

Multifactorial Interventions for Prevention of Dementia

「認知症予防のための多因子介入」



The 17th International
Symposium on Geriatrics
and Gerontology



Saturday, December 3rd, 2022

10:00-18:00

日時 | 2022年12月3日(土) 10:00~18:00

第 17 回長寿医療研究センター国際シンポジウム開催報告

1. 長寿医療研究センター国際シンポジウム

長寿医療研究センター国際シンポジウム (International Symposium on Geriatrics and Gerontology, ISGG) は、2004 年に我が国における 6 番目のナショナルセンターとしてあらたな活動を開始した国立長寿医療研究センター(National Center for Geriatrics and Gerontology, NCGG)において、長寿医療の発展と普及を促進し、老化のメカニズムならびに老化関係疾患の病態解明と治療薬開発に関する新しい情報を発信することを目的に開催されている。毎年 NCGG が主催し、公益財団法人長寿科学振興財団 (Japan Foundation for Aging and Health) が共催、多くの企業、団体のご後援を得て、センター内からの発表に加え、当該領域を代表する国内外の著名な研究者ならびに医療関係者を招聘し、広く参加者を求め、定例開催を継続している。2022 年 12 月 3 日に開催した今回のシンポジウムで、開催は 17 回を重ね、その評価も定着しつつあるが、今後ますます国際的にも関心の高まる超高齢社会における健康長寿の延伸に向けたさらなる発展をめざすものである。

2. 第17回開催のねらい

第 17 回国際シンポジウムでは、4 年前から国立長寿医療研究センターが総力を挙げて行ってきた「認知症予防のための多因子介入研究 (J-MINT 研究)」が終了することを受け、認知症予防に関する世界の英知を結集して、その最新情報を国内外に広く発信することを目的として企画した (タイトル: Multifactorial Interventions for Prevention of Dementia)。

認知症予防では、運動、食事、社会参画が基本であるが、その神経科学的バックグラウンドを明らかにすることが重要である。そこでセッション 1 では、脳と身体との臓器連関のメカニズムについて 3 名の研究者に登壇して頂いた。セッション 2 では、認知症予防のための多因子介入研究が進捗している主要 3 か国から、北欧の FINGER 研究、ドイツの AgeWell.de 研究、日本の J-MINT 研究・J-MINT PRIME 研究の知見が報告された。セッション 3 では、認知症予防を研究にとどめるのではなく社会実装する試みについて、豪州、日本から 4 題の発表がなされた。全体で女性 5 名を含む 11 人の演者 (海外からは 3 名) に発表をお願いした。また、ランチョンセミナーでは、アルツハイマー病のバイオマーカーについての講演を計画した。

COVID-19 の対策のため、第 17 回国際シンポジウムはハイブリッド開催とした。第 16 回国際シンポジウムもハイブリッド形式の開催であったが、会場の参加者は

限られていた。今回は事前に関係学会などに周知することで、多くのオンサイトの参加者があり、face to faceでの情報交換が可能であった。オンラインでも過去最大の参加者があり、3年ぶりに国際学会の雰囲気再現することができた。

シンポジウム終了後の懇親会では、演者、座長をお勤めいただいた先生、実行委員会のメンバーが集まり、和やかに食事を共にすることができた。海外からオンサイトで参加された Susanne Röhr 博士には翌日に京都を案内することもできた。

以上のように、第17回国際シンポジウムでは、世界の最先端の認知症・老年医学の研究者との交流が可能となり、国立長寿医療研究センターの研究・臨床活動の活性化に貢献した。

3. 第17回国際シンポジウムの概要

今回のシンポジウムの開催に当たって、主催者である国立長寿医療研究センターの荒井 秀典 理事長、共催者である公益財団法人長寿科学振興財団の大島 伸一 理事長、第17回国際シンポジウム実行委員会・委員長である櫻井 孝 研究所長から、次の挨拶が寄せられた。

※国立長寿医療研究センター 荒井 秀典 理事長の挨拶

Welcome, everyone!

We are very pleased to welcome you all to the 17th International Symposium on Geriatrics and Gerontology (ISGG) hosted by the National Center for Geriatrics and Gerontology (NCGG).

Since 2020 COVID-19 has strongly influenced our society around the globe. Due to the COVID-19 pandemic, we could not have ISGG in 2020. Although we managed to hold this symposium virtually in 2021, a face-to-face meeting would be ideal for more interactions. Therefore, we did our best to invite domestic and international speakers to NCGG in person as much as we could this year.

The theme of the 17th symposium is “Multifactorial Interventions for Prevention of Dementia”. As we all know, dementia is a huge public health issue in all aging societies and will be a future problem in low to middle income countries. Thus, the effective measures should be implemented to prevent dementia as early as possible. Our center has been conducting a multidomain intervention trial for prevention of dementia, J-MINT since 2019. We are now collaborating with international researchers working on multidomain interventions for dementia. Therefore, it would be a great opportunity for us to discuss dementia prevention in this symposium and to promote future research in this area.

We wish that we can make a great contribution to the world on dementia prevention through our knowledge obtained from this symposium.

Hidenori Arai

President

National Center for Geriatrics and Gerontology

※公益財団法人長寿科学振興財団 大島 伸一 理事長の挨拶

Dear Researchers,

I am delighted to welcome you and have the opportunity to speak at the 17th International Symposium on Geriatrics and Gerontology.

Today, Japan is one of the leading countries of longevity, called super aging society, in the world and to live a long life in good health physically and mentally, is one of the top concerns of most people in our country.

Japanese government had settled a new strategy called “Framework for Promoting Dementia Care”, ~focusing on inclusion and prevention, much like two wheels of a cart, while putting emphasis on the perspectives of the patients and their families~

The theme of the 17th International Symposium is "Multifactorial Interventions for Prevention of Dementia", which is the issue we have to tackle together.

I hope your knowledge exchange and new ideas obtained through the discussion in the symposium will greatly contribute to solving the issue.

The Japan Foundation for Aging and Health is very happy to support the International Symposium for Geriatrics and Gerontology and thanks very much for all participants in the symposium. Now let us create a society that will enjoy longevity together!

Yours sincerely,

Shinichi Ohshima

President

The Japan Foundation for Aging and Health

※第 17 回長寿医療研究センター国際シンポジウム 実行委員会・委員長
櫻井 孝 研究所長の挨拶

Greetings

On December 3, 2022, the 17th International Symposium on Geriatrics and Gerontology will be held. The title of symposium is "Multifactorial Interventions for prevention of Dementia.

Ten years ago, many people would have asked, "Is it even possible to prevent dementia?". In recent years, however, many evidences have been reported from around the world that exercise, diet, social activities, etc. can inhibit the decline of cognitive functions. The FINGER study, in particular, has had a major impact on the world by demonstrating that a combination of these interventions (Multifactorial Interventions) can significantly improve cognitive impairment. In Japan, a multifactorial intervention study that is tailored to the lifestyle of Japanese people, mainly at the National Center for Geriatrics and Gerontology will soon be completed.

Recently, there was also the wonderful news of the successful development of a disease-modifying drug for Alzheimer's disease. It is expected that the prevention of dementia through a combination of pharmacological and non-pharmacological therapies will bring even greater preventive effects. Therefore, we have planned this symposium to bring together the world's top researchers in multifactorial intervention for dementia prevention. They will present their latest research results on large-scale intervention trials for dementia prevention, social implementation, and biological linkage between brain and multi-organ functions.

We hope that this symposium will contribute to a deeper understanding of dementia and the realization of new dementia countermeasures. Thank you very much for your kind attention.

Sincerely

Takashi Sakurai, MD, PhD
Director, Research Institute
National Center for Geriatrics and Gerontology



写真 1：座長・講師・国際シンポジウム実行委員会の集合写真



写真 2：シンポジウムの開催風景

開催概要

催 事 名 : 第 17 回長寿医療研究センター国際シンポジウム
The 17th International Symposium on Geriatrics and Gerontology

テ ー マ : Multifactorial Interventions for Prevention of Dementia
「認知症予防のための多因子介入」

開催日時 : 2022 年 12 月 3 日 (土) 10:00~18:00

開催場所 : あいち健康の森プラザ 1 階プラザホール
(愛知県知多郡東浦町大字森岡字源吾山 1 番地の 1)

主 催 : 国立研究開発法人国立長寿医療研究センター

共 催 : 公益財団法人長寿科学振興財団

ランチオンセミナー共催 : エーザイ株式会社

後 援 : 一般社団法人日本老年医学会、公益社団法人日本老年精神医学会、
一般社団法人日本認知症学会、一般社団法人日本神経学会、日本神
経科学学会、一般社団法人日本サルコペニア・フレイル学会、国立大
学法人東海国立大学機構 名古屋大学、公立大学法人名古屋市立大学、
藤田医科大学病院、愛知医科大学、国立大学法人三重大学、国立大学
法人浜松医科大学、国立大学法人東海国立大学機構 岐阜大学、厚生
労働省、愛知県、名古屋市、大府市、東浦町、朝日新聞社、株式会社
中日新聞社、株式会社毎日新聞社 中部本社、読売新聞社、東海テレ
ビ放送株式会社、中京テレビ放送株式会社、株式会社 C B C テレビ、
名古屋テレビ放送株式会社、テレビ愛知株式会社

使用言語 : 英語

講 演 者 : 国内 12 名 (うち、内部 5 名)、海外 3 名
※ランチオンセミナーも含む

参加人数 : 会場 66 名、ライブ配信によるオンライン視聴者 308 名 (延人数)

プログラム

10:00～10:05 開会の辞

国立長寿医療研究センター 理事長 荒井 秀典

Session I : Interaction between the brain and peripheral organs

座長：国立長寿医療研究センター 里 直行

国立長寿医療研究センター 関谷 倫子

10:10～10:40 **Exploring the Association Between Oral Health and Dementia**

国立長寿医療研究センター 松下 健二

10:40～11:10 **Sarcopenia and NAD-mediated functional connection between hypothalamus and skeletal muscle**

国立長寿医療研究センター 伊藤 尚基

11:10～11:40 **Aged human neurons directly converted from urine-derived cells**

慶應義塾大学医学部生理学教室 前田 純宏

ランチョンセミナー

座長：国立長寿医療研究センター 佐治 直樹

11:50～12:50 **Digital biomarker と Biofluid biomarker が捉えるアルツハイマー病の Biological subtype**

大阪大学大学院医学系研究科 武田 朱公

Session II : World's Leading Multimodal Intervention Trial for Dementia Prevention

座長：国立長寿医療研究センター 櫻井 孝

神戸大学大学院保健学研究科 古和 久朋

13:00～13:45 **The AgeWell.de Study: findings and implications from a pragmatic multidomain trial against cognitive decline in Germany**

ライプツィヒ大学（ドイツ） Susanne Röhr

13:45～14:15 **The Japan-Multimodal Intervention Trial for Prevention of Dementia (J-MINT): Study progress**

国立長寿医療研究センター 杉本 大貴

14:15～14:55 **Social Implementation of Dementia Prevention based on the J-MINT PRIME Tamba Study**

神戸大学大学院保健学研究科 古和 久朋

15:00～15:40 **World-Wide FINGERS Updates: Toward a Personalized and Global Strategy for Dementia Prevention**

カロリンスカ研究所（スウェーデン） Francesca Mangialasche

※Web オンライン講演

Session III : Prospects for social implementation of multifactorial interventions for dementia prevention

座長：国立長寿医療研究センター 島田 裕之

国立がん研究センターがん対策研究所 内富 庸介

15:45～16:30 **Population and individual approaches to dementia prevention**

ニューサウスウェールズ大学（オーストラリア） Kaarin Anstey

※Web オンライン講演

16:30～17:00 **Scaling up evidence-based practices for disease prevention using implementation science**

国立がん研究センターがん対策研究所 島津 太一

17:00～17:30 **Is a health promotion program using IoT technology effective for older adults living in the community?**

国立長寿医療研究センター 李 相 侖

17:30～17:55 **Implementation and challenges of the latest technologies to support activities of daily living**

国立長寿医療研究センター 大高 恵莉

17:55～18:00 閉会の挨拶

国立長寿医療研究センター 櫻 井 孝

Exploring the Association Between Oral Health and Dementia

Kenji Matsushita

Department of Oral Disease Research,
National Center for Geriatrics and Gerontology

Summary

Although the establishment of measures against dementia is an urgent issue worldwide, the etiology of dementia, including Alzheimer's disease (AD), which is the most common form of dementia, has not been fully elucidated and effective therapies have not been established. Elucidation of the risk factors for dementia and factors that inhibit its onset and progression as well as implementation of measures to deal with these factors could be effective for preventing dementia. The results of previous cohort studies have shown that the smaller number of retained teeth is, the lower is the cognitive function and the higher is the risk of developing dementia. It is thought that a decrease in the number of teeth retained leads to a decrease in masticatory function. A decrease in cerebral blood flow due to decreased masticatory function and deterioration of nutritional status due to decreased masticatory function are thought to be the causes of the decline in cognitive function. However, the causal relationship between those has not been fully elucidated. On the other hand, we have recently shown that extraction of the first maxillary upper molars in aged mice and AD model mice and long-term rearing of aged mice on a soft diet decreased spontaneous activity, spatial working memory, and motor coordination and enhanced cellular senescence in the hippocampus and hypothalamus. Recently, a number of epidemiological and animal studies have shown that periodontal disease and the periodontopathic bacterium *Porphyromonas gingivalis* (P.g) are associated with cognitive function and dementia. In mouse models, P.g infection impairs cognitive function and promotes the deposition of amyloid- β protein (A β) in the brain. Furthermore, inhibition of gingipain has been shown to improve the pathogenesis of AD in mouse models. Clinical trials (Phase II/III) for the treatment of AD with gingipain inhibitors are currently underway in Europe and the United States, and their efficacy has been partially confirmed. Thus, the importance of oral care as a measure against dementia is being reaffirmed. Periodontal disease, oral bacteria, oral function, and dementia/Alzheimer's disease are the keywords in this presentation, and their relationships will be comprehensively explained. The importance of oral health for extending healthy life expectancy will also be discussed.

