Global multidisciplinary collaborations: Insights from the global epidemic of early-onset cancers and diseases

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The incidence of early-onset diseases has been increasing worldwide, representing an emerging global epidemic that presents new challenges and opportunities for epidemiologists. For example, the incidence of cancers diagnosed in adults aged < 50 years has increased substantially over the past several decades. Increasing incidence trends of early-onset type 2 diabetes, hypertension, inflammatory bowel disease, dementia, and other chronic diseases have also been reported. Several epidemiological studies have suggested a potential causal role of early-life exposures in the development of early-onset diseases. However, key challenges in causal analyses of these exposures remain. International collaborations with innovative study designs and methods are needed to address the global public health epidemic of early-onset diseases. I plan to (i) summarize the latest descriptive and causal research on various early-onset diseases, and (ii) provide an overview of methodological and analytic challenges in early-onset disease research.

Biography

Dr. Ugai is an MD/PhD physician scientist with expertise in clinical oncology, cancer epidemiology, and molecular epidemiology. Dr. Ugai's research focuses on early-onset cancers and cancer biomarkers, especially immune and microbial characteristics of cancer, utilizing population-based studies.　Building on his clinical expertise and epidemiological expertise, his research justifies the power and promise of the integrative approach of biology into epidemiologic research towards precision medicine and public health.

Current status and future perspectives of the Asia Cohort Consortium

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Asia is a composite of various ethnic groups and the histories, religions, and customs that define them. The socioeconomic structures of the region's countries also vary considerably. These similarities and differences present important opportunities for comparative research. The Asia Cohort Consortium (ACC) is a large consortium of cohort studies in the Asian region. The ACC was established in 2004 by researchers with diverse perspectives on Asia with the aim of contributing to the development of epidemiology in this region. The ACC has two common goals: to serve as a platform for cross-collaborative projects and combined analysis in Asia, and to act as an incubator for new cohorts. Specifically, the ACC conducts pooled analyses and provides intellectual support (methodology and common research materials), but not funding, to create new cohorts. As of 2025, 45 cohort studies from Bangladesh, Brunei, Mainland China, India, Iran, Japan, Korea, Malaysia, Mongolia, Singapore, and Taiwan have joined the ACC and are involved in pooled analyses. In addition, new cohorts have begun operating in Korea, Malaysia, Singapore, and Taiwan. The ACC coordinating center is located in the National Cancer Center, Japan, and is in charge of the administrative work necessary to facilitate the various research activities. ACC members are now collaborating on multiple epidemiological studies of various risk factors and health outcomes in Asian populations. The ACC has published over 40 original articles and has over 40 ongoing projects. In the 20 years since its establishment, the ACC has contributed to improving epidemiological skills in this region and expanding research networks and activities among epidemiologists. At the same time, many challenges remain, including data harmonization, resolution of ethical and legal issues, potential use of biological samples, and funding procurement. Going forward, participating researchers must work together to overcome these challenges.

Biography

M.D. The University of Tsukuba in 1990, Ph.D. in Medicine, from Nagoya University in 1995, and received M.S. in Epidemiology from Harvard School of Public Health in 1996. After working at the Aichi Cancer Center Research Institute (1992-2002), the Division of Prevention, Cancer Prevention and Screening Research Center, National Cancer Center (2002-2012), and Graduate School of Medicine, University of Tokyo (2012-2017). She now serves as the Deputy Director, Institute for Cancer Control, National Cancer Center, Japan (2023).

Powerful Prospective Cohort Incident-tumor Biobank Method to Decipher Long-term Carcinogenic Process

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Evidence indicates that all of us (including cancer-free individuals) carry mutant clones/cells in our bodies for decades unless premature death occurs. Cancer develops in some individuals after long latency, while no cancer develops in others. Why is this difference? Long-term lifestyle and other risk factor exposures (along with genetic variations) play a role. Notably, longitudinal prospective cohort studies can be designed to assess long-term time-varying exposures. This lecture illustrates the powerful integration of a longitudinal prospective cohort study with incident tumor profiling, which allows us to assess the effects of long-term time-varying exposures on tumor incidence plus tumor characteristics. This integration has been termed “the prospective cohort incident-tumor biobank method (PCIBM)”. The PCIBM enabled prospective molecular pathological epidemiology (MPE) studies. Our PCIBM-based MPE research led to many discoveries linking long-term exposures with colorectal cancer (CRC) incidence plus tumor features, starting from 2007 (Chan AT et al. New Engl J Med). Remarkably, the 2007 study remains the only and newest study to assess the effect of long-term aspirin use on CRC incidence plus tumor PTGS2 (cyclooxygenase-2) expression (18 years after its publication). The same holds for 30 other discoveries that we have made to date. There exist other prospective cohort incident-tumor biobanks in the world, including that of the Japan Public Health Center-based Prospective Study (JPHC Study). We plan to form the Prospective Cohort Incident-tumor Biobank Consortium (PCIBC) to revitalize the existing precious resources. PCIBC will enable us to improve our knowledge on how long-term time-varying exposures influence tumorigenic mechanisms.

