

How Karlsruhe Botany was born – Why Kölreuter came here

- 1. Caroline Luise (1723-1783): the highly educated princess of Baden**
- She was an excellent and ambitious Botanist
- 2. Joseph Gottlieb Kölreuter (1733-1806): His Education**
- 1763: His Start and Duties in Karlsruhe
- 3. 2023: the great Memorial Year of Karlsruhe Botany**



**Karlsruher Schloß
Karlsruhe Palace**

Caroline Luise (1723-1783), the highly educated princess of Baden ***



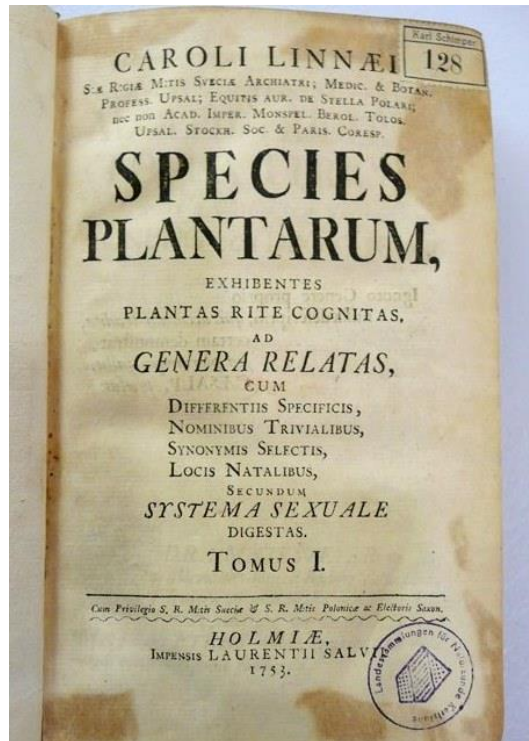
Caroline Luise, 1761

- 1751 Caroline Luise came to the court of Karlsruhe as spouse of margrave Karl Friedrich.
- She made the Residence Karlsruhe to an intellectual and Cultural Center of the German Empire.
- She had correspondence with Katharina the Great of Russia, with Maria Theresia of Austria, and also with the botanist Carl von Linné in Sweden.
- Various great minds were her guests at the court of Karlsruhe: *Voltaire, Klopstock, Goethe, Herder, Gluck, Lavater*
- She was a good musician (cembalist), collected early Dutch and French paintings, and had a large Natural History Cabinet with fossils, minerals, stones, + plants.

*** **H.K. Lichtenthaler.** Early development of Botany and Genetics in Karlsruhe 1715-1832. In Development of Biology at the University of Karlsruhe, pp. 1-7 (2010). See Link:

<https://www.jkip.kit.edu/molbio/download/2010%20DEVELOPMENT%20of%20Biology%20at%20Karlsruhe.pdf>

Caroline Luise (1723-1783), an excellent and ambitious Botanist



Carl von Linné's
plant system of 1753

- She gave very essential Impulses for Research in Botany and the knowledge of plants.
- She planned to edit a large *Botanical Encyclopedia* of all plants with colored copper-plate etchings of each plant, according to the plant system of Carl von Linné.
- Cultivation of local and foreign plants in the Palace gardens. These were painted in color in flower and fruit stage and used as basis for copper etchings.
- 1775. She hired the French copper plate etcher *J. Dagoty* who made 114 copper plate etchings of various plants.
- Determination of local and foreign trees and plants in the Palace Gardens. The plants were catalogued after the system of Carl von Linné.
- She created her own *Experimental Agricultural Farm* to investigate new and better cultivation techniques.



J.G. Kölreuter
(a lithography)

1733 born in Sulz as son of a pharmacist.