Education

Ph.D. in Kagoshima University Dental School, Kagoshima, Japan, 1993.

Professional Experiences

- 1993 Assistant Professor, Conservative Dentistry and Endodontology, Kagoshima University Dental School, Kagoshima, Japan
- 1997 Instructor, Department of Conservative Dentistry and Endodontology, Kagoshima University Dental School, Kagoshima, Japan
- 2002 Research fellow, Department of Cardiology, Johns Hopkins University School of Medicine
- 2005-present Head, Department of Oral Disease Research, National Center for Geriatrics and Gerontology
- 2007-present Visiting Professor, Tohoku University Graduate School of Dentistry
- 2008-present Visiting Professor, Health Sciences University of Hokkaido School of Dentistry
- 2009-present Visiting Professor, School of Dentistry, Aichi Gakuin University
- 2010-present Visiting Professor, Hokkaido University Graduate School of Dentistry
- 2011-present Visiting Professor, Kagoshima University Graduate School of Dentistry
- 2012-present Visiting Professor, Kyusyu University Graduate School of Dentistry
- 2018-present Visiting Professor, Tokushima University Graduate School of Dentistry

Honors and Awards

- 1995 Young Investigator Award, The Japanese Society of Conservative Dentistry
- 2003 Young Investigator Prize in Thrombosis, 4th Annual Conference on Arteriosclerosis, Thrombosis and Vascular Biology
- 2004 Young Investigator Award, The 3rd International Conference on the Biology, Chemistry and Therapeutic Applications of Nitric Oxide
- 2016 Basic Research Award, 100th Annual Meeting of American Academy of Periodontology
- 2016 Clinical Impact Award, 100th Annual Meeting of American Academy of Periodontology

Major Research Interest

- Research on the relationship between periodontal disease and the whole body
- Research on the aging of periodontal tissue
- Studies on pathogenic factors of periodontal pathogens
- Research on the decline of masticatory function and brain aging

Recent Publications (Selected)

1. Furukawa M, Tada H, Wang J, Yamada M, Kurosawa M, Satoh A, Ogiso N, Shikama Y, Matsushita K. Molar loss induces hypothalamic and hippocampal astrogliosis in aged

- mice. *Sci Rep*, 18;12(1):6409, 2022.
2. Furukawa M, Matsuda K, Aoki Y, Yamada M, Wang J, Watanabe M, Kurosawa M, Shikama Y, Matsushita K. Analysis of senescence in gingival tissues and gingival fibroblast cultures. *Clin Exp Dent Res*, 8(4):939-949, 2022.
 3. Shikama Y, Kurosawa M, Furukawa M, Kudo Y, Ishimaru N, Matsushita K. The Priming Potential of Interferon Lambda-1 for Antiviral Defense in the Oral Mucosa. *Inflammation*, 45(3):1348-1361, 2022.
 4. Song LT, Tada H, Nishioka T, Nemoto E, Imamura T, Potempa J, Li CY, Matsushita K, Sugawara S. *Porphyromonas gingivalis* Gingipains-Mediated Degradation of Plasminogen Activator Inhibitor-1 Leads to Delayed Wound Healing Responses in Human Endothelial Cells. *J Innate Immun*, 14(4):306-319, 2021.
 5. Kurosawa M, Shikama Y, Furukawa M, Arakaki R, Ishimaru N, Matsushita K: Chemokines Up-Regulated in Epithelial Cells Control Senescence-Associated T Cell Accumulation in Salivary Glands of Aged and Sjögren's Syndrome Model Mice. *Int J Mol Sci*, 22(5):2302, 2021.
 6. Furukawa M, Wang J, Kurosawa M, Ogiso N, Shikama Y, Kanekura T, Matsushita K: Effect of green propolis extracts on experimental aged gingival irritation in vivo and in vitro. *J Oral Biosci*, 63:58-65, 2021.
 7. Furukawa M, Yamada K, Kurosawa M, Shikama Y, Wang J, Watanabe M, Kanekura T, Matsushita K: High concentration of glucose induces filaggrin1 expression through AP-1 in skin keratinocytes. *J Dermatol Sci*, 98(2):137-140, 2020.
 8. Matsushita K, Yamada-Furukawa M, Kurosawa M, Shikama Y: Periodontal Disease and Periodontal Disease-Related Bacteria Involved in the Pathogenesis of Alzheimer's Disease. *J Inflamm Res*, 13:275-283, 2020.
 9. Matsushita K: Analysis of Interaction Between *Porphyromonas gingivalis* and Endothelial Cells In Vitro. *Methods Mol Biol*, 2210:225-233, 2020.
 10. Ishida N, Ishihara Y, Ishida K, Tada H, Funaki-Kato Y, Hagiwara M, Ferdous T, Abdullah M, Mitan A, Michikawa M, Matsushita K: Periodontitis induced by bacterial infection exacerbates features of Alzheimer's disease in transgenic mice. *npj Aging and Mechanisms of Disease* 3(15), 2017.

Contact Information

National Center for Geriatrics and Gerontology,
Institute, Department of Oral Disease Research,

Name: Kenji Matsushita, D.D.S., Ph.D.

Address: 7-430 Morioka-cho, Obu City, Aichi 474-8511, Japan

Phone: +81-562-46-2311(ext.5401)

Fax: +81-562-46-8479

e-mail: kmatsu30@ncgg.go.jp

Sarcopenia and NAD⁺-mediated functional connection between hypothalamus and skeletal muscle

Naoki Ito

Brain-Skeletal Muscle Connection in Aging Project Team, Geroscience Research Center, National Center for Geriatrics and Gerontology

Summary

In rapidly aging societies, sarcopenia is an urgent socio-economic problem. However, the underlying molecular mechanism of sarcopenia remain unclear. In the past several years, a number of studies have revealed that the progressive and systemic decreases in nicotinamide adenine dinucleotide (NAD⁺) levels and dysfunctions of NAD⁺-consuming enzymes are a driving force of age-associated pathophysiologies. In this study, we revealed the novel functional connection between the lateral hypothalamus (LH) and skeletal muscle through *Slc12a8*, a nicotinamide mononucleotide (NMN) transporter (Grozio A et al., Nat Metab, 2019), and its relationship to sarcopenia. We found that *Slc12a8*-expressing cells were mainly localized in the LH, compared with other hypothalamic nuclei. The genetic knockdown of *Slc12a8* specifically in the LH of young mice caused decreases in activity-dependent energy expenditure. LH-specific *Slc12a8*-knockdown mice also showed significant decreases in skeletal muscle functions including muscle mass, muscle force, intramuscular glycolysis, and protein synthesis, indicating the important role of *Slc12a8* in the LH for the regulation of whole-body metabolism and skeletal muscle functions. This regulation was mediated by the sympathetic nerve-β2-adrenergic receptor axis in skeletal muscle. The expression of *Slc12a8* in the LH decreased over age. Furthermore, LH-specific *Slc12a8*-knockdown mice recapitulated the skeletal muscle phenotypes in aged mice. Remarkably, overexpression of *Slc12a8* in the LH of aged mice ameliorated age-related decreases in energy expenditure and skeletal muscle functions. Thus, our results highlight the novel role of *Slc12a8* in the LH for the regulation of whole-body metabolism and skeletal muscle functions and implicate its importance in the pathogenesis of sarcopenia during aging (Ito N et al., Cell Reports, 2022).

Education

Department of Biological Information, Graduate School of Bioscience and Biotechnology, Tokyo institute of Technology, 2013

Professional Experiences

2011-2013, Research Fellowship for Young Scientists DC2, Japan Society for the Promotion of Science (JSPS)
2013-2015, Research fellow, Department of Molecular Therapy, National Institute of Neuroscience, National Center of Neurology and Psychiatry

- 2015-2016, Research fellowship for Young Scientists PD, Department of Rheumatology and Allergy, IMSUT Hospital, Institute of Medical Science, University of Tokyo
- 2016-2018, Researcher, Pharmaceutical & Healthcare Research Laboratories, Research & Development Management Headquarters, FUJIFILM Corporation
- 2018-2019, Researcher, Laboratory of Molecular Life Science, Institute of Biomedical Research and Innovation, Foundation for Biomedical Research and Innovation
- 2019-2022, Senior Researcher, Laboratory of Molecular Life Science, Institute of Biomedical Research and Innovation, Foundation for Biomedical Research and Innovation
- 2022 April-2022 June, Researcher, Department of Integrative Physiology, Geroscience Research Center, National Center for Geriatrics and Gerontology
- 2022 July-present Project reader, Brain-Skeletal Muscle Connection in Aging Project Team, Geroscience Research Center, National Center for Geriatrics and Gerontology

Honors and Awards

- 2012 Young Investigator Awards, The 67th Japan Society of Physical Fitness and Sports Medicine
- 2013 Akaike Journal Awards, Tokyo Institute of Technology
- 2013 Dimitris N. Chorafas Foundation Awards, Weizmann Institute of Science
- 2014 Seiichi Tejima Doctoral Dissertation Awards, Tokyo Institute of Technology
- 2014 The Best Article Awards, National Center of Neurology and Psychiatry
- 2018 The Best Article Awards, FUJIFILM Corporation
- 2018-2019 Associated editor of *Journal of Alzheimer's Diseases*
- 2020 Outstanding Reviewer Awards, Nutrients
- 2020 Young Investigator's Awards, The 6th Annual Meeting of Japan Muscle Society
- 2021 The Best Presentation Awards, The 8th Annual Meeting of Japanese Association on Sarcopenia and Frailty
- 2022 Presentation Awards, The 9th Annual Meeting of Japanese Association on Sarcopenia and Frailty

Major research Interest

- ❑ Molecular mechanisms of sarcopenia and physical frailty

- ❑ Interaction between hypothalamus and skeletal muscle
- ❑ NAD⁺ metabolism in hypothalamus and skeletal muscle

Recent Publications (Selected)

1. **Naoki Ito** et al., Slc12a8 in the lateral hypothalamus maintains energy metabolisms and skeletal muscle functions during aging. *Cell Reports*. 2022.
2. **Naoki Ito** et al., Effects of Composite Supplement Containing Collagen Peptide and Ornithine on Skin Conditions and Plasma IGF-1 Levels—A Randomized, Double-Blind, Placebo-Controlled Trial. *Marine Drugs*. 2018.
3. **Naoki Ito** et al., ATP-induced increase in intracellular calcium levels and subsequent activation of mTOR as regulators of skeletal muscle hypertrophy. *International Journal of Molecular Sciences*. 2018.
4. **Naoki Ito** et al., The Protective Role of Astaxanthin for UV-Induced Skin Deterioration in Healthy People—A Randomized, Double-Blind, Placebo-Controlled Trial. *Nutrients*. 2018.
5. **Naoki Ito** et al., Effects of composite supplement containing astaxanthin and sesamin on cognitive function in people with mild cognitive impairment: A randomized, double-blind, placebo-controlled trial. *Journal of Alzheimer's Diseases*. 2018.
6. **Naoki Ito** et al., Direct reprogramming of fibroblasts into skeletal muscle progenitor cells by transcription factors enriched in undifferentiated subpopulation of satellite cells. *Scientific reports*. 2017.
7. **Naoki Ito** et al., Enhancement of satellite cell transplantation efficiency by leukemia inhibitory factor. *Journal of Neuromuscular Diseases*. 2016.
8. **Naoki Ito** et al., Capsaicin mimics mechanical load-induced intracellular signaling events: Involvement of TRPV1-mediated calcium signaling in induction of skeletal muscle hypertrophy. *Channels*. 2013.
9. **Naoki Ito** et al., Activation of calcium signaling through Trpv1 by nNOS and peroxynitrite as a key trigger of skeletal muscle hypertrophy. *Nature Medicine*. 2013.