Biography

Dr. Shuji Ogino is American Cancer Society Professor; Professor of Pathology and Epidemiology at Harvard University; the Founding Chief of the Molecular Pathological Epidemiology (MPE) Program of Brigham and Women’s Hospital; an Affiliated Member of Broad Institute of MIT and Harvard. He has received numerous awards/honors, including the Outstanding Investigator Award (2015-22) from the U.S. NIH; the Outstanding Investigator Award (2018) from the ASIP; Invited Nominator for Nobel Prize in Physiology or Medicine (2019-22); the lifetime American Cancer Society Professorship (since 2024), etc.

International Collaborative Research: Benefits, Challenges, and Lessons Learned

Keitaro Matsuo (1)

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International collaborative research has become an essential approach in modern epidemiology, offering unique opportunities to advance science beyond what individual groups can achieve. Based on my personal experience as a junior researcher participating in large-scale multinational projects, I will present both the advantages and challenges inherent in such collaborations. On the positive side, international consortia enable access to large and diverse datasets, allowing analyses that would be impossible within a single country. They also provide exposure to cutting-edge methodologies and opportunities to learn advanced analytical techniques. Importantly, collaborations often offer support for high-cost measurements, such as genomic analyses, which would be difficult for individual researchers or institutions to conduct independently. For early-career researchers, these experiences provide valuable training in project management, cross-cultural communication, and practical skills required to work effectively within multidisciplinary teams. However, international collaborations also present several difficulties. Differences in scientific interests among partners can lead to conflicts over research priorities. Depending on the governance structure, decisions may not always align with one's own vision or preferred analytical approach. Additionally, because studies are often constrained by the data contributed by each participating group, research questions may become limited to what fits into a predefined matrix rather than what is conceptually ideal. These factors can reduce flexibility, limit innovation, and at times create frustration among investigators. In this presentation, I will reflect on these contrasting experiences and discuss what is needed to ensure that international collaborative research remains both scientifically productive and personally rewarding for researchers at all career stages.

Biography

Keitaro Matsuo, MD, PhD, MSc, is Division Chief of Cancer Epidemiology and Prevention at Aichi Cancer Center. He received his MD from Okayama Univ., PhD from Nagoya Univ., and MSc in epidemiology from Harvard. His research centers on molecular epidemiology, focusing on gene–environment interactions involving ALDH2, alcohol, smoking, and H. pylori, and their roles in digestive tract cancers. As PI or co-investigator on major MEXT and AMED projects, he has produced over 800 publications and contributed extensively to large-scale genomic and epidemiologic studies.

Future Perspectives of Descriptive Epidemiology: Insights from Global Collaborations

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Population-based cancer statistics—such as incidence, survival, and mortality—form the cornerstone of cancer epidemiology, providing essential evidence for research, program evaluation, and health policy planning. Over the past decades, international collaborations—particularly with the International Agency for Research on Cancer (IARC), the OECD, and partners in Europe and the United States—have advanced methodologies for data collection, quality assurance, analytical techniques, and global comparability. Japan's participation in projects such as *Cancer Incidence in Five Continents (CI5)*, *CONCORD*, *International Classification of Childhood Cancer (ICCC)*, *BENCHISTA*, and *RARECARE* has underscored the importance of harmonizing data according to international standards while responding to the needs of domestic clinical and policy contexts.Drawing on these experiences, this presentation emphasizes that descriptive epidemiology must continuously monitor international trends and adapt its systems swiftly and flexibly. Timely data updates, strengthened linkages between population-based registries and clinical datasets, and the application of advanced statistical models are essential to enhance research responsiveness and policy relevance in developed countries. Within Asia, Japan has also played a leading role in capacity building and regional collaboration. Although international collaborative research in Asia remains limited in scope, it is expected to become an indispensable framework for future cancer treatment and drug development. As cancer data become increasingly complex and dynamic, global collaboration must evolve toward real-time, privacy-preserving federated analysis. Aligning domestic data systems with international frameworks is crucial for sustaining research integrity and accelerating global cancer control.

Biography

From the early design phase of the Act on Promotion of Cancer Registry which took effect in 2016, Dr. Matsuda has played a central role and contributed to the establishment of the cancer registry system in Japan. Building on the strong network and trusting relationship he has built in the field of cancer epidemiology and statistics in Europe and Asia as the PI of the IARC Collaborating Center of GICR and the head of the Asian Partnerships Section of ATLAS project, he is striving to advance cancer research, collaborating across nations and disciplines.