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Presidential Honor for Evelyn Witkin

The entire DNA repair and mutagenesis community received a truly wonderful piece of news recently when it learned that Evelyn Witkin, one its true pioneers and most beloved members, had been named by the President of the United States as one of eight recipients of the 2002 National Medal of Science. The presidential medal is the nation's highest honor for researchers who make major impacts on their fields of science through career-long ground-breaking achievements.

Evelyn spent her career studying *E. coli*'s responses to DNA—mutagenesis, filamentation, and prophage induction. She was the first to recognize that these diverse physiological responses are coordinately controlled by a system we now know as the SOS regulatory network. After events such as the recent Cold Spring Harbor Symposium on "Biological Responses to DNA Damage," it is hard to remember that the idea that cells could respond to DNA damage was very controversial when originally proposed. However, it was Evelyn's visionary research and remarkable intellectual syntheses that laid the ground work for the many recent discoveries of how mutations affecting DNA repair or cell cycle checkpoints exert profound effects on human health, particularly with respect to cancer and aging.

Evelyn was a very close friend of Barbara McClintock, and we think it is fair to draw a parallel between them. Like Barbara, the experiments that Evelyn carried out were brilliantly conceived but so complex that, for many years, it was difficult for scientists who were not in the field to understand and appreciate the importance of what she was doing. Nevertheless, just as Barbara's work revealed a fundamental principle of biology with wide-ranging implications, namely that segments of DNA can be mobile, so too did Evelyn's work. In Evelyn's case, that fundamental insight was that cells respond to damage to their DNA in complex ways that deal not only with how their genetic material (and that of associated prophages) is processed after damage but also with how their cell division and other aspects of their physiology is regulated.

Evelyn is also arguably one of the most generous and supportive scientists that this country is has ever known. By being so open and generous with her ideas and insights, Evelyn set a style of sharing that permeated the whole field and greatly accelerated its development. Evelyn nurtured not only the science but also the scientists in the field, supporting young scientists, stimulating more senior researchers, and fostering an atmosphere of free information exchange and almost joyous delight in the discovery of new biological principles and mechanisms.

The people who owe a great debt to Evelyn include the two writers of this short tribute. I (B.A.B.) met her first in 1967, immediately after an important meeting at Gatlinburg at which the work of Rupp and Howard-Flanders on discontinuities in the DNA synthesized after exposure of bacteria to ultraviolet light was reported. We both immediately realized the significance of such a lesion as a possible site for an error-prone (her word!) process resulting in mutation. When we met she was open and stimulating in her discussion of the current position and this attitude continued over the next 30 years or so with everyone else in the field. With her encouragement strains were always sent out to those who needed them, letters were exchanged (travel was less easy in those days and there were no E-mails), and when we were able to meet at conferences it was something to look forward to and always proved stimulating and food for thought.

I (G.C.W.) remember the thrill of meeting Evelyn while still a postdoctoral fellow at Berkeley. Evelyn had somehow gotten wind of my still unpublished experiments concerning a possible relationship between pKM101, the plasmid in the Ames *Salmonella* tester strains, and the SOS responses. Evelyn called up and paid a visit, which was truly memorable. She could not have been more helpful and encouraging and I still remember vividly how inspired and excited I was by the time her visit was over. Shortly afterwards, I joined the faculty at MIT and phoned Evelyn to ask if she could tell me where to get one of the Latarjet UV meters that she used in her experiments. It turned out that Latarjet built them himself in France and the next thing I knew,

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Evelyn had not only arranged for him to make me one, but also personally hand-delivered it to my office when returning from a trip to Paris. Evelyn's willingness to support and encourage so many in the field has truly been offscale!

Ever self-effacing, in her prefatory chapter for the 2002 *Annual Review of Microbiology*, Evelyn tells the story of how luck helped her in her first-ever research experiment at the Cold Spring Harbor Laboratory in 1944. She set out to isolate a radiation-resistant strain of *Escherichia coli* B by examining the survivors of a high dose of ultraviolet light. However, she gave a dose that killed far more bacteria than she anticipated and had only four survivors. All of these proved to be resistant to radiation. One of these strains she called B/r and it was the parent strain that she used for the rest of her career and which has been used by countless others for radiation and mutagenesis work. In her prefatory chapter, Evelyn called this "beginner's luck" because in many later attempts she never again succeeded in isolating UV-resistant mutants as the last survivors of a single exposure to a high dose of UV! Evelyn's writing about her research reveals a passion for the power of genetics and a love of the laboratory bench. Her description of the moment of suspense, holding one's breath as one opens the incubator door the morning after an experiment, is one that will strike a chord with many beside ourselves.

Evelyn Witkin is one of the most brilliant biologists in the United States. Working mostly by herself or with a technician or student, Evelyn carried out experiments and developed theories that fundamentally changed the way we think about biology. Furthermore, she did much of her work while bringing up a family and at a time when it was exceedingly difficult for female scientists to succeed. Evelyn has been a highly innovative researcher, a deep and insightful thinker, a mentor for many of today's scientists, a true leader in the field in many dimensions, and a remarkable human being.

On behalf of the DNA repair and mutagenesis community we salute Evelyn Witkin's achievements and congratulate her on her on being awarded the National Medal of Science.

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