Professor and Chief, Department of Parasitology, Graduate School of Medical Sciences, and Director, International Preventive Medicine Section, Advanced Preventive Medical Sciences Research Center, Kanazawa University.

E-Mail: tokoro@med.kanazawa-u.ac.jp
Web site: https://www.parasitology.jp/

Abstract: In the field of parasitology, although it was initially concerned that the co-infection of SARS-CoV-2 and various parasites may promote severe conditions on the clinical sequence of COVID-19, the impacts of COVID-19 in developing countries have been rather milder than the damages in industrialized countries (Fig. 1). The COVID-19 mortality rate is clearly multifactorial indicator depending on various factors, such as the socioeconomic conditions and the population demographics of each country. However, the hygiene hypothesis appears to be a relatively promising explanation for the lower COVID-19 mortality in those low-income countries. The most important but unresolved question in the hygiene hypothesis is what factor lacking in the hygiene environment could triggers such deleterious effects of COVID-19.

It is worth mentioning that parasites might be one of the candidates representing low-hygiene condition. The hygiene hypothesis, especially the notion of lost friends theory, is quite convincing to parasitologists, because the widespread presence of various parasites among humans and animals is a typical landscape of rural areas in developing countries. Such old friends may have constituted an essential initial immunological stimulus for the maturation of the human immune system, and in this regard, the immaturity, that is common in those industrialized areas, seems to allow the cytokine storm by COVID-19.

In this presentation, I would like to discuss the potential therapeutic applications using parasites to control the development of cytokine storm by COVID-19.

Fig. 1 Higher mortality rates of COVID-19 observed among people in higher-GDP countries.

Nominal GDP per capita (2018) vs. COVID-19 mortality rates per 1 million population (2020.9.24) are linearly related. The countries more than 20 million population were included for this analysis.

The countries were categorized to following four groups.
Group I: high GDP and high mortality countries.
Group II: high-mid GDP and mid-low mortality countries.
Group III: mid GDP and high mortality countries.
Group IV: low GDP and mid-low mortality countries.
No country with low income and high mortality was found.

Current research focuses: As an expert of PARASITOLOGY, I've been engaged in the studies regarding molecular evolution and taxonomy of human-related protozoan parasites. Molecular epidemiological investigations targeting various pathogenic and commensal parasites in human population have been conducted in Kenya and Indonesia. Currently my research focus is further extended to the roles of commensal protozoans in human gut microbiota. The potential therapeutic utility of parasites for autoimmune and allergic diseases is pursued through re-evaluati of the "pathogenicity" of parasites to those residents living under parasites-endemic status.

Representative publications related to the hygiene hypothesis:
Atsushi Tajima, PhD
Dean, Graduate School of Advanced Preventive Medical Sciences, Kanazawa University
Professor, Department of Bioinformatics and Genomics,
Graduate School of Advanced Preventive Medical Sciences, Kanazawa University
E-mail: atajima@med.kanazawa-u.ac.jp
Web site: http://big.w3.kanazawa-u.ac.jp/

Research projects:
1. Genetics and genomics research to identify novel factors that contribute to inter-individual differences in disease susceptibility and quantitative traits in humans
2. Research on AI-related technologies for outcome predictions, identification of high-risk individuals and prediction of disease onset and severity for the realization of precision medicine

Recent publications (selected):
5. Science 361(6397):88-92, 2018

Education:
1990 B.Pharm., Faculty of Pharmaceutical Sciences, Kyoto University, Japan
1992 M.Pharm., Department of Pharmacology, Kyoto University, Japan
2002 Ph.D., Department of Biosystems Sciences, The Graduate University for Advanced Studies (SOKENDAI), Japan

Professional experience:
2002 – 2004 Postdoctoral Fellow, The Graduate University for Advanced Studies (SOKENDAI), Japan
2004 – 2006 Project Research Associate, Institute of Medical Science, The University of Tokyo, Japan
2006 – 2007 Project Research Associate, School of Medicine, Tokai University, Japan
2007 – 2009 Research Associate, School of Medicine, Tokai University
2009 – 2010 Lecturer, School of Medicine, Tokai University
2010 – 2014 Associate Professor, Department of Human Genetics, Institute of Health Biosciences, The University of Tokushima Graduate School, Japan
2014 – Professor, Department of Bioinformatics and Genomics, Graduate School of Advanced Preventive Medical Sciences, Kanazawa University, Japan
2020 – Dean, Graduate School of Advanced Preventive Medical Sciences, Kanazawa University
Tatsuya Yamashita, MD, and PhD

Associate Professor, Advanced preventive medical sciences research center, Kanazawa University

Department of Gastroenterology, Kanazawa University Hospital
WHO Collaborating Center for Chronic Hepatitis and Liver Cancer

E-mail: ytatsuya@m-kanazawa.jp
Website: https://cellmeta.w3.kanazawa-u.ac.jp/

Area of interest:

1. Diagnosis and Treatment of Hepatocellular carcinoma
2. Diagnosis and Treatment of Viral Hepatitis

Education:

1993   Graduate from Kanazawa University School of Medicine (MD)
1998   Graduate from Graduate School of Medicine, Kanazawa University (PhD)

Career Experiences:

January 2018: Associate Professor, Advanced preventive medical sciences research center
April 2016: Lecture, Department of Gastroenterology, Kanazawa University Hospital
April 2009: Research Professor, Center for Education in Community Medicine, Kanazawa University Hospital
June 2014: Secondment, Global Hepatitis Programme, Department of HIV, World Health Organization
April 2001: Assistant Professor, Department of Gastroenterology, Kanazawa University Hospital
October 1: Medical staff, Department of Gastroenterology, Kanazawa University Hospital
Abstract:
We have isolated, and identified cancer stem cells (CSCs), which have played an essential role in the development, proliferation, and distant metastasis of hepatocellular carcinoma (HCC) and have identified the relationship between the diversity of CSCs and malignant progression in HCC. CSCs are present in the invasion frontier and are associated with a variety of stromal cells. It is believed that this tumor microenvironment is created to respond to external and internal stresses such as cancer immunity or anti-cancer drugs. This study aims to elucidate the tumor microenvironment induced by CSCs and identify new therapeutic targets in HCC. Since chemokines play an essential role in cancer immunosuppression that promotes CSCs in the tumor microenvironment, we examined the cancer immunosuppression induced by CSCs and chemokines. We found chemokine (C-C motif) ligand 20 (CCL20) as one of the cytokines through stem-cell-related gene expression analysis in the human HCC tissues. Serum CCL20 was related to prognosis, suggesting that it could be a biomarker. In the tissue immunostaining, the CCL20 receptor, CCR6, was expressed in the tumor's stroma cells. High CCL20 expression was related to the enrichment of EpCAM-positive CSCs. In the animal and cell culture model, we found the CCL20-CCR6 axis is related to the tumor microenvironment to promote cancer progression in HCC. The CCL20-CCR6 axis could be a potential therapeutic target.
Transcription factor regulation of CD8 T cell differentiation

Makoto Kurachi, MD & PhD
Professor, Department of Molecular Genetics, Kanazawa University Graduate School of Medical Sciences
E-mail kurachi@med.kanazawa-u.ac.jp
Web site http://molgenet.w3.kanazawa-u.ac.jp/wordpress/

Abstract:
Several transcription factors (TFs) including T-bet, Eomes, Runx3, Id2 and Blimp-1 are known to regulate the expression of genes essential for CD8+ effector T cells such as IFN-γ and perforin. However, CD8+ T cells that lack T-bet, Eomes, Id2 or Blimp-1 acquire many features of normal effector T cells and are competent to form T cell memory. One interpretation of these relatively mild defects in single transcription factor (TF)-deficient settings is that functional redundancy exists between TFs known to be involved in CD8+ effector differentiation. Alternatively, or in addition, other TFs may exist that are upstream and/or more fundamental to the regulation of CD8+ T cell differentiation.

The transcription factor BATF is required for interleukin 17 (IL-17)-producing helper T cell (TH17) and follicular helper T cell (TFH) differentiation. Here, we show that BATF also has a fundamental role in regulating effector CD8+ T cell differentiation. BATF-deficient CD8+ T cells show profound defects in effector expansion and undergo proliferative and metabolic catastrophe early after antigen encounter. BATF, together with IRF4 and Jun proteins, binds to and promotes early expression of genes encoding lineage-specific transcription-factors (T-bet and Blimp-1) and cytokine receptors, while paradoxically repressing genes encoding effector molecules (IFN-γ and granzyme B). Thus, BATF amplifies TCR-dependent transcription factor expression and augments inflammatory signal propagation but restrains effector gene expression. This checkpoint prevents irreversible commitment to an effector fate until a critical threshold of downstream transcriptional activity has been achieved.

