EDITORIAL

This year is inherently linked with the worldwide celebration of the bicentenary of the birth of Johann Gregor Mendel, one of the greatest geniuses of modern science, the world-famous discoverer of inheritable information, and the founder of genetics. The celebrations were, naturally, centred in Brno, where Mendel spent a substantial part of his life and where he revealed the essence of the mystery of heredity and variability of all living things. The Moravian Museum is the direct successor to the museum founded in 1817 by the Moravian-Silesian Agricultural Society, in which Mendel was active for forty years and where he found inspiration for his research. This is also why, in 1962, the Gregor Mendel Department of Genetics, the present-day Centre for the History of Biological Sciences – Mendelianum, was established. The Mendelianum played a major role in the organisation and implementation of this year's Mendel anniversary celebrations.

The preparations for the organisation of the international Mendel Genetics Conference 2022, organised with the support of UNESCO, began at the start of 2021. The scientific committee of the conference consisted of 21 scientists and luminaries from seven countries. The Mendelianum was responsible for the organization of Section C, the historical-scientific session, entitled History of genetics: more than a century of international research into the life and legacy of Gregor Johann Mendel, the origin of genetics and its development. This session consisted of four main topics: 1. Anthropological and genomic analysis of Mendel's remains, 2. Mendel's history in the nineteenth century, 3. Mendel's legacy in the twentieth and twenty-first centuries, and 4. Mendel's theory and its implications.

This issue of our journal Folia Mendeliana brings together all the important contributions of the first two topics: 1. Anthropological and genomic analysis of Mendel's remains, 2. Mendel's history in the nineteenth century, including the opening lecture by Daniel Fairbanks, presented at the opening ceremony of the Mendel Genetics Conference at the Basilica of the Assumption of the Virgin Mary, and the Mendel lecture by Uwe Hoßfeld, presented at the Dietrichstein Palace of the Moravian Museum on the occasion of the award of the Mendel Memorial Medal 2022.

In THE CHRONICLE section we also present a very interesting eyewitness report: When Politicians get involved in Science: The marble statue of Gregor Mendel by Anne-Ruth Wertheim.

In the next issue, contributions to the other two topics will follow: 3. Mendel's legacy in the twentieth and twenty-first centuries, and 4. Mendel's theory and its implications. The second opening lecture by Nils Christian Stenseth, presented at the opening ceremony of the Mendel Genetics Conference at the Basilica of the Assumption of the Virgin Mary and the most interesting papers of the poster part of the historical-scientific session of the conference will also be published in the journal.

Jiří Sekerák

SECTION C PROGRAMME

www.mendel22.cz/conference

Friday 22 July 2022, BRNO

HISTORY OF GENETICS: MORE THAN A CENTURY OF INTERNATIONAL RESEARCH INTO THE LIFE AND LEGACY OF GREGOR JOHANN MENDEL, THE ORIGIN OF GENETICS, AND ITS DEVELOPMENT

ANTHROPOLOGICAL AND GENOMIC ANALYSIS OF MENDEL'S REMAINS

9:00–10:30

Session chairs:	Daniel J. Fairbanks; Uwe Hoβfeld
9:00–9:20	Dana Fialová: Multidisciplinary Approach to Identification of Gregor Johann Mendel's Skeletal Remains
9:20–9:40	Eva Drozdová: Body Remains of the Founder of Genetics Gregor Johann Mendel – a Case Study
9:40–10:00	Filip Pardy: Reconstructing the genome of Gregor Johann Mendel using state-of-the-art molecular and bioinformatics tools
10:00–10:20	Eva Chocholová: Metagenomic and Proteomic Analysis of Dental Calculus of Abbot Gregor Johann Mendel
10:20–10:30	Discussion

MENDEL'S HISTORY IN THE NINETEENTH CENTURY

10:50–12:20

Session chairs:	Daniel J. Fairbanks; Uwe Hoβfeld
10:50–11:10	Sylvia Eckert-Wagner: Johann Gregor Mendel – His family and origin
11:10–11:30	Jiří Sekerák: Mendel's Date of Birth
11:30–11:50	Peter Van Dijk: A New Reconstruction of Mendel's 1865-lectures and a Content Comparison with the 1866 Paper
11:50–12:10	Johann Vollmann: Mendel's Contemporaries: Convergence and Strategies in 19th Century Plant Breeding
12:10–12:20	Discussion

