

GCBN IPK's Contributions to Services & Training for Plant Bioinformatics

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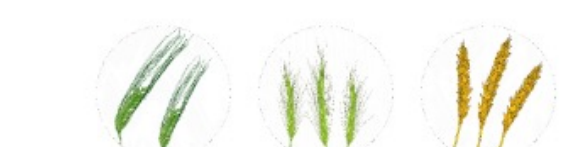
Project Description

The IPK provides 3 services for plant researchers: (1) The **CATS** - Crop Analysis Tools Suite offers various tools including the **Web-Blast Server**, **MISAWeb**, **BRIDGE** and the new tool **PanBARLEX**. (2) The **e!DAL-PGP** Plant Genomics and Phenomics Research Data Repository for data publication. (3) The IPK hosts **EURISCO** (European Search Catalog for Plant Genetic Resources) which provides information about more than 2 million accessions of crop plants and their wild relatives, preserved *ex situ* by about 400 institutes. Furthermore, IPK provides training for all offered services and is active in the ELIXIR Plant Science Community, the Biodiversity Community, and the ELIXIR Data Platform.

Provided de.NBI Services

Web Applications:

- CATS**
Crop Analysis Tool Suite



Web Blast Server



MISA Web



BRIDGE

Databases:

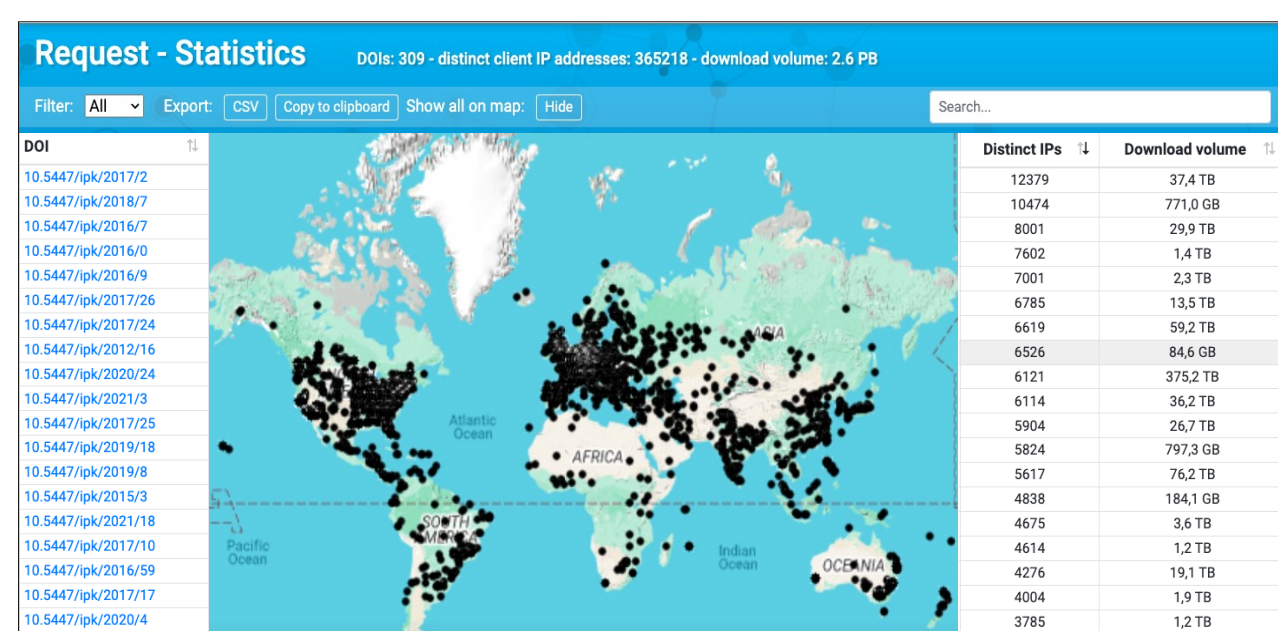
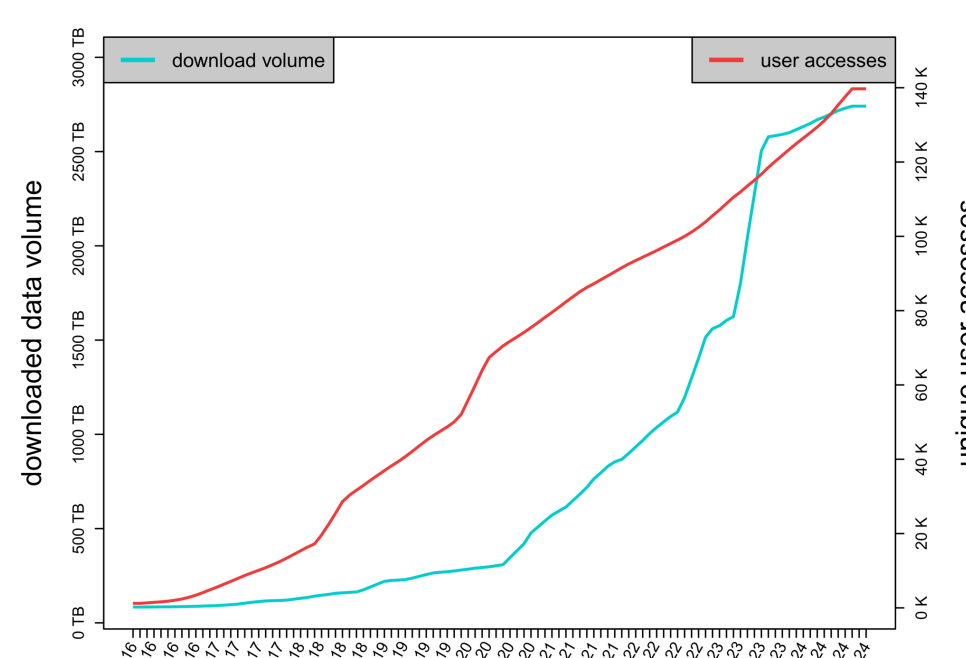
- EURISCO Database**



