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Judith Campisi

After years at an all-girls Catholic high school, when it came time to go to college, Judy Campisi's course selections were strongly influenced by the estimated enrollment of men. Chemistry met the necessary requirement.

The Campisi family moved from Queens to Long Island when Judy was 13. Judy Campisi's father sold advertising for the Yellow Pages, and her mother was a homemaker until her four children were grown, when she took a job in the printing department of a local newspaper.

Campisi describes herself as a "typical, un-exotic second generation American, where my grandparents were the ethnic centers of the families." That extended family strongly influenced Campisi, who feels that she "received more than a Mendelian share of my Italian grandmother's genes. She was small and feisty, an energetic woman, with no dearth of opinions, and a magic touch in the kitchen" — all qualities that Campisi proudly shares. Campisi observes that "the major difference between inspired experiments and inspired cooking is the success rate (that of cooking, alas, being much higher)."

Campisi completed a program in chemical technology in two years and spent the next four years working in jobs ranging from quality control for a pharmaceutical company, to a newspaper, to even selling Avon products. It being the 1970's, she also took some time off to travel the country and experience life. She describes the 1970's as "an exhilarating time. Not without a dark and troubling side to be sure. It seems that a confluence of social, political and economic forces created a climate that allowed a generation of young people to explore themselves and their relationships to others and society in ways that were difficult at best for vious generations. This is not to say that individuals haven't engaged in such explorations for millennia, nor to deny the casualties of the times, but the 70's made it permissible, available, possible... I think the greatest impact was on women. No matter how the political and social tides ebb and flow today, there is a cohort of women from that generation, and their daughters, and now, I guess, their daughters' daughters, for whom there is no going back."

Campisi subscribes to the philosophy that one should play a little while they're young and see what options are available before selecting a life-long career. "Science is an enormous, lifelong commitment," and one should "try it on to see how it feels" before dedicating one's life to it, Campisi believes. She urges students today not to stay in school without interruption from kindergarten through the Ph.D., but rather to take time to travel and work before entering "scientist mode."

Campisi did return to school, earning her bachelor's degree in chemistry at the State University of New York at Stony Brook in 1974, and her Ph.D. in biochemistry there in 1979. While a graduate student, Campisi married Sam Beall, who was working at the University of California, Davis, so Campisi's Ph.D. work was completed at both UCD and SUNY-SB.

Upon completing her Ph.D., Beall moved back East, to Brown University. Campisi gamely followed and sought out Art Pardee at Dana-Farber. Campisi remembers her four years in the Pardee lab as her initiation not only The ASCB Newsletter, Vol 23 No 3 16 to science but also to the culture of science.

In 1984, Campisi moved to the Department of Biochemistry at Boston University to work on aging and senescence despite the fact that she wasn't convinced that senescence had anything to do with aging. After five years in New England, Campisi was offered another opportunity to go West.

Although Campisi's time in California in the 1980's was brief, the seed had been planted during her period at Davis, so when the opportunity to join Lawrence Berkeley Labs coincided with her separation from Beall, she went without skipping a beat.

At the LBL, Campisi set about her work in senescence in earnest. It has been known for four decades that normal cells do not divide indefinitely owing to cellular senescence. Several lines of evidence strongly suggested that cellular senescence is important for suppressing the development of cancer, at least in mammals. Less strong evidence suggested that this process may also contribute to the loss of tissue function and integrity that is a hallmark of aging. Early on, Campisi thought that if cell senescence had anything to do with aging, it was less likely that the loss of cell proliferative capacity was important and more likely that the altered function of senescent cells was important. Research from her lab and others' continue to build support for this view, "although I am always careful to point out that the idea that cellular senescence contributes to age-related pathology is still a working hypothesis. I have proposed that cellular senescence may be an example of antagonistic pleiotropy — a trait that was selected during evolution to optimize fitness (e.g., by preventing cancer) early in life, but has unselected deleterious effects (e.g., compromising tissue function) late in life. This might occur through the striking morphologic, behavioral and functional changes in senescent cells that together are termed the senescent phenotype.

Senescent cells irreversibly lose the capacity for further division, although they remain viable and metabolically active, and this growth arrest is undoubtedly responsible for the suppression of tumorigenesis. However, senescent cells also show selected changes in cell type-specific function. These functional changes include the secretion of molecules that can stress tissues (e.g., proteases and inflammatory cytokines), and may be responsible for the deleterious effects late in life.”

Campisi's lab continues to probe two fundamental questions regarding cellular senescence: its cause, and consequences. She reports that “from our work and others, we now know that the senescent phenotype can be caused by telomere shortening, which limits the number of divisions cells can complete, certain types of DNA damage, and unregulated mitogenic stimuli — all potentially cancercausing stimuli. We provided the first histochemical evidence that senescent cells probably exist in human tissues, and accumulate with age. We now have preliminary data to suggest that senescent cells can disrupt the function of epithelial cells, and also stimulate the growth of preneoplastic cells. We now believe that cellular senescence, which promotes tumorigenesis if it is lacking, may also promote tumorigenesis if it is excessive, which is likely to occur later in life. This suggests that the accumulation of senescent cells, together with the accumulation of mutations, may explain the exponential rise in cancer that occurs with age.”

Former ASCB President Mina Bissell is Campisi's mentor and one of her most enthusiastic supporters. “Judy has an abundance of energy and love for science. She is a creative scientist (who is also an artist) and has strong opinions about all sorts of things — as a Prima Donna would or should! We are really fortunate to have attracted Judy to LBNL's program in Cell and Molecular Biology. She has helped me personally to get this young program on the national and international map.”

Like for many in science, relaxation and leisure are worked around research and scientific meetings. Over last Christmas, Campisi decided a vacation was in order and took five days on the Big Island of Hawaii — her first non-work related trip in nine years.

Any free time is devoted to her lifelong interest in pottery and her love of wine. Living near Napa and Sonoma has provided a wonderful opportunity to learn more about California wine, and wine making. Campisi and a friend recently embarked on a new venture, making their first wine, for which her chemistry education served her well. She revels in watching the transformation from vine to grape to juice to wine.

Campisi's artistic streak has even extended to television. In 1997, she was featured in the PBS series “Stealing Time,” in an episode on “Turning Back the Clock.” Ironically, while Campisi was a prominent participant in the project, she has never seen the program since she hasn't owned a TV for more than 20 years.