1748 Study of medicine, Botany and Zoology at the Universities of Tübingen and Strasbourg.

1755 Ph.D. with 22 years.

(His Botany mentor and promoter: Prof. J.G. Gmelin, known for his *Flora sibirica*)

1756 -1761: Adjunct at the *Imperial Academy of Natural History* at St. Petersburg. (In 1760 he won a competition on sex in plants)

1761 in Sulz, **1762** in Calw: Continuation of his crossbreeding experiments with plants, he had started in St. Petersburg

1763: Appointment as *Professor of Natural History and Director of the Palace Gardens Karlsruhe* by margrave **Karl Friedrich (1727-1811)** and his wife **Caroline Luise**.

* **H.K. Lichtenthaler:** Early development of Botany and Genetics in Karlsruhe 1715-1832, pp.1-7 (2010). See Link: <https://www.jkip.kit.edu/molbio/download/2010%20DEVELOPMENT%20of%20Biology%20at%20Karlsruhe.pdf>

** S. Rietschel: J.G. Kölreuter (1733 – 1806), a distinguished botanist of the 18th century. *Carolinea* 71, 13-23 (2013)

Main Duties and Functions as Botanist at the Court of Karlsruhe:

(Contract of November 11, 1763)

1. To Name all Exotic Plants in the Court Gardens by their scientific names + to classify them in a catalogue according to their natural relationship.
2. To import missing Plants via seedlings or seeds from foreign countries.
3. To plant as many Trees and Shrubs as possible into the large gardens behind the Karlsruhe Palace. (It's today the large Schlosspark !)
To instruct the gardeners how to grow and sustain these trees
4. To perform Research with Plants, whereby the topics of his botanical studies he could select himself. (He continued his genetic studies)

+ Various other tasks:

- Advice for ameliorations in Forestry and Agriculture,
- Advice for cultivation and refining of Apple trees
- Correspondence with other Botanists, and exchange with Botanical Gardens, e.g. those in St. Petersburg, Leipzig, Schwetzingen

Why came Kölreuter to Karlsruhe?

- Princess Caroline Luise had arranged his appointment
- This was a great challenge for a young botanist
- a good chance to perform his genetic studies

Kölreuter and the Court Gardeners: not a good match!

- The court gardeners used to work self dependant, not getting orders.
- They regarded Kölreuter as a strange fellow.
They did not understand his scientific genetic studies.
- They refused cooperation by often not watering his experimental plants.

Consequence: Kölreuter continued his *genetic crossbreeding experiments* with two tobacco species in a private garden in Karlsruhe.

Results: He demonstrated that the characteristic features (Merkmale) of the resulting tobacco hybrids were of *maternal* and *paternal* origin. He is the pioneer and father of genetics!

Recognition:

- **Kölreuter** was well known among other botanists in Europe!
- **Erich Laxmann** named a newly detected tree after him: *Koelreuteria*

Koelreuteria paniculata Laxmann^{**}, Blasenescche (Sapindaceae)



Golden rain tree, bladder ash
in the Karlsruhe Palace Garden



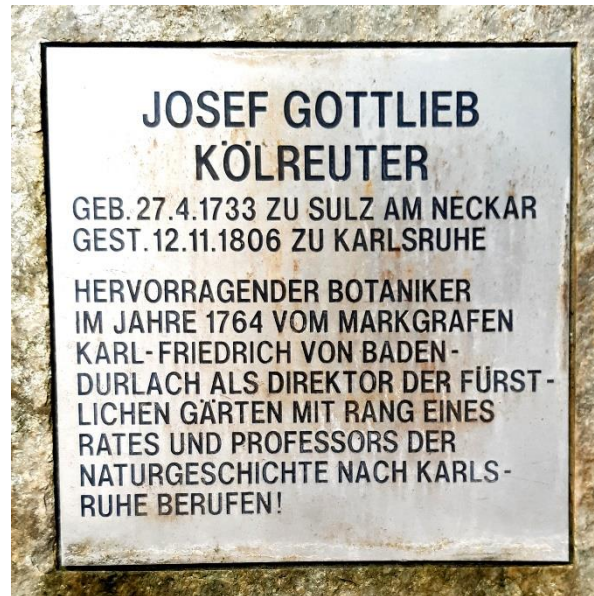
„Blasen“-Früchte, August 2023
bladder-fruits, lantern fruits



geöffnete „Blasen“
open bladders

****** **Erich Laxmann** (1737-1796), Reverend and Botanist in Irkutsk, Sibiria. He knew Kölreuter very well from their joint time in St. Petersburg.