MENDEL'S LEGACY IN THE TWENTIETH AND TWENTY-FIRST CENTURIES

13:20–14:50

Session chairs:	Daniel J. Fairbanks; Uwe Hoβfeld
13:20–13:40	Michael Mielewczik: New insights from a new critically commented edition of Mendel's classic article on plant-hybridization and its role in the transformation of science and agriculture
13:40–14:00	Gregory Radick: The Role of the Cold War in Transforming a Statistical Puzzle about Mendel's Pea Data into a Scientific Scandal
14:00–14:20	Toshiyuki Nagata: The Fate of Mendel's grapevine
14:20–14:40	Milan Macek sr.: Development of medical genetics in the Czech Republic
14:40–14:50	Discussion

MENDEL'S THEORY AND ITS IMPLICATIONS

15:10–16:40

Session chairs:	Daniel J. Fairbanks; Uwe Hoβfeld
15:10–15:30	Pablo Lorenzano: An Analysis of Mendel's Two Hybridist Theories and of their Relationships
15:30–15:50	Jaroslav Nešetřil: Genius Loci: Mendel in Context of Central and Peripheral Categories
15:50–16:10	Hui Zhang: On the Bicentennial of Mendel's Birth, Attempting to Recover Mendel's Inheritance Principles with Mendel's Eyes
16:10–16:30	Petr Dostál: Genetic Algorithms Optimize Problems in Business and Economics
16:30–16:40	Discussion

POSTER SESSION Thursday 21 July 2022, 18:00–19:00

GREGOR MENDEL AT HIS BICENTENNIAL: HIGHLIGHTS OF THE LIFE AND LEGACY OF A SCIENTIFIC GENIUS

Speech presented at the opening ceremony of the Mendel Genetics Conference
Basilica of the Assumption of the Virgin Mary, Augustinian Abbey, Brno
20 July 2022

DANIEL J. FAIRBANKS
Professor of Biology, Utah Valley University, USA, daniel.fairbanks@uvu.edu

ABSTRACT – As we celebrate the bicentennial of Gregor Mendel's birth, a few highlights of his life and legacy illustrate the breadth of his contributions and his genius. Born into poverty, he exceled in education in his youth. He entered the St. Thomas Monastery as a friar where he joined an extraordinary community of scholars. At the University of Vienna, he studied with some of the world's finest scientists, especially in mathematics, physics, botany, and evolution, and published his first research papers there. His famous experiments led him to an enduring theory that is more expansive than often portrayed. It includes not only the well-known laws of segregation and independent assortment, but also definitive evidence of the nature of fertilisation and accurate interpretations of aspects often portrayed as exceptions to his theory, such as pleiotropy, incomplete dominance, and epistasis. His subsequent genetic research was elaborate and extensive, including hybridisation experiments in at least twenty plant genera as he sought to broaden his theory. As Darwin's contemporary, his annotations in Darwin's books and Darwinian comments in letters reveal much about his understanding of the role of hybridisation in evolution. Although he published several scientific papers, most in meteorology, much of his genetic research remained unpublished, partially evident to us now in his preserved correspondence with Nägeli. The neglect and rediscovery of his theory constitute one of the most intriguing stories in the history of science. At the bicentennial of his birth, his theory endures essentially unchanged as the foundation of genetics.

TEXT OF SPEECH

It is a privilege for us all to gather in this historic place where one of the great chapters in the history of science began. We are here to honour the life and legacy of Gregor Johann Mendel. He was born 200 years ago, possibly today, on July 20th, or possibly on July 22nd – no one can be certain. The birth register of the parish church in Vražné lists the date of his birth and baptism as July 20th, although Mendel himself and his family members consistently recalled and recorded his birthdate as July 22nd. According to Mendel's nephew, Dr. Alois Schindler, who knew his uncle as well as anyone, "Perhaps the parish dates were recorded belatedly and incorrectly" (as quoted in Kříženecký, 1965). Fortunately for us, our conference spans both dates, allowing us to celebrate Mendel's 200th birthday for an extended period.

