And The Winner Is... A New Senior Seminar Course Has Students Betting the Odds

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The entire Nobel Seminar class, pictured from left to right: Lauren Ferrell, Clare Conlisk, Ashley Legel, Abbey Pipkorn, Terese (Beth) Noe, and Dr. Ann Maine.

In December of 1895, Alfred Nobel passed away without any heirs or close relatives, and so bequeathed his sizable fortune to the eventual development of the Nobel Prize Foundation. Since then the Nobel Prize has become a prestigious award given only to those who have been the most influential and progressive in their field. As seniors majoring in biology, students having the pleasure of taking Dr. Ann Maine’s senior seminar course entitled, “BIOL 485 – The Nobel Prizes: A Century of Innovation and Discovery,” have been delving into the inner-workings of the Nobel Prize. One of the most recent laureates has close ties to our own biology department here at Lake Forest College. Dr. Blackburn’s and previous Nobel laureates’ success have helped us to realize the importance of research to our current understanding of biological processes.

The Nobel Prize Foundation was founded after Nobel’s death by his assistant, Ragnar Stohlmans (Hargittai). In his last will and testament, Alfred Nobel instructed that his fortune should be divided equally into five parts on an annual basis and awarded to those who have made the “most important discovery or invention” in physics, chemistry, medicine or physiology, “the most outstanding work in an ideal direction,” and “done the most or best work for fraternity between nations for the abolition or reduction of standing armies and for the holding and promotion of peace congresses” (Hargittai). These five categories make up the Nobel Prizes in physics, chemistry, physiology or medicine, literature, and peace. Since the first Nobel Prizes were first presented 108 years ago, 829 recipients have received prize money generated by Nobel’s fortune and the interest it has gathered (Nobelprize.org).

This semester’s senior seminar is entirely focused on the work of medicine and physiology Nobel laureates, and how these discoveries have been applied since their initial conception. With some heavy input from class members, every week Dr. Maine chooses two or more laureates of interest for a particular decade. Reading assignments consist of primary papers in which those laureates first published their Nobel Prize winning findings, as well as more modern primary papers that incorporate these findings. Two class members per week are selected to give hour-long presentations discussing these papers in detail. All five members of our class are now thoroughly versed in a range of Nobel worthy topics. These include (but are not limited to) the elucidation of the diphtheria, tuberculosis, and malaria bacteria – as well as the treatments that were engineered after these discoveries – and blood typing, all of which were researched in the early 1900s. More recent Nobel laureate research has been bacterial resistance, organ transplantation, immune responses, and oncogenes.

As all five senior seminar participants this semester are female, Dr. Maine thought it would be interesting to include a discussion on women in the history of the Nobel Prize. There have only been 40 women laureates since 1901. Marie Curie was awarded the Nobel Prize twice, once in 1903 for Physics for her work on radiation phenomena and the other for Chemistry for her discovery of the elements radium and polonium, bringing the total number of Nobel Prizes awarded to women to 41 (Nobel Foundation). Other women laureates include Dorothy Crowfoot Hodgkin (Chemistry, 1964) for her “determinations by X-ray techniques of the structures of important biochemical substances” and Barbara McClintock (Physiology or Medicine, 1983) for the discovery of mobile genetic elements. Also included in our discussion were “honorable mentions” for women who potentially should have merited a Nobel Prize. These controversial women include Rosalind Franklin for her x-ray crystallography data that helped Watson and Crick discover the double helical structure of DNA and Emmy Noether for the first Noether’s Theorem, a fundamental tool of modern theoretical physics (McGrayne). This year’s Nobel Prize in Medicine and Physiology was awarded in part to Dr. Elizabeth H. Blackburn for her research on telomeres. Dr. Blackburn was the graduate research advisor of Dr. Karen Kirk, a Lake Forest College professor of molecular genetics. As Dr. Maine stated, Dr. Blackburn’s win places any student that has taken a class from Dr. Kirk only three generations of intellect from a Nobel Prize!

The final project assigned to the class has been designed to mimic a Nobel Committee meeting with students making their arguments as to which topic and scientists should be awarded in 2010. This includes a detailed and thorough discussion and presentation of the potential prize-winning work and its beneficial application to modern science and medicine. Each student was asked to interview biology faculty for their suggestions as to who will win in the upcoming year. Once a pool of potential winners was generated, class members put in their votes as to who was the most deserving of a Nobel Prize. In the final presentations and papers, the students of this class will be arguing whether they believe researchers who have pioneered stem cell research or those who have discovered microRNA and RNA polymerase should win the prize.

This senior seminar has given the class the opportunity to discuss a rather large range of topics and the ability to tailor the material to fit the students’ interests. While at times it might have been difficult to keep up with hour-long presentations required every other week, all members of this class are becoming proficient in reading technically dense primary articles, and working efficiently
and independently. We have gained a new appreciation of the work performed by Nobel laureates as well as the degree to which their research has shaped modern science.

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References