Research interests:
1. Molecular mechanisms of CD8 T cell differentiation (effector, memory and exhaustion)
2. Interaction of transcription factors
3. Anti-virus and anti-tumor immunity provided by CD8 T cells

Key publications:
3. Immunity. May 19;52(5):825-841.e8, 2020

Educational background & professional experience:
1997 M.D. Kanazawa University, Faculty of Medicine
2002 Ph.D. Kanazawa University, Graduate School of Medicine
2000–2011 Department of Molecular Preventive Medicine, The University of Tokyo (Prof. Kouji Matsushima)
2011–2018 Post-doc and research associate, University of Pennsylvania (Prof. John Wherry)
2018~ Professor, Department of Molecular Genetics, Kanazawa University Graduate School of Medical Sciences
Keita Suzuki  
Department of Public Health,  
Graduate School of Advanced Preventive Medical Sciences, Kanazawa University  
E-mail keitasuzuk@stu.kanazawa-u.ac.jp

Abstract: We aim to elucidate the association between lifestyles and the development of many kinds of diseases using epidemiological methods. We have held a cohort study in Shika town that is a rural area located in Noto peninsula, Ishikawa. In particular, we have been trying to elucidate risk factors associated with the development of chronic pain. Although the effects of vitamin D on chronic pain have been investigated in many previous studies, it remains debated. Therefore, we assessed the association between chronic pain and serum 25-hydroxyvitamin D concentrations with the stratification of subjects by factors considered to affect the association. The results showed that the association between deficiency of serum 25-hydroxyvitamin D and prevalence of chronic pain was observed in subjects with drinking habits. Our findings will contribute to the development of tailored treatment for chronic pain. We also take part in a national cohort study called the Japan Diabetes and Obesity Study. This study included more than 700 patients with type 2 diabetes or obesity across Japan and had investigated the development of cardiovascular disease and chronic kidney disease for 5 years. Zaharia OP and colleagues from German Diabetes Center have reported novel subgroups of type 2 diabetes. Therefore, we also divided the Japanese patients of the cohort using clustering analysis that is the same method as the previous study. Then, the characteristics of each cluster of the Japanese cohort were compared with those of the German cohort. Furthermore, our group is developing a collaboration study with professor Michael Roden and professor Cristian Herder groups. We are going to exam the effects of several genes reported to be altered methylation 52 weeks after a metabolic surgery on muscle insulin sensitivity. We will demonstrate the tentative study plan.

Research projects:
1. Epidemiological study on the effects of lifestyles on chronic pain
2. National cohort study of patients with obesity and metabolic syndrome
3. Basic research on pathophysiology of diabetes

Key publications:
2. J Diabetes Investig:jdi.13402, 2020
4. Nutrients 12:nu12082258, 2020
5. Prog Rehabil Med:prm.20200008, 2020
6. Nutrients 11:nu11040911, 2019
7. Nutrients 11:nu11020389, 2019
8. Nutrients 10:nu10121825, 2018

Educational background & professional experience:
2018 – present Department of Public Health, Graduate School of Advanced Preventive Medical Sciences, Kanazawa University  
2015 – 2018 Assistant Professor, Department of Rehabilitation, Faculty of Health Science and Technology, Kawasaki University of Medical Welfare  
2013 – 2015 Master's Program in Rehabilitation, Graduate School of Health Science and Technology, Kawasaki University of Medical Welfare  
2009 – 2013 Department of Rehabilitation, Faculty of Health Science and Technology, Kawasaki University of Medical Welfare
Effect of atmospheric particulate matters on respiratory symptoms in people with chronic cough

Akinori Hara, MD
Department of Environmental and Preventive Medicine, Kanazawa University, Ishikawa, Japan
E-mail ahara@m-kanazawa.jp
Web site http://publichealth.w3.kanazawa-u.ac.jp/index-en.html

Abstract:
To clarify the relationship between particulate matters (PM) and their components and respiratory diseases with chronic cough, epidemiological studies in combination with the measurement of PM components, especially polycyclic aromatic hydrocarbons, are under conducted. Through these studies, standards of the atmospheric concentration for PM components are expected to be revised to prevent the development and progression of diseases with chronic cough, especially in health-vulnerable populations.

Research projects:
1. Biochemical and epidemiological research on the causal relationship between PM elements and respiratory diseases with chronic cough
2. Prospective cohort study on lifestyle-related diseases in a Japanese rural area
3. Analysis of gene-environment interactions in lifestyle-related diseases

Related publications in the present topic:

Educational background & professional experience:
2000~ Kanazawa University Graduate School of Medical Science
2006 Awarded the degree of PhD in Internal Medicine
2010~ Assistant Professor, Section of Emergency Medicine, Kanazawa University Hospital
2012~ Assistant Director, Health Policy Bureau, Ministry of Health, Labour and Welfare
2014~ Associate Professor, Kanazawa University
Genetic and functional diversity of leukocyte immunoglobulin-like receptor family in humans

Kouyuki HIRAYASU, PhD

Associate Professor, Advanced Preventive Medical Sciences Research Center, Kanazawa University
E-mail: hirayasu@med.kanazawa-u.ac.jp
Web site: http://immunology.w3.kanazawa-u.ac.jp/index2.html

Abstract: Genes of the leukocyte immunoglobulin (Ig)-like receptor (LILR) family are located on human chromosome 19q13.4, within the leukocyte receptor complex (LRC) region, which includes the genes encoding a number of immunoglobulin superfamily receptors, such as leukocyte associated Ig-like receptors and killer Ig-like receptors (KIRs). The LILR gene cluster differs greatly in the number of genes and amino acid sequences among species, owing to their species-specific evolution. Human LILRs comprise 11 protein-coding genes and two pseudogenes, comprising five inhibitory receptors, five activating receptors, and one soluble form. LILR genes show high genetic diversity, including copy number variations and functional SNPs, resulting in large inter-individual differences. It is still unclear why the LILR family shows such remarkable genetic diversity. In general, inhibitory LILRs are involved in immune regulation by recognizing self-molecules such as HLA class I molecules. However, our recent studies have revealed that some pathogenic microorganisms and tumor cells use inhibitory LILRs to escape from host immunity. In contrast, the activating receptors of the LILR family play a role in defense against pathogenic microorganisms. These data suggest that the LILR family has co-evolved with microbial pathogens, which have diversified their functions in humans. In this symposium, I will introduce the genetic and functional diversity of the LILR family in humans.

Research projects:
4. Host-microbe interaction through leukocyte receptor complex
5. Genetic association study of leukocyte receptor complex
6. Immune evasion mechanism that targets host inhibitory receptors

Key publications:
10. J Hum Genet. 2021 (Online ahead of print)
12. Nature. 562:605–9, 2018

Educational background & professional experience:
2004 B.S., The University of Tokyo
2006 M.S., The University of Tokyo
2008~ JSPS Research Fellow
2009 Ph.D., The University of Tokyo
2010~ Postdoctoral Fellow, WPI Immunology Frontier Research Center, Osaka University
2012~ Assistant Professor, WPI Immunology Frontier Research Center, Osaka University
2018~ Associate Professor, Advanced Preventive Medical Sciences Research Center, Kanazawa University

Award: 2019 The Young Scientists’ Award, the Commendation for Science and Technology by the Minister of Education, Culture, Sports, Science and Technology
Atmospheric behavior comparison of polycyclic aromatic hydrocarbons (PAHs), Nitro-PAHs (NPAHs), and water-soluble inorganic ions (WSIIs) at two background sites in Japan

Lu Yang1, Hao Zhang1, Xuan Zhang1, Wanli Xing1, Yan Wang1, Akinori Takami2, Kei Sato2, Atsushi Shimizu2, Ayako Yoshino2, Naoki Kaneyasu3, Lulu Zhang4, Atsushi Matsuki4, Kazuichi Hayakawa4, and Ning Tang4, 5

1 Graduate School of Medical Sciences, Kanazawa University; 2 National Institute for Environmental Studies, Japan; 3 National Institute of Advanced Industrial Science and Technology, Japan; 4 Institute of Nature and Environmental Technology, Kanazawa University; 5 Institute of Medical, Pharmaceutical and Health Sciences, Kanazawa University. (Email: veronicayl@stu.kanazawa-u.ac.jp)

[Objective] Among air pollutants, PM2.5 consists of a variety of organic and inorganic compounds. Polycyclic aromatic hydrocarbons (PAHs) and nitro-PAHs (NPAHs) are both well-known environmental pollutants due to their carcinogenicity and mutagenicity. Water-soluble inorganic ions (WSIIs) are some of the dominant chemical components of PM2.5 that can affect the size, composition, and lifetime of particles, and they play a key role in the formation of severe pollution events such as haze. Japan is located on the leeward side of the East Asian winter monsoon. PM2.5 in Japan is not only domestically produced but is also produced on the Asian continent and reaches Japan via long-range transport. Daily PM2.5 samples were simultaneously collected at Kanazawa University Wajima Air Monitoring Station (WAMS) and Fukue-Jima Atmosphere and Aerosol Monitoring Station (FAMS) in Japan, to compare the characteristics of air pollutants among different regions and to determine the possible variation during the long-range transport process.

[Methods] PM2.5 sampling was simultaneously performed at WAMS and FAMS using high-volume air samplers at a flow rate of 1000 L/min that were equipped with quartz fibre filters. Filters were changed every 24 hours in the winter monsoon period (Period 1) in April 2017 and in the summer monsoon period (Period 2) in June 2019. After filter pretreatment, nine PAHs and three NPAHs including fluoranthene, pyrene, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, benzo[ghi]perylene, indeno[1,2,3-cd]pyrene, 1-, 2-nitropyrenes, and 2-nitrofluoranthene were determined by using HPLC with fluorescence detection. Nine WSIIs including sodium, ammonium, potassium, calcium, magnesium, chloride, sulfate, nitrate, and bromine were determined by using ion chromatography.

[Results] In Period 1, the daily average PM2.5 concentrations at FAMS was 23.2 µg/m3 (8.90 - 78.5 µg/m3) that mostly higher than 8.62 µg/m3 (2.33 - 21.2 µg/m3) which observed at WAMS, but the opposite trend was observed in the Period 2. The average concentrations of ∑PAHs, ∑NPAHs, and ∑WSIIs were similar between two sites both in the two periods. The results revealed that the air pressure and coexistence reactants are the main causes, which result in the differences in the composition of air pollutants in long-range transportation receptor areas.