Memorial Plate for Joseph Gottlieb Kölreuter in 1958 (in the Palmtree House of the University of Karlsruhe, now KIT)



„Excellent botanist, appointed in 1764 by margrave Karl-Friedrich of Baden-Durlach as director of the court gardens in the rank of a court council and professor of natural history.“

This memorial plate was established in 1958 by *Prof. Hans Kühlwein* (1910-1988) in the new Botanical Garden of the University, now KIT.

- We commemorate our two famous Karlsruhe Botanists:

Caroline Luise (1723-1783) and Joseph G. Kölreuter (1733-1806)

- **Caroline Luise:**

Birth anniversary: 300 years

Death anniversary: 240 years

- **Joseph Gottlieb Kölreuter:**

Birth anniversary: 290 years

His start in Karlsruhe: 260 years

- In addition we celebrate:

65 Years: **Botanical Garden of the University Karlsruhe**

[established in 1958 by *Prof. Hans Köhlwein (1910-1988)*]

2023: Inauguration of the

Joseph Gottlieb Kölreuter Institute of Plant Sciences (JKIP)

Addition: a personal statement of *Hartmut Lichtenthaler*

2023 is also for me a special year of memory:

- 65 years ago, in 1958, I got my degree in Botany and Pharmacognosy with Prof. Hans Köhlwein here at the University of Karlsruhe (now KIT).
- Also in 1958 I heard in a lecture of Hans Köhlwein the first time of Joseph Kölreuter and his genetic studies with plants.
- Thus, it is a great privilege and honor that today, 65 years later, I could give here the **Opening Talk** to the Inauguration of the **Joseph Kölreuter Institute of Plant Sciences JKIP** and the Kölreuter Symposium „*Plants Fit for Future*“.

Princess **Caroline Luise (1723-1783)**, who 1751 came from Darmstadt to Karlsruhe, was also the heir of the former *Fürstentum Hanau-Lichtenberg* in North Alsace. As an excellent botanist she was not only interested in the *Flora of the State of Baden* but also in the *Flora of Alsace*, i.e. on the other side of the river Rhine.

When she became acquainted with the Botany student **Carl Christian Gmelin (1762-1835)**, she promoted and activated him to also study and describe the *Flora of Alsace*. This he already started during his studies at the University of Strasbourg.

Indeed, after finishing his university education (and after the early death of princess *Caroline Luise*) **Carl Christian Gmelin** was appointed in 1785 as *Professor of Natural History and Director of the Karlsruhe Palace Gardens*. Then, he intensified his botanical studies in Baden and Alsace. His *Flora Badensis Alsatica* was published in 1805.