Contact Information

Brain-Skeletal Muscle Connection in Aging Project Team,
Geroscience Research Center,
National Center for Geriatrics and Gerontology

Name: Naoki Ito

Address: 7-430, Morioka-cho, Obu-shi, Aichi 474-8511, Japan

Phone: +81-562-44-5651 ext. 7594

e-mail: naoki.ito@ncgg.go.jp

Aged human neurons directly converted from urine-derived cells

Sumihiro Maeda

Keio University School of Medicine, Department of Physiology

Summary

The intervention of induced pluripotent stem cells (iPSCs) enabled us to model neurodegenerative diseases using human cells. However, the aging signatures are canceled in iPSCs, which is a limitation to study aging-dependent diseases like Alzheimer's disease (AD) using iPSCs. To circumvent the aging cancellation, conversion methods of somatic cells directly to neurons were developed mainly for fibroblasts. However, the collection of fibroblasts is invasive, making it difficult to obtain the donor's consent. Thus, we aimed to develop a novel method to convert other somatic cells, urine-derived cells (UDCs), to aged neurons not via iPSCs because UDCs can be extracted from human urine samples multiple times in non-invasive ways. After several modifications of the direct conversion method for fibroblasts, we succeeded to induce neuron-like cells from UDCs (UDC-iNs). Neuronal markers including microtubule-associated protein tau were expressed in the UDC-iNs, and the frequency of Ca oscillation of the cells was comparable level with neurons and much faster than the original UDCs. In addition, transcriptome analysis revealed neuronal profiles of the UDC-iNs. Using this newly established conversion method, we succeeded to establish UDC-iNs from donors of various ages, 2 to 89 years old. DNA methylation analysis of the UDCs from those donors illustrated the donor's age-dependent methylation and the preservation of methylation status even after the conversion to UDC-iNs. To examine if UDC-iN can reflect disease phenotypes of neurodegenerative diseases, we obtained UDCs from Niemann-Pick type C (NPC), a familial neurodegenerative disease with lysosomal dysfunction. The UDC from NPC proliferated well, but the UDC-iN showed a drastic reduction in the survival rate with lysosomal dysfunction. In UDC-iNs, we also examined the effect of tau expression, which is a key protein in several neurodegenerative diseases including AD. We found that the survival rate of UDC-iNs was increased by tau reduction, indicating that tau expression was detrimental to UDC-iNs. These data implied the potential of UDC-iNs as a disease modeling platform. The accumulation of disease modeling and phenotyping of various donors will enable us to draw a standard curve of neuronal aging and may enable us to predict one's onset of neurodegenerative diseases.

Education

Tokyo Institute of Technology, Japan

1997-2001 (undergrad), 2001-2003 (Master course), 2003-2006 (Doctor course)

- Graduate research with Akihiko Takashima (RIKEN) and Atsushi Ikai (Tokyo Institute of Technology), Apr 2001–Mar 2006

Professional Experiences

Keio University School of Medicine, Tokyo, Japan

- Assistant Professor with Hideyuki Okano, Oct 2018–Present
- Instructor with Hideyuki Okano, Dec 2016–Sep 2018

The J. David Gladstone Institute of Neurological Disease; University of California, San Francisco, CA, USA

- Research Scientist with Lennart Mucke, Jan 2014–Nov 2016
- The post-doctoral fellow with Lennart Mucke, Sep 2008–Dec 2013

Brain Science Institute, RIKEN, Saitama, Japan

- The post-doctoral fellow with Akihiko Takashima, Apr 2006–Aug 2008

Brain Science Institute, RIKEN, Saitama, Japan and Tokyo Institute of Technology, Kanagawa, Japan

- Graduate research with Akihiko Takashima (RIKEN) and Atsushi Ikai (Tokyo Institute of Technology), Apr 2001–Mar 2006
- Teaching assistant in Tokyo Institute of Technology, Apr 2003– March 2004

Honors and Awards

- Career advancement award at the Gladstone Institute (2014)
- Poster presentation award (1st) at 2013 the Gladstone Retreat
- Poster presentation award (3rd) at 2012 the Gladstone Retreat
- Scientific leadership award 2011-2012 the Gladstone Institute of Neurological diseases
- Excellent paper award in Neuroscience research at 2006

Major Research Interest

- Aggregation-dependent pathogenesis by Tau protein
- Aggregation-independent pathogenesis by Tau protein
- Direct conversion of human somatic cells to neuronal cells

Recent Publications (Selected)

1. Supakul, S, Maeda, S#, and Okano, H#. Stem Cell Res. 2022, 62. # Corresponding

2. *Supakul, S, Okano, H, and Maeda, S#. Front. Aging Neurosci. (2021) #Corresponding
3. Maeda S and Takashima A. Tau oligomer. Tau Biology. Advances in Experimental Medicine and Biology. 2019.
4. *Das D, *Maeda S, Hu B, Yu G, Guo W, Lopez I, Yu X, and Mucke L. Neuronal levels and sequence of tau modulate the power of brain rhythms. Neurobiology of Disease. 2018 June. *Co-first author, equally contributed.
5. Maeda S*, Y Sato, A Takashima, FTDP-17 mutations enhance tau oligomer formation. Neurobiology of aging. 2018 May. *Corresponding author.
6. Maeda S, Djukic B, Taneja P, Yu GQ, Lo I, Davis A, Craft R, Guo W, Wang X, Kim D, Ponnusamy R, Gill TM, Masliah E, Mucke L. Expression of A152T human tau causes age-dependent neuronal dysfunction and loss in transgenic mice. EMBO Rep. 2016 Apr;17(4):530-5.
7. Morris M, Knudsen GM, Maeda S, Trinidad JC, Ioanoviciu A, Burlingame AL, Mucke L. Tau post-translational modifications in wild-type and human amyloid precursor protein transgenic mice. Nat Neurosci. 2015 Aug;18(8):1183-9.
8. Morris M, Maeda S, Vossel K, Mucke L. The many faces of tau. Neuron. 2011 May 12; 70 (3): 410-26. Review.
9. Maeda S, Sahara N, Saito Y, Murayama M, Yoshiike Y, Kim H, Miyasaka T, Murayama S, Ikai A, Takashima A. Granular tau oligomers as intermediates of tau filaments. Biochemistry. 2007 Mar 27; 46 (12): 3856-61.
10. Maeda S, Sahara N, Saito Y, Murayama S, Ikai A, Takashima A. Increased levels of granular tau oligomers: an early sign of brain aging and Alzheimer's disease. Neurosci Res. 2006 Mar; 54 (3):197-201.

Contact Information

Keio University School of Medicine Department of Physiology

Name: Sumihiro Maeda

Address: 35 Shinanomachi, Shinjuku-ku, Tokyo, Japan, 160-8582

Phone: +81-(0)3-5363-3747

Fax: +81-(0)3-3357-5445

e-mail: sumihiro.maeda@keio.jp

The AgeWell.de Study: findings and implications from a pragmatic multidomain trial against cognitive decline in Germany

Associate Professor Susanne Röhr

School of Psychology, Massey University, Palmerston North, New Zealand; Global Brain Health Institute (GBHI), Trinity College Dublin, Dublin, Ireland; Institute of Social Medicine, Occupational Health and Public Health (ISAP), Medical Faculty, University of Leipzig, Leipzig, Germany

Summary

The potential for dementia risk reduction and prevention is deemed substantial if modifiable risk factors were addressed. First multidomain interventions that simultaneously address several such modifiable risk factors aiming at reducing risk of cognitive decline and dementia have yielded mixed but promising evidence. In Germany, AgeWell.de is the first large-scale pragmatic randomized controlled trial investigating the effectiveness of a multi-component lifestyle intervention against cognitive decline. Drawing and extending on the successful Finish Geriatric Intervention Study to Prevent Cognitive Impairment and Disability (FINGER) model, which demonstrated a benefit for cognitive functioning, the AgeWell.de intervention included individualized nutritional counselling, physical activity enhancement, cognitive training, monitoring of vascular risk factors, optimization of medication, social activity enhancement, and, if necessary, interventions targeting depression, bereavement, and grief. Over 1000 older primary care patients at increased dementia risk underwent the intervention or received general health advice/treatment as usual for two years. The lecture will present first findings and discuss implications for the field of multidomain interventions considering global developments. Overall, despite the impact of the COVID-19 pandemic on trials conduction, causing interruptions and delays, the research landscape on multidomain interventions is growing rapidly with studies underway in more than 40 countries. Lessons learned from AgeWell.de with regards to study conduction and challenges during COVID-19 will be shared and contrasted against this landscape. Moreover, multidomain interventions will be framed as part of larger public health strategies for dementia risk reduction and dementia from a social-ecological perspective. Conclusions for future directions will be drawn that may inform optimizing intervention protocols for increased impact.

Education

- 2021 Venia Legendi, Epidemiology & Public Health, University of Leipzig, GER
- 2017 Cert, Higher Education Didactics, University of Leipzig, GER
- 2017 PhD, Social Medicine & Public Health, University of Leipzig, GER
- 2014 MSc, (Clinical) Psychology, Chemnitz Technological University, GER
- 2012 BSc, Psychology, University of Leipzig, GER

Professional Experiences

- 2022 Associate Professor, School of Psychology, Massey University
- 2021 Senior Research Scientist, Institute of Social Medicine, Occupational Health and Public Health (ISAP), Medical Faculty, University of Leipzig, Germany
- 2020 Global Atlantic Fellow for Equity in Brain Health, Global Brain Health Institute (GBHI), Trinity College Dublin, Ireland; Atlantic Institute, Oxford, UK
- 2018-20 Head of Research Group, Epidemiology & Population Brain Health, University of Leipzig, Germany
- 2018 Visiting Postdoctoral Research Fellow, Centre for Healthy Brain Ageing (CHeBA), UNSW Sydney, Australia
- 2017-18 Postdoctoral Research Fellow, Leipzig Research Center for Civilization Diseases (LIFE), University of Leipzig, Germany
- 2015-18 Research Fellow, Doctoral Student, ISAP, Medical Faculty, University of Leipzig, Germany
- 2014-15 Research Assistant, ISAP, Medical Faculty, University of Leipzig
- 2011-13 Student Research Assistant, Polyclinic for Psychosomatic Medicine and Psychotherapy, University Hospital Leipzig, Germany

Honors and Awards

- 2021 Outstanding Early Career Researcher (ECR) Award, German Association for Psychiatry, Psychotherapy and Psychosomatics, Berlin, GER
- 2021 Best Presentation Award, Alzheimer's Association, Athens, GR (virtual)
- 2020 Outstanding ECR-Keynote, EU Psychiatric Association, Cambridge, UK
- 2018 Best Dissertation Prize, Medical Faculty, University of Leipzig, GER
- 2017 Paper of the Month, International Psychogeriatrics
- 2017 Poster Award, Intl. Federation of Psychiatric Epidemiology, Melbourne, AUS
- 2015 Poster Award, Intl. Federation of Psychiatric Epidemiology, Bergen, NO
- 2015 Best Master Thesis Prize, German Society of Social Medicine & Prevention

Major Research Interest

My professional speciality is epidemiological and public health research on healthy brain

ageing, specifically dementia risk reduction and prevention. A key focus is on population-based cohort studies to identify modifiable health and lifestyle risk factors for cognitive decline and dementia and their individual and combined contribution to brain health in old age as well as interventional studies to promote brain health. I am interested in the social and environmental determinants of brain health, i.e., which and how contextual factors (e.g., education, income, social, natural, and built environment, climate) determine modifiable health and lifestyle for age-related brain health. The overarching aim is to inform equitable public health policy towards creating equitable environments for healthy ageing as well as developing and evaluating multidomain interventions for individual brain health promotion and risk reduction of cognitive decline and dementia.

Recent Publications (Selected)

1. Pazan, F., Breunig, H., Weiss, C., Röhr, S., Lupp, M., Pentzek, M., ... Wehling, M.(2022). Higher FORTA(Fit fOR The Aged)scores are associated with poor functional outcomes,dementia,and mortality in older people. *Eur J Clin Pharmacol*, 78(11), 1851-1859. doi:10.1007/s00228-022-03389-w
2. Samtani, S., Mahalingam, G., Lam, B. C. P., Lipnicki, D. M., Lima-Costa, M. F., Blay, S. L., ...SHARED consortium for the Cohort Studies of Memory in an International Consortium (COSMIC). (2022). Associations between social connections and cognition: a global collaborative individual participant data meta-analysis. *Lancet Healthy Longev*. doi:10.1016/S2666-7568(22)00199-4
3. Röhr, S., Pabst, A., Baber, R., Engel, C., Glaesmer, H., Hinz, A., ...Riedel-Heller, S. G.(2022). Socioeconomic Inequalities in Cognitive Functioning Only to a Small Extent Attributable to Modifiable Health and Lifestyle Factors in Individuals Without Dementia. *J Alzheimers Dis*. doi:10.3233/JAD-220474
4. Kleineidam, L., Wagner, M., Guski, J., Wolfsgruber, S., Miebach, L., Bickel, H., ... Hesser, K.(2022). Disentangling the relationship of subjective cognitive decline and depressive symptoms in the development of cognitive decline and dementia. *Alzheimers Dement*. doi:10.1002/alz.12785
5. Röhr, S., Wittmann, F., Engel, C., Enzenbach, C., Witte, A.V., Villringer, A., ... Riedel-Heller,S.G.(2022). Social factors and the prevalence of social isolation in a population-based adult cohort. *Soc Psychiatry Psychiatr Epidemiol*, 57(10), 1959-1968. doi:10.1007/s00127-021-02174-x
6. Gühne, U., Jung, F., Röhr, S., Pabst, A., Grochtdreis, T., Dams, J., ... Riedel-Heller, S. G. (2022). [Occupational Participation of Syrian Refugees with Posttraumatic Stress in Germany]. *Psychiatr Prax*, 49(7), 352-358. doi:10.1055/a-1503-4685
7. Gerhards, S. K., Pabst, A., Röhr, S., Lupp, M., & Riedel-Heller, S. G. (2022). Coping with stress during the COVID-19 pandemic in the oldest-old population. *Eur*

- J Ageing, 1-10. doi:10.1007/s10433-022-00719-w
8. Röhr, S., Pabst, A., Baber, R., Engel, C., Glaesmer, H., Hinz, A.,... Riedel-Heller, S. G. (2022). Social determinants and lifestyle factors for brain health: implications for risk reduction of cognitive decline and dementia. *Sci Rep*, 12(1), 12965. doi:10.1038/s41598-022-16771-6
 9. Röhr, S., Kivipelto, M., Mangialasche, F., Ngandu, T., & Riedel-Heller, S. G. (2022). Multidomain interventions for risk reduction and prevention of cognitive decline and dementia: current developments. *Curr Opin Psychiatry*, 35(4), 285-292. doi:10.1097/YCO.0000000000000792
 10. Grothe, J., Röhr, S., Lupp, M., Pabst, A., Kleineidam, L., Hessler, K., ... Riedel-Heller, S. G. (2022). Social Isolation and Incident Dementia in the Oldest-Old-A Competing Risk Analysis. *Front Psychiatry*, 13, 834438. doi:10.3389/fpsy.2022.834438

Contact Information

Massey University
School of Psychology
Health and Ageing Research Team

Name: Dr. Susanne Röhr

Address: Private Bag 11-2222, 4442 Palmerston North, Aotearoa New Zealand

Phone: +64 28 8517 5958

E-mail: s.roehr@massey.ac.nz

The Japan-Multimodal Intervention Trial for Prevention of Dementia (J-MINT): Study progress

Taiki Sugimoto

Department of Prevention and Care Science, Research Institute, National Center for Geriatrics and Gerontology

Summary

Dementia and cognitive decline are key challenges for healthy longevity in aging societies, because dementia is one of the main causes of disability among older adults and greatly affects the society, owing to the rising costs of health and social care services. Given the high failure rate of drug development in Alzheimer's disease, especially for disease-modifying therapies, developing successful nonpharmacological strategies to prevent dementia is an urgent priority.