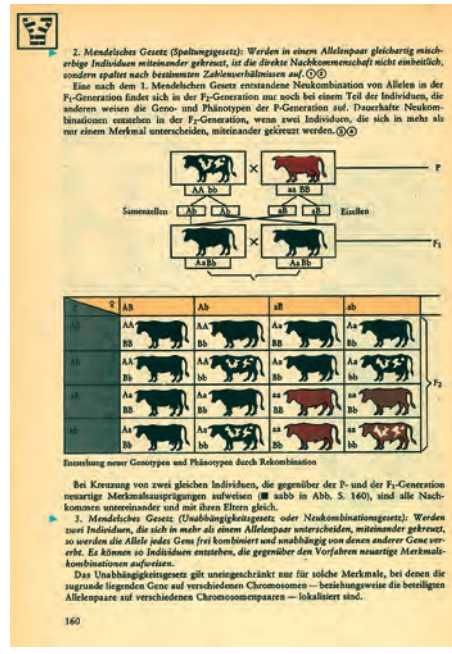
MENDEL AND THE UNIVERSITY OF JENA. EVOLUTION WITH/WITHOUT GENETICS[1]

UWE HOßFELD
Friedrich-Schiller-Universität Jena, Fakultät für Biowissenschaften, Institut für Zoologie und Evolutionsforschung, Arbeitsgruppe Biologiedidaktik, Bienenhaus, Am Steiger 3, 07743 Jena, uwe.hossfeld@uni-jena.de

SOME PERSONAL WORDS INSTEAD OF AN INTRODUCTION

My first contact with Mendel and his research was when I was a schoolboy at the Polytechnical Highschool and later at the advanced highschool during the lessons in biology education.

Later as a student, I bought my first three Mendel-books (SAJNER 1973, FROLOW & PASTUŠNY 1981, LÖTHER 1989) in a book shop in Jena. I have been doing research for more than a decade as student and PhD student at the Ernst Haeckel House, where for many years a catalog from a previous Mendel Exhibition was available for visitors to buy.


2. *Mendelsches Gesetz (Spaltungsgesetz): Werden in einem Allelenpaar gleichartig mischerbige Individuen miteinander gekreuzt, ist die direkte Nachkommenschaft nicht einheitlich, sondern spaltet nach bestimmten Zahlenverhältnissen auf.*

Eine nach dem 1. Mendelschen Gesetz entstandene Neukombination von Allelen in der F_1-Generation findet sich in der F_2-Generation nur noch bei einem Teil der Individuen, die anderen weisen die Geno- und Phänotypen der P-Generation auf. Dauerhafte Neukombinationen entstehen in der F_2-Generation, wenn zwei Individuen, die sich in mehr als nur einem Merkmal unterscheiden, miteinander gekreuzt werden.

Entstehung neuer Genotypen und Phänotypen durch Rekombination

Bei Kreuzung von zwei gleichen Individuen, die gegenüber der P- und der F_1-Generation neuartige Merkmalsausprägungen aufweisen (■ aabb in Abb. S. 160), sind alle Nachkommen untereinander und mit ihren Eltern gleich.

3. *Mendelsches Gesetz (Unabhängigkeitsgesetz oder Neukombinationsgesetz): Werden zwei Individuen, die sich in mehr als einem Allelenpaar unterscheiden, miteinander gekreuzt, so werden die Allele jedes Gens frei kombiniert und unabhängig von denen anderer Gene vererbt. Es können so Individuen entstehen, die gegenüber den Vorfahren neuartige Merkmalskombinationen aufweisen.*

Das Unabhängigkeitsgesetz gilt uneingeschränkt nur für solche Merkmale, bei denen die zugrunde liegenden Gene auf verschiedenen Chromosomen — beziehungsweise die beteiligten Allelenpaare auf verschiedenen Chromosomenpaaren — lokalisiert sind.

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Fig. 1: Title page and p. 160, 1983.