Key publications:

Educational background:
2016 ~ Graduate School of Natural Science and Technology, Kanazawa University (Awarded the degree of Master)
2018 ~ Graduate School of Medical Sciences, Kanazawa University (PhD Student)
Award:
2017.10 Joint International Symposium of Institute of Nature and Environmental Technology, Kanazawa University (The Best Poster Award)
The unique source of polycyclic aromatic hydrocarbons on the northwestern highland of China

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Abstract: Lanzhou is an important heavy industry city in northwestern China. In the study, polycyclic aromatic hydrocarbons (PAHs) and nitro-PAHs (NPAHs) in PM$_{2.5}$ were first observed at a background site, the Semi-Arid Climate and Environment Observation Station of Lanzhou University (SACOL), in Lanzhou in five seasonal campaigns. The results show that the PAH and NPAH concentrations peaked in the winter campaigns, which were approximately a dozen times higher than those in the spring, summer, and fall campaigns. The enhancement in the PAH and NPAH pollution would increase the toxic potential of PM$_{2.5}$. In addition, the diagnostic ratios indicate that vehicle emissions were the primary source of the PAHs throughout the five campaigns, and coal and biomass combustion also contributed during the winter, summer, and fall campaigns. Among NPAHs, 2-nitrofluoranthene and 2-nitropyrene were generated through OH radical-initiated reactions during atmospheric transport, while 1-nitropyrene came from combustion sources. Moreover, it is noticed that the ratio between pyrene and fluoranthene increased abnormally in the spring and fall campaigns, which is presumably caused by the burning of Tibetan barley straw in the northwestern highlands. This finding underscores that air pollution, such as PAHs, derived from traditional habits in the northwestern highlands gives a unique and prospective clue to the atmospheric transport network in East Asia. Therefore, it is requested that research involving endemic emissions and tracers in the northwestern highlands in China be carried out. For more details, please check out the full article (Zhang L.L. et al., Environ. Pollut., 2021).

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Key Publications
1. Environ. Pollut. 274: 116527, 2021
3. Environ. Pollut. 263: 114454, 2020
7. Environ. Pollut. 255: 113147, 2019

Educational background
2017~2020: Ph.D., Graduate School of Medical Sciences, Kanazawa University
Characteristics of PM$_{2.5}$-bound polycyclic aromatic hydrocarbons at a roadside air pollution monitoring station at Yamashina, Kanazawa from 2017 to 2020

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[Introduction] Ambient particulate matter (PM) is a well-known atmospheric pollutant. PM greatly influences air quality, climate, and human health. Especially, fine particulates (PM$_{2.5}$) is more harmful because it can be enriched in more toxic components and penetrate into the human lungs deeply. On PM$_{2.5}$, polycyclic aromatic hydrocarbons (PAHs) are a group of ubiquitous organic pollutants composed of multiple aromatic rings. PAHs are mainly originated from incomplete combustion processes and have been widely researched due to their carcinogenicity and mutagenicity. In the urban area, traffic emission is recognized as a major source of PAHs. In Japan, since the 1980s, traffic emission has gradually become the main source of air pollution in commercial cities. Among these cities, Kanazawa is the capital city of Ishikawa Prefecture and the largest city in the Hokuriku region of Japan. It is a tourist city with no significant industrial or agricultural activities and does not use coal for winter heating. Moreover, based on the data from Automobile Inspection & Registration Information Association, in Kanazawa, per 1000 inhabitants owned an average of 1489 vehicles until March 2016 ranking 13$^{th}$ among cities in Japan. The monitoring of traffic emission in Kanazawa is particularly important. Therefore, several air pollution monitoring stations were set up where the traffic emission is most obvious to monitor the traffic-related pollutants. In this study, a four-year sampling campaign was conducted at one of these stations at a heavily trafficked road in Yamashina, Kanazawa. We aimed to have a better understand on the characteristics of traffic-related PAHs and were hoping to provide data basic for more accurate health risk assessment and the formulation of traffic emission policy.

[Materials and Methods] Sampling was conducted at a roadside air pollution monitoring station in Yamagawa loop road in Yamashina, Kanazawa for one or two weeks in four seasons from April 2017 to February 2020 (spring: April 2017, 2018 and 2019; summer: August 2017, 2018 and 2019; autumn: November 2017, 2018 and 2019; winter: February 2018, 2019 and 2020). Twenty-four hour PM$_{2.5}$ samples were collected on quartz fiber filters using a high-volume air sampler at a flow rate of 1000 L/min. Nine PAHs include fluoranthene (FR), pyrene (Pyr), benz[a]anthracene (BaA), chrysene (Chr), benzo[b]fluoranthene (BbF), benzo[k]fluoranthene (BkF), benzo[a]pyrene (BaP), benzo[ghi]perylene (BgPe) and indeno[1,2,3-cd]pyrene (IDP) were analyzed by HPLC with a fluorescence detector.

[Results and Discussion] During the sampling campaign, the PM$_{2.5}$ level in most days (over 90%) were lower than the 24-hour standard (35 µg/m$^3$) which indicated that air pollution was not serious in the roadside environment of Yamashina. The PAHs concentration presents a similar seasonal variation trend. Higher concentrations were observed in the winter campaigns (1004 ± 260 pg/m$^3$ in 2018, 1069 ± 450 pg/m$^3$ in 2018 and 566 ± 256 pg/m$^3$ in 2019), while lower concentrations were in the summer campaigns (298 ± 90.7 pg/m$^3$ in 2017, 202 ± 84.6 pg/m$^3$ in 2018 and 259 ± 154 pg/m$^3$ in 2019). Possible reasons for the seasonal variations were that high temperature could cause vaporization of semi-volatile PAHs from the particle to the gas phase and enhanced photochemical degradation of PAHs in summer. FR, Pyr, BgPe and BbF predominantly contributed to the total PAHs. The proportion of PAHs exhibited variations but with no significance (p < 0.05). These variations might be associated with the variations of weather conditions and the variations of traffic emissions including proportion of traffic fleet, vehicle conditions, driving conditions, etc. Among these variations, [BbF]/([BbF] + [BkF]) and [IDP]/([BgPe] + [IDP]) remained at the range of 0.47 to 0.83 and 0.28 to 0.49, respectively. And these ranges were different with the ranges for identifying other PAHs emission sources. These two ratios seemed to be good indicators for identifying the traffic emission sources.

Key publication:

Educational background & professional experience:
2019– Division of Pharmacy and Division of Pharmaceutical Sciences, Graduate School of Medical Sciences, Kanazawa university (Master student).
Seasonal characteristic and health risks of PM$_{2.5}$-bound polycyclic aromatic hydrocarbons and nitro-polycyclic aromatic hydrocarbons in Shenyang, China

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[Objective]
Polycyclic aromatic hydrocarbons (PAHs) and nitro-PAHs (NPAHs) are some of the most harmful organic compounds in fine particles (PM$_{2.5}$), which are well-known for their carcinogenicity and mutagenicity. PAHs and some NPAHs in the urban atmosphere released from man-made sources such as traffic emission and coal combustion. Shenyang is the largest city in northeast China, also is the industrial and transported center, those factory activities and crowded roads can largely increase the direct emission of PAHs and NPAHs, severely affected the air quality and human health. Moreover, some other NPAHs can secondarily formed by the atmospheric reaction, occupied a large proportion of total NPAHs in the atmosphere. Therefore, this study collected PM$_{2.5}$ samples in Shenyang in four seasons from 2018 to 2019 to clarify the characteristics of PM$_{2.5}$-bound PAHs and NPAHs in Shenyang, as well as the health risks.

[Methods]
PM$_{2.5}$ samples were collected at the School of Pharmaceutical Sciences, Liaoning University in Shenyang by using a low-volume air sampler (3 L/min), equipped with quartz fiber filters. Filters were changed every 48 h in summer (2017/07/25 - 08/06), winter (2018/01/05 - 01/17), and autumn (2018/11/15 - 11/27), every 24 h in spring (2019/03/20 - 03/27), respectively. After pretreatment, 9 kinds of PAHs and 3 kinds of NPAHs including fluoranthene (FR), pyrene (Pyr), benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[a]pyrene (BaP), benzo[k]fluoranthene, benzo[ghi]perylene, indeno[1,2,3-cd]pyrene, 1-, 2-nitropyrenes (1-, 2-NP), 2-nitrofluoranthene (2-NFR) were detected by using HPLC system with fluorescence detector.

[Results and discussion]
The concentration of PM$_{2.5}$-bound PAHs was highest in winter (49.67 ± 21.75 ng/m$^3$) and lowest in summer (3.72 ± 1.92 ng/m$^3$). The concentration of NPAHs was highest in winter (260.32 ± 159.93 pg/m$^3$) and lowest in spring (95.36 ± 111.61 pg/m$^3$). The concentration of NPAHs was significantly lower than PAHs and the seasonal characteristics were different. By using diagnostic ratio, the result of [FR]/([FR] + [Pyr]) indicated that PAHs were mainly affected by traffic emission in summer and coal combustion in winter. The NPAHs diagnostic ratios ([2-NFR]/[1-NP]) showed that NPAHs in winter mainly generated from local emission, which differed from other seasons. The potential health risks of PAHs calculated by BaP-equivalent concentration were highest in winter, showed a serious health risks on human.