PanBARLEX

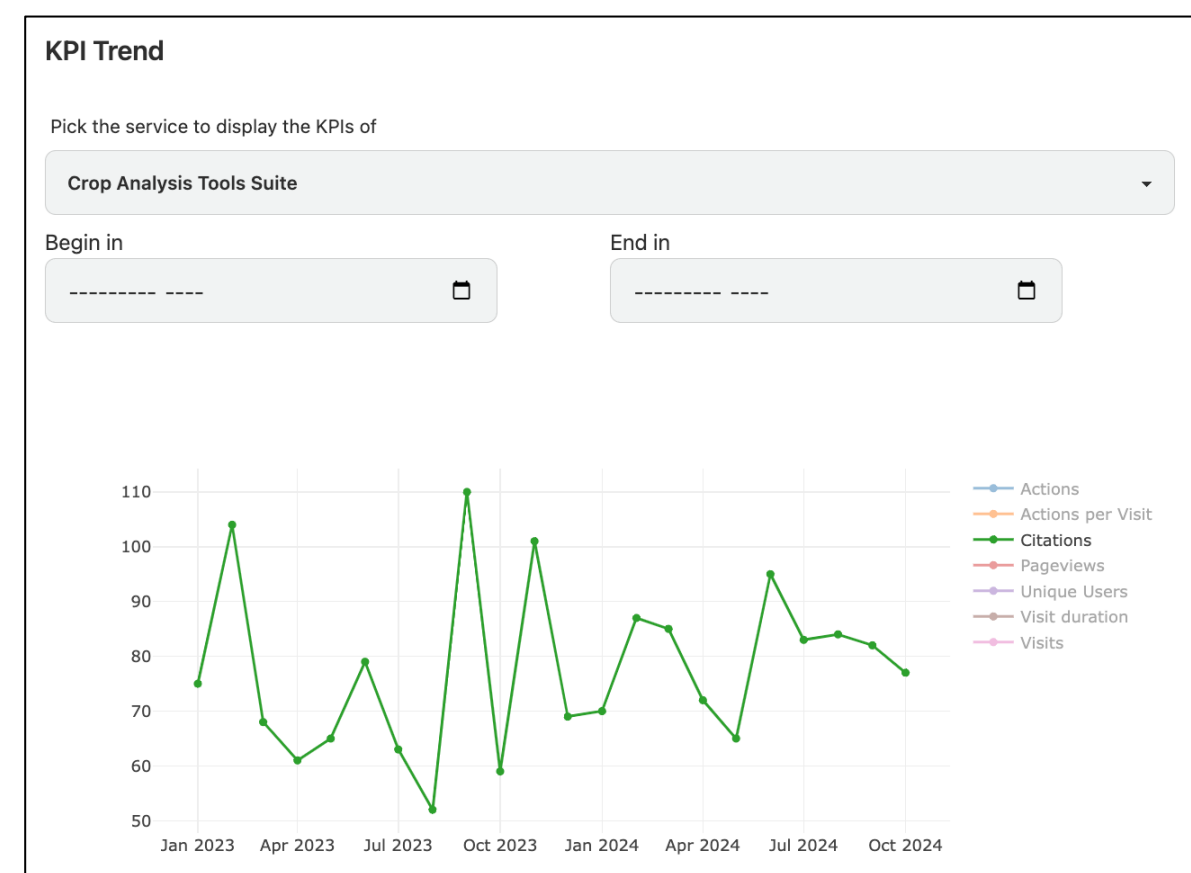
- e!DAL – PGP**

Plant Genomics & Phenomics
Research Data Repository



Downloaded Volume: 2.9 PB - Unique Accesses: ~380,000

Continuous KPI Monitoring



KPI Table									
Pick the service to display the KPIs of									
Crop Analysis Tools Suite									
Date	Actions	Actions per Visit	Visits	Engagement	Unique Users	Visit Duration	Visits	Visits	Visits
Jan 2023	147	6	74	6666	1216	622	1601		
Feb 2023	146	3	144	4907	1086	251	1602		
Mar 2023	212	4	65	7090	1470	275	2292		
Apr 2023	263	4	41	7645	1223	425	1666		
May 2023	263	3	45	6776	1216	462	2167		
Jun 2023	123	4	76	3836	1163	367	1737		
Jul 2023	82	4	63	4912	1163	346	1794		
Aug 2023	100	4	102	4999	1037	364	1640		
Sep 2023	100	3	116	5567	1163	364	1762		
Oct 2023	128	4	59	6366	1223	370	1796		
Nov 2023	143	4	101	6976	1117	391	1728		
Dec 2023	162	4	69	6666	1086	418	1716		
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General Project Information

- Since January 2023 **0,75 FTE** financed by de.NBI
- Other staff involved **0.75 FTE** and further in-kinds:
 - **0,15 FTE** administrator IT infrastructure
 - **0,15 FTE** administrator DBS, application & web server
 - **0,45 FTE** data curation & GALAXY administration
- + **10 TEUR** maintenance costs (proportionately)

Progress Report

Services Extension

Enabling the access to barley pan-genomes

3,797,824 genes from 76 genotypes	
Chromosome-scale Assemblies 76 FASTA files	Passport Data 1 TSV file
Gene Annotations 76 GFF3 files	Orthogroups 1 TSV file
Functional Annotations 76 CSV files	Gene Sequences 380 FASTA files
BUSCO results 76 TSV files	611 files of different types uncompressed size 329 GB

one file per genotype one file for all genotypes multiple files per genotype



ELIXIR Activities

Successfully applied for Commissioned Services in frame of BFSP (Biodiversity, Food Security & Pathogens) 2024-2026 Work Plan:

E-PAN: Enhancing pan-genome analysis in plants

HARVEST: Handling & alignment of plant research FAIRification - value through the use of ELIXIR data Standards and Tools

Selected de.NBI Events

de.NBI Spring School 2023

Focused on FAIR data management with hands-on sessions. Joined event of BioData, BiGi, GCBN, de.NBI-SysBio & de.NBI/ELIXIR-DE office.



In April 2024, the **BrAPI Hackathon** was held at the Leucorea in Lutherstadt Wittenberg, Germany, with the goal of advancing data standards in plant science.