To date, several large multidomain prevention trials, including the FINGER study, have shown that interventions targeting multiple modifiable risk factors for dementia simultaneously in older adults, especially in those at increased risk of dementia, could slow cognitive decline and reduce incident dementia. In addition, the World-Wide FINGERS Network, which is the global network of multimodal intervention trials testing and optimizing the FINGER model in various populations and settings, was launched in 2017. In Japan, the Japan-Multimodal Intervention Trial for Prevention of Dementia (J-MINT) was started in 2019 as a multicenter clinical trial at five sites across Japan, led by the National Center for Geriatrics and Gerontology. The J-MINT trial aimed to verify whether an 18-month multidomain intervention, which consists of the management of vascular risk factors, group-based physical exercise and self-monitoring of physical activity, nutritional counseling, and cognitive training, could prevent the progression of cognitive decline among older adults with mild cognitive impairment. In addition, J-MINT trial aimed to clarify the mechanism of cognitive improvement and deterioration by using the assessment of blood-based biomarkers, omics analysis, and neuroimaging. Further, the J-MINT trial collaborates with partnering private enterprises in the implementation of relevant interventional measures for future social implementation.

While COVID-19 pandemic has been affecting J-MINT trial in recruitment and intervention, we successfully recruited 531 older adults in this trial. In area under the declaration of state emergency, J-MINT trial provided on-line group-based physical exercise intervention programs, which could maintain participant's adherence and promote physical activity and social contacts even in COVID-19 pandemic. The J-MINT trial completed intervention and final evaluation in November 2022. The results of the J-MINT trial will not only demonstrate

efficacy of multidomain interventions for older people at high risk for dementia, but will also serve as a starting point for social implementation for dementia prevention.

Education

- 2014 Japanese License of Physical Therapist (No. 127106)
2014–2016 MS. Kobe University Graduate School of Health Sciences, Kobe, Japan
2016–2019 Ph.D. Kobe University Graduate School of Health Sciences, Kobe, Japan

Positions and Employment

- 2015–2017 Research fellow, Center for Comprehensive Care and Research on Memory Disorder, National Center for Geriatrics and Gerontology
2017–2019 Research fellowship for Young Scientists (DC2), Japan Society for the Promotion of Science
2019–present Research fellow, Center for Comprehensive Care and Research on Memory Disorder, National Center for Geriatrics and Gerontology
2021–present Research fellow, Department of Prevention and Care Science, Research Institute, National Center for Geriatrics and Gerontology

Honors and Awards

- 2015–2020 The Urakami Award 2015–2020 (5th–10th Meeting of Japan Society for Dementia Prevention) 2018 KCDS young best award
2018 (Kansai Chubu Dementia Seminar)

Major Research Interest

- ❑ Multidomain intervention for prevention of dementia in older adults at high risk of developing dementia.
- ❑ Association between diabetes and dementia.
- ❑ Clinical significance of frailty and sarcopenia in older adults with cognitive impairment.

Recent Publications (Selected)

1. **Sugimoto T**, Tokuda H, Miura H, Kawashima S, Ando T, Kuroda Y, Matsumoto N, Fujita K, Uchida K, Kishino Y, Sakurai T. Cross-sectional association of metrics derived from continuous glucose monitoring with cognitive performance in older adults with type 2 diabetes. *Diabetes Obes Metab*. 2022. doi: 10.1111/dom.14866. Epub ahead of print.
2. **Sugimoto T**, Noma H, Kuroda Y, Matsumoto N, Uchida K, Kishino Y, Saji N, Niida S, Sakurai T. Time trends (2012-2020) in glycosylated hemoglobin and adherence to the

- glycemic targets recommended for elderly patients by the Japan Diabetes Society/Japan Geriatrics Society Joint Committee among memory clinic patients with diabetes mellitus. *J Diabetes Investig.* 2022. doi: 10.1111/jdi.13897. Epub ahead of print.
3. **Sugimoto T**, Kuroda Y, Matsumoto N, Uchida K, Kishino Y, Saji N, Niida S, Sakurai T. Cross-Sectional Associations of Sarcopenia and Its Components with Neuropsychological Performance among Memory Clinic Patients with Mild Cognitive Impairment and Alzheimer's Disease. *J Frailty Aging.* 2022;11(2):182-189.
 4. **Sugimoto T**, Arai H, Sakurai T. An update on cognitive frailty: Its definition, impact, associated factors and underlying mechanisms, and interventions. *Geriatr Gerontol Int.* 2022 ;22(2):99-109.
 5. **Sugimoto T**, Araki A, Fujita H, Honda K, Inagaki N, Ishida T, Kato J, Kishi M, Kobayashi K, Kouyama K, Noma H, Ohishi M, Satoh-Asahara N, Shimada H, Sugimoto K, Suzuki S, Takeya Y, Tamura Y, Tokuda H, Umegaki H, Watada H, Yamada Y, Sakurai T. The Multi-Domain Intervention Trial in Older Adults With Diabetes Mellitus for Prevention of Dementia in Japan: Study Protocol for a Multi-Center, Randomized, 18-Month Controlled Trial. *Front. Aging Neurosci.* 2021. 13:680341.
 6. **Sugimoto T**, Sakurai T, Akatsu H, Doi T, Fujiwara Y, Hirakawa A, Kinoshita F, Kuzuya M, Lee S, Matsuo K, Michikawa M, Ogawa S, Otsuka R, Sato K, Shimada H, Suzuki H, Suzuki H, Takechi H, Takeda S, Umegaki H, Wakayama S, Arai H, J-MINT investigators. The Japan-Multimodal Intervention Trial for Prevention of Dementia (J-MINT): The Study Protocol for an 18-Month, Multicenter, Randomized, Controlled Trial. *J Prev Alzheimers Dis.* 2021. doi: 10.14283/jpad.2021.29.
 7. **Sugimoto T**, Ono R, Kimura A, Saji N, Niida S, Sakai T, Rakugi H, Toba K, Sakurai T. Impact of Cognitive Frailty on Activities of Daily Living, Cognitive Function, and Conversion to Dementia Among Memory Clinic Patients with Mild Cognitive Impairment. *J Alzheimers Dis.* 2020;76(3):895-903.
 8. **Sugimoto T**, Ono R, Kimura A, Saji N, Niida S, Toba K, Sakurai T. Impact of Glycemic Control on Daily Living Activities Over 1-Year Follow-up in Memory Clinic Patients With Diabetes. *J Am Med Dir Assoc.* 2019; 20:792-794.
 9. **Sugimoto T**, Ono R, Kimura A, Saji N, Niida S, Toba K, Sakurai T. Cross-Sectional Association Between Cognitive Frailty and White Matter Hyperintensity Among Memory Clinic Patients. *J Alzheimers Dis.* 2019; 72:605-612.
 10. **Sugimoto T**, Sakurai T, Ono R, Kimura A, Saji N, Niida S, Toba K, Chen LK, Arai H. Epidemiological and clinical significance of cognitive frailty: A mini review. *Ageing Res Rev.* 2018;44:1-7.

Contact Information

National Center for Geriatrics and Gerontology

Department of Prevention and Care Science

Name: Taiki Sugimoto

Address: 7-430 Morioka-cho, Obu, Aichi 474-8511, Japan.

Phone: +81-562-46-2311 (7779)

e-mail: taiki-s@ncgg.go.jp

Social Implementation of Dementia Prevention based on the J-MINT PRIME Tamba Study

Hisaomo Kowa, M.D.

Kobe University Graduate School of Health Sciences

Summary

Kobe University had the opportunity to participate in the J-MINT PRIME study, a randomized controlled study of multifocal interventions aimed at dementia prevention in the citizens of Tamba, Japan. 200 elderly subjects with hypertension or impaired glucose tolerance who scored 22 to 30 on the DASC-21 questionnaire were recruited. A 78-week intervention began in October 2020 for 100 randomly assigned participants in the intervention group. The intervention was almost similar to that in the J-MINT study, and consisted mainly of a weekly 90-minute intervention class. Aerobic exercise, dual-task exercise (called “cognicise”), and communication time were included. Other interventions included home-based brain training using software, nutrition and lifestyle guidance. Participants in these intervention groups gave positive feedback, saying that they found the sessions very beneficial and would like to continue them in the future. The effectiveness of the intervention on cognitive function is still being verified, and an evaluation using Cogstate's digital evaluation tool (named Nou-know for the Japanese version) confirmed significant improvement and maintenance in processing speed and executive function in the intervention group.

In addition to conducting research for establishing evidences for dementia prevention in Tamba city, Kobe University has also begun to realize social implementation of dementia prevention. The program is called "CogniCare", which consists of weekly exercise classes, bi-monthly lectures on dementia prevention and health promotion, and an annual health assessment including cognitive function. The program began in October 2019 at a site in the Kobe area, but had to be interrupted with the beginning of COVID-19 pandemic in the spring of 2020, and an online intervention and assessment program called "eCogniCare" began in October 2020. From October 2021, the service has been integrated with the online service of Moff, which has the technology to evaluate body movements using wearable sensors, and has been offered as "eCogniCare powered by Moff".

The issues to be addressed in the social implementation of dementia prevention through these research and business activities include: securing and training instructors to support the intervention classes; improving the efficiency of evaluation

indices and their implementation so that participants can feel the effects of the intervention; cost sharing to ensure continuity; and the selection of high-risk groups for whom the intervention is expected to have the greatest impact and the means to encourage their participation. Together with the other symposiasts, I would like to discuss solutions to these issues and seek ways to resolve them.

Education

Faculty of Medicine, University of Tokyo, Japan. 1995

Graduate School of Medicine, University of Tokyo, Japan. (2000-)2004

Professional Experiences

1995-1997	Resident in Internal Medicine, Department of Internal Medicine, University of Tokyo hospital, Japan.
1997-2000	Senior resident in Neurology, Department of Neurology, University of Tokyo hospital, Japan.
2004-2005	Project Researcher, Center of Excellence for Integrated Brain Medical Science, Department of Neurology, Graduate School of Medicine, University of Toyko, Japan
2005-2008	Post-doctoral Fellow, Department of Neurology, Alzheimer Research Unit, Massachusetts General Hospital
2008-2010	Assistant Professor – Department of Molecular Neuroscience on Neurodegeneration, University of Tokyo
2010-2011	Lecturer, Department of Neurology, Kobe University Hospital
2012-2016	Associate Professor, Division of Neurology, Kobe University Graduate School of Medicine
2017-present	Professor, Division of Rehabilitation Science, Kobe University Graduate School of Health Sciences
2021-present	Director, Dementia Preventing Center

Honors and Awards

2003	Awarded Travel Grant from University of Tokyo, Japan
2005-2007	Awarded Research Fellowship from Sankyo Foundation of Life Science.
2020-present	Associate Editor of the Neurology and Clinical Neuroscience
2022	Presidential Award of Kobe University (as the Director of Dementia Preventing Center)

Major Research Interest

- ❑ Development of tools to enable screening of elderly people at high risk of dementia in the community
- ❑ Development of a social system that enables screening of cognitive function in the

community

- ❑ Prevention of dementia by non-drug intervention for high-risk elderly
- ❑ Employment support for young people with dementia
- ❑ Activities to deepen understanding of dementia

Recent Publications (Selected)