Educational background
2019 Faculty of Water Resources and Hydroelectric Engineering, Environmental Engineering, Xi'an University of Technology (bachelor’s degree)
2020~ Graduate School of Medical Sciences, Kanazawa University (Master student)
How COVID-19 lockdown in China significantly influenced the air pollutants at the Wajima Air Monitoring Station of Japan?

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[Introduction]
Air pollution as a global problem has attracted considerable attention, health studies from many researchers had already proved the damage of air pollution to human. Particulate matter (PM) including PM₁₀ (aerodynamic diameter <1 mm) and PM₂.₅ are deliberate as the air pollutant. Both PM₁₀ and PM₂.₅ will then turn into lung cells (alveolar macrophages and epithelial cells, etc.) after inhaling, which leads to oxidative stress. Carbonaceous aerosol such as elemental carbon (EC) and organic carbon (OC) also plays a significant role in the pollution of atmospheric aerosol, which attracted many attentions by the researchers. The Kanazawa University Wajima Air Monitoring Station (KUWAMS) in Japan is a monitoring station for studying long-range transport of air pollution from East Asia. Previous researches had found the air pollutants that emission from combustion in northeast China can strongly affect KUWAMS in the cold season. During the period of COVID-19, most factories, transportation, work and even schooling were prohibited, the cease leads to the significant decreasing of the intensity of air pollution level. The impact of anti-epidemic measurements implemented by China during COVID-19 on the long-range transport of air pollutants from East Asia to KUWAMS was documented and analyzed in this study.

[Method] With the surrounding of dense forest, KUWAMS located at the north western coast of Noto Peninsula, 2.1 kilometres south of the Sea of Japan. There was nearly no sever artificial industrial emissions around the site. The concentration of PM₁₀, PM₂.₅, OC, EC and meteorological conditions was measured online during December 2019 to April 2020. The back-trajectory analysis was used to analyze the orbit of air mass to track the source of air pollutants.

[Result and Discussion]
The mean concentration of PM₁₀, PM₂.₅, OC and EC were 4.46 ± 2.17 (µg m⁻³), 11.49 ± 4.24 (µg m⁻³), 0.64 ± 0.42 (µgC m⁻³) and 0.10 ± 0.06 (µgC m⁻³), respectively. Comparing with the same period of 2019, the concentration of all pollutants shows a significant decrease in the COVID-19 period. This might due to the curbing of disease transmission by adopting drastic containment measures in China. Also, the year to year contrast of the concentration of PM₂.₅ in KUWAMS with other cities in China shows a similar tendency during the lockdown. Overall, the decrease of artificial air pollution emissions during the epidemic in Northeast China caused a major reduction in the pollution at KUWAMS after long-range transportation. This study also demonstrated the sensitivity of KUWAMS sampling point to long-range transportation of air pollutants from East Asia continent.

Key publications:

Educational background:
Department of Chemistry, Loughborough University (Awarded the degree of Master of Science)
Graduate School of Medical Sciences, Kanazawa University (PhD Student)
Analysis of compositional variation and source characteristics of Water-soluble ions in TSP at a remote background site in Japan (Wajima) from 2005 to 2015.

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Introduction

Atmospheric particulate matter has a wide range of sources and multiple compositions and is an important pollutant affecting air quality, climate change, and human health. Wajima in Japan is a typical remote background site facing the Sea of Japan, located in the East Asian monsoon region. During winter and spring, the Wajima area mostly receives the Asian continent air masses with the East Asian winter monsoon before crossing Japan to the North Pacific Ocean which provides the possibility for long-term studies of long-range transport in such a unique geographic location. In this study, total suspended particulate (TSP) was consecutively collected at Kanazawa University Wajima Air Monitoring Station (KUWAMS) from 2005 to 2015, and water-soluble inorganic ions (WSIIs) were determined. Our purpose is to understand the composition characteristics; analyze research time trends and sources of the generation of WSIIs and the impact of the marine and anthropogenic sources during the short- and long-range transportation from other areas.

Methods

TSP samples were collected with a high-volume air sampler with a quartz fiber filter at a flow rate of 700 L/min every seven consecutive days, from January 7, 2005, to December 18, 2015. The filter samples were analyzed with an ion chromatograph to determine the concentrations of water-soluble inorganic ions (WSIIs), including Cl⁻, NO₃⁻, SO₄²⁻, Na⁺, NH₄⁺, K⁺, Mg²⁺, and Ca²⁺.

Results and Conclusion

The average TSP concentration was 19.91 ± 11.33 µg/m³. The average total WSIIs concentration was 7.93 ± 3.93 µg/m³, accounting for 42.3 % of TSP mass, ranged from 11.4 to 93.9 %. SO₄²⁻ is the most abundant ion, contributing a total WSI mass from 18.0 to 79.8 %, and non-sea-salt (nss-) SO₄²⁻ contributed from 63.6 % - 99.6 % of total SO₄²⁻, which was related to human activities on the Asian continent and the effects of marine precursors in spring and summer, respectively. NO₃⁻ and NH₄⁺ contribute 6.3 and 7.4 % of the total WSIIs and were affected by long-range transport and local sources as well. The representative ions of sea salt, Na⁺ and Cl⁻, with the lowest concentration. K⁺ is mainly produced from biomass burning with a stable seasonal variation, Ca²⁺ as the characteristic ion of dust has the highest concentration in spring. Mg²⁺ comes from minerals and marine sources during spring and summer, respectively.

This work describes in detail the annual change trend of the WSIIs of atmospheric particles in the Wajima area (KUWAMS), seasonal characteristics, and source contributions, provide a comprehensive understanding of long-term variation in atmospheric particulate.

Educational background

2015 ¬ 2019: Graduate School of Food Science and Engineering, Dalian Ocean University
2019 ¬ present: Graduate School of Medical Sciences, Kanazawa University
Air pollution exposure and respiratory health of office workers in current China: a pilot survey in a heavy-polluted region

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[Introduction]

Air pollution is a silent killer for human health. Exposure to air pollution is associated with multiple health outcomes, especially to respiratory system. Fine particulate matter (PM$_{2.5}$), nitrogen oxides (NO$_2$, NO), ozone (O$_3$) and sulfur dioxide (SO$_2$) are typical pollutants with wide distribution resulting to extensive human health risk. Polycyclic aromatic hydrocarbons (PAHs) are a group of ubiquitous organic pollutants enhancing the health hazard of air pollution. As a rapidly developing country with the largest population, China is facing severe air quality and undertaking active measures to control air pollution. The population number of indoor workforce in China has increased due to rapid urbanization and modernization, especially in economically active but heavy-polluted Beijing-Tianjin-Hebei region. Thus, it is significant and urgent to evaluate the air pollution exposure and respiratory health on office workers residing in this region.

[Methods]

Fourteen healthy office workers were recruited in the urban Beijing and Baoding. During the periods of eleven continuous days in each of summer, autumn and winter in 2019, daily personal sampling was conducted for various air pollutants including PM$_{2.5}$, PM$_{2.5}$-bound PAHs, NO$_2$, NO, O$_3$ and SO$_2$. The concurrent ambient air pollutants data were obtained from the national air monitoring stations which were nearest to the subjects. Simultaneously, repeated measurements on lung function index were performed including forced expiratory volume in the first second (FEV$_1$) and peak expiratory flow (PEF). Additionally, time-activity diary was recorded by each subject. A mixed linear model was utilized to explore the relationship between air pollution exposure and lung function changes. Inhalation cancer risk due to PM$_{2.5}$-bound PAHs exposure was calculated based on a well-known carcinogenic PAH, Benzo[a]pyrene (BaP).

[Results and discussion]

During the entire sampling period, the major exposure pollutants were PM$_{2.5}$, NO$_2$ and PM$_{2.5}$-PAHs with a mean concentration of 38.5 ± 27.1, 46.41 ± 39.29, 114.0 ± 121.6 μg/m$^3$, and 26.6 ± 27.0 ng/m$^3$, respectively. A significant seasonal order was shown in above pollutants as winter > autumn > summer, except for PM$_{2.5}$ (autumn > winter). Moreover, there were 8% of PM$_{2.5}$, 17% of NO$_2$ and 25% of BaP measurements higher than the respective Chinese standards, especially in autumn and winter, indicating an elevated health risk.

No significant adverse effect was shown in pulmonary function in the short-term air pollution exposure, which might result from a good lung health status of these subjects with an average FEV$_1$ and PEF higher than the respective standard limits. Notably, the lifetime cancer risk of exposure to PM$_{2.5}$-bound PAHs was 1.69 × 10$^{-5}$ for the office workers in Beijing and Baoding, which was higher than the acceptable level of 10$^{-6}$ suggested by the U.S. Environmental Protection Agency, indicating the urgency to improve the air quality and protect respiratory health for the office workers.
On the other hand, individual exposed pollutants depicted great difference with those measured in ambient monitoring station in the concentration level and seasonal variation, indicating that ambient air pollution data can't characterize personal exposure accurately. Furthermore, based on the stable time-location features of the office workers, a feasible estimation approach monitoring was found to estimate human exposure based on microenvironmental exposure model, which will be researched and utilized in the further investigation.

