Gauging Progress in a Decades-Old Fight

Jesse Potash and Kenneth C. Anderson

We are proud to present the American Association for Cancer Research (AACR) Cancer Progress Report 2012, which is available as a supplement to this issue of Clinical Cancer Research. Coordinated by the AACR and written with the input of a large group of leaders in the oncology community, the Progress Report represents an impressive benchmark for chronicling recent advances in understanding, preventing, and treating cancer. The Progress Report provides a far-reaching update on cancer biology, causes, detection, therapies, and personalized medicine and also offers glimpses of what the future may hold. A complementary perspective is provided with the inclusion of commentaries from cancer patients and survivors, who, by sharing their stories, remind us of what is at stake and the urgency of continuing our work.

While the AACR Cancer Progress Report 2012 was written to highlight research successes and provide a compelling account of some of the most important scientific advancements in cancer prevention, detection, diagnosis, and treatment during the past year, its ultimate purpose is to persuade Congress, the Obama administration, and the general public to support sustainable budget increases for the National Cancer Institute and its parent agency, the National Institutes of Health (NIH). It is vitally important for our policymakers and their constituents to understand that the research funded by the NIH has contributed to nearly every medical treatment, diagnostic tool, and medical device developed in modern history, and that we are all enjoying longer, healthier lives, thanks to the federal government’s wise investment in this lifesaving agency.

We have been fortunate to see a spate of new cancer drugs receive approval from the U.S. Food and Drug Administration in recent months, and several drugs already in use have received approval for treatment of new types of cancer. The Progress Report details these approvals and illustrates the ways in which these cutting-edge medicines are already providing benefit to some patients. Additionally, the importance of patient stratification and the identification of appropriate markers of treatment response are emphasized, as targeted drugs may only provide benefit to subsets of patients with specific molecular characteristics.

The Progress Report also summarizes the current state of our knowledge on the causes of cancer, from environmental and lifestyle factors to genetic factors. As the Progress Report indicates, many causes of cancer can be avoided, suggesting that education and social policy play an important role in reducing cancer deaths. An improved understanding of cancer epidemiology may also lead to screening or preventive medicine for individuals in high-risk populations. The Progress Report points out, however, the difficulties we have faced in developing reliable screening tests and biomarkers for early detection of some cancers, underscoring the need for continued perseverance.

The Progress Report highlights several areas of research that hold promise for the future. It is known that many cancers have abnormalities in epigenetic modifications, and efforts are being made to understand these defects at a genome-wide level in a variety of cancers. Drugs that target epigenetic modifications are in development and have shown potential in some patients who are resistant to other agents. Large-scale metabolite profiling is also emerging as a useful tool, particularly for developing novel biomarkers of risk, prognosis, or treatment response. Because microorganisms have in some cases been linked to cancer, efforts to better understand the microbiome may eventually yield new strategies for cancer prevention and treatment. Given the complexity of cancer, large integrative systems biology approaches are needed to deepen our understanding of the pathways and networks that are active in cancer cells and to target them more effectively.

The fight against cancer is an enormously challenging undertaking that has spanned decades, and it will require continued support for innovation and perseverance. The AACR Cancer Progress Report 2012 was written to be accessible to a general audience, but we feel it will be of interest to researchers and physicians as well. Such a report reminds us that though the road is long, the time, effort, and resources invested in fighting cancer have borne fruit that is benefiting patients on a daily basis and providing hope for the future.
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