The Punnett Square was created in the early 1900s by Reginald Punnett. Punnett was born in 1875 and was the eldest of three children. He grew up in England and was fascinated by the natural sciences at an early age. When he was young, he was often stricken by appendix issues and had to stay quiet during recovery. During one particular recovery period, he spent a large amount of time reading his father's library on natural history, which sparked his interest and had a lasting impact on his career choices (Crew 1967). As Punnett continued his love for science, he eventually became one of the first scientists to study genetics at Cambridge University and helped to establish the field there. He spent a significant amount of time conducting genetics research with the leading scientists of his day, including William Bateson and G. H. Hardy (Cold Spring Harbor Laboratory 2011). Together they were strong proponents of the genetic work of Gregor Mendel, who today is credited as the father of genetics.

In 1905, Punnett devised what is known today as the Punnett Square (Arizona State University 2012). The Punnett Square is used to illustrate some of Mendel's discoveries including the segregation of DNA into different gametes upon gamete formation. The Punnett Square was designed as a teaching tool and is still used in classrooms today.

The premise is simple; the genetic contribution of the two individuals under study is listed on each side of the square. For example, we are to cross two sweet pea individuals that have the genotypes Gg and gg. G represents green peas and is dominant to g representing yellow peas. If we are to cross Gg x gg, the genetic makeup of each individual is listed on a different side of the square.

In this case, Individual 1 has a 50% chance he or she will donate a G to the next generation and a 50% chance he or she will donate a g. Individual 2 can only donate g, but there is a 50% chance for either g in the next generation.

Individual 1

	1/2G	1/2g
1/2g	1/4Gg	1/4gg
1/2g	1/4Gg	1/4gg

Individual 2

As in Mendel's work with diploid organisms, each individual contributes one copy of the genetic information to the potential offspring. The Punnett Square illustrates where each copy will go as well as the likelihood of it combining with the genetic information for the other individual.

References

Arizona State University, 2012. "Solving a genetic mystery."

http://askabiologist.asu.edu/punnett-squares (accessed February 15, 2012). Cold Spring Harbor Laboratory, 2011. "Genetic

inheritance follows rules."

http://www.dnaftb.org/5/bio.html (accessed February 15, 2012).

Crew, F. A. E. 1967. Reginald Crundall Punnett: 1875–1967. Biographical Memoirs of Fellows of the Royal Society 13:309–26.