Key publications:

Educational background & professional experience:
2014– Department of Pharmaceutical Engineering and Environmental Sciences, School of Pharmaceutical Engineering, Shenyang Pharmaceutical University
2019– Division of Pharmacy and Division of Pharmaceutical Sciences, Graduate School of Medical Sciences, Kanazawa University
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Research projects:
1. Environmental Medicine
2. Public Health
3. Developmental Medicine

Key publications:
1. Environ Sci Pollut Res Int. 2019
3. J Dev Orig Health Dis. 2019
4. J Epidemiol. 2018
5. J Diabetes Investig. 2018
6. Environmental Pollution. 2018
7. J Epidemiol Community Health. 2017
10. Indoor and Built Environment 2014

Educational background & professional experience:
1984   Doctor of Medicine (M.D.), Asahikawa Medical College
1989   Doctor of Medical Science (D.Med.Sc; Ph.D) Kyoto University
1984-1992 Research Associate, Department of Anatomy, Faculty of Medicine, Kyoto University
1990-1992 Visiting Associate, National Institute of Environmental Health Sciences, National Institutes of Health (NIEHS/NIH), Research Triangle Park, North Carolina, U.S.A.
1992-2000 Associate Professor, Department of Anatomy and Developmental Biology, Faculty of Medicine, Kyoto University
1999-2001  Professor, Department of Anatomy and Cell Biology, School of Medicine, Chiba University,
2001-     Professor, Department of Bioenvironmental Medicine, Graduate School of Medicine, Chiba University
2006-2008 Adjunct Professor, Division of Environmental Health Sciences
          University of Minnesota, School of Public Health, USA
2008-     Director, Center for Preventive Medical Sciences, Chiba University
2009-2013 Adjunct Professor, College of Medicine, Inje University, Korea

Award: 1995 Young Investigator Award of the Japanese Association of Anatomists
Walkable Design in Practice

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Abstract:

In recent years, there is an increase in the number of reports showing the influence of the built environment on human health. The research theme of our group is to characterize the relationship between health and the built environment from an engineering perspective. We aim to construct useful objects and comfortable environments for public safety, health, and welfare, and to translate our research findings into sustainable urban development practices.

Specifically, we focus on the following two areas:
- Characterizing the relationship between health and the built environment.
- Implementing healthy urban development in collaboration with various stakeholders.

Research projects:
1. Relationship between health and the built environment
2. Walkability and walkable design implementation
3. Tool design for healthy community development

Educational background & professional experience:
2002~ Bachelor of science, Department of Mathematical Sciences, Ritsumeikan University, Japan.
2007~ Bachelor of Engineering, Department of Architecture, Chiba University, Japan.
2011~ Technical assistant, Graduate of Architecture, Chiba University
2013~ Design Department, Nikken Sekkei Ltd.
2014~ Project Researcher, Campus Planning Office, Chiba University, Japan
2015~ Design intern, Ashton Porter Architects, London
2016~ Technical assistant, Center for Preventive Medical Sciences, Chiba University, Japan
2019~ Project Assistant Professor, Center for Preventive Medical Sciences, Chiba University, Japan
Association between levels of PCB in maternal serum with birth weight of newborn in C-MACH study

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Background and Purpose:
In our previous studies, it was reported that maternal exposure to polychlorinated biphenyls (PCBs) was negatively correlated with birth weight of newborns in part of C-MACH cohort. However, congener specific effect and mixture effect of PCB congeners were not well determined. Therefore, in the present study, we used all maternal serum samples collected at 32 weeks of gestational age in the C-MACH cohort to examine the relationship between newborn birth weight and the individual PCB congener in maternal serum to analyze the individual and synergistic effects of PCB exposure.

Methods:
Informed consents were obtained from all the participants. Human serum samples (291 maternal sera) were collected from the participants in Chiba and Saitama Prefecture, Japan. Thirteen congeners of PCB in maternal serum were analyzed using the gas chromatography electron capture negative ionization quadrupole mass spectrometry. Effects of mixture and individual PCB congener (13 congeners: CB74, 118, 126, 138, 146, 153, 156, 170, 177, 178, 180, 183 and 187) were analyzed by generalized weighted quantile sum regression (gWQS) model with multiple imputation. This study was approved by the Biomedical Research Ethics Committee of the Graduate School of Medicine, Chiba University.

Results and Discussion
The mean concentration of total PCBs in maternal sera was 410 pg g\(^{-1}\) wet weight. Individual congener levels of PCBs were highly correlated each other (R = 0.63 - 0.99), however, these levels were not significantly correlated with birth weight of newborns. Birth weight of newborns were significantly associated with exposure of mixture PCB in gWQS model. The results suggest that exposure to mixture PCB were associated with birth weight of newborns. However, specific effects of individual PCB congeners were not shown, indicated the possibility that a single PCB congener may have special effects was not observed in this study.
Aims of Study
The research object is to elucidate the pathogenesis of thyroid cancer, through the basic research using cultured cells and animal models.

Research Projects
1. Generation of mouse models and elucidation of pathophysiology of thyroid cancer
2. Study on relationship between autophagy and thyroid morphology/function/carcinogenesis
3. Study on relationship between mitophagy and thyroid morphology/function/carcinogenesis
4. Identification and functional analysis of thyroid cancer stem cells

Status and Prospects
1. By crossing the conditional knock-in (KI) mice that express BRAFV600E in the presence of Cre DNA recombinase (BrafCa) and adenovirus expressing Cre in the thyroid, the new mouse model of thyroid cancer was established. These mice are now combined with the PTEN knockout (KO) mice or the conditional TGFβ KI mice. In addition, the conditional KI mice for ATM is also being used.
2. By crossing the conditional KI mice that lose Atg5 gene expression in the presence of Cre (Atg5f/f) and thyroid-specific Cre expressing transgenic mice (TPO-Cre), the morphological and functional significance of autophagy in the thyroid is now being studied.
3. Two KO mice that lack expression of PARK2, a component of canonical mitophagy, or MIEAP, a component of non-canonical mitophagy are being used to study the relationship quality control of mitochondria and carcinogenesis. Thyroid Hurthle cell cancer line, XTC.UC1, is also being used
The functional significance of ALDH and ROS as a marker for thyroid cancer stem cells is being studied.
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Web site http://www.med.nagasaki-u.ac.jp/intmed-1/

Research projects:  
1. Inflammatory arthritis: Genetic, environmental, immunological and imaging analysis  
2. Autoinflammatory diseases: Genetic and inflammasome analysis leading to drug discovery  
3. Sjögren's syndrome: Pathological analysis especially the role of HTLV-1  
4. Systemic lupus erythematosus: Pathological analysis especially identification of autoantigen  
5. Immuno-related adverse events: Identification of susceptibility through whole-genome analysis

Key publications:  
3. Virus Res 269:197643, 2019  
5. Ann Rheum Dis 77(4):602-611, 2018  
6. Arthritis Care Res 26,2018  
7. Frontiers in Immunology 8:8: 1958, 2018  
8. Arthritis Rheumatol 70(7):1014-1021, 2018  
10. Rheumatology 1:57(4):718-726, 2018  

Educational background & professional experience:  
1985  First Department of Internal Medicine, Nagasaki University School of Medicine  
1987–1991  Department of Immunology and Rheumatology, Nagasaki University Graduate School of Biomedical Sciences  
1991–1993  Post-Doctoral Fellow, Division of Tumor Immunology, Dana-Farber Cancer Institute, Boston  
(Supervised by Prof. Paul Anderson)  
1991–1993  Post-Doctoral Fellow, Division of Tumor Immunology, Dana-Farber Cancer Institute, Boston  
(Supervised by Prof. Paul Anderson)  
2000  Assistant Professor, Unit of Translational Medicine, Department of Immunology and Rheumatology, Nagasaki University Graduate School of Biomedical Sciences  
2009  Associate Professor  
2010  Professor and Chairman  
2016  Professor and Chairman, Department of Immunology and Rheumatology, Unit of Advanced Preventive Medical Sciences, Division of Advanced Preventive Medical Sciences, Nagasaki University Graduate School of Biomedical Sciences  
2017  Professor and Chairman, Department of Immunology and Rheumatology, Division of Advanced Preventive Medical Sciences, Nagasaki University Graduate School of Biomedical Sciences  
2019  Dean, Nagasaki University Graduate School of Biomedical Science

Awards:  
2000  Japan College of Rheumatology Scientific Award  
2001  7th The Japanese Society of Inflammation and Regeneration Promotion Award  
2004  32th Japan Clinical Immunology Society of the General Assembly Best Poster Award
Kiyoshi AOYAGI, MD & PhD
Professor, Department of Public Health,
Nagasaki University Graduate School of Biomedical Sciences
E-mail kiyoshi@nagasaki-u.ac.jp
Web site https://www.med.nagasaki-u.ac.jp/public-h/

Research projects:
7. Epidemiology on musculoskeletal health
8. The Japan Public Health Center-based Prospective Study for the Next Generation

Key publications:

Educational background & professional experience:
1985 MD, Nagasaki University School of Medicine
1989 Ph.D. received from Nagasaki University Graduate School of Biomedical Sciences
1989 Department of Orthopedic Surgery, Nagasaki University
1995-96 Research Fellow, Hawaii Osteoporosis Center, USA
1997 Assistant Professor, Department of Public Health, Nagasaki University School of Medicine
2000 Associate Professor, Department of Public Health, Nagasaki University School of Medicine
2002 Professor, Department of Public Health, Nagasaki University Graduate School of Biomedical Sciences

Award: 2019 Japan Society of Physiological Anthropology
Current status and future prospects in the diagnosis and treatment of familial Mediterranean fever in Japan
Tomohiro KOGA, M.D., Ph.D.

