

Resolution for the Retirement of Professor Eli Siegel

May 19, 2010

The faculty of the Department of Biology joins with the faculty of Arts and Sciences to put on the record our admiration and warmest appreciation for Professor Eli Siegel on the occasion of his retirement after 42 years of service to Tufts University. Eli was born and raised in Newark, New Jersey, where one of his favorite boyhood activities was getting outside with friends and exploring the world around him. Frequently some of that world came home with Eli as pet snakes, frogs, and toads, an early sign of a fledgling biologist. To this day he enjoys hiking in and around New England.

Eli went to Rutgers in Newark as an undergraduate. There he had his first research experience, studying a new gene affecting eye shape in *Drosophila*. He entered graduate school at Rutgers in 1960 at the Institute of Microbiology in New Brunswick where he turned to working with bacteria. At a time when molecular biology was young, Eli's PhD thesis, *A study of mutator genes in two strains of Escherichia coli*, was and remains a seminal piece of work that has recently taken on new significance.

Mutator is the name given to a gene that, when it fails to function properly, results in an accelerated rate of mutation. Thus, the normal function of proteins coded by mutator genes is to correct errors, mistakes if you will, that occur when the strands of DNA are copied for cell division or when DNA is damaged by an environmental factor such as UV irradiation. Now we know that there are several mutator genes, but when Eli discovered and characterized a mutator, it was only the second one known. Henry Treffers at Yale found the first. Realizing that people would never remember which was which, Eli designated Treffers' as *mutT* and his as *mutS* and showed that they had different spectra of increased mutational activity.

The normal protein for *mutS* repairs mismatched DNA, a specific type of DNA damage, and keeps cells from accumulating large numbers of mutations. Recently, others have found that there are several human homologues for *mutS*, which may be mutated in hereditary colorectal cancers, some spontaneous colorectal cancers and some endometrial cancer. Like those in bacteria, these human homologues of *mutS* are responsible for defects in mismatch DNA repair, which explains how they can result in specific cancers.

After he completed his PhD in 1966, Eli took a postdoctoral position in the Department of Biochemistry at Albert Einstein College of Medicine with Julius Marmur. Eli came to Tufts in 1968 and built a vibrant research group with several PhD students and numerous undergraduates. He continued work on mechanisms for correcting DNA copying errors, focusing particularly on a gene in *E. coli* that was defective in both mismatch and UV-induced damage repair. He showed that some mutator genes are damage inducible and was the first to show that a type of mutation called a frameshift was elevated in mutator strains. As with his previous work, this finding would eventually lead others to identify failures in mismatch correction in human tumors.

In addition to mentoring his own graduate students, Eli chaired the Graduate Admissions Committee and the Graduate Program Committee in Biology. Under his stewardship, the quality and quantity of the graduate students increased. He expanded his commitment to graduate education when he served as chair of the Executive Committee of the Graduate School.

As a member of numerous faculty search committees and chair of several, Eli was also instrumental in helping to build the faculty. Once junior faculty members came to Tufts, Eli shared his wisdom and frequently offered much-needed encouraging words.

Of all the courses required for the major in Biology, there is only one that all students must take, and that course is Genetics. Genetics has been taught by Eli since he arrived at Tufts, which means that with minor exceptions, Professor Siegel has taught every Tufts Biology major since 1969. For many years, he also taught the genetics component of the introductory biology course, Bio 13. Eli also taught a course on human genetics, a cancer course and a microbiology course with laboratory. During the mid-1970's, Eli introduced to the department, and perhaps to the university, the first standardized machine-graded course evaluations.

Any tribute to Eli would not be complete without recognizing his marvelous sense of humor. Eli's humor is dry. Sometimes students report that about three seconds after he made a comment in class there would be some chuckling followed by full-blown laughter. When the Barnum building burned in 1975, the department was relocated to Sweet Hall for a year. Stories still circulate about these difficult times when the contents of offices and research labs had burned to a crisp and the entire faculty was packed into small cubicles separated by low partitions. A conversation in one cubical was "a conversation of the whole". People remember that remarks made by Eli frequently had the entire department laughing together, and in the process, lifted morale.

Although it is hard to imagine classes starting in September without Eli teaching Genetics, we wish him well in his retirement with his wife Tess and hope to see him frequently at department seminars and parties.

On behalf of the Department of Biology, I move that this resolution on the retirement of Professor Eli Siegel be spread on the minutes of the faculty of Arts and Sciences and that a copy be presented to Eli and his family.