



Susumu Ito



Susumu (Sus) Ito, (1919-2016), the James Stillman Professor of Comparative Anatomy at Harvard Medical School was born in California, the son of non-English speaking Japanese sharecroppers. He spent the first eight years of school in a single classroom for the children of sharecroppers. After decades of scrimping and hard work his parents were able to buy a bath house in Stockton where for the first time he could attend a regular public high school. A gifted student, he was accepted at UC Berkeley but his mother forbade him to attend, saying that college was only for students who planned to be doctors or lawyers; he was expected to become a garage mechanic. He went to vocational school instead.

At 22, he had just started working at a garage when he was drafted into the US Army. He was assigned to the 442nd Infantry Regimental Combat Team, the “Go for broke” Japanese-American unit. His family was deported to an internment camp while he swore his “unqualified allegiance to the United States of America.” When President Roosevelt visited his base at Camp Shelby Mississippi, he was hidden in the basement with his fellow Asian American recruits.

He was offered the chance to be part of the supporting 552nd Field Artillery Battalion and he accepted, because he was hoping to “learn something new and interesting”. A perilous choice, because first in Italy and then in the Vosges mountains in France he was a forward observer, directing the artillery fire from the no man’s land between the American and German frontlines. During his Italian campaign from June 26 through November 12, 1944, Sus was one of the 9 survivors of 300 forward observers.

“For courage beyond duty” Sus received a battlefield promotion to lieutenant, an unusual rank in WWII for a Japanese-American. In the Vosges, the German’s had surrounded 211 members of the 36th Infantry Division of the Texas National Guard. After battling five days, the 442nd broke through and rescued the “Lost Battalion” having sacrificed 121 lives and 800 wounded. Throughout the battle Sus was stationed

*In tribute to their dedicated efforts to science and medicine, deceased members of the Harvard Faculty of Medicine (those at the rank of full or emeritus professor) receive a review of their life and contributions with a complete reflection, a **Memorial Minute**.*

between the front lines, directing the artillery fire of his unit and, for his bravery, he was awarded the Bronze Star. Of the 442nd Regimental Combat Team, General George C. Marshall said, "They were superb! That word correctly describes it: superb! They took terrific casualties. They showed rare courage and tremendous fighting spirit."

When the German army collapsed, his platoon was the first American unit to reach Dachau. His photos of the death camp survivors are now exhibited in the United States Holocaust Memorial Museum in Washington. They depict the deeply moving story of a group of Japanese-American soldiers liberating the prisoners, while many of their own families were interned in the United States.

Sus came back to this country in November 1945 and joined his parents in Cleveland, where they had moved since their release. His homecoming was marred by citizens who racially affronted him for wearing a US army uniform. He found a job in a garage where he changed brake pads, at the time made of asbestos. He used compressed air to blow out the asbestos laden dust of the old pads. There he developed pulmonary asbestosis.

At 27 he decided to go back to school thanks to the GI Bill and obtained a BS degree at Fenn College, the former Cleveland Y.M.C.A School of Technology. He discovered his interest in biology there and, against the advice of his biology professor, applied and was accepted as a graduate student by Case Western Reserve University. He obtained a PhD in Biology in 1954.

His academic career began as a Postdoctoral Fellow in the laboratory of Don W. Fawcett, then Chair of the Department of Anatomy at Cornell Medical School. In 1960, when Fawcett became Chair of the Department of Anatomy at Harvard Medical School, he brought Sus and other future HMS faculty members with him.

Sus was a meticulous and ingenious electron microscopist. Working with one of us (TDP), at the time a medical student at HMS, they discovered in *Amoeba proteus* that actin and myosin were responsible for the motility of a non-muscle cell. This work started a new field of research which led to our understanding of the molecular mechanism underlying movement in any eucaryotic cell. He was promoted to full professor in 1970.

An expert of cell biology of the gastric and intestinal mucosae, Sus described the functional organization of the HCl-secreting gastric parietal cells and that of the intestinal epithelium. He defined the nature of the glycoprotein coat of intestinal cells which he called "fuzz." Now all gastroenterologists know it as "Ito's fuzz."

Furthermore, he began a series of elegant experimental studies of the damage caused by aspirin and alcohol to the gastric mucosa and the mechanism of its repair. The surface epithelial cells rapidly die over extensive regions but the special neutral mucus secreted by the residual cells creates a barrier to further damage, while the cells rapidly flatten out and cover the exposed surface of the underlying basal lamina. In a matter of hours, the epithelial barrier is restored and, more slowly, the flattened cells are replaced by newly formed, normal columnar epithelial cells. These studies made Sus Ito famous among gastroenterologists the world over.

After retiring in 1990, he continued to come to work in the early morning hours without pay. He helped postdoctoral fellows of any department with electron microscopy of any type of cell, tissue or organ. By

9:30 a.m. he was gone from the school, so that he “did not interfere” with the work of other investigators using the interdepartmental electron microscopy facility. At home, he spent the rest of his day preparing specimens and cutting thin sections on his ultramicrotome designed by Keith Porter in the early ‘50s.

Sus lived among us common sinners, infinitely kind, infinitely patient and infinitely generous. Tolerant of human weakness, one never heard him say anything bad of anybody. He looked for good in every person, irrespective of race, nationality or appearance. He was open to all ideas and experience, yet private and reserved with his own feelings and observations. He was marvelously dexterous and created wonderful things with his own hands. He never complained, and his grace and kindness brought happiness to us all.

Finally, in his old age recognition came for his bravery and military achievements. On October 5, 2010, he was chosen to receive from the Speaker of the House the Congressional Gold Medal bestowed to the 442nd Regimental Combat Team and in 2012 he was one of the surviving members of the unit who were made chevaliers of the French Légion d’Honneur for their actions contributing to the liberation of France during World War II. Two years ago, Sus was commended personally by President Barack Obama in the Oval Office. He accepted prizes and praise with the simplicity and joy of a child. His modesty was humbling to the rest of us. One of us told him that he was the eighth of Kurosawa’s samurai and that he possessed the qualities of all of them. For any who knew him, he is still very much with us.

Respectfully submitted,

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