Center for Bioinformatics and Molecular Medicine,
Nagasaki University Graduate School of Biomedical Sciences, Nagasaki, Japan

Abstract:

Familial Mediterranean fever (FMF) is a common inherited autoinflammatory disease associated with periodic fevers, arthritis, and serositis. The therapeutic goals of FMF are to prevent febrile attacks, minimize subclinical inflammation during attacks, and prevent the development and progression of amyloidosis. Canakinumab, a monoclonal antibody against IL-1β, is expected to be effective in such cases of colchicine invalidity and intolerance, but there is not sufficient evidence in Japan. With the pandemic of COVID-19, the importance of appropriate management of patients with periodic fevers has increased. In this lecture, we will discuss the actual treatment of familial Mediterranean fever, the latest evidence for treatment in Japan, COVID-19 infection, and autoinflammatory diseases.

Reference:


Educational background & professional experience:

2005 M.D. Oita University School of Medicine, Japan.
2011 Ph.D. received from Graduate School of Biomedical Sciences, Nagasaki University, Japan.
2011-2014 Post-Doc. Department of Medicine, Division of Rheumatology, Beth Israel Deaconess Medical Center (Tsokos Lab), Harvard Medical University, Boston, USA.
2014-2016 Assistant prof. Medical Education Development Center, Nagasaki University, Japan.
2016-present Assistant prof. Graduate School of Biomedical Sciences, Nagasaki University, Japan.
(2016-present Leading Initiative for Excellent Young Researchers of the Ministry of Education, Culture, Sports, Science and Technology, Japan.)
Circadian clocks in senescent cells: a possible strategy to fight aging

Yasukazu NAKAHATA, Ph.D.

Center for Bioinformatics and Molecular Medicine,
Nagasaki University Graduate School of Biomedical Sciences,
Nagasaki, Japan

Abstract:

Our research goal is to reveal molecular mechanisms connecting circadian clocks and aging process and contribute to extend healthy aging. To address this goal, we have first investigated at cellular level. So far, we have found that cellular senescence, aging at cellular level, triggers altered circadian clocks with a prolonged period and delayed phase [1,2]. We have also found that intracellular NAD\(^+\) amount decreases with cellular senescence, furthermore, the onset of cellular senescence delays when NAMPT, which is the rate-limiting enzyme in NAD\(^+\) salvage pathway, is overexpressed [3]. Our previous study that circadian clock and NAD\(^+\) salvage pathway are mutually regulated via NAD\(^+\)/SIRT1 axis [4-6] prompted us to investigate whether the boost of NAD\(^+\) in senescent cells recover the alteration of circadian clock properties. The answer was “yes”, circadian period was shortened in NAD\(^+\)-boosted senescent cells and even aged mice [unpublished data]. Now we have been struggling to reveal molecular mechanisms of how NAD\(^+\) influences circadian clocks. We have also started to find out other molecules which recover the alteration of circadian clock properties in senescent cells to understand how circadian clock regulates aging process and contribute to extend healthy aging.

Reference:


Educational background & professional experience:

2002 Ph.D. received from Osaka University Graduate School of Scince, Japan
2002-2005 Post-Doc. Osaka Bioscience Institute, Japan
2005-2006 Post-Doc. Institut de Génétique et de Biologie Moléculaire et Cellulaire (IGBMC), France
2006-2009 Post-Doc. University of California, Irvine, USA
(2008-2009, supported by Postdoctoral Fellowship for Research Abroad of Japan Society for the Promotion of Science)
2009-2019 Assistant prof. Nara Institute of Science and Technology (NAIST), Japan
2019-present Associate prof. Nagasaki University, Japan
A prospective cohort study of rheumatic disease in a residential health checkup-based healthy population: prediction of rheumatoid arthritis and IgG4-related disease development.

Yoshika TSUJI, M.D.

Graduate School of Biomedical Sciences, Division of Advanced Preventive Medical Sciences, Nagasaki University, Japan

Abstract:

Anti-citrullinated protein antibody (ACPA) production is observed in several organs even prior to the onset of rheumatoid arthritis (RA), and oral mucosa is considered to be one of the important tissues. Saliva is considered to reflect the oral microbiota including periodontal disease. A gene-environment interaction between cigarette smoking and shared epitope genes in HLA-DRB1*shared epitope (SE) provides a high risk of ACPA-positive RA. However, the interaction of HLA-DRB1*SE, ACPA, cigarette smoking and oral microbiota of RA patients remains to be elucidated. The Nagasaki Island Study, which had started in 2014 collaborating with Goto City, Nagasaki Prefecture, Japan, is intended for research of the preclinical stage of RA, including ACPA, HLA genotype screening, oral microbiota and lifestyle habit. Elucidation of the relationship between the oral MB and ACPA-positive RA might enable prediction of high-risk individuals for RA and preventive intervention in the future.

Reference:


Education:

2012  M.D  received from Nagasaki University School of Medicine, Japan
2019-  Ph.D.  present Graduate School of Biomedical Sciences, Division of Advanced Preventive Medical Sciences, Nagasaki University, Japan
Association of FTO genotype with obesity and bone health

Xiao Xu, student pursuing a PhD degree

Department of Public Health, Nagasaki University
Graduate School of Biomedical Sciences, Nagasaki, Japan

Abstract:

Aim: The aim of this study was to examine the association of the FTO gene (Fat Mass and Obesity associated gene #610966 on OMIM) with obesity and bone health among community-dwelling adults. Methods: This cross-sectional study included 1,828 participants aged 27 to 97 years, residing in a rural city in western Japan (N prefecture). Participants were recruited at medical check-ups in 2014 and 2016 for community dwelling population. Body mass index (BMI) (kg/m2) was calculated. Bone mass of the calcaneus was evaluated using a quantitative ultrasound measurement. Peripheral blood mononuclear cells were obtained from subjects. The SNP rs1421085 was genotyped using hydrolysis probe. The chi-squared test was used to determine whether the variants was in equilibrium in that population. All analyses were carried out using SPSS 23. Results: The mean ages of the participants were 67.6 +/- 11.6 in men and 67.1 +/- 11.3 years in women, respectively (Table 1). There was a significant association between the genotype and overweight, but there was no significant difference in stiffness index. There were significant associations between the minor allele and overweight (Table 2 and 3). Logistic regression analysis showed a significant protective association in men with carriers of minor allele against low bone mass after an adjustment for age and BMI in man aged 50 to 70, not significant in women. Conclusions: Our study indicated a significant association of the genetic polymorphism on FTO gene with bone mass among community dwelling men aged 50 to 70. The polymorphism may play a rule in a part of bone health with higher BMI and other beneficial functions.

Educational background & professional experience:

2017,MB, received from Fujian Medical University, China
2018,Studying for a PhD in the Graduate School of Biomedical Sciences, Nagasaki University, Japan.
HTLV-1 infection and age-associated health problems

Hirotomo YAMANASHI, M.D., Ph.D.

The Department of General Medicine, Nagasaki University Hospital, Nagasaki, Japan

Abstract:

Sarcopenia is defined as the accelerated loss of muscle mass and low muscle strength with aging, and has a medical and economic burden in a super-aged society due to adverse outcomes including falls, disability, long term care placement, and mortality. Human T-cell lymphotropic virus type 1 (HTLV-1) is a human retrovirus that is endemic in Southwest Japan [1]. HTLV-1 is associated with a number of diseases, such as adult T-cell leukemia/lymphoma, and autoimmune/inflammatory diseases [2]. However, little is known about the effect of asymptomatic HTLV-1 infection on age-associated problems. Our previous case-control study using data from the Nagasaki Islands Study, which was a prospective cohort study performed in Goto City in the western islands of Japan (N=4,500) revealed that asymptomatic HTLV-1 infection was positively associated with atherosclerosis as measured by carotid intima-media thickness [3]. As we also found the negative association between atherosclerosis and handgrip strength in our Japanese and Indian cohorts [4], we hypothesize HTLV-1 asymptomatic infection has a negative impact on skeletal muscle and strength. We conducted a cross-sectional study (N=2,811) in our cohort study [5]. HTLV-1 infection was significantly associated with sarcopenia (adjusted OR 1.46, 95% CI 1.03–2.07, P=0.034). Active surveillance and early detection of asymptomatic HTLV-1 infection might be beneficial to reinforce countermeasures to control cardiovascular risks and to inhibit the progress of HTLV infection-associated sarcopenia.

Reference:


Educational background & professional experience:
2006 M.D. Sapporo Medical University, Japan.
2016 Ph.D. received from Graduate School of Biomedical Sciences, Nagasaki University, Japan.
2013-2017 Assistant prof. Department of Island and Community Medicine, Nagasaki University, Japan.
2018-present Senior lecturer. Department of General Medicine, Nagasaki University Hospital, Japan.
Dr. Michael RODEN
Professor of Medicine, Endocrinology and Metabolic Diseases, Director, Division of Endocrinology and Diabetology, Heinrich-Heine University (HHU) and University Clinics Düsseldorf (UKD), Germany
Chief Scientific Executive Officer, German Diabetes Center (DDZ), Leibniz Center of Diabetes Research, Düsseldorf Germany
E-mail michael.roden@ddz.de

Research focus
My scientific interests comprise clinical-experimental and basic research on the (patho)physiology of energy metabolism with a focus on the understanding of insulin resistance, obesity, nonalcoholic fatty liver diseases (NAFLD) and diabetes mellitus. I have developed and employed methods to non-invasively trace metabolic fluxes using magnetic resonance spectroscopy and stable isotopes in cohorts with and without diabetes mellitus. With this technology, my group contributed paradigm-shifting studies on the regulation of glycogen turnover, ectopic fat stores and mechanism of lipid- and amino acid-induced insulin resistance in humans. More recently, I focused on the role of mitochondrial function in metabolic diseases.

