The world of “-omics” is vastly changing the landscape of accelerated research and its translation to patient care. Understanding this complex science, particularly in the world of oncogenomics, can be daunting. Questions arise pertaining to how nurses can best educate patients who are forced to make difficult decisions without fully understanding to what they are consenting. This article follows a patient story that drives home the need to improve -omics literacy.

Hammer is the director of research and evidence-based practice in the Department of Nursing at Mount Sinai Hospital in New York, NY.

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Hammer can be reached at marilyn.hammer@mountsinai.org, with copy to editor at ONFEditor@ons.org.

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The accelerated rate of knowledge gained from genomics and other “-omics” scientific investigations is anticipated to vastly enhance patient care. The translation from research to patient care is termed implementation science (Williams, Feero, Leonard, & Coleman, 2016). Implementing the science requires alterations of current practice and adaptation of the new treatments, procedures, and protocols. To successfully make this transition, knowledge and belief are essential for patients and providers. In addition, education and training of all healthcare team members must be instituted to put protocols into action.

However, understanding the -omics language and implications for health care can be challenging. In recognition of the need to enhance -omics, particularly in genomics, the National Institutes of Health and National Human Genome Research Institute held a workshop in 2011 to discuss genomic health literacy and genomic science literacy (Hurle et al., 2013). Clearly articulated was the challenge of a public not well versed in the basic biology and math necessary to understand the implications of genomic and epigenomic science to better address their healthcare needs (Hurle et al., 2013). Six years later, and with the National Cancer Moonshot Initiative and Precision Medicine Initiative accelerating -omics research and practice, the public is still not omically literate.

Using a case study example, the following will explore this challenge from a patient perspective.

Case Study

Mr. X is a 48-year-old male high school math teacher who was diagnosed with acute myeloid leukemia (AML) three years ago. Standard therapies of cytarabine (Depocyt®) and idarubicin (Idamycin®) initially led to remission. He also had an allogeneic hematopoietic cell transplantation and was doing well until he relapsed six months ago. Consultations with two different oncologists have left him with two options. One, based on a review of pharmacogenomics in patients with AML that discussed the multiple DNA polymorphisms associated with anthracycline and cytarabine pathways (Megías-Vericat et al., 2016), was to sequence his genome to assess for any of these polymorphisms. If detected, he would be offered a trial of a new regimen for patients with such polymorphisms. The second oncologist suggested that he enter a small radioimmunotherapy trial that had been yielding some promising results (Bodet-Milin et al., 2016). In both cases, the explanations were unclear, and neither approach seemed to offer more hope than the other. As a well-educated, middle-aged adult, Mr. X felt out of sorts and unsure of what decision to make. He sought the opinion of a third oncologist at one of the top research-intensive