Gabi Primary Database

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GabiPD is a comprehensive database collecting and presenting Gabi & WPG data. Together with a variety of tools one can access information to facilitate research. GabiPD is a flexible tool adapting to a wide variety of supplied data from a plethora of experiments performed by Gabi project partners. More than 20 species are currently covered with the majority of transcript/genomic, proteomics & metabolic data concentrated on A. thaliana, H. vulgare & S. tuberosum.

Interaction of Gabi project partners and GabiPD resulted in constant accumulation of valuable data. Recently integrated data originate from various resources:



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> www.gabiPD.org gabipd@mpimp-golm.mpg.de

- » 32000 Genome Survey Sequences of sugar beet Gabi-BPM » Gabi-BARLEX
- > 454 chromosomal sequences plus > 3500 BAC clones (*H.v.*)
- » BLASTable chromosomal genomic shotgun data
- » chromosomal 454 sequence data (*H.v.* cv Betzes)
- » 61000 ESTs Oryza longistaminata Gabi-NITROGEN
- » 1157 SSR / DArT marker and phenotypic data Gabi-GENOBAR (H.v.)
- » 454 data & assemblies Gabi-RYE Express
- » "omics" data supplied by Gabi-PAPATOMICS
- » SNP compilation available A.thaliana
- (Nordborg et al., 2005; Clark et al., 2007; Ossowski et al., 2008)
- » Identification of homologous genes in A. thaliana, O. sativa, P. trichocarpa & C. reinhardtii
- » Interaction interfaces with BioMoby and Taverna established

		Sequences	SNPs	Mapping info	next-gen reads	2D spots	metabolic profiling
	 Chlamydomonas reinhardtii 						
	/ Zea mays						
	/ Oryza sativa						
	[\] Oryza longistaminata						
	/ Secale cereale						
	[\] Hordeum vulgare				31310628		
	/Beta vulgaris						
	Nicotiana tabacum						
	/ Capsicum annuum						
	_/ Solanum phureja						
	- Solanum tuberosum				3189298		
	Solanum lycopersicum						





Green cards are the central information resource in GabiPD as they provide functional annotation, ontologies, public protein function data, links to MapMan bins & links to external resources like TAIR.

Phylogenetic tree of species incorporated into GabiPD. Data entered into GabiPD is concentrated to the main model and crop species A. thaliana, H. vulgare & S. tuberosum.

Bars represent the amounts of public data (blue), non-public data (yellow) and total amounts (brown).

TOOLS developed and enhanced in collaboration with GabiPD:

MapMan is a program to import and depict metabolomic and transcriptomic data visualizing pathways to get a comprehensive overview on global and local changes in accumulation of the respective analytes.

Conquest Explorer was created to analyze and manage marker data for Gabi-PAPATOMICS, Gabi-CONQUEST1/2 to facilitate correlation of genotypic and phenotypic data.

Satiotyper infers phased genotypes from unphased SNPs to yield haplotype information in heterozygous tetraploid *S. tuberosum*

GabiPD defines webservices to facilitate interactions with external workflows. These interactions are registered to BioMoby and accessible via Taverna.

Privileged access to GabiPD is currently granted to nearly 300 registered users from the Gabi/WPG community. In addition many thousand users access

GabiPD without a login.



YAMB Genetic maps were initially developed for PoMaMo for graphical mapping of SNPs and InDels onto chromosomes of S. *tuberosum*. YAMB is now also used to map *H. vulgare* chromosomal data.

Future perspectives

» constantly introduce additional Gabi data into GabiPD and provide authorized access to Gabi/WPG partners » introduce workflows to handle high throughput sequencing data » define standard data transfer formats and workflows

to allow automated data exchange and decreased manual workload » incorporate new genome annotations (e.g. Z. mays, S. tuberosum) » perform further homology search to facilitate gene discovery in not fully annotated species (e.g. Triticum aestivum, Medicago truncatula)

2004 2006 2008 2010

During the Gabi-FUTURE period, numbers of direct text searches originating from green cards as well as transfer volume steadily increased reflecting the increasing amount of data provided by Gabi projects. GabiPD is most popular with European and North American users.

References and Publications:

Basekow *et al.* 2011 (submitted) Clark *et al.* Science, 317: 338-342 (2007) Meyer et al. Nucleic Acid Research, 33: D666-D670 (2005) Neigenfind *et al.* BMC Genomics, 9:356-368 (2008) Nordborg *et al.* PLOS Biology, 3 (2005) Ossowski *et al.* Genome Research, 18: 2024–2033 (2008) Thimm *et al.* Plant Journal, 37:914-939 (2004) Usadel et al. Plant Cell Environment, 32:1211-1229 (2009) http://www.biomoby.org/