

Two hundred years since the birth of Mendel: who he was and where we have come from his works

Thiago Alexandre Santana Gilio¹  ; Petterson Baptista da Luz^{1,2*} 

¹ Universidade do Estado de Mato Grosso, Cáceres-MT, Brazil

² Propagation and Plant Nutrition Area-Editor, Ornamental Horticulture, Viçosa-MG, Brazil.

During the 19th and 20th centuries, researchers in various parts of the world sought a theory that could explain the inheritance of traits in different organisms. One of them was Gregor Johann Mendel, born on July 20, 1822, in rural areas in a small village in the Silesian region, located then in the Austrian empire; today, the Czech Republic. However, Mendel celebrated his birthday on July 22 (Moreira, 2017).

At the time Mendel was born, feudalism still prevailed in Moravia. His father, Anton Mendel, had a small farm but owed allegiance to his feudal lord, for whom he worked three days per week; and his mother, Rosine Schwirtlich, was the daughter of horticulturists. Mendel's family was of primary German-speaking origin (Tudge et al., 2002; Schwarzbach et al., 2014). Although his family dated back to over 100 years before his birth, Mendel did not speak the Czech language. Despite his difficulty with the language and many setbacks, at the age of 16, Mendel was already supporting himself as a tutor at a school in Opava (formerly Troppau) (Henig, 2000).

Gregor Johann Mendel finished elementary school II and was appointed to study at the Institute of Philosophy in Olomouc, where he took two years to prepare for university. Through many hindrances and difficulties, he finished his studies in Olomouc in 1843, at the age of 21, and was recommended by his physics professor to the Augustinian monastery of Brno, capital of the province of Moravia (Iltis, 1924).

The monastery of Brno stimulated the desire for knowledge, which allowed Mendel to be a teacher at a local school and a researcher. In the year 1865, on February 8 and March 8 Mendel presented his article "Experiments in plant hybridization" at two meetings of the Natural

History Society in Brno, Moravia (Henig, 2000). His article was published in the journal *Verhandlungen des naturforschenden Vereines in Brunn* (Proceedings of the Society for the Study of Natural Sciences, Brno). His study had only been cited 15 times before the rediscovery of Mendel's work in 1900 by Dutch botanist Hugo Marie De Vries, German botanist Carl Erich Correns, and Austrian agronomist Erich Tschermak von Seysenegg (Corcos and Managhan, 1990).

From then on, Mendel's work became inspiring, serving as a precursor to several areas today. In 1906, at the Third International Conference on Hybridization and Plant Breeding, English geneticist William Bateson proposed a new discipline called "genetics" as a paradigm shift proposal (Henig, 2000).

Mendel's first law, or *law of segregation*, describes the segregation of a trait such as seed color or shape in pea. Based on his studies, Mendel postulated the existence of a pair of distinct factors that determine different traits that are transmitted via gametes. However, their gametes have only one member of each pair of factors (Olby, 1972). Mendelian factors were designated as "genes" later. Then came Mendel's second law, or *law of independent assortment*.

The article by Gregor Johann Mendel entitled *Experiments in Plant Hybridization* (Mendel, 1886) was one of the triumphs of humanity and is considered the precursor of all the evolution of genetics and related areas. Bateson was indeed right—the rediscovery of Mendel's work revolutionized plant breeding. But not only that, Mendel's work was essential for the understanding of evolution and for all advancements in genetics.

*Corresponding author: petterbaptista@yahoo.com.br

<https://doi.org/10.1590/2447-536X.v28i3.2524>

Licensed by CC BY 4.0 (<https://creativecommons.org/licenses/by/4.0/>)

References

- CORCOS, A.; MONAGHAN, F. Mendel's work and its rediscovery: a new perspective. **Critical Reviews in Plant Science**, v.9, p.197-212, 1990.
- HENIG, R.M. **A monk and two peas: the story of Gregor Mendel and the discovery of genetics**. London: Phoenix, 2000.
- ILTIS, H. **Gregor Johann Mendel: Leben, werk and wirkung**. Berlin: Springer-Verlag, 1924.
- MENDEL, G. Versuche uber pflanzen-hybriden. **Verhandlungen des naturforschenden Vereins in Brunn**, v. 4, p. 3-47, 1866.
- MOREIRA, J. R. Legado e controvérsias de Gregor Mendel. In: ARAGAO, F.J.L.; MOREIRA, J.R. **Mendel, das leis da hereditariedade à engenharia genética**. EMBRAPA, Brasília-DF, 2017
- OLBY, R. C. **Mendel, mendelism and genetics**. 1997. < <http://www.mendelweb.org/>>. Accessed June 06, 2022.
- SCHWARZBACH, E.; SMÝKAL, P.; DOSTÁL, O.; JARKOVSKÁ, M.; VALOVÁ, S. Gregor J. Mendel-genetics founding father. **Czech Journal of Genetics and Plant Breeding**, v. 50, n. 2, p. 43-51, 2014.
- TUDGE, C. **In Mendel's footsteps: an introduction to the science and Technologies of genes and genetics from the 19th century to the 22nd**. London: vintage,2002.