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GREGOR MENDEL SOCIETY OF VIENNA: LOOKING BACK, LOOKING AHEAD

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INTRODUCTION

Gregor Mendel Society of Vienna (Gregor Mendel Gesellschaft Wien) is a registered scientific association (eingetragener Verein) according to the Austrian associations act (Vereinsgesetz). The society was founded in 1972 by Alfred Buchinger who was a student of Erich Tschermak-Seysenegg, one of the rediscoverers of Gregor Mendel's findings in the year 1900. The major goals of the society comprise biographical and science history research on Gregor Mendel, promotion of basic and applied genetic research, dissemination of genetic knowledge, and public relations work towards a better acceptance of medicinal and agricultural genetic research in the wider public. The society is also holding an archive including a genealogical tree of the Mendel family.

RECENT SCIENTIFIC ACTIVITIES

Gregor Mendel Society of Vienna is regularly organizing or co-organizing symposia, seminars or excursions on different subjects of applied genetics with a strong focus on plant and animal genetics, plant breeding, forest genetics and livestock breeding. Topics of these events include both the history of science as well as the latest developments in the present day scientific research, such as genome editing, genomic selection and the related ethical issues.

In 2016, members of the society were guest editors initiating a special issue of the journal *Theoretical and Applied Genetics* (VOLLMANN and BUERSTMAYR, 2016) in order to commemorate the 150 years anniversary of Mendel's seminal publication "Versuche über Pflanzen-Hybriden". In two publications, Mendel's most prominent plants, i.e. the garden pea and hawkweed, were revisited in the light of molecular genetics. Other contributions were dealing with Mendelian genetics of disease resistance, QTL mapping of traits, genomics of flowering control, or the historical role of research in *Solanaceae* species for the development of genetics.

A number of significant society events from previous years are summarized in Table 1. In the year 2016, Gregor Mendel Society of Vienna initiated an international symposium entitled "150 Jahre Mendelsche Regeln: Vom Erbsenzählen zum Gen-Editieren" which was jointly organized by Austrian Academy of Sciences, the German National Academy of Sciences (Leopoldina), University of Natural Resources and Life Sciences Vienna, and University of Veterinary Medicine Vienna. As a follow-up, a symposium proceedings

volume with 15 full papers was published in the series Nova Acta Leopoldina (Brem, 2017). Other activities included lectures given by invited speakers during the annual general assembly of the society, summer excursions, and the participation in the International Mendel Day which is organized by the Mendelianum Institute, Brno, Czech Republic.

Table 1. Recent activities with organization/co-organization or participation of Gregor Mendel Society of Vienna.

Year	Activity description
2018	Scientific Symposium: Hermann Hänsel, Plant breeder – Scientist – Philosopher
2017	International Mendel Day: Mendel Walk in Vienna (see Fig. 1) Display at Fascination of Plants Day (EPSO): 150 years of Mendelian inheritance – the dawn of genetics Public Discussion within the 13 th International Wheat Genetics Symposium: Weizen – ein Grundnahrungsmittel der Menschheit Lecture: Beyond genome selection: breeding for genetic improvement with increased speed and precision, T. Sonstegard, USA
2016	International Mendel Day: Mendel Walk in Vienna (see Fig. 2) Scientific Symposium: 150 Jahre Mendelsche Regeln: Vom Erbsenzählen zum Gen-Editieren Summer Excursion Tulln: Gräser, die die Welt ernähren, H. Bürstmayr, Austria Lecture: Evolutionary history and domestication of Old World camelids, E. Mohandesan, Austria
2015	Symposium participation: Weekend with Gregor Mendel / Mendel Forum 2015, Mendelianum, Brno Fascination of Plants Day (EPSO): Grundlagen der Pflanzenzüchtung seit Gregor Mendel / Bases of plant breeding since Gregor Mendel Summer Excursion Tulln: Gräser, die die Welt ernähren, H. Bürstmayr, Austria Lecture: Bandwagons I, too, have known, R. Bernardo, USA

OUTLOOK

At present, genetic research related to plant and animal breeding is undergoing rapid changes, capitalizing on the technological advancements. These new advances and methods, although working on principles comparable to Mendel's approaches allow us to get an insight to the genomic makeup of populations, as well as uncover causal genes behind both beneficial and harmful traits.