1. Kowa H, Uchimura M, Ohashi A, Hiroe M, Ono R. Self Assessment Memory Scale (SAMS), a new simple method for evaluating memory function. *Front. Aging Neurosci.*, 22 November 2022 Sec. Neurocognitive Aging and Behavior. <https://doi.org/10.3389/fnagi.2022.1024497>
2. Sekiya H, Tsuji A, Hashimoto Y, Takata M, Koga S, Nishida K, Futamura N, Kawamoto M, Kohara N, Dickson DW, Kowa H, Toda T. Discrepancy between distribution of alpha-synuclein oligomers and Lewy-related pathology in Parkinson's disease. *Acta Neuropathol Commun.* 2022 Sep 6;10(1):133. doi: 10.1186/s40478-022-01440-6.
3. Kumagai R, Osaki T, Oki Y, Murata S, Uchida K, Encho H, Ono R, Kowa H. The Japan-Multimodal Intervention Trial for Prevention of Dementia PRIME Tamba (J-MINT PRIME Tamba): Study protocol of a randomised controlled multi-domain intervention trial. *Arch Gerontol Geriatr.* 2023 Jan;104:104803. doi: 10.1016/j.archger.2022.104803.
4. Yoshino H, Kowa H, Maeda K, Takechi H. Eight months observation of check-up system 'Kobe dementia model' of dementia in Kobe City. *Psychogeriatrics.* 2021 Mar;21(2):246-248. doi: 10.1111/psyg.12649.
5. Murata S, Ono R, Yasuda H, Tanemura R, Kido Y, Kowa H. Effect of a Combined Exercise and Cognitive Activity Intervention on Cognitive Function in Community-dwelling Older Adults: A Pilot Randomized Controlled Trial. *Phys Ther Res.* 2021 Feb 24;24(2):112-119. doi: 10.1298/ptr.E10057.
6. Seki T, Kanagawa M, Kobayashi K, Kowa H, Yahata N, Maruyama K, Iwata N, Inoue H, Toda T. Galectin 3-binding protein suppresses amyloid- β production by modulating β -cleavage of amyloid precursor protein. *J Biol Chem.* 2020 Mar 13;295(11):3678-3691. doi: 10.1074/jbc.RA119.008703.
7. Nagai Y, Kojima S, Kowa H, Yamamoto Y, Kajita H, Osaki T, Kakei Y, Kothari KU, Kayano R. Kobe project for the exploration of newer strategies to reduce the social burden of dementia: a study protocol of cohort and intervention studies. *BMJ Open.* 2021 Jun 18;11(6):e050948. doi: 10.1136/bmjopen-2021-050948.
8. Akatani R, Chihara N, Tachibana H, Koto S, Kowa H, Kanda F, Matsumoto R, Toda T. Validation of the Guy's Neurological Disability Scale as a screening tool for cognitive impairment in multiple sclerosis. *Mult Scler Relat Disord.* 2019 Oct;35:272-275. doi: 10.1016/j.msard.2019.08.012.
9. Fujio H, Inokuchi G, Kuroki S, Tatehara S, Katsunuma S, Kowa H, Nibu KI. Three-year prospective study on olfaction of patients with Parkinson's disease. *Auris Nasus Larynx.* 2020 Oct;47(5):899-904. doi: 10.1016/j.anl.2019.08.008.

10. Sekiya H, Kowa H, Koga H, Takata M, Satake W, Futamura N, Funakawa I, Jinnai K, Takahashi M, Kondo T, Ueno Y, Kanagawa M, Kobayashi K, Toda T. Wide distribution of alpha-synuclein oligomers in multiple system atrophy brain detected by proximity ligation. *Acta Neuropathol.* 2019 Mar;137(3):455-466. doi: 10.1007/s00401-019-01961-w.

Contact Information

Kobe University Graduate School of Health Sciences
Department of Rehabilitation Science
Division of Cognitive and Psychiatric Rehabilitation

Name: Hisatomo Kowa

Address: 7-10-2, Tomogaoka, Suma-ku, Kobe, Hyogo, Japan

Phone: +81-78-796-4502

Fax: +81-78-796-4509

e-mail: kowa@med.kobe-u.ac.jp

World-Wide FINGERS Updates: Toward a Personalized and Global Strategy for Dementia Prevention

Author Francesca Mangialasche, MD, PhD, Assistant Professor, Executive Director of the Global Scientific Coordinating Center of World-Wide FINGERS

Affiliations: Karolinska Institutet, Department of Clinical Geriatrics, Center for Alzheimer Research and Theme Inflammation and Aging, Karolinska University Hospital, and FINGERS Brain Health Institute, Stockholm, Sweden.

Summary

Prevention of cognitive decline and dementia has been highlighted as pivotal to curb the worldwide growing number of cases of Alzheimer's disease (AD) and dementia. Given the multifactorial etiology of dementia and late-onset AD, multidomain interventions targeting several modifiable risk factors and mechanisms simultaneously may be needed for optimal preventive effects. The landmark Finnish Geriatric Intervention Study to Prevent Cognitive Impairment and Disability (FINGER trial) has shown that a multidomain intervention combining exercise, nutritional advice, cognitive training, social activities, and vascular and metabolic risk monitoring, can prevent cognitive and functional decline in older adults at risk of dementia. Participants with genetic risk for dementia and AD (ApoE4 or high polygenic risk score) had clear beneficial effects on cognition. New results from the MIND-AD trial among persons with prodromal AD support the feasibility of a combination approach (multidomain lifestyle + medical food) for increased adherence and efficacy. Ongoing studies based on the FINGER data are unraveling the pathways mediating the beneficial intervention effects, including reduced occurrence of vascular events, improvement of cholesterol/lipids metabolism, inflammation, and synaptic plasticity. These findings will be key to the identification of new therapeutic targets and the definition of personalized prevention approaches. The FINGER model is currently being adapted, tested and optimized in 45+ countries across all continents within the World-Wide FINGERS network (WW-FINGERS, <https://wwfingers.com>). As part of this initiative, we are starting the MET-FINGER trial, which for the first time combines an updated FINGER model with the possible disease-modifying drug metformin using repurposed drug approach. In addition, since the COVID-19 pandemic has caused modifications in the mental and physical health of older adults, with possible detrimental changes on risk profiles for AD and dementia, the WW-FINGERS network launched the WW-FINGERS-SARS-CoV-2 survey, to assess direct

and indirect effects of the pandemic in older adults. Data have been collected from 20+ countries, with 21000+ participants. Findings emerging from various countries show significant negative changes in modifiable risk factors for AD and dementia. These results can inform adaptations to ensure successful recruitment and adherence in forthcoming multidomain trials for dementia prevention in older adults.

Education

2013: Authorized Specialist in Geriatrics in Sweden

2012: PhD in Medical Science Karolinska Institutet (KI), Stockholm, Sweden.

2007: Specialist in Geriatrics, University of Perugia, Perugia, Italy. Full grades with honors.

2003: Medical Licensure in all Countries of the European Community.

2003: Medical Doctor (MD), University of Perugia, Perugia, Italy. Full grades with honors.

Professional Experiences

CURRENT POSITIONS AND ROLES:

- 2018-present: Assistant Professor in Clinical Geriatric Epidemiology, Division of Clinical Geriatrics and ARC, NVS Dept, KI, Stockholm, Sweden. Area of expertise: Clinical Geriatrics and Geriatric Epidemiology.
- 2020-present: position as Senior Geriatrician at the Medical Unit Aging (former dept of Geriatric Medicine) at Karolinska University Hospital (KUH)
- 2021-present: Executive Director of the World-Wide-FINGERS Global Scientific Coordinating Center at the FINGERS Brain Health Institute. Time devoted for research is around 70%, clinic 10-15%, and teaching 10-15%.

PRIOR POSITIONS AND PERIODS OF APPOINTMENT:

- 2019-2020: Scientific and Clinical Coordinator at the FINGERS Brain Health Institute.
- 2013-2018: Postdoctoral researcher at the ARC, NVS Dept, Karolinska Institutet, Stockholm, Sweden.
- 2008-2012: PhD student at the Aging Research Center, Karolinska Institutet, Stockholm, Sweden
- 2003-2007: resident in the school of Gerontology and Geriatrics, University of Perugia, Perugia, Italy

Honors and Awards, Commissions of Trust

- 2021-present: Alzheimer's Disease International (ADI) International Advisory Board Member and Scientific Programme Committee member
- 2020-present: Member of the World Health Organization (WHO) "Neurology and COVID-19 Global Forum"

- 2020-2021 Diagnostic study to develop integrated and sustainable model for long-term older adult in Malaysia (National University of Malaysia) – Benchmarking of older adults care in Sweden: senior expert
- 2015: The Lancet Neurology Commission on “Defeating Alzheimer’s disease and other dementias: a priority for European science and society”
- 2013: EU Meeting on Governmental Experts on Dementia, Ministry of Health, Rome, Italy
- 2006 The C.M. Lerici foundation research award, Italienska Kulturinstitutet i Stockholm, Sweden.

Major Research Interest

- ❑ Community-based and clinical-based intervention research in elderly people in the at-risk spectrum for Alzheimer’s disease and dementia
- ❑ Biological aspects on age-related cognitive impairment, with focus on blood-based markers of neurodegeneration, inflammation, oxidative/nitrosative stress, lipid and glucose metabolism
- ❑ Age-related brain iron accumulation and changes in cognition

Recent Publications (Selected)

98 publications (web of science). H-Index: 36, 8 901 citations without self-citations.

1. Waterink L, Bakker ED, Visser LNC, **Mangialasche F**, Kivipelto M, Deckers K, Köhler S, Sikkes SAM, Prins ND, Scheltens P, van der Flier WM, Zwan MD. Changes in Brain-Health Related Modifiable Risk Factors in Older Adults After One Year of COVID-19-Restrictions. *Front Psychiatry*. 2022 Jun 2;13:877460. doi: 10.3389/fpsyt.2022.877460. eCollection 2022.
2. Röhr S, Kivipelto M, **Mangialasche F**, Ngandu T, Riedel-Heller SG. Multidomain interventions for risk reduction and prevention of cognitive decline and dementia: current developments. *Curr Opin Psychiatry*. 2022 Jul 1;35(4):285-292. doi: 10.1097/YCO.0000000000000792. Epub 2022 Jun 9.
3. Bellenguez C , **Mangialasche F**, ...New insights into the genetic etiology of Alzheimer's disease and related dementias. *Nat Genet*. 2022 Apr;54(4):412-436. doi: 10.1038/s41588-022-01024-z. Epub 2022 Apr 4.
4. Crivelli L, Palmer K, Calandri I, Guekht A, Beghi E, Carroll W, Frontera J, García-Azorín D, Westenberg E, Winkler AS, **Mangialasche F**, Allegri RF, Kivipelto M. Changes in cognitive functioning after COVID-19: A systematic review and meta-analysis. *Alzheimers Dement*. 2022 May;18(5):1047-1066. doi: 10.1002/alz.12644. Epub 2022 Mar 17.
5. Goikolea J, Gerenu G, Daniilidou M, **Mangialasche F**, Mecocci P, Ngandu T, Rinne J,

- Solomon A, Kivipelto M, Cedazo-Minguez A, Sandebring-Matton A, Maioli S. Serum Thioredoxin-80 is associated with age, ApoE4, and neuropathological biomarkers in Alzheimer's disease: a potential early sign of AD. *Alzheimers Res Ther.* 2022 Feb 24;14(1):37. doi: 10.1186/s13195-022-00979-9.
6. Rydström A, Darin-Mattsson A, Kåreholt I, Ngandu T, Lehtisalo J, Solomon A, Antikainen R, Bäckman L, Hänninen T, Laatikainen T, Levälähti E, Lindström J, Paajanen T, Havulinna S, Peltonen M, Sindi S, Soininen H, Neely AS, Strandberg T, Tuomilehto J, Kivipelto M, **Mangialasche F**. Occupational complexity and cognition in the FINGER multidomain intervention trial. *Alzheimers Dement.* 2022 Feb 9. doi: 10.1002/alz.12561.
 7. Sindi S, Thunborg C, Rosenberg A, Andersen P, Andrieu S, Broersen LM, Coley N, Couderc C, Duval CZ, Faxen-Irving G, Hagman G, Hallikainen M, Håkansson K, Lehtisalo J, Levak N, **Mangialasche F**, Pantel J, Kekkonen E, Rydström A, Stigsdotter-Neely A, Wimo A, Ngandu T, Soininen H, Hartmann T, Solomon A, Kivipelto M. Multimodal Preventive Trial for Alzheimer's Disease: MIND-ADmini Pilot Trial Study Design and Progress. *J Prev Alzheimers Dis.* 2022;9(1):30-39. doi: 10.14283/jpad.2022.4.
 8. Kalpouzos G, **Mangialasche F**, Falahati F, Laukka EJ, Papenberg G. Contributions of HFE polymorphisms to brain and blood iron load, and their links to cognitive and motor function in healthy adults. *Neuropsychopharmacol Rep.* 2021 Sep;41(3):393-404. doi: 10.1002/npr2.12197. Epub 2021 Jul 21.
 9. De Rojas I, ... **Mangialasche F**, ... Common variants in Alzheimer's disease and risk stratification by polygenic risk scores. *Nat Commun.* 2021 Jun 7;12(1):3417. doi: 10.1038/s41467-021-22491-8.
 10. Ponvel P, Shahar S, Singh DKA, Ludin AFM, Rajikan R, Rajab NF, Ai-Vyrm C, Din NC, Ibrahim N, Subramaniam P, Haron H, Ismail A, Sharif R, Ramasamy K, Majeed ABA, Ali NM, Mohamad M, Noah SAM, Ibrahim AM, Safien AM, Khalid NM, Fadzil NHM, **Mangialasche F**, Kivipelto M. Multidomain Intervention for Reversal of Cognitive Frailty, Towards a Personalized Approach (AGELESS Trial): Study Design. *J Alzheimers Dis.* 2021;82(2):673-687. doi: 10.3233/JAD-201607.