MULTIDISCIPLINARY APPROACH TO IDENTIFICATION OF GREGOR JOHANN MENDEL'S SKELETAL REMAINS

DANA FIALOVÁ[1*], EVA DROZDOVÁ[1], EVA CHOCHOLOVÁ[1], KRISTÝNA BRZOBOHATÁ[1], FILIP PARDY[2], ANNA ŠENOVSKÁ[1], HANA SVOBODOVÁ[1], KATEŘINA NOVOTNÁ[1], BORIS TICHÝ[2], MAREK PEŠKA[3], ANTONÍN ZŮBEK[3], MICHAEL DOUBEK[4, 5], ŠÁRKA POSPÍŠILOVÁ[4, 5]

[1] Laboratory of Biological and Molecular Anthropology, Department of Experimental Biology, Faculty of Science, Masaryk University, Brno, CZ
[2] CF Genomics, CEITEC Masaryk University, Brno, CZ
[3] Archaia Brno z.ú., CZ
[4] Centre for Molecular Medicine, CEITEC Masaryk University, Brno, CZ
[5] Institute of Medical Genetics and Genomics, joint workplace of Medical Faculty and University Hospital, Masaryk University, Brno, CZ
* Corresponding author: dfialova@sci.muni.cz

ABSTRACT – Skeletal remains of five members of the Order of St. Augustine were found in the tomb at the Central Cemetery in Brno during an archaeological excavation in 2021. The aim was to identify Gregor Johann Mendel. Archaeological, anthropological, and genetic approaches were used for this purpose. However, the most reliable method to distinguish his skeletal remains was genetic identification. Specifically, the whole mitochondrial DNA (mitogenome) was read by next-generation sequencing (NGS). The mitogenomes of all five men and twenty DNA samples from Mendel's personal belongings (e.g., hair from his books and swabs) were compared. A match was found with one hair. The positive identification paved the way for proceeding with the project and reading his entire genome.

INTRODUCTION AND AIMS

The bicentennial anniversary of the birth of G. J. Mendel gave the opportunity to study his grave, an Augustinian tomb at the Central Cemetery in Brno (Czechia). The first aim of the interdisciplinary research was to identify his skeletal remains. During an archaeological excavation in June 2021, the remains of five men were found in the tomb. Archaeological, anthropological, and genetic approaches were used for Mendel's identification. However, the most reliable method to distinguish his skeletal remains was by genetic analyses. For this purpose, it was necessary to obtain ancient DNA (aDNA) from the five skeletal remains and Mendel's personal belongings and compare it.

Genetic identification of historical figures played an important role in history. It is possible to mention Francesco Petrarca (Caramelli *et al.* 2007), the Romanov family (Gill *et al.* 1994; Coble *et al.* 2009), Richard III (King *et al.* 2014) or Nicolaus Copernicus (Bogdanowicz *et al.* 2009). Copernicus's skeletal remains were identified at Frombork Cathedral thanks to a comparison of two hairs discovered in his calendar (now exhibited at Museum Gustavianum in Uppsala, Sweden). The same approach was adopted for the genetic identification of Mendel. Two types of Mendel samples were collected in museums.

BODY REMAINS OF ABBOT GREGOR JOHANN MENDEL

EVA DROZDOVÁ, DANA FIALOVÁ, EVA CHOCHOLOVÁ, KATEŘINA NOVOTNÁ,
ANNA ŠENOVSKÁ, KRISTÝNA BRZOBOHATÁ, ROMANA SARVAŠOVÁ, LENKA FALK
drozdova@sci.muni.cz
Laboratory of Biological and Molecular Anthropology, Seccion of Genetics and Molecular Biology,
Department of Experimental Biology, Faculty of Science, Masaryk University, Brno,
Czech Republic

MAREK PEŠKA, ANTONÍN ZŮBEK
Archaia Brno z.ú., Czech Republic

ŠÁRKA POSPÍŠILOVÁ, MICHAEL DOUBEK
Centre of Molecular Medicine, Central European Institute of Technology;
Institute of Medical Genetics and Genomics, Department of Internal Medicine –
Haematology and Oncology, Medical Faculty, Masaryk University, Brno, Czech Republic

FILIP PARDY
Genomics Core Facility, Central European Institute of Technology,
Masaryk University, Brno, Czech Republic

ABSTRACT – In the occasion of the 200th anniversary of birth an interdisciplinary research of skeletal remains of Gregor Johann Mendel (buried at Central cemetery in Brno) was carried out by a team of researchers coming from Masaryk University. The aim of the research is to perform a complex survey of the skeletal remains found in the Augustinian tomb. The main focus is concentrated on identification of the person of Gregor Mendel, on evaluation of biological traits of his body (via his skeletal remains) and on obtaining a evaluating his genetical information.
Archaeological and anthropological field research at the Central Cemetery of Brno pass in period from June 6 to June 30 2021 including exhumation of body remains from found coffins. All excavated skeletons and mummified tissues were further explored in the laboratory using anthropological and genetic methods.
Anthropological and genetical evaluation of the skeletal remains of Abbot Mendel brought new information on his body parameters.