The various groups within the modern society perceive these advances in a very different way, however. While one group celebrates the advances as an approach to provide food resources to the ever growing human population, the other group takes a more cautious approach, criticizing it for deviation from the natural ways. While there are many examples to mention, perhaps the best one is the so called gene editing. This technique allows to produce animals or plants with desired qualities while leaving the rest of the genome unaffected. Currently it is a hot topic within the scientific community, in general public and also in the legislation bodies of the EU, whether or not to categorize the

Fig. 1. Bust of Professor Franz Unger (1800–1870) at the inner courtyard of University of Vienna. Franz Unger was professor of botany and Mendel's teacher during his study period in Vienna. Apart from his new and experimental teaching approaches in plant anatomy and physiology, Unger was also well-known for verbalizing a pre-Darwinian theory of evolution based on his insight in paleobotany. (from Mendel walk in Vienna, 2017)



Fig. 2. News paragraph from the daily Viennese newspaper *Die Presse* (7 April 1868, p. 2) reporting about Gregor Mendel's election as abbot of the Augustine monastery in Old-Brno. Mendel is praised for his liberal attitude and pleasant personality, and his election is warmly welcomed. (from Mendel walk in Vienna, 2016)

Brünn, 5. April. [Orig.-Corr.] (P. Mendel zum Abte des Augustiner-Klosters in Alt-Brünn gewählt. Die Sammlungen für den Papst.) Brünn wurde durch die allseits mit Befriedigung aufgenommene Nachricht überrascht, daß die seit dem Tode des Prälaten Napp längere Zeit vacante Stelle des Abtes vom Augustiner-Convente in Alt-Brünn durch die Wahl des P. Mendel besetzt worden ist. Man war lange genug in Spannung über den Ausgang dieser Wahl, zumal auch hier die nationale Farbe hervorstrach und unsere Stadt wünschen mußte, daß nicht abermals ein Prälat von nationalem Gepräge einen Stützpunkt für gegnerische Umtriebe biete. Was man wünschte und was man auch für ziemlich wahrscheinlich hielt, geschah — P. Mendel, ein Deutscher und wegen seiner liberalen Gesinnung und gewinnenden Persönlichkeit beliebter Mann, ging mit einer größeren Majorität, als man erwarten durfte, aus der Wahl hervor. Derselbe war auch bisher an der k. k. Ober-Realschule in Brünn als Religionslehrer in Verwendung.

outcomes of this approach as genetically modified organism (GMO). While the technical part of the gene adjustment involves laboratory techniques, the same outcome could be achieved also by perfectly natural mating of individuals.

As the above example shows, the genetic approaches to improve agricultural plant and livestock resources could face criticism from different groups of modern society. As a consequence, progress in agriculture and even in human medicine could be hampered due to lower acceptance of genetic research results, and cannot be implemented. In contrast, agriculture is facing exceptional challenges due to global climate change, a steadily growing need for livestock feed, and a strong demand for high-quality, sustainable and environment-friendly human food production.

In this context, the year 2022 appears as a special landmark in the science of genetics, as it is the year of Gregor Mendel's 200th birthday. This anniversary offers a unique opportunity for bringing the science of genetics to a wider audience, using multiple channels to contribute to better public acceptance of genetics. Gregor Mendel spent most of his educational and professional life in the region spanned by Moravia and the north-east of Austria. This most-inspiring border region between Slavic and German speaking cultures was Gregor Mendel's natural habitat, and the cities of Brno, Znojmo and Vienna are still bearing prominent items related to the development of genetics. Thus, Gregor Mendel Society of Vienna and its Czech counterparts are facing important roles and opportunities for science communication in the coming years. We should not stop at the Central European level, however, but try to match the global influence of genetics with a global network of science communication overarching the continents.

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