



ATHLETE – A SPOTLIGHT ON RELEVANT GENES

THE CONCEPT

In Silico gene discovery of novel plant genes, linked to a trait of interest, such as yield and drought tolerance.

MEANS

ATHLETE uses vast amounts of genomic and additional data types from various plant species for a rapid discovery and efficient prioritization of hundreds of plant genes linked to a target trait of interest. The ATHLETE is specially designed for addressing Evogene's evolving demand and capacity for gene discovery and harnessing the data explosion of the 'omics' era for generating improved Ag-biotech traits.

KEY STRENGTHS

- **Rapid and reliable computational discovery** of genes linked to traits of interest
- Powerful **cross-species comparison approach** based on a diverse database of over 130 plant species
- Accurate gene modeling using **various data types** - from genomic to metabolic and phenotypic data
- Proprietary tools for **handling new sequencing methods** enabling to exploit massive amount of genomic data available today
- **Unique algorithms & tools** for data mining concepts
- **Applicable for different traits and crops**, according to the needs of our various internal programs and partnerships.

PROVEN TRACK RECORD

- Partnerships with world leading ag-companies
- Hundreds of genes in development pipelines of leading ag-companies
- Over 2,000 novel genes discovered and under patents granted & pending for enhancing yield, drought tolerance and fertilizer utilization
- Over 17 gene discovery rounds to date, with innovative gene candidates being produced every year

THE ATHLETE METHODOLOGY – AT A BRIEF

The ATHLETE methodology combines traditional breeding approaches with the most advanced algorithms and computational tools to organize, analyze, mine and prioritize vast amounts of 'omic' data in order to generate novel genes linked to target traits of interest.



(1) Trait Understanding

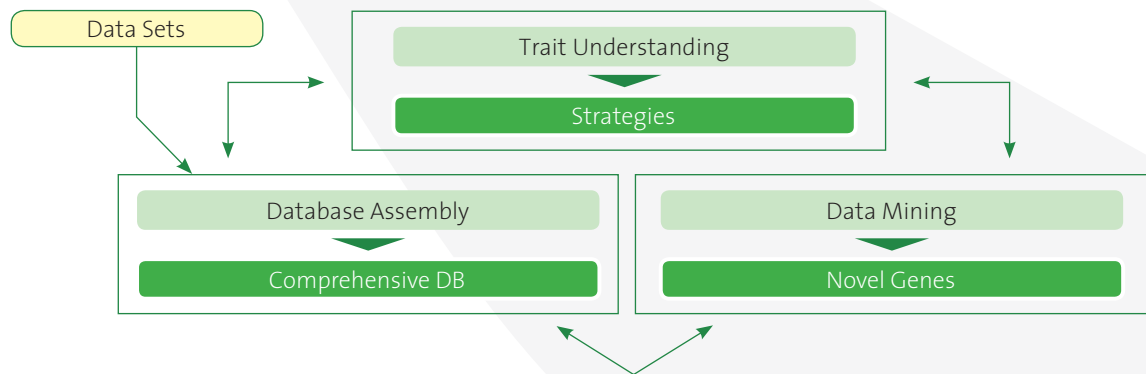
The desired trait is first broken down into precise biological and physiological terms in order to focus on relevant processes and facilitate gene discovery. A multidisciplinary team of experts is formed, including plant geneticists, breeders, bioinformaticians and others. The team drafts several strategies to tackle trait improvement, which are then translated into a computational task.

(2) Database Assembly

ATHLETE's robust performance is based on a wide, rich, annotated and easy-to-analyze array of data types from various crops and data types. The databases are based both on public data and proprietary, program-specific database, generated through in-house field experiments. Each trait improvement program is fitted with its own tailored database, enriched in the relevant information for the particular trait.

(3) Data Mining

Data mining is performed using proprietary algorithmic tools and novel data mining concepts. This final stage includes review of the ATHLETE output and prioritization by our team of program managers, based on mathematical, biological, technological and commercial criteria. The outcome of this phase is a list of hundreds of prioritized genes with high relevance to the trait, which undergo further gene validation.



THE ATHLETE – KEEPING IN SHAPE

Evogene is continuously investing in the upgrading and improvements of the ATHLETE tools and methodologies in order to preserve Evogene's position in the forefront of plant genomics.

In 2010, Evogene launched version 3.0 of the ATHLETE, enabling to adjust our technology and gain knowledge from the burgeoning volume of data becoming available today to achieve even faster, more efficient and comprehensive predictions. ATHLETE 3.0 relies on a series of unique, new and enhanced tools which substantially accelerate gene discovery, in addition to incorporating additional types and quantities of data compared with the previous version.