

Research
on the Basis
of Life



Genome Sequence

The genomic sequence is the foundation of new ideas and developments. Hence sequencing of plant genomes is a key factor for the research pipeline. Aided by latest bioinformatics tools, scientists use it to develop new concepts for the plants for the future.



Plants – the basis of life

Plants have a unique property. They are able to build up biomass with the aid of sunlight. Therefore they are the basis of life. Furniture, clothing or food – our life would not be possible without plants and their photosynthesis.

Since plants are of crucial importance for mankind, 10,000 years ago man began to select plants according to his needs. It was the origin of plant breeding. Today we know the building blocks of life. Modern genome research opens doors previously locked. Goals that required hard work for centuries in former times are now reachable within a few years. Other approaches are exclusively facilitated by plant genome research.



Thale Cress *Arabidopsis thaliana*

New concepts have to be proven in model plant species. Thale Cress, also known as Arabidopsis, is a small herbaceous plant that renders great service to plant scientists. It is easy to handle and propagate and no other plant has been investigated as thoroughly as Arabidopsis. Its genomic sequence is known since the year 2000.

GABI – genome analysis in the plant biological system

In 1999 the Federal Ministry of Education and Research (BMBF) in Germany together with private companies started to foster applied and future-oriented plant genome research in the GABI framework.

GABI shaped German plant research and established itself as a national and international brand. Modern genome research in the plant biological system – that is GABI.



Barley *Hordeum vulgare*

Sequencing the barley genome is an ambitious project within the GABI framework. Knowledge of the genomic sequence will provide great impetus on barley research within the next years. Such a huge effort can only be successful combining international vigor. Thus German scientist are in charge of a consortium of internationally leading genome scientists.

Research from model to product

Innovation emerges from basic research – a crucial part of the value-added chain in plant genome research. The genomic sequences of plants are the fundamentals of applied plant research. Therefore deciphering plant genomes is an integral part of the GABI program. Genome projects on barley and sugar beet will provide a foundation for a plenitude of new approaches – even beyond the program.

GABI projects comprise the whole innovation pipeline. Funding is starting with new ideas emerging from basic research and accompanies these approaches on the way to an innovative product.

Maize *Zea mays*

If a concept has been proven in a model plant it has to be transferred onto a crop species. Close co-operation between scientists and plant breeders is crucial in such a bridging process. One of these public-private partnerships within GABI develops special maize cultivars for bio-energy production.



Together toward the plants of the future

In GABI projects scientists closely collaborate with plant breeders and industrial companies. Their common goal: enhancing plants to arm them for challenges of the future. This close interconnection is unique. More than 25 companies are involved in GABI participating in the projects with their knowledge and resources. Yield, resistance or improved food quality – the latest research results are incorporated in product development via the shortest possible way.

Facilitated by the economic network “Wirtschaftsverbund Pflanzengenomforschung e.V.” (WPG) and the “Plant Innovation Agency” (PIA) an optimised transfer of technology is guaranteed. Research projects are supported intensely and assisted in exploitation of their results.

Rapeseed *Brassica napus*

Rapeseed is an important source of oil. It was not suitable for human consumption until the Canola varieties were developed a few decades ago. This was a great success for plant breeding. Today scientists are working on converting valuable canola meal to make it accessible for human consumption.



Interdisciplinary and international

German plant genome research is leading on international level. German plant scientists are playing key roles in international consortia and cooperation. Within the framework of the GABI program joint programs were established with many different countries.

Amongst others „ERA-Net Plant Genomics“ and „PLANT-KBBE“ led to even closer collaboration of German scientists together with researchers in France, Spain, Portugal or Canada.



Potato *Solanum tuberosum*

Potatoes are of great importance for Europe's nutrition. Regardless of whether you prefer them as chips or mashed, cooked or baked potatoes, nearly every day they are an important part of our diet. Scientists work to improve this important plant by lowering sugar content, preventing sprouting or improving yield through genome research.

Information on applied plant research

Would you like to know more about GABI? Visit the program's website on **www.gabi.de** and you will find an overview on GABI projects as well as publications and reports on the program. Furthermore you will be informed on funding opportunities, open positions and important dates.

Together with other research networks GABI is publishing a quarterly magazine, the GENOMXPRESS. The periodical will inform you on new results from cutting-edge systems oriented genome research. You can obtain your own free copy regularly. Please visit **www.genomxpress.de** for details. You will also find all preceding issues as a PDF-file in the archive.



Contact

If you prefer personal contact please get in touch with the GABI Managing Office. We gladly inform you on new funding opportunities in the field of applied plant research as well as on new scientific results in that field.

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