INTRODUCTION

An interdisciplinary research of body remains of Gregor Johann Mendel and other monks buried in the grave of the order St. Augustin in the Central cemetery in Brno was carried out at Masaryk University. Research was carried out on the occasion of the 200th anniversary of the birth of G. J. Mendel.

The first idea of the interdisciplinary research was to explore the genetic information of Gregor Johann Mendel. But archaeological and anthropological research must anticipate that his body remains are yet to be found. During the excavation works, the

RECONSTRUCTING THE GENOME OF GREGOR JOHANN MENDEL USING STATE-OF-THE-ART MOLECULAR AND BIOINFORMATICS TOOLS

FILIP PARDY
CEITEC, Core Facility Genomics, Brno, f.pardy@gmail.com

JAKUB HYNŠT
CEITEC, Šárka Pospíšilová Group, Brno, jakub.hynst@ceitec.muni.cz

DANA FIALOVÁ, KRISTÝNA BRZOBOHATÁ
Institute of Experimental Biology, Department of Molecular Anthropology, Masaryk University

LUKÁŠ HEJTMÁNEK
Institute of Computer Science, Department of Automated Infrastructure Systems, Masaryk University

ŠÁRKA POSPÍŠILOVÁ
CEITEC, Šárka Pospíšilová Group, Brno

ABSTRACT – Introduction and aims: Reconstruction of the genome from ancient DNA (aDNA) is difficult process, hampered by low amount of available DNA, post-mortem damage of nucleobases and contamination risks. However, we applied state-of-the-art NGS Methods and bioinformatics to inspect genomic features of Gregor Johann Mendel, founder of genetics.
Methods: aDNA was isolated from tooth using column-based isolation and concentrated with Amicon filter unit. After QC, Illumina Sequencing library was created using Swift 2S flexible kit (IDT), using molecular barcode oligo (IDT) and PreCR repair mix (NEB). Library was amplified with EvaGreen dye to optimize the cycling conditions. Libraries were sequenced using Illumina NovaSeq instrument with S4 chemistry in Paired-end 150 cycle setting. The Eager bioinformatics pipeline, freely available in the nf-core pipelines repository, was used to retrieve SNV/Indel variants and aDNA quality control metrics. Computationally demanding analysis was performed on cluster using Kubernetes technology.
Results: We managed to reconstruct 91% of Mendel's genome, 99% of exome, with 9,26x average coverage. We detected 4,1 million highly confident SNV/Indel variants genome-wide. Of them, 57308 occurred in the gene coding regions.
Discussion and conclusion: Using the latest approaches in the molecular biology and bioinformatics, we reconstructed Mendel's genome and identified genetic variants that might have shaped his life and health. Variants impact to phenotype is currently under investigation by biologists and physicians. In the opportunity of Mendel's bicentennial anniversary, we consider this as an important contribution and a gift to this genius.

The project, aimed at reconstructing the genome of Gregor Johan Mendel, has been undertaken jointly by research teams at Masaryk University and CEITEC MU institute in