15 Key publications

Professional education and training
1986 Graduation as Dr. med. univ., University of Vienna, Austria
1993/97/03 Certification in Internal Medicine, Endocrinology & Metabolism Clinical Pharmacology, Austria
1994-95 Max-Kade-Fellow, Austrian Academy of Science, Yale University, CT, USA
1997-06 Associate Professor, of Medicine, Univ. of Vienna, Austria
2003-08 Head, 1. Med. Dept., Hanusch Hospital, (Teaching Hospital of Medical Univ. Vienna), Vienna, Austria
2008- Chair/Professor/Director, Div. of Metab. Diseases, later Endocrinol.&Diabetol., HHU/UKD, Düsseldorf
Chief Scientific Executive Officer, DDZ, Head, Institute for Clinical Diabetology at DDZ, Düsseldorf
2009- Boards of Speakers, National Health Center - Diabetes (DZD), Germany
2016- Member, German Council of Science and Humanities (WR), appointed by the President of Germany
2017- Head, Committee Medicine of the WR, Germany
Selected awards

2004  International Novartis Award for Innovative Patient Oriented Research, Young Investigator
2006  ESCI (Mack-Foster) Award for Excellence in Clinical Sciences, Europ. Soc. for Clin. Invest
2006  Oskar-Minkowski Prize, Europ. Assoc. for the Study of Diabetes (EASD)
2013  Honorary Doctorate, Dr. h. c., Medical Faculty, University of Belgrade
2014  Somogyi Award, Hungarian Diabetes Association
2016  Honorary Doctorate, Dr. h. c., Medical School, University of Athens
2017  Paul Langerhans Medal, German Diabetes Association
2018  19th Aretaeus lecture, Hellenic Diabetes Association
2018  G. B. Morgagni Prize - Gold Medal Career Achievement Association, Italy
Diabetes and Metabolism Session

Dr. Christian HERDER
Professor (Epidemiology), Medical Faculty, Heinrich Heine University Düsseldorf, Germany
Head of the research group Inflammation, Institute for Clinical Diabetology, German Diabetes Center (DDZ), Leibniz Center for Diabetes Research, Düsseldorf, Germany
Guest scientist, Division of Endocrinology and Diabetology (Director Prof. Dr. Michael Roden), Medical Faculty, Heinrich Heine University Düsseldorf, Germany
E-mail christian.herder@ddz.de

Research focus
We focus on epidemiological and mechanistic studies on the role of inflammation-mediated processes in the development and progression of type 2 diabetes. Our studies sharpened the concept that inflammation - as independent risk factor or induced by lifestyle and environmental factors - contributes to the development of type 2 diabetes and its chronic macro- and microvascular complications and therefore represents a promising therapeutic target in disease prevention and treatment. Recent publications included the first prospective studies on multiple inflammation-related biomarkers and pathways as predictors of incident sensorimotor polyneuropathy.

Key publications
Environ Health Perspect 2020;128:127013; Trends Endocrinol Metab 2019;30:286-298;
Psychoneuroendocrinology 2018;91:216-225; Arterioscler Thromb Vasc Biol 2017;37:1222-1227;
Diabetes Care 2017;40:569-576; Heart 2017;103:63-70; Trends Endocrinol Metab 2015;26:551-563;
Diabetologia 2015;58:2269-2277; Diabetes Care 2015;38:91-96; Diabetes 2014;63:4343-4359;
Diabetes Care 2014;37:1401-1409; Diabetes Care 2013;36:3663-3670; Diabetes Care 2012;35:2540-2547;
Lancet 2012;379:2279-2290; Diabetes Care 2011;34:2320-2322;
Environ Health Perspect 2010;118:1273-1279; Diabetes 2010;59:1222-1227;

Professional education and training
1993-1999 Heinrich Heine University Düsseldorf and University of Edinburgh (UK): Studies in Biology
1999 Diploma (Biology) Heinrich Heine University Düsseldorf
2003 Doctorate (Dr. phil. nat./Biochemistry), Johann Wolfgang Goethe University, Frankfurt am Main, Germany
2009 Master of Science (M.Sc.) in Epidemiology, Johannes Gutenberg University Mainz, Germany
2012 “Habilitation” in Epidemiology (highest academic qualification in Germany), Medical Faculty Heinrich Heine University Düsseldorf
2017 Professor (Apl. Prof.), Epidemiology, Medical Faculty, Heinrich Heine University Düsseldorf,
Selected awards

2007  Jühling Prize from the Anna Wunderlich-Ernst Jühling Foundation (Germany)
2009  Lecture in the Rising Star Symposium, Annual Meeting of the European Association for the Study of Diabetes (EASD)
2013  Ferdinand Bertram Prize (German Diabetes Association/DDG)
2016  Hans Christian Hagedorn Grant (German Diabetes Association/DDG)
2019  Menarini Grant from the German Diabetes Association (German Diabetes Association/DDG)
Abstract:

The work of the research group focuses on epidemiological aspects of environmentally-induced aging of the lung, the brain and the skin. The main focus is the collection and analyses of data on the effect of long-term exposure to air pollution on chronic diseases (lung, skin and brain) as well as the complex interplay between the organs. We were able to show that chronic exposure to air pollution, in particular PM$_{10}$ and NO$_2$ as well as living close to major roads, increases the risk of developing chronic obstructive pulmonary disease (COPD) and mild cognitive impairment (MCI) in elderly women. Furthermore, skin aging was enhanced. In addition, the working group could show that high exposure with traffic-related air pollution increases the risk of cardio-pulmonary mortality Worldwide the working group Schikowski was the first one to show that particle exposure from traffic-related sources was associated with diabetes and skin aging (pigment spots and wrinkles).

Research projects:

- Gene-Environment Interaction analyses
- Investigation of air pollution decline on aging and health
- Investigation of the effect of particle pollution on mild cognitive impairment in elderly women
- Investigation of air pollution effects on skin aging and inflammation in China
- Investigation of air pollution effects on skin/lung aging India
- Investigation of the effect of carbon black on health in Manila
- Investigation of the effect of long-term air pollution on the development and incidence of COPD in particular in non-smoking women and interaction with reproductive factors and obesity
Key publications:

2. Tropospheric ozone and skin aging: Results from two German cohort studies. Environ Int. 2019 Mar;124:139-144
4. The role of air pollution and lung function in cognitive impairment. Eur Respir J. 2018 Feb 21;51(2).

Educational background & professional experience:

1996~ University of Cologne Medical School
2001~ Bachelor of Environmental Health, Swinburne University Melbourne
2004~ Master of Public Health, Monash University Melbourne
2008~ PhD Award Public Health, Heinrich-Heine University Düsseldorf
2009~ Postdoctoral Researcher, Swiss Tropical and Public Health Institute, Basel Switzerland
2013~ Working Group Leader, IUF Leibniz Institute for Environmental Medicine, Düsseldorf Germany

Award:

Vichy Exposome Award 2016, The combined effect of air pollution and sun exposome on extrinsic skin aging manifestation in the population-based SALIA study group by Vichy Laboratories, France

TGO Jordan Memorial Prize, Student with the highest academic results in the final year of the Bachelor of Health Science of 2002 by the Australian Institute of Environmental Health, Victorian Division
HIV-1 cell biology: host factors and pharmacological inhibitors in sensing and restriction

Carsten Münk, PhD

Professor for AIDS Research, Clinic for Gastroenterology, Hepatology and Infectiology
University Hospital Düsseldorf, Heinrich-Heine-University Düsseldorf
E-Mail: carsten.muenk@med.uni-duesseldorf.de

Abstract:

We are interested in early events until integration in HIV-1 replication and the Vif-APOBEC3 interaction. We try to develop pathways that interfere with the virus infection and explore new animal models for HIV-1. At the same time, we working on mechanisms of zoonosis of SIV of chimpanzees (SIVcpz) (see Fig. 1)

Research projects:

1. Vif- APOBEC3 interaction
2. Rolle of USP18 in HIV-1 replication
3. Mechanisms of resistance to integrase inhibitors
4. New animal models for HIV-1
5. Mechanism of restriction of rare HIV-1 N, O, P and SIVcpz

Key publications:

1. mBio July/August (10) 4 2019
2. Virology (523): 52-63. 2018
3. Journal of Virology 92(20) 2018
4. Retrovirology, 15:38 2018
12. Genome Biology, 9 (3); R48, 2008

Fig 1 A model of SIVcpz’s evolutionary path to HIV. SIVcpz to human cross-species transmission likely happened 100 years ago in central Africa. After spillover, SIV adapted to human cells. For high-level replication, SIVcpz had to adapt to human tethers and evolve a Vif protein able to counteract human APOBEC3H (A3H). Only viruses that were able to adapt to these and possible other host-factors were able to spread globally.
Educational background and professional experience:

2008 to present: Professor for AIDS Research, University Hospital, Clinic for Gastroenterology, Hepatology and Infectiology (Director Prof. Dr. D. Häussinger), Heinrich-Heine University Düsseldorf, Germany.

2003-2008: Research Group Leader, Department of Medical Biotechnology (Head Prof. Dr. K. Cichutek), PaulEhrlich-Institute, Langen, Germany.

