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Leading oncologists and nutritionists pinpoint areas to catalyze nutrition-based cancer prevention

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An international collaborative led by Ludwig Cancer Research and Cancer Research UK has identified key areas that are central to uncovering the complex relationship between nutrition and cancer. Advancing research on these core areas using a holistic, cross-disciplinary approach could catalyze progress urgently needed to prevent cancer and improve public health globally. Their main observations and conclusions are reported in a Forum article published online today in *BMC Medicine*.

"While data clearly show that obesity is a major risk factor for cancer, we still have a lot to learn about how diet, physical activity and other metabolic factors impact cancer development," said Bob Strausberg, deputy scientific director of the Ludwig Institute for Cancer Research. "In bringing together the most prominent experts in the field across institutions, disciplines and continents, we have worked to identify these research gaps and clarify the role of nutrition in cancer prevention."

Insights from the Forum article published today emerged from discussions during the inaugural international Cancer Prevention and Nutrition Conference held in London on December 3-4, 2018. The full list of the Cancer Research UK—Ludwig Cancer Research Nutrition and Cancer Prevention Collaborative Group is included in the manuscript here. The article includes several sections addressing main areas of concern as outlined by experts in each field who attended the

conference.

Traditionally, there have been several methodological challenges with studying the impact of nutrition on cancer risk, development and treatment. Environmental exposures in early life—including diet—can influence cancer risk in the future. However, the impact of these factors has been difficult to track from childhood to adulthood. In addition, our understanding of the fundamental biologic mechanisms behind these long-term effects is limited.

"The complexity of the metabolic factors modulated by diet and physical activity may be a contributing factor for the lack of support for several prominent food and cancer hypotheses in large prospective studies," wrote section leads Walter Willett, professor of epidemiology and nutrition at the Harvard T.H. Chan School of Public Health, and Elio Riboli, chair in cancer epidemiology and prevention at Imperial College London.

The current nutrition and cancer evidence-base is largely observational and prone to confounding, and long-term diet is difficult to assess," added section leads Richard Martin, professor of clinical epidemiology at University of Bristol, and Edward Giovannucci, professor of nutrition and epidemiology at the Harvard T.H. Chan School of Public Health.

New analytical approaches and global networks are helping researchers to move from observational associations to causal links. Recent advances in omics technologies, combined with the creation of large research groups and population biobanks, have made high-dimensional molecular datasets from human samples more accessible. These tools are a valuable resource to advance our understanding of the causal underpinnings of cancer.

"With improved mechanisms to share data, enhanced collaboration

across continents and cross-pollination increasing among traditional siloes—the links between nutrition and cancer prevention research are potentially more understandable and actionable," wrote Fiona Reddington, head of population, prevention and behavioral research funding at Cancer Research UK.

To best leverage these recent advances in the fields of nutrition and oncology, scientists urgently seek institutional support and funding for cancer prevention and nutrition research. "Resources are reluctantly applied to prevention, let alone early life factors that are decades removed from cancer occurrence," added Karin Michels, professor of epidemiology at University of California and Robert Waterland, professor of pediatrics-nutrition at Baylor College of Medicine. "We hope our pressing call to action will be heard."

Translating research on nutrition and diet into cancer prevention recommendations and policies that successfully change people's eating habits is equally important, according to the authors. Working with governments and healthcare professionals to limit the proliferation of unhealthy food options will continue to be critical.

"Research to inform the development of policies and interventions to improve the food environment and prioritize cancer and other noncommunicable disease prevention requires interdisciplinary collaborations," wrote Linda Bauld, professor of public health at the University of Edinburgh and Cancer Research UK/BUPA chair in cancer prevention, and Hilary Powers, emeritus professor of nutritional biochemistry at the University of Sheffield. "Researchers need skills not only in identifying appropriate context specific methods and analysis but also in knowledge translation and in engaging policy makers and the public."

More information: Current opportunities to catalyze research in

nutrition and cancer prevention – an interdisciplinary perspective, *BMC Medicine* (2019). DOI: 10.1186/s12916-019-1383-9