METAGENOMIC AND PROTEOMIC ANALYSIS OF DENTAL CALCULUS OF ABBOT GREGOR JOHANN MENDEL

EVA CHOCHOLOVÁ[1*], EVA DROZDOVÁ[1], DANA FIALOVÁ[1], PAVEL ROUDNICKÝ[2], ZBYNĚK ZDRÁHAL[2, 3], BARBORA ZWINSOVÁ[4], KATEŘINA NOVOTNÁ[1], FILIP PARDY[5], JAKUB HYNŠT[6], MAREK PEŠKA[7], ANTONÍN ZŮBEK[7], KATEŘINA MRÁZOVÁ[8], VLADISLAV KRZYžÁNEK[8], MICHAEL DOUBEK[6, 9] and ŠÁRKA POSPÍŠILOVÁ[6, 9]
[1]Laboratory of Biological and Molecular Anthropology, Department of Experimental Biology, Faculty of Science, Masaryk University, Brno, Czech Republic
[2]Mendel Centre for Plant Genomics and Proteomics, CEITEC MU, Brno, Czech Republic
[3]National Centre for Biomolecular Research, Faculty of Science, Masaryk University, Brno, Czech Republic
[4]RECETOX, Faculty of Science, Masaryk University, Brno, Czech Republic
[5]Core Facility Genomics, CEITEC MU, Brno, Czech Republic
[6]Centre for Molecular Medicine, CEITEC MU, Brno, Czech Republic
[7]Archaia Brno z.ú., Czech Republic
[8]Institute of Scientific Instruments of the Czech Academy of Sciences, v.v.i., Brno, Czech Republic
[9]Institute of Medical Genetics and Genomics, joint workplace of Medical Faculty and University Hospital, Masaryk University, Brno, Czech Republic
[*]corresponding author: chocholova@sci.muni.cz

ABSTRACT – As part of the interdisciplinary research of abbot and founder of genetics, Gregor Johann Mendel, his dental calculus was sampled to gain insight into his health that could not be obtained by mere genome sequencing. A total of 469 proteins were found after filtering, including proteins related to immunity and oral health. Multiple oral species connected to dental pathology such as periodontitis were confirmed based on both DNA and proteins, originating from Porphyromonas gingivalis, Tannerella forsythia, or Treponema denticola. High abundance of Clostridiales DNA was confirmed, in agreement with mummification by saponification.

INTRODUCTION AND AIMS

Ancient dental calculus as a calcified dental plaque is a rich source of information. This precious material is used to study the diet, health, environment, or habits of past populations based on the biomolecules trapped inside, namely ancient DNA and ancient proteins (see, e.g., Adler *et al.*, 2013; Warinner *et al.*, 2014a, Warinner *et al.*, 2014b; Tromp and Dudgeon, 2015; Fialová *et al*., 2017a; Radini *et al*., 2019 Geber *et al*., 2019, Stojanovski *et al*., 2020, Bleasdale *et al*., 2021).

The multidisciplinary project focusing on Gregor Johann Mendel therefore utilizes the most recent approaches to combine information from genome as well as metagenome and metaproteome of the found remains. A similar broad set of studies was applied to the mummified remains of Ötzi, where apart from genomic information, intensive research focused on e.g., dietary information or microbial composition of his gastrointestinal tract (Maixner *et al*., 2016; Zink and Maixner, 2019; Maixner *et al.*, 2018).

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MENDEL'S DATE OF BIRTH*

Why would Mendel want to make a mistake?

JIŘÍ SEKERÁK
Centrum Mendelianum Musei Moraviae, Brno, jsekerak@mzm.cz

ABSTRACT – From the very beginning, the literature on Mendel has provided two dates for his birth, the 20th or 22nd July 1822. Understandably, this has been a source of controversy, which comes up from time to time in various contexts. The bicentenary celebration of Mendel's birth, therefore, seems an appropriate occasion to recall the basic outline of this age-old problem. At the same time, we try to present another hypothesis why Mendel himself consistently insisted on 22nd July as being the date of his birth, even when this contradicted the official entry in the parish register of Vražné village.

It is important to remember from the outset that we find a number of distinguished authors among both the proponents of 20th July and those who find good arguments for the 22nd July. This is perhaps why the largest group today is those who, together with Hugo Iltis, believe that the actual date of Mendel's birth will never be certain.