Contact Information

Karolinska Institutet,
Center for Alzheimer research,
Stockholm, Sweden.

Name: Francesca Mangialasche

Address: Center for Alzheimer research, Karolinska Vägen 37 A, QA32, 171 64 Solna,
Sweden.

Phone: +46 (0)70 301 94 66

e-mail: francesca.mangialasche@ki.se

Population and Individual Approaches to Dementia Prevention

Kaarin Anstey

University of New South Wales and Neuroscience Research Australia

Summary

With population ageing, the projected number of cases of dementia will increase dramatically, creating unprecedented challenges for care provision and health care costs, as well as reducing quality of life. Several neurodegenerative and neuropathological changes lead to dementia and there is currently no cure for these. Rather, there is evidence that a large proportion of cases of dementia are attributable to modifiable risk factors. The Lancet Commission in 2020 identified twelve potentially modifiable risk factors for dementia which globally account for about 40% of cases. However, there is less evidence available on the effectiveness of interventions for cognitive decline than there is on the risk factors themselves. The World Health Organization reviewed the intervention literature using the GRADE methodology and found sufficient evidence to recommend lifestyle changes and medical advice such as physical activity, a healthy diet, management of high cholesterol and hypertension in mid-life, smoking cessation and more. Others studies are focusing on the effect of intervening on multiple risk factors simultaneously through multi-domain trials. At a broader level, there is currently debate regarding the best approach to take to dementia risk reduction – with some focusing on individual or personalized risk reduction interventions, and others focusing on population health approaches. In this talk I will describe both approaches and propose where each approach may be useful as well as challenges for each approach. I will also introduce the International Research Network on Dementia Prevention which is a group of researchers and stakeholders with a common interest in global dementia prevention.

Education

1991	BA (Hons 1)	University of Sydney
1997	PhD	University of Queensland

Professional Experiences

Current Appointments and Roles

2020- ARC Laureate Fellow, UNSW

2019- Scientia Professor, UNSW

2018- Director, UNSW Ageing Futures Institute
 2018- Professor of Psychology, UNSW
 2018- Senior Principal Research Scientist, NeuRA
 2018- Honorary Professor – Australian National University
 2017- Deputy Director, ARC Centre of Excellence in Population Ageing
 2014- Director, Board of Alzheimer’s Australia Dementia Research Foundation
 2021- Fellow of the Australian Academy of Health and Medical Sciences (Elected)
 2020 Fellow of the Royal Society of NSW (Elected)
 2016- Fellow of the Gerontological Society of America (Elected)
 2011- Fellow of the Academy of the Social Sciences in Australia (Elected)
 2010- Fellow of the Australian Psychological Society (Elected)
 2002- Fellow of the Australian Association of Gerontology (Elected)

Previous Appointments and Roles

2015-2021	Director, Centre of Research Excellence in Cognitive Health
2018-2021	Director, NHMRC Dementia Centre for Research Collaboration
2016-2020	NHMRC Principal Research Fellow
2009-2017	Professor, Australian National University
2012-2017	Director, ANU Centre for Research on Ageing, Health and Wellbeing
2010-2014	Adjunct Professor, Gerontology Centre, Pennsylvania State University
2010-2017	Director, Dementia Collaborative Research Centre Early Diagnosis and Prevention
2012-2017	ANU Public Policy Fellow (Inaugural)
2009-2011	Deputy Director, Centre for Mental Health Research
2008-Mar 2010	National Convenor, Population Research Strategies Theme, ARC/NHMRC Research Network in Ageing Well
2006-2008	Associate Professor, Australian National University
2006-2010	NHMRC Senior Research Fellow Level A
2005-2007	Co-convenor, Population Research Strategies Theme, ARC/NHMRC Research Network in Ageing Well

Honors and Awards

2020 Mental Health and Prevention Senior Career Researcher Award, Mental Health & Prevention Journal, Elsevier
 2018 The Distinguished Scientific Contribution to Psychological Science Award 2018, Australia Psychological Society
 2016 Research Team won the best Poster Prize, Australian Injury Prevention Network Conference for our NHMRC Grant work

- 2016 Research Team won the Australasian College of Road Safety Road Safety Poster Award for our RCT in cognitive training for driving (Eramudugolla et al)
- 2016 Vice Chancellor's Award for Advancing the reputation of the ANU through media
- 2015 ANU High Commended for Media Award for Public Policy
- 2012 Selected as 1 of 100 Women who have contributed to Canberra for International Women's Day Centenary Celebration
- 2010 Advisor to the Governor General of Australia on Priorities in Aged Care
- 2010 Included in ISI database of highly cited scientists
- 2009 E.W. Busse Award for Research Excellence in the Social and Behavioural Sciences (presented by the Busse Foundation at the 4-yearly International Association of Gerontology and Geriatrics Congress)
- 2009 Exceptional contribution award – Journals of Gerontology Psychological Science
- 2008 Invited Participant at the Australia 2020 Future Summit
- 2007 Distinguished Contribution Award from the Australian Association of Gerontology, ACT Division
- 2005 Margret Baltes Award in Social and Behavioural Sciences from the American Gerontological Society (international award for Research Excellence in Social and Behavioural Gerontology up to 10 years Postdoctoral)
- 2002 Australian Psychological Society Early Career Award
- 2001 Academy of Social Sciences in Australia Early Career Medal (now the Paul Bourke Award)
- 2000 Organon Award 2000 from the Australasian Society for Psychiatric Research (for a mental health researcher under the age of 35)
- 1999 NHMRC Travelling fellowship for Training Fellows
- 1998 R.M. Gibson Research Award from the Australian Association of Gerontology
- 1997 Chinoir Young Investigator Award from the International Association of Gerontology and Geriatrics (IAGG)
- 1994 University of Queensland Travelling Scholarship for the best applicant from another university to undertake doctoral study in any field
- 1994 Offered APA Scholarship (declined in favour of Travelling Scholarship)
- 1992 The Inaugural Elsie Harwood Award for best psychology honours thesis on ageing in Australia 1988-1992
- 1991 The Australian Psychological Society Prize for best empirical research thesis
- 1991 The Dick Thomson Prize for first place in honours year, University of Sydney

Major Research Interest

- Cognitive ageing, cognitive resilience over the life course
- Dementia prevention, dementia epidemiology

- Older driver safety
- Late-life mental health

Recent Publications (Selected)

1. Lang, L., Clifford A., Wei, L., Zhang, D., Leung, D., Augustine, G., Danat, I., Zhou, W., Copeland, J., **Anstey, K.J.**, Chen, R. (Jan 2017). Prevalence and determinants of undetected dementia in the community: a systematic literature review and a meta-analysis. *BMJ Open*. doi:10.1136/bmjopen-2016-011146.
2. Chowdhary N., Barbui C., **Anstey K.J.**, Kivipelto M., Barbera M., Peters R., Zheng L., Kulmala J., Stephen R., Ferri C.P., Joannette Y., Wang H., Comas-Herrera A., Alessi C., Suharya Dy K., Mwangi K.J., Petersen R.C., Motala A.A., Mendis S., Prabhakaran D., Bibi Mia Sorefan A., Dias A., Gouider R., Shahar S., Ashby-Mitchell K., Prince M., Dua T. Reducing the Risk of Cognitive Decline and Dementia: WHO Recommendations. (2022). *Frontiers in Neurology*. PMID: 35082745. doi: 10.3389/fneur.2021.765584.
3. **Anstey, K.J.**, Ashby-Mitchell, K., Peters, R., (Jan 2017). Updating the evidence on the association between serum cholesterol and risk of late-life dementia: Review and meta-analysis. *Journal of Alzheimer's Disease*, 56 (2017) 215–228.
4. Walsh S., Govia I., Wallace L., Richard E., Peters R., **Anstey K.J.**, Brayne C. A whole-population approach is required for dementia risk reduction. (2022). *The Lancet Healthy Longevity*. doi: 10.1016/S2666-7568(21)00301-9.
5. **Anstey K.J.**, Ee N., Eramudugolla R., Jagger C., Peters R. (2019). A Systematic Review of Meta-Analyses that Evaluate Risk Factors for Dementia to Evaluate the Quantity, Quality, and Global Representativeness of Evidence. *Journal of Alzheimers Disease*. PMID: 31306123 PMCID: PMC 6700718 70(s1):S165-S186. doi: 10.3233/JAD-190181.
6. Peters R, Ee, N, Peters, J, Beckett, N, Booth, A, Rockwood, K, **Anstey K.J.**, (2019). Common Risk Factors for Major Noncommunicable Disease, a Systematic Overview of Reviews and Commentary: The Implied Potential for Targeted Risk Reduction. *Therapeutic Advances in Chronic Disease*. doi: 10.1177/2040622319880392.
7. Hosking, D.E., Eramudugolla, R, Cherbuin , N, **Anstey, K.J.**, MIND not Mediterranean Diet Related to 12-year Incidence of Cognitive Impairment in an Australian Longitudinal Cohort Study. *Alzheimers and Dementia*. 2019 Apr;15(4):581-589. doi: 10.1016/j.jalz.2018.12.011. Epub 2019 Feb 28.PMID: 30826160.
8. **Anstey K.J.**, Peters R., Mortby M.E., Kiely K.M., Eramudugolla R., Cherbuin N., Huque M.H., Dixon R.A., (2021). Association of sex differences in dementia risk factors with sex differences in memory decline in a population-based cohort spanning 20-76 years. *Scientific Reports*. PMID: 33833259. doi: 10.1038/s41598-021-86397-7.
9. Yao Y., Lv X., Qiu C., Li J., Wu X., Zhang H., Yue D., Liu K., Eshak E.S., Lorenz

T., **Anstey K.J.**, Livingston G., Xue T., Zhang J., Wang H., Zeng Y. The effect of China's Clean Air Act on cognitive function in older adults: a population-based, quasi-experimental study. (2022). *The Lancet Healthy Longevity*. doi: 10.1016/S2666-7568(22)00004-6.

10. Peters, R, Ee, N, Peters, J, Booth, A, Mudway, I, **Anstey, K.J.**, (2019) Air Pollution and Dementia: A Systematic Review. *J Alz Dis* doi.org10.3233/JAD-180631.

Contact Information

Name: Professor Kaarin Anstey
Address 1: Neuroscience Research Australia Level 2/139 Barker Street
Randwick NSW 2031
Address 2: University of New South Wales Mathews Building 1203/Level
12 Kensington Campus NSW 2052
Division/Department 1: Science/Psychology
Division/Department 2: Deputy Vice-Chancellor/Ageing Futures Institute
Contact numbers: 02 9399 1019
0421 935 746
E-mail: k.anstey@unsw.edu.au

Scaling up evidence-based practices for disease prevention using implementation science

Taichi Shimazu

Section Head, Implementation Science Section, Division of Behavioral Sciences,
Institute for Cancer Control, National Cancer Center

Summary

Many evidence-based practices (EBPs) aimed at preventing chronic diseases by inducing a change in behaviors that increase disease risk, such as smoking, low exercise and unhealthy diet, have been reported. However, it is estimated that it takes 17 years from the submission of pivotal clinical trials reporting EBPs to their implementation as routine clinical practices, and only a portion take root in society in a sustainable manner.

Among EBPs related to prevention, those involving medical practice such as immunization and early detection need to be implemented in healthcare settings. In contrast, EBPs that change health behavior for disease prevention can be widely developed in various settings in the community, such as schools, workplaces, community organizations, and social welfare organizations, along the life course of people living in the community. Barriers and facilitators in the implementation of EBPs in the community somewhat differ from those in medical services. Examples include priorities for prevention and health promotion, variations in the skills of EBP providers, and the culture and values of organizational management. These factors need to be considered when developing implementation strategies for EBPs in community settings.

A number of important points need to be kept in mind in moving forward with the implementation of EBPs; in particular, an emphasis on the efficient dissemination of EBPs can contribute to health disparities. To achieve health equity, it is essential that EBPs be delivered through pre-implementation surveys to fully understand those who are socially disadvantaged and in need of assistance.

Implementation science in community settings is evolving. Tools such as the Consolidated Framework for Implementation Research (CFIR) and Expert Recommendations for Implementing Change (ERIC) - developed primarily in clinical settings - are now available. The accumulation of knowledge from project results using these tools is creating a solid foundation for implementation. Lessons learned from the many implementation attempts to date should be used as generalized knowledge to help the scaling-up of EBP implementation activities for prevention in community settings. In this presentation, we will introduce examples we have experienced in community settings, including implementation studies conducted by the research team at the National Cancer Center Japan,

and discuss strategies for promoting the implementation of EBPs for disease prevention.