1999-2003: Postdoctoral Fellow, Infectious Disease Laboratory (Prof. Dr. N. R. Landau), The Salk Institute for Biological Studies, La Jolla, USA.
1999: Graduation, Dr. rer. Nat, University Hamburg, Germany.
Heiner Fangerau (Prof. Dr. med., Dr. h.c. (Bucharest), ML) is Head and director of the Department of the History, Philosophy and Ethics of Medicine, Heinrich-Heine-University Duesseldorf. Before he went to Duesseldorf in 2016 he held chairs in the history, philosophy and ethics of medicine in Ulm (since 2008) and Cologne (2014). He has a strong research record in the history and ethics of modern medicine. He studied medicine at the University of Bochum. In 2000 he finished his doctorate on the history of eugenics at the Institute of the History of Medicine in Bochum (summa cum laude). His habilitation (“post doctoral thesis”) on the history of the biomedical model was defended in 2008. He is a member of the German National Academy of Sciences Leopoldina

His main research fields are research ethics, history and ethics of psychiatry and neurology, child and adolescence psychiatry and historical network analyses. A particular focus of Prof. Fangerau has experience in collaborating in several interdisciplinary research projects, including BMBF and EU projects. Current works include the history and ethics of technology development in medicine including m-health and e-health applications.

Selected publications:

Matthis Krischel, PhD

Lecturer
Institute for the History, Philosophy and Ethics of Medicine
Centre for Health and Society, Medical Faculty
Heinrich Heine University Düsseldorf
matthis.krischel@hhu.de
matthiskrischel.de

Research Interests
History and ethics of medicine and the life sciences, especially
- Nazi medicine and its commemoration
- History and ethics of human genetics
- History and ethics of urology, venereology and sexology
- Ethics and History of dentistry

Representative Publications (in English)

Education and Experience
Since 2017: Member of the Clinical Ethics Committee, Düsseldorf University Hospital
Since 2016: Lecturer at the Department of History, Theory and Ethics of Medicine, Heinrich Heine University Düsseldorf
2013: PhD in History and Philosophy of Medicine, Ulm University, Germany
2013: Research Prize on the Role of Doctors during the Nazi Era, German Medical Association („Herbert Lewin Research Prize“)
2007: M.A. in History of Science, University of Oklahoma, USA
Ute Linnenkamp

Work experience

05/2015 - present
German Diabetes Center (DDZ), Düsseldorf
Research Associate
Institute for Health Services Research and Health Economics

02/2013 – 04/2015
International Diabetes Federation [http://www.idf.org], Brussels- Administrator, Public Health
Department: Programs and Policy

Master

09/2010 – 08/2012
Erasmus Mundus Master European Public Health
Degree awarded: European Master in Public Health: Europubhealth
University of Copenhagen (DK), Institute of Public Health

08/2011 – 06/2012
2nd Module of the dual Master degree in Public Health
University of Sheffield (UK), School of Health and Related Research

09/2010 – 06/2011
1st Module of the dual Master degree in Public Health
University of Maastricht, Faculty of Health, Medicine and Life Sciences Degree awarded: Bachelor of Science European Public Health

09/2007 – 08/2010
Honours Degree: Governance of health care innovations

09/2008 – 08/2010

Publications

2020

2018


Curriculum Vitae Sara Kress

PhD student/ Research Associate
Research group: Environmental epidemiology of lung, brain and skin aging
IUF – Leibniz Research Institute for Environmental Medicine
Email: Sara.Kress@IUF-Duesseldorf.de

Research Profile
One main target of our research group is the investigation of risk factors for the development of allergies, skin and lung diseases. In my PhD, I will focus on polygenic risk scores and gene-environment interaction effects on respiratory health to explore the interplay between air pollution exposure and genetic susceptibility on respiratory health. Assuming unequal susceptibilities, we will investigate the difference in gene-environment interaction effects between age stages and ethnic groups, e.g. non-Caucasian individuals.

Research projects/ collaborations
1) Polygenic susceptibility in chronic air pollution exposure associated adverse respiratory health in adolescents: a meta-analysis (collaboration between GINIplus/LISAplus (DE), PIAMA (NL), BAMSE (SE), and ALSPAC (UK))
2) SpiroMeta Haplotype Reference Consortium Age-Stratified Genome-wide association analysis of lung function
3) Gene-Environment analysis in eczema: A collaboration between the UK-TREND and the Early Genetics and Lifecourse Epidemiology (EAGLE) consortium
4) EAGLE Genome-wide association analysis in atopic dermatitis

Publications

Work Experience
10/2019 – PhD student/ Research Associate today IUF – Leibniz Research Institute for Environmental Medicine, Düsseldorf
09/2017 – Research Assistant
08/2018 Epidemiology & International Public Health, Bielefeld University
02/2015 – Trainee & Student Assistant
08/2016 Centre for Urban Epidemiology, University Hospital Essen
**Educational background**

10/2016 – MSc in Public Health  
09/2018  University of Bielefeld, Bielefeld

10/2012 – BSc in Bio Science and Health  
04/2016  Rhine-Waal University of Applied Sciences, Kleve

**Awards**

12/2019  Award of the AOK for an outstanding master thesis

09/2019  Master thesis award of the German Society of Social Medicine and Prevention
Research Profile

One main focus of our research group is the collection and analyses of data on the effect of exposure to air pollution on chronic diseases (lung, skin and brain). In my doctoral project, I am investigating the potential interactive effect of air pollution and temperature on health outcomes with a particular focus on respiratory health. We aim to establish whether there is an interactive effect between temperature and air pollution on respiratory health as well as to develop statistical models to assess the affect of this interaction within cohort studies.

Research Projects

1. The interactive effect of air pollution and temperature on blood pressure within the SALIA cohort.
2. The interactive effect of air pollution and temperature on Lung Function in the GINIplus/LISAplus cohort
3. The interactive effect of air pollution and temperature on respiratory mortality in North-Rhine Westphalia, Germany.

Key Publications


Educational background and professional experience

2013-2016 Bachelor of Science in Molecular Biology and Biotechnology; Stellenbosch University, South Africa

2017-2018 Master of Science in Epidemiology; Maastricht University, The Netherlands.

2018-2020 Research intern in the Climate Change and Heat-Health Study group.

2018-2019 Master of Science in Global Health; Maastricht University, The Netherlands.

2020- Doctoral student/ Research Assistant at the IUF-Leibniz Research Institute Environmental Medicine; Düsseldorf, Germany
Curriculum Vitae
Khurshid Pia Jahan
Scientific employee

Research group: Environmental epidemiology of lung, brain and skin aging
IUF – Leibniz Research Institute for Environmental Medicine

Pia.jahan@IUF-Duesseldorf.de

Research Field
Our research group focuses on epidemiological aspects of environmentally-induced aging of the lung, the brain, and the skin. The research group also investigate the risk factors for the development of allergies and lung diseases. I am working on the project “Air pollution exposure on aging-related outcomes in the Indian population”. This project aims to assess skin aging in three Indian cities, namely Delhi, Bangalore, and Mumbai, and to identify genetic susceptibilities to environmental factors associated with skin aging in the regions mentioned above of India.

WORK EXPERIENCE

Aug 2011 — Apr 2016
Student Assistant
IUF – Leibniz Research Institute for Environmental Medicine, Düsseldorf

May 2016 — Nov 2016
Student Assistant
Institute of Human Genetics, Düsseldorf

March 2018 — July 2018
Trainee
IUF – Leibniz Research Institute for Environmental Medicine, Düsseldorf

July 2018 — Current Scientific Employee
IUF – Leibniz Research Institute for Environmental Medicine, Düsseldorf

EDUCATION

2000 — 2006
Secondary and Higher Secondary School Certificates
Viqarunnisa Noon School and College, Dhaka, Bangladesh

Nov 2007 — May 2008
German Language course (B-2 Level)
EURASIA, Berlin

Sept 2008 — July 2010
Preparatory Course for medical school
Goethe University Frankfurt

Oct 2010 — Apr 2015
Pre-Clinic of medical school (First Part of the Medical Examination - 5 Terms out of 12.5 Terms)
Heinrich Heine University Düsseldorf

Oct 2015 — Feb 2018
Bachelor of Science in Biology
Heinrich Heine University Düsseldorf

Oct 2019 — Present
Master in Public Health
Heinrich Heine University Düsseldorf

LANGUAGE SKILLS
Bengali, English, German, Hindi
Dr. Dr. Haifa MAALMI
Clinical Epidemiologist

Professional Experience

Sep 2018 - present  Postdoctoral Researcher, Epidemiologist
                    German Diabetes Center (DDZ), Leibniz Center for
                    Diabetes Research at Heinrich Heine University,
                    Düsseldorf

May 2018 - Aug 2018  Visiting Research Scientist
                    Weill Cornell Medicine, Qatar

Feb 2015 - Jan 2018  PhD in Clinical Cancer Epidemiology
                    German Cancer Research Center (DKFZ) & University
                    of Heidelberg - Network Aging Research (NAR)

Jul 2014 - Dec 2014  Visiting Research Scientist
                    University of Nantes, France

Aug 2013 - Nov 2013  Visiting Research Scientist
                    German Cancer Research Center (DKFZ), Heidelberg

Sep 2010 - Jul 2014   PhD in Biology
                    University of Tunis El Manar, Tunisia

Education

2013  Certificate in Epidemiology and Statistics
      University of Tunis El Manar, Tunisia

2010  MSc in Biology
      University of Tunis El Manar, Tunisia

List of top 10 selected publications


* Equal contribution