In numerous archival documents, Mendel's date of birth is consistently given as 22nd July 1822. (Like, for example Commemorative notice on Mendel's death, Fig. 2. and 3.) There are, however, two quite important exceptions to this. The parish register of Vražné (Fig. 4.) and the baptismal certificate (Fig. 5) issued in 1834 (which was derived from the register) both record Mendel's date of birth as 20th July 1822. No date of birth is included in any education certificate, passport or registration form from the University of Vienna.[1]

Anna Matalová, like Vítězslav Orel, states that the probable real date of Mendel's birth was 22nd July and accepts the claim of Mendel's nephew Alois Schindler that for Mendel's family this was the correct date (Fig. 6).[2] This was primarily because Mendel's mother, Rosina Mendel (1794–1862), designated it so. She always associated the date of Mendel's birth with the feast of St. Mary Magdalene on 22nd July. The circumstances of births in Silesian villages in the 19th century were such that mothers gave birth to their children either at home or wherever they worked and then informed the authorities (i.e., the parish priest) of the birth. Mendel's mother Rosina Mendel gave birth to Mendel on the feast of St. Magdalene, i.e. on 22nd July. The 20th July date can be considered the consequence of a late entry in the parish register of births and a possible numerical misinterpretation of the feast of St. Magdalene. The 20th July entry was not signed by

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FROM GREGOR MENDEL'S 1865-LECTURES TO HIS 1866-MASTERPIECE

PETER J. VAN DIJK
Keygene N.V., Agro Business Park 90, 6708 PW Wageningen, The Netherlands,
peter.van-dijk@keygene.com

T. H. NOEL ELLIS
Department of Biochemistry and Metabolism, John Innes Centre, Norwich Research Park,
Norwich, NR4 7UH, United Kingdom, thnoelellis@gmail.com

ABSTRACT – The two lectures Gregor Mendel gave in the spring of 1865 to the Natural Science Society in Brno can be considered the ultimate origin of genetics. Here we reconstruct these lectures and their settings using digitized historical newspapers, and we compare these to Mendel's 1866-paper "Experiments on plant hybrids". The newspapers explained to their readers that Mendel used the term "*Hybriden*" in the sense of "*Bastarden*". Naturalists commonly used the latter term to describe hybrids between species in nature. Mendel's use of "*Hybriden*" and the avoidance of "*Bastarden*" in the 1866-paper and early letters to Nägeli regarding *Pisum* are particular. In English translations, both German words are translated as "hybrids" so that Mendel's differentiated use of words is no longer noticeable. We argue that with the use of "*Hybriden*" Mendel did not need to take a position on whether the *Pisum* parental forms were species or varieties, as Mendel considered these as extremes of a continuum. That Mendel probably started his pea crossings as a breeder may also have played a role; "*Hybriden*" was commonly used in horticulture. Mendel's use of "*Hybriden*" was unusual for the naturalists in the Natural Science Society, and newspaper reports indicate that this led to confusion. According to the *Brünner Zeitung,* legumes were not suitable for studies on *hybridisation* because such interspecific hybrids were rare in nature. However, in his 1866-article, Mendel explained that the garden pea was highly suitable for experimental hybridization due to its flower structure. In the Concluding Remarks of the 1866-article, Mendel showed that his findings were relevant for hybrids between wild species by reviewing the work of Gärtner and Kölreuter. We conclude that it is probable that this section was not part of the lectures and was added later to the paper to accommodate points raised in the discussion after the lectures.

INTRODUCTION

On Wednesday, February 8, and a month later, on Wednesday, March 8, 1865, Gregor Mendel presented the results of his crossing experiments in *Pisum* in two lectures to the Natural Science Society (NSS) in Brünn (nowadays Brno, Czech Republic). These lectures were the climax of the experiments, which he had begun ten years earlier in 1856. The lectures were the only public presentations Mendel made about his pea crosses.

GREGOR MENDEL AND THE 19th CENTURY PLANT BREEDING STRATEGIES

JOHANN VOLLMANN
Department of Crop Sciences, University of Natural Resources and Life Sciences, Vienna, Konrad Lorenz Str. 24, 3430 Tulln an der Donau, Austria johann.vollmann@boku.ac.at

PAVLÍNA SMUTNÁ
Department of Crop Science, Breeding and Plant Medicine, Mendel University in Brno, Zemědělská 1, 61300 Brno, Czech Republic pavlina.smutna@mendelu.cz

ABSTRACT – Mass selection was the prevailing strategy in plant breeding throughout most of the 19th century. Empirical plant breeders increasingly utilised hybridisation only towards the end of the century. They described uniformity of the F_1 generation, segregation of F_2 and independent assortment of characters in later generations following a cross. In contrast to Gregor Mendel, however, plant breeders did not utilise statistics and could not develop a clear hypothesis of inheritance. After the rediscovery of Mendel's findings at the turn of the century, hybridisation followed by selection was recognised as a highly efficient new strategy, from which modern breeding methods were subsequently developed.