Education

Tokushima University Faculty of Medicine, Tokushima, Japan. M.D., 2000

Tohoku University Graduate School of Medicine, Sendai, Japan. Ph.D. in Medical Sciences (Epidemiology), 2007

Professional Experiences

- | | |
|--------------|--|
| 2000-2003 | Resident in General Internal Medicine, Saga Medical School Hospital, Saga, Japan |
| 2007-2013 | Staff Scientist, Division of Prevention, Research Center for Cancer Prevention and Screening, National Cancer Center |
| 2013-2015 | Section Head, Division of Prevention, Research Center for Cancer Prevention and Screening, National Cancer Center |
| 2016-2017 | Guest Researcher, Division of Cancer Epidemiology and Genetics, National Cancer Institute, National Institutes of Health |
| 2016-2020 | Section Head, Division of Prevention, Center for Public Health Sciences, National Cancer Center |
| 2020-2021 | Section Head, Implementation Science Section, Division of Behavioral Sciences, Center for Public Health Sciences, National Cancer Center |
| 2021-Present | Section Head, Implementation Science Section, Division of Behavioral Sciences, Institute for Cancer Control, National Cancer Center |

Honors and Awards

2007 Presidential Prize for Excellent Student (Tohoku University)

2018 Young Investigator Award (Japan Epidemiological Association)

Major Research Interest

- Implementation research on evidence-based health promotion interventions in the workplace
- Capacity building in implementation science

Recent Publications (Selected)

1. Saito J, Odawara M, Takahashi H, Fujimori M, Yaguchi-Saito A, Inoue M, Uchitomi Y, **Shimazu T (corresponding author)**. Barriers and facilitative factors in the implementation of workplace health promotion activities in small and medium-sized enterprises: a qualitative study. *Implement Sci Commun* 2022;3:23.
2. Odawara M, Saito J, Yaguchi-Saito A, Fujimori M, Uchitomi Y, **Shimazu T**

- (corresponding author)**. Using implementation mapping to develop strategies for preventing non-communicable diseases in Japanese small- and medium-sized enterprises. *Front Public Health* 2022;10:873769.
3. Lwin KS, Bhandari AKC, Nguyen PT, Saito J, Yaguchi-Saito A, Ota E, **Shimazu T**. Factors influencing implementation of health-promoting interventions at workplaces: Protocol for a scoping review. *PLoS One*. 2022;17:e0275887.
 4. Yuwaki K, Kuchiba A, Otsuki A, Odawara M, Okuhara T, Ishikawa H, Inoue M, Tsugane S, **Shimazu T (corresponding author)**. Effectiveness of a Cancer Risk Prediction Tool on Lifestyle Habits: A Randomized Controlled Trial. *Cancer Epidemiol Biomarkers Prev*. 2021;30:1063-1071.
 5. Otsuki A, Saito J, Yaguchi-Saito A, Odawara M, Fujimori M, Hayakawa M, Katanoda K, Matsuda T, Matsuoka YJ, Takahashi H, Takahashi M, Inoue M, Yoshimi I, Kreps GL, Uchitomi Y, **Shimazu T (corresponding author)**. A nationally representative cross-sectional survey on health information access for consumers in Japan: A protocol for the INFORM Study. *World Medical and Health Policy*. 2022;14:220-270.
 6. Yaguchi-Saito A, Kaji Y, Matsuoka A, Okuyama A, Fujimori M, Saito J, Odawara M, Otsuki A, Uchitomi Y, Zenda S, **Shimazu T (corresponding author)**. Factors affecting the implementation of guideline-based prophylactic antiemetic therapy for chemotherapy-induced nausea and vomiting in Japan: a protocol for a hospital-based qualitative study. *BMJ Open* 2022;12:e055473.
 7. Fujiwara M, Yamada Y, **Shimazu T**, Kodama M, So R, Matsushita T, Yoshimura Y, Horii S, Fujimori M, Takahashi H, Nakaya N, Kakeda K, Miyaji T, Hinotsu S, Harada K, Okada H, Uchitomi Y, Yamada N, Inagaki M. Encouraging participation in colorectal cancer screening for people with schizophrenia: A randomized controlled trial. *Acta Psychiatr Scand*. 2021;144:318-328.
 8. Yamada Y, Fujiwara M, **Shimazu T**, Etoh T, Kodama M, So R, Matsushita T, Yoshimura Y, Horii S, Fujimori M, Takahashi H, Nakaya N, Miyaji T, Hinotsu S, Harada K, Okada H, Uchitomi Y, Yamada N, Inagaki M. Patients' acceptability and implementation outcomes of a case management approach to encourage participation in colorectal cancer screening for people with schizophrenia: a qualitative secondary analysis of a mixed-method randomised clinical trial. *BMJ Open* 2022;12:e060621.
 9. Sasaki N, Obikane E, Vedanthan R, Imamura K, Cuijpers P, **Shimazu T**, Kamada M, Kawakami N, Nishi D. Implementation Outcome Scales for Digital Mental Health (iOSDMH): Scale Development and Cross-sectional Study. *JMIR Form Res*. 2021;5:e24332.
 10. Akashi H, Kodoi H, Noda S, Tamura T, Baba H, Chinda E, Thandar MM, Naito K, Watanabe Y, Suzuki Y, Narita T, **Shimazu T**. Reporting on the implementation to set up a "care and isolation facility" for mild COVID-19 cases in Tokyo. *Glob Health*

Med. 2022;4:71-77.

Contact Information

National Cancer Center, Japan

Division of Behavioral Sciences, Institute for Cancer Control

Name: Taichi Shimazu

Address: 5-1-1 Tsukiji, Chuo-ku, Tokyo, 104-0045 Japan

e-mail: tshimazu@ncc.go.jp 59

Is a health promotion program using IoT technology effective for older adults living in the community?

Sangyoon Lee

Department of Preventive Gerontology, Center for Gerontology and Social Science,
Research Institute, National Center for Geriatrics and Gerontology

Summary

As a technology that facilitates self-management activities, interest in health promotion using IoT technology has been growing in recent years. Smartphone applications can record daily activities and even health conditions, and this information can be used to achieve health goals and manage chronic diseases and health conditions. They also have the advantage of easily reaching a large number of people, managing and disseminating information, and having fewer time and location constraints.

However, compared to other generations, smartphone ownership among the elderly is considered low. In addition, the use of applications is considered low among the elderly due to the risks involved in using applications, the accuracy of the information provided, concerns about operability and data transmission, and the lack of ease of use. On the other hand, annual trends in the number of smartphones owned show a steady upward trend, and it is expected that digital literacy will improve as a result of dissemination activities by various local governments and digital utilization support measures (Ministry of Internal Affairs and Communications). Against such a background, the use of smartphones in future health promotion policies is considered important.

Today, we present a community-based screening model for geriatric syndrome and evaluate the relationship between ICT use and health adverse events using data from the National Center for Geriatrics and Gerontology-Study of Geriatric Syndromes (NCGG-SGS), a very large cohort study among community-dwelling older adults in Japan. In addition, ongoing intervention studies to prevent cognitive decline and the onset of dementia in community-dwelling older adults will be reviewed.

Education

Ewha Womans University, Department of Health Convergence, Seoul, Korea Bachelor
1997 Health education

University of Tokyo, Graduate School of Medicine, Department of Social Gerontology,
Japan Master 2002 Health science

University of Tokyo, Graduate School of Medicine, Department of Social Gerontology,
Japan Ph. D 2012 Health science

Professional Experiences

- 2003-2005 Research assistant staff, National Institute of Public Health
- 2005-2007 Research resident (Tokyo Metropolitan Institute of Gerontology),
Japan Foundation for Aging and Health
- 2007-2009 Researcher, Tokyo Metropolitan Institute of Gerontology
- 2009-2012 Senior Lecturer, Oita University
- 2012-2014 Researcher, National Center for Geriatrics and Gerontology
- 2014-2016 Postdoctoral Fellowship for Foreign Researchers, Japan Society for
the Promotion of Science
- 2016–Present Section chief, Section of Cohort Study for Longevity, Department of
Preventive Gerontology, Center for Gerontology and Social Science,
National Center for Geriatrics and Gerontology

Honors and Awards

- Member, The Japan Gerontological Society
- Member, Japanese Society of Public Health
- Director, Japan Socio-Gerontological Society
- Awards, 2014 Prize of President, 49th Congress of Japanese Society of Physical Therapy
- Awards, 2020 Prize of President, Congress of The Japanese Society for the Prevention
of Dementia
- Awards, 2021 Prize of Presentation Award, Congress of Japan Society of Public Health

Major Research Interest

- Cohort study on community-dwelling older adults to identify factors that contribute
to the development of geriatric syndromes
- Intervention studies to prevent cognitive decline and disability in community-
dwelling older adults
- Intervention research in the prevention of dementia by promoting physical, social,
and cognitive activities among community-dwelling older adults

Recent Publications (Selected)

1. Shimada H, Tsutsumimoto K, Doi T, Lee S, Bae S, Nakakubo S, Makino K, Arai H.
Effect of Sarcopenia Status on Disability Incidence Among Japanese Older Adults.
J Am Med Dir Assoc, 22(4): 846-852, 2021.
2. Chiba I, Lee S, Bae S, Makino K, Shinkai Y, Katayama O, Harada K, Yamashiro Y,

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Implementation and challenges of the latest technologies to support activities of daily living

Eri Otaka

Section Chief, Laboratory of Practical Technology in Community Assistive Robot Center, Research Institute, National Center for Geriatrics and Gerontology

Summary

With the increase in the number of people certified as requiring nursing care and the growing shortage of nursing care providers, supporting the independence of the elderly and improving the quality of nursing care have become pressing issues in Japan. The use of robots, sensors, and information and communication technologies has been attracting attention as one of the countermeasures, and the development of technology for the medical and care field has become very active in recent years.

Activity Assistive Technology, which supports people's lives by intervening in their activities, can be broadly classified into four areas: exercise assist, independence assist, caregiving assist, and cognitive-emotional assist. Exercise assistive technology is mainly used in rehabilitation, aiming to recover physical functions more effectively in a shorter period of time. On the other hand, independence and caregiving assistive technologies are used by the elderly themselves or their caregivers in their daily lives to support basic and instrumental activities of daily living (ADL), solve problems in daily living, and reduce the burden of caregiving. In addition, cognitive-emotional assistive technologies are expected to support the creation of psychological stability and a sense of fulfillment or purpose in life through various forms of communication according to the users' cognitive functions.

While many of these assistive technologies are already commercially available, especially in the areas of independence and caregiving support, their widespread use in the general public remains limited. Even for technologies with established safety and effectiveness, social implementation may be hindered by (1) size and cost issues, (2) operational issues during use, and (3) skill issues on the part of the user. Therefore, in order to introduce and establish technology in clinical settings, it is important to provide institutional and financial support from local governments, to provide technical support during initial implementation, and to make a clear sense of purpose and a willingness to reform operations. Also, most of the products currently on the market are designed for use in so-called elderly care facilities. However, it is desirable to develop and disseminate more technologies targeting the homebound elderly, who account for a larger proportion

of the elderly population. Furthermore, it is expected that the activity assistive devices will evolve into a home-integrated system that makes full use of multi-sensor technology. Both developers and medical care providers are expected to take an active interest in and gather information about assistive technology in light of these trends.

Education

Keio University School of Medicine, Tokyo (2009)
Doctor of Medicine, Keio University, Tokyo (2016)

Professional Experiences

2009-2011 Clinical resident, JA Toride Medical Center
2011-2015 Resident, Department of Rehabilitation Medicine, Keio University School of Medicine
-Worked at the following facilities, including during the residency program
2011-2012 Department of Rehabilitation Medicine, Keio University Hospital
2012-2013 Department of Rehabilitation Medicine, Higashisaitama National Hospital
2013-2017 Department of Rehabilitation Medicine, Eisei Hospital
2017-2020 Chief, Department of Rehabilitation, Kariya Toyota General Hospital
2020-present Section Chief, Laboratory of Practical Technology in Community, Assistive Robot Center (ARC), Research Institute, National Center for Geriatrics and Gerontology

Honors and Awards

2014 Best article award, The Japanese Association of Rehabilitation Medicine
2015 Best resident of the year, Department of Rehabilitation Medicine, Keio University school of medicine

Major Research Interest

- Rehabilitation Medicine
- Implementation of technologies in clinical practice

Recent Publications (Selected)

1. Creation of a list of neuropsychological tests and other assessment methods used in clinical practice and research of dementia. Aiko Osawa, Shinichiro Maeshima, Naoki Itoh, Ikue Ueda, Takako Yoshimura, Koki Kawamura, Eri Otaka, Masaki Kamiya, Yayoi Sato, Izumi Kondo, Hidenori Arai. Japanese journal of geriatrics, accepted 2022

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Contact Information

Laboratory of Practical Technology in Community
 Assistive Robot Center, Research Institute, National Center for Geriatrics and Gerontology

Name: Eri Otaka

Address: 7-430 Morioka, Obu, Aichi 474-8511 Japan

Phone: +81 562-46-2311 (ext.5665 / 7799)

e-mail: eotaka@ncgg.go.jp

4. 座長の印象記

Session I 「Interaction between the brain and peripheral organs」

セッション 1 は「脳と末梢組織の相互作用」ということで 3 人の演者の先生方にお話しを伺った。松下健二先生からは「歯と脳」、伊藤尚基先生からは「筋肉と脳」、前田純宏先生からはすこし違う方向から「尿由来細胞からの神経細胞への誘導」についてのお話であった。座長は関谷倫子先生と里 直行が担当した。