1762 born in Mülheim, South-Baden

1778 Study of medicine and Botany in Strasbourg and Erlangen.

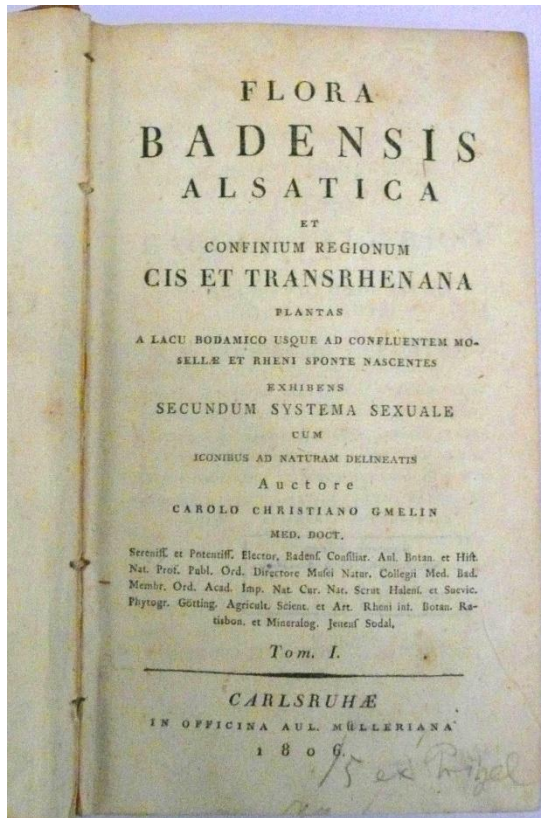
1781 contact with princess Caroline Luise. She activated him to study the Flora of Baden and Alsace

1785 Appointment as Professor of Natural History and Director of the Karlsruhe Palace Gardens by marcgrave Karl Friedrich (1727-1811)

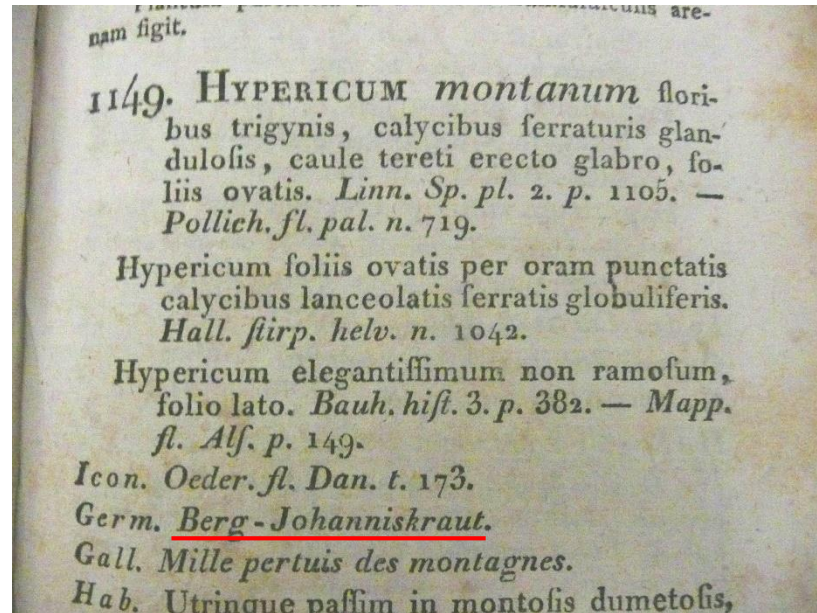
- He pressed and conserved plants, created a large Herbarium collection with several hundred plant specimens in the **Natural History Cabinet** (today **Naturkundemuseum Karlsruhe**)
- He explored and described the plants growing in **Baden and the Alsace: Flora Badensis Alsatica**
- He re-arranged the Karlsruhe Botanical Gardens planting new trees and shrubs



Carl Chr. Gmelin



Flora Badensis Alsatica
by C. Chr. Gmelin, 1805
(in Latin Language)



Example: *Hypericum montanum*
Berg-Johanniskraut

Via a special Kölreuter symposium „*Plants Fit for Future*“, held on October 5th and 6th, 2023, the **Botany Institute** of the Karlsruhe Institute of Technology (KIT) was officially renamed into:

Joseph Gottlieb Kölreuter Institute of Plant Sciences, JKIP (Joseph Gottlieb Kölreuter Institut für Pflanzenwissenschaften, JKIP)



The present 4 professors of the **JKIP** are shown on the photo taken on October 5th 2023. These are (from left):

Tilman Lamparter, Peter Nick, Natalia Requena, Holger Puchta (Head of JKIP) and the emeritus professor ***Hartmut Lichtenthaler*** in the middle.