INTRODUCTION

In the 19th century, plant breeding was mainly based on phenotypic selection (mass selection) from adapted and widely grown landraces. Ideas or hypotheses about genetics were hardly developed, and the assumptions of inheritance rarely matched with empirical knowledge of practical plant breeders (Schulze, 2010). Moreover, hybrid progeny often lacked constancy during the first generations following hybridisation and was, therefore, not considered practically helpful. In the middle of the 19th century, when Gregor Mendel was a student at the University of Vienna, a dispute was still ongoing on the process of fertilisation and the contribution of maternal tissue to inheritance and embryo development. Mendel's professors, Franz Unger and Eduard Fenzl, were following contradicting hypotheses: While Unger supported the observations of the Italian biologist Giovanni Battista Amici who constructed and utilised microscopes to eventually observe the fusion between a pollen tube penetrating the ovule and the egg cell prior to embryo development, Fenzl was a follower of the German botanist Matthias Jacob Schleiden who mistakenly stated that the female role in embryo development is only to nourish the embryo without any genetic contribution (Fairbanks, 2022; Hageman 2008). In contrast to that, in the year 1849, the German botanist Carl Friedrich von Gärtner already presented a most remarkable and convincing body of evidence on fertilisation and the fate of parental characters in later generations of hybrid plants (Gärtner, 1849). Unger advised his students to study Gärtner's book, and Gregor Mendel cited Gärtner's work most frequently in his 1866 paper on plant hybrids.

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WHEN POLITICIANS GET INVOLVED IN SCIENCE: THE MARBLE STATUE OF GREGOR MENDEL

ANNE-RUTH WERTHEIM
Email: anne-ruthwertheim@hetnet.nl

ABSTRACT – In 1955, as a biology student, Anne-Ruth Wertheim travelled with a group of young people to Brno (then part of Czechoslovakia), where Gregor Mendel had done his experiments with peas in the abbey garden. And they then saw at first hand what happens when politicians interfere in scientific disputes.

In 1910 a more than life-size white marble statue of the founder of genetics, Gregor Johann Mendel (1822–1884), was unveiled. It stood in the square outside the church of St Thomas's abbey in the city of Brno, which was then part of the Austro-Hungarian empire and was known in German as Brünn. Between 1918 and 1992 Brno was part of Czechoslovakia (with the exception of the Second World War), and it is now in the Czech Republic.

In the mid-nineteenth century the Augustinian friar Mendel had conducted his cross-breeding experiments with pea plants in the garden of the Brno abbey, and so paved the way for modern genetics. When I was studying biology at the University of Amsterdam in the 1950s, our professor of systematic botany and genetics Jacob Heimans never stopped mentioning the subject[1].

We students were very fond of Professor Heimans and his fascinating, well-attended lectures. At one lecture he gave in spring 1955 he told us about the unveiling of the large statue of Mendel in 1910, outside the abbey garden where he had done his experiments. On the board he showed an enlarged photograph of the ceremony, and pointed out which celebrities had attended it – I still remember Erich von Tschermak, one of the three scientists who had independently rediscovered Mendel's laws of heredity around 1900 (the others were Hugo de Vries and Carl Correns). But, Heimans continued with a sad voice, his face contorted with anger, now that the communists were in power in Czechoslovakia they had demolished the fine statue and smashed it into a thousand pieces....

He then explained how this had come about. After Czechoslovakia had joined the Eastern bloc in 1948, the government interfered in the work of the universities and in what was both studied and taught there. In the field of genetics this meant that only researchers who espoused the theories of the Soviet Russian biologist Trofim Lysenko were taken seriously – the rest were cast aside. Unlike Mendel and his successors, the now long-forgotten Lysenko believed that the hereditary properties of organisms could be permanently altered by the conditions they lived in. For example, if grains of corn were deep-frozen, plants grown from them would be more resistant to cold. This fitted in well with the Marxist view that people can be fundamentally altered by the conditions they live in; and it seemed a good way to help develop newly cultivated farmlands in Siberia.

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