

Preface: Associations and Challenges

In a series of landmark articles published in the New England Journal of Medicine [1, 2] and Nature Reviews [3] between 1999 and 2004, Dr. Eugenia “Jeanne” Calle alerted the entire scientific and medical community to the epidemiologic evidence providing definitive support for the association between body mass, all cause mortality, and cancer mortality. Based on results from a prospectively studied cohort of more than 900,000 US adults in the American Cancer Society, Cancer Prevention II Study, Jeanne identified the association of increased body mass index with death rate for all cancers combined, as well as for specific malignancies in both men and women. The ACS study showed that elevated body mass was associated with higher death rates from cancers of the esophagus, colon and rectum, liver, gallbladder, pancreas, kidney, non-Hodgkin’s lymphoma, and multiple myeloma. Trends were identified also for association of elevated BMI with deaths from prostate and stomach cancer in men and postmenopausal breast, uterus, cervix, and ovarian cancer in women. She put forth the alarming statistics that 14% of cancers in men and 20% of cancers in women were associated with obesity, all of which were of even greater concern due to the rising prevalence of overweight and obesity in the United States and on a worldwide basis. These studies clearly stressed the importance of obesity control to prevent the relative burdens of obesity-related morbidity and mortality.

In subsequent years, Jeanne conducted important studies defining specific tumor types associated with overweight and obesity, investigated the contribution of specific nutrients to this problem, initiated studies to examine the interaction of adiposity with hormones and hormone-dependent malignancies, conducted studies on the impact of weight gain as opposed to established obesity on carcinogenesis and instituted studies on the importance of physical activity on adiposity and cancer.

Jeanne earned her Ph.D. in Preventive Medicine from the Ohio State University. She subsequently worked at Oak Ridge National Laboratories, The Centers for Disease Control and The American Cancer Society where she ultimately became Vice President of Epidemiology. In her 2003 article she advocated that maintaining a BMI less than 25.0 might prevent 90,000 cancer deaths per year in the United States. Before her tragic death on February 17, 2009, Jeanne had become a leading spokesperson for obesity control and increased physical activity to prevent cancer incidence and mortality.

On July 8, 2004, the National Cancer Institute responded to the alarming association of obesity and cancer by issuing RFA-CA-05-010 to establish the Transdisciplinary Research on Energetics and Cancer (TREC) Centers in nutrition, energetics, energy balance, physical activity, and cancer. The primary mission of the TREC Centers was to “foster collaboration among transdisciplinary teams of scientists with the goal of accelerating progress toward reducing cancer incidence, morbidity and mortality associated with obesity, low levels of physical activity and poor diet.” This initiative was spearheaded at NCI by Linda Nebeling, Ph.D., M.P.H., RD, Chief, Health Promotion Research Branch, NCI, and her associates Robert Croyle, Ph.D., Director, Division of Cancer Control and Population Sciences, Rachel Ballard-Barbash, M.D, M.P.H. Associate Director, Applied Research Program and John Milner, Ph.D., Chief, Nutritional Science Research Group, Division of Cancer Prevention, NCI. After a competitive grant review process, TREC Centers were established at five institutions, Case Western Reserve University, University of Southern California, University of Minnesota, and Fred Hutchinson Cancer Research Center, along with a coordinating center at the Fred Hutchinson Cancer Research Center. Independent and collaborative research and training activities at the TREC Centers coupled with a series of interactive and national meetings have significantly accelerated development of progress focused on this critical area of cancer prevention and control.

From the beginning, it was clear that the problems of energy balance and cancers would not be solved by individual scientists or even by interdisciplinary or multidisciplinary teams, but that a new transdisciplinary approach might lead to significant progress. This book series was stimulated by the need to encourage communication among investigators representing the multiple disciplines engaged in addressing this problem. Many of the authors in this introductory volume are TREC investigators or collaborators and, although they wrote their chapters from the perspective of their individual disciplines, they are very much aware of the need for transdisciplinary communication and research efforts and are already engaged in leading these initiatives.

In her keynote address to a meeting entitled Energy Balance and Cancer: Mechanisms and Mediators sponsored by the American Association for Cancer Research, NCI, and TREC on October 24–26, 2008, in Lansdowne, Virginia, Jeanne Calle reviewed the relation between obesity and cancer, provided evidence for a growing list of obesity-related cancers, and stressed the need for accelerated research to identify the mechanisms involved. Just as she labored to prove the link between body mass and cancer, it remains for us to understand and break that link.

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