松下先生からは認知症対策としての口腔ケアの重要性のお話があった。歯周病、口腔細菌、口腔機能、認知症・アルツハイマー病(AD)をキーワードに、それらの関係を総合的に解説された。これまでのコホート研究の結果から、保有歯数が少ないほど認知機能が低くなり、認知症を発症するリスクが高くなることが示されているとのことであった。その原因に関する質問では保持歯数の減少は咀嚼機能の低下、さらには脳血流の低下や栄養状態の悪化が認知機能低下につながっているのではないかと discussion された。またモデル動物を用いた興味深いお話があった。高齢マウスおよび AD モデルマウスにおける歯牙の摘出および軟食での長期飼育は自発的活動および攻撃性の亢進や空間的作業記憶の低下を誘発するとともに、細胞老化を亢進させることを示された。最近、多くの研究により、歯周病原細菌ポルフィロモナス・ジンジバリスが認知機能および認知症に関連していることが示されているとのこと、ジンジバリスが産生するトリプシン様プロテアーゼ・ジンジパインの阻害は、マウスモデルにおける AD の病態を改善することが示されているおり、ジンジパイン阻害剤による AD 治療の臨床試験(フェーズ II/III.)は現在欧米で進行中であるとのことのお話であった。

伊藤先生からは急速に高齢化する社会において社会的問題となっているサルコペニアの根底にある分子メカニズムについてのお話があった。多くの研究により、加齢に伴うニコチンアミドアデニンジヌクレオチド(NAD⁺)レベルの低下と NAD⁺消費酵素の機能不全が加齢に伴う病態生理に重要であることが明らかになっているとのこと。伊藤先生は、この NAD⁺合成中間体であるニコチンアミドモノヌクレオチド(NMN)のトランスポーターと報告されている Slc12a8 に注目し、外側視床下部(LH)と骨格筋の間の新しい機能的つながりを明らかにしました。LH 特異的 Slc12a8 ノックダウンマウスは、エネルギー消費および骨格筋機能の有意な低下の結果を示された。逆に、高齢マウスの LH における Slc12a8 の過剰発現は、エネルギー消費および骨格筋機能の加齢に伴う減少を改善したことから、全身代謝と骨格筋機能の調節に対する LH における Slc12a8 の重要な役割を強調された。

前田先生からはヒトの尿サンプル(UDC, urine-derived cell)からの神経細胞の誘導に関するお話があった。これまで人工多能性幹細胞(iPSC)の導入により、ヒト細胞を用いた神経変性疾患のモデル化が可能になったが、iPS 細胞では老化シグ

ネチャが取り消され、iPS 細胞を用いてアルツハイマー病(AD)などの加齢依存性疾患を研究するには限界があるとの問題点から、前田先生はこの研究に取り組みましたとのこと。線維芽細胞からの神経細胞誘導法を何度か改変した後、UDC から神経細胞様細胞(UDC-iN, UDC-induced Neuron)を誘導することに成功された。この新しく確立した変換法を用いて、様々な年齢のドナーから UDC-iN を確立することに成功し、DNA メチル化分析により、UDC-iN への変換後も加齢依存的なメチル化状態の保存を示したと発表された。次に UDC-iN が神経変性疾患の疾患表現型を反映できるかどうかを調べるために、リソソーム機能障害を伴う家族性神経変性疾患であるニーマンピック C 型(NPC)から UDC を入手し、調査したところ、NPC 由来の UDC は良好に増殖したが、UDC-iN はライソソーム機能障害により生存率の劇的な低下を示したとのこと。これらの結果から、様々なドナーの疾患モデリングや表現型の蓄積により、神経老化の標準曲線を描くことができ、神経変性疾患の発症を予測することができるかもしれません、と締めくくられた。会場からは、臨床応用についての多くのコメントや質問があり、今後の研究が期待された。

以上、脳と末梢組織の関係について 2 題、末梢組織を活用した脳疾患の理解のための技術について 1 題のお話を伺った。いずれも分野における最先端の研究であり、会場からも活発な質疑応答がなされた。今後も認知症の病態の解明に重要な領域と考えられ、研究発展が期待される。

(国立長寿医療研究センター研究所 分子基盤研究部長 里 直行)

Session II 「World's Leading Multimodal Intervention Trial for Dementia Prevention」

近年、認知症予防についてのエビデンスの蓄積が進んでいる。身体活動、栄養、社会参画などが中心となるが、それぞれのリスクに個別に介入してもその効果は限られており、複数のリスクに同時に介入を行う多因子介入が主流になりつつある。多因子介入研究の先鞭となった FINGER モデルはグローバルネットワークである World-Wide FINGERS Network に進展している。セッション 2 では、FINGER 研究はじめ、World-Wide FINGERS の最先端を走る世界のトップ 4 名の演者に講演をしていただいた。座長は、神戸大学の古和久朋教授と櫻井が担当した。

最初に、ドイツの Susanne Röhr 博士 (University of Leipzig) が、AgeWell.de 研究について報告された。AgeWell.de 研究は、個別栄養カウンセリング、身体活動強化、認知トレーニング、血管リスク因子のモニタリング、投薬の最適化、社会活動強化、さらに必要に応じてうつ、死別、悲しみを対象とした介入などが行われた。認知症リスクの高い高齢プライマリケア患者 1000 人以上を対象に、2 年間の介入を行い、対照群では通常通りの健康アドバイスや治療を行った。COVID-19 パンデミックのために研究は中断や遅延を引き起こしたが、予定の介入を達成した。主要評価項目では認知機能の有意な改善効果をしめすことはできなかったが、層別化解析においてより多因子介入の効果が示された。

2 番目の演者として国立長寿医療研究センターの杉本大貴博士が、Japan-Multimodal Intervention Trial for Prevention of Dementia (J-MINT) について紹介した。J-MINT 試験は、血管リスク因子の管理、集団での身体運動と身体活動の自己モニタリング、栄養カウンセリング、認知トレーニングからなる 18 カ月間の多領域介入により、軽度認知障害のある高齢者の認知機能低下の進行を予防できるかどうかを検証している。血中バイオマーカー、オミックス解析、神経画像などの評価により、認知機能の改善・悪化のメカニズムを明らかにすることを目的としている。さらに、J-MINT トライアルでは、提携する民間企業と連携し、将来の社会実装に向けた関連施策の実施に取り組んでいる。COVID-19 の流行が J-MINT 試験の被験者募集と介入に影響を与えたが、531 人の高齢者の被験者登録を行った。また、非常事態宣言が発令された地域においても、オンラインによるグループベースの身体運動介入プログラムを提供し、参加者のアドヒアランスを維持し、身体活動や社会的接触を促進することが可能であったことを報告した。

3 番目に、J-MINT 研究のシスター研究である、J-MINT PRIME Tamba 研究について、神戸大学の古和久朋教授から報告があった。高血圧または耐糖能異常を有し、DASC-21 質問票のスコアが 22~30 点の高齢者 200 名を登録した。介入内容は J-MINT 試験とほぼ同様である。介入群の参加者からは、「セッションは非常に有益であり、今後も継続したい」という肯定的なフィードバックが得られて

いる。神戸大学では、丹波市における認知症予防のエビデンスを確立するための研究を行うとともに、認知症予防の社会実装を実現するための取り組みも始めている。週1回の運動教室、隔月で認知症予防や健康増進に関する講義、年1回の認知機能を含む健康診断からなる「コグニケア」というプログラムである。2020年春のCOVID-19の流行開始とともに中断せざるを得ず、2020年10月から「eCogniCare」というオンライン介入・評価プログラムを開始した。2021年10月からは、ウェアラブルセンサーによる体動評価技術を持つMoffのオンラインサービスと統合し、「eCogniCare powered by Moff」として提供されていることが紹介された。

最後に、FINGER 研究から Francesca Mangialasche 博士 (カロリンスカ研究所) が WEB にて講演をされた。FINGER 試験では、認知症や AD の遺伝的リスク (ApoE4 または多因子性リスクスコアが高い) を有する参加者は、認知機能に明らかな有益な効果を示した。FINGER モデルは現在、World-Wide FINGERS network の中で、すべての大陸の 45 カ国以上で適応、試験、最適化されている。この取り組みの一環として Mangialasche 博士らは MET-FINGER 試験を開始している。この試験では、最新の FINGER モデルと疾患修飾薬となりうるメトホルミンを初めて組み合わせている。さらに、WW-FINGERS ネットワークは、高齢者における COVID-19 の大流行の直接的および間接的影響を評価するため、WW-FINGERS-SARS-CoV-2 調査を立ち上げた。20 カ国以上、21000 人以上の参加者からデータが収集された。様々な国から得られた知見は、AD や認知症の修正可能なリスクファクターに著しいマイナスの変化があることを示している。高齢者の認知症予防のためのマルチドメイン試験の今後の展開について概説された。

(国立長寿医療研究センター 研究所長 櫻井 孝)

Session III 「Prospects for social implementation of multifactorial interventions for dementia prevention」

認知症予防に関する研究の実践をどのように社会実装に進めるかについての背景、方法論、そして実践活動について、領域を代表する第一人者の先生方にご講演いただきました。

1 人目の演者である Kaarin Anstey 先生は Neuroscience Research Australia とニューサウスウェールズ大学 (オーストラリア) に所属され、認知症をはじめとした高齢者の社会的課題について広く取り組んでいる。本講演では、認知症予防に関するこれまでの歴史的な流れについて概観し、認知症のリスクが高い個人に対するアプローチと、集団を対象としたアプローチの有用性と課題について説明された。また、認知症予防に共通の関心を持つ研究者や関係者の集まりである認知症予防に関する国際研究ネットワークについての紹介がなされた。

2 人目の演者である島津太一先生は国立がん研究センターに所属され、がん対策の実装研究についてリーダーの一人であり、今回は慢性疾患予防に関するエビデンスに基づく実践について講義がなされた。予防に関する実践のうち、予防接種や早期発見のような医療行為に関わるものは、医療現場で実施される必要があるが、疾病予防のための健康行動を変える実践は、学校、職場、地域組織など、地域社会の様々な場面で、地域住民のライフコースに沿って広く展開することが可能であることが紹介され、地域社会における実装研究の促進戦略について議論された。

3 人目の演者である国立長寿医療研究センターの李相侖先生からは情報通信技術を活用した認知症予防に関する実践が報告された。認知症予防活動を広く実践するためにスマートフォンを活用した自己管理型の健康行動促進の介入研究や、地域人材を活用した認知症予防介入について紹介され、これまでの成果や研究成果を社会実装する上での課題について討議がなされた。

4 人目の演者である国立長寿医療研究センターの大高恵莉先生からはロボットやセンサー、情報通信技術の活用による医療・介護分野での技術開発について講義がなされた。これらの技術が社会に普及する課題として、コスト、操作性、使用者スキルなどの問題があげられ、その対策についての紹介と議論がなされた。

これらの講義から、認知症予防活動を社会実装する上での戦略や課題が浮き彫りとなり、今後研究開発すべき課題を考える機会となった。

(国立長寿医療研究センター 老年学・社会科学研究センター 島田 裕之)

5. 総括

第 17 回国際シンポジウムはハイブリッド形式で行なわれ、会場で 68 名（長寿研：NCGG は 57 名）、オンラインでは 150 名（NCGG は 38 名）が参加した。事前に関係学会などに周知することで、多くの参加者があり、face to face での情報交換が可能であった。オンライン参加者の半数以上は外部からのアクセスであり、認知症の予防に多くの関心が集まっていることが伺われた。

発表者は女性 5 名を含む 11 人の講師（海外からは 3 名）で、ランチョンセミナーでは、アルツハイマー病のバイオマーカーについてご講演をいただいた。3 年ぶりに国際学会の雰囲気に戻ってきたことを実感することができた。

セッション 1 は「脳と末梢組織の機能連関」について、歯科、筋肉、また、尿由来細胞からの神経細胞への誘導について講演があった。いずれも質の高い研究であった。脳と末梢臓器の連関についてはこれまでも研究は多いが、ヒトでどのように検証できるかは難しい課題である。前田純宏先生（慶応大学 岡野研）は、細胞を初期化せずに神経細胞に誘導できる手技について紹介され、長寿研の多くのコホート研究でこの技術を導入できれば、“細胞疫学”のような新しい科学を展開する可能性があると思われた。

セッション 2 では、認知症予防のための多因子介入研究、FINGER 研究、AgeWell.de 研究、J-MINT 研究・J-MINT PRIME 研究の知見が報告された。認知症の非薬物的予防では FINGER 研究は草分け的な研究で、世界に大きなインパクトを与えている。NCGG で行っている J-MINT 研究も解析の段階にある。今後、どのような高齢者において有効であるか、機序についてもデータの蓄積が期待される。FINGER 研究の研究者たちとも交流が深く、今回の国際シンポジウムでさらに共同研究が発展すると考えられる。

セッション 3 では、認知症予防を研究にとどめるのではなく社会実装する試みについて、豪州、日本から 4 題の発表がなされた。NCGG では多くの実証研究が進行しているが、得られた知見を研究コホートだけではなく社会実装することは NCGG の重要なミッションである。社会実装は単に参加者の人数を増やすことではない。実装科学のマナーを学び実践することで、持続性のある社会貢献が進められるよう期待したい。

以上のように、第 17 回国際シンポジウムでは、3 年ぶりに世界の認知症・老年医学の研究者との交流が可能となり、NCGG の研究・臨床活動の活性化に貢献することができた。

さいごに、公益財団法人長寿科学振興財団（The Japan Foundation for Aging and Health）様のご共催、多くの企業、団体のご後援、また、センター内外からのご発表者、ご参加の皆様にご深く御礼申し上げます。

（国立長寿医療研究センター 研究所長 櫻井 孝）



Multifactorial Interventions for Prevention of Dementia