Announcements

8th – 9th September 2025:
Training “**Data Analysis in the Cloud**” together with



Publications

Arend D, Scholz U, Lange M: The Plant Genomic and Phenomics Research Data Repository: an on-premise approach for FAIR-compliant data acquisition. In: Garcia S, Nualart N (Eds.): Plant genomic and cytogenetic databases. (Series: Methods in molecular biology, Vol. 2703) New York: Humana, pp 3-22, 2023. (https://dx.doi.org/10.1007/978-1-0716-3389-2_1)

Jayakodi M, Lu Q, Pidon H, Rabanus-Wallace MT, Bayer M, Lux T, Guo Y, Jaegle B, Badea A, Bekele W, Brar GS, Braune K, Bunk B, Chalmers KJ, Chapman B, Jørgensen ME, Feng J, **Feser M, Fiebig A**, Gundlach H, Guo W, Haberer G, Hansson M, Himmelbach A, Höffle I, Höffle RE, Hu H, Isobe S, **König P**, Kale SM, Kamal N, Keeble-Gagnère G, Keller B, Knauft M, Koopulu R, Krattinger SG, Kumlehn J, Langridge P, Li C, Marone MP, Maurer A, Mayer KFX, Melzer M, Muehlbauer GJ, Murozuka E, Padmarasu S, Perovic D, Pillen K, Pin PA, Pozniak CJ, Ramsay L, Pedas PR, Rutten T, Sakuma S, Sato K, **Schüler D**, Schmutzer T, **Scholz U**, Schreiber M, Shirasawa K, Simpson C, Skadhauge B, Spannagl M, Steffenson BJ, Thomsen HC, Tibbitts JF, Nielsen MTS, Trautewig C, Vequaud D, Voss C, Wang P, Waugh R, Westcott S, Rasmussen MW, Zhang R, Zhang XQ, Wicker T, Dockter C, Mascher M, Stein N: Structural variation in the pangenome of wild and domesticated barley. Nature, 2024. (<https://doi.org/10.1038/s41586-024-08187-1>)

König P, Beier S, Mascher M, Stein N, **Lange M, Scholz U**: DivBrowse - interactive visualization and exploratory data analysis of variant call matrices. GigaScience 12, giad025, 2023. (<https://dx.doi.org/10.1093/gigascience/giad025>)

König, P, Fiebig, A, Münch, T, Grüning B, **Scholz U**: blast2galaxy: a CLI and Python API for BLAST+ and DIAMOND searches on Galaxy servers. Bioinform. Adv. 2024. accepted. (<https://doi.org/10.1093/bioadv/vbae185>)

BioHackathon Reports:

Arend D, Beier S, Brilhaus D, Dörpholz H, **Feser M**, Frey K, **König P**, Maus O, **Psaroudakis D**, Martins Rodrigues C, Schrader A, Senger E, Weil HL: Improving Metadata Collection and Aggregation in Plant Phenotyping Experiments with MIAPPE Wizard and DataPLANT. BioHackathon series: BioHackathon Germany 2022 Lutherstadt Wittenberg, Germany 2023. (<https://doi.org/10.37044/osf.io/ekhdw>)

Arend D, Del Conte A, **Feser M**, Gadiya Y, Gaignard A, Jael Castro L, Mičetić I, Moretti S, Neumann S, Rayya N, Tsueng G, Willighagen E, Wittig U: Bioschemas Resource Index for Chem and Plants. BioHackathon series: BioHackathon Europe 2023 Barcelona, Spain, 2023. (<https://doi.org/10.37044/osf.io/vxunp>)

Beier S, Mühlhaus T, Pommier C, Owen S, Brilhaus D, Weil HL, Wetzels F, Chait G, **Arend D, Feser M**, Doniparthi G, Bauer J, Gundersen S, Vázquez P: BioHackEU23 report - Enabling continuous RDM using Annotated Research Contexts with RO-Crate profiles for ISA. BioHackathon series: BioHackathon Europe 2023 Barcelona, Spain, 2023. (<https://doi.org/10.37044/osf.io/7y2jh>)