Non-Vertebrate Genomics Expertise: Empowering Agriculture, Biodiversity, and Industry Innovation

Challenge

- The world population is outpacing crop production/area. The annual increase in food production is insufficient to meet the future food demand.
- This escalating global demand emphasizes the need to boost plant production, improve food security and reduce the risk of hunger for the next generations.
- However, these imperatives are further complicated by challenges tied to diminishing arable land, biodiversity decline, and global climate change which foster the emergence of new pests and diseases.
- There is a critical need to develop and promote sustainable agriculture and thus to characterise and improve crop genotypes capable of withstanding pests, diseases, and other abiotic factors that are increasing due to current climate changes.
- The challenge extends beyond genetic sequencing; it involves the intricate processes of collecting, assembling, annotating, analysing, and presenting this information in a relevant and actionable manner.

Technology (TRL9)

Our Non-Vertebrate Genomics team's mission involves seamlessly integrating plant and invertebrate genome data, gene models, and genetic variation information into the Ensembl database. We bring together a diverse range of public datasets, encompassing genome assemblies, genome annotations, and genetic variation data. Our coverage extends across various species, including agricultural crops, insects, and disease vectors. We promote data accessibility by making it easily browsable and available for download in standard formats, granting users straightforward access to relevant information. Our overarching goal is to support access to public resources, playing a vital role in product development, vegetable breeding, seed ordering, and the prediction of ideal seeds for industrial purposes. We have experience in supporting industrial partners in navigating plant or pest DNA and helping them develop cutting-edge tools for crop breeding, all while contributing to the enhancement of genetic diversity in agriculture. In collaboration with the Ensembl team, we can create customized tools, web interfaces, and datasets to precisely match the requirements of our customers. We leverage our expertise to identify optimal datasets that align with our customers' requirements, and we possess the capability to enrich or adapt these datasets as needed to address specific inquiries. Furthermore, we are committed to providing continuous support and tailored training to users of all Ensembl platforms, offering professional training and educational material and also managing Ensembl's help desk.

Internal EMBLEM Reference

2024-027

Key Inventors

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Applications

- **Agritech and Precision Agriculture**: Improving crop yields; Optimizing farming practices; development of resilient and productive agricultural systems; Pest, disease and disease resistance management; Promoting sustainable practices; Soil health management; ...
- **Aquaculture:** Seaweed, seagrasses and phytoplankton culture; Coastal areas habitat enhancement; Improvement of recirculating aquaculture systems; Aquatic ecosystem health assessment; …
- **Food Industry:** Improved crop varieties; product innovation; Enhanced ingredient quality; Sustainable ingredient sourcing; …
- **Biodiversity Conservation:** Preservation of natural ecosystems; Assessment of genetic diversity in endangered species; Habitat restoration and management; …
- **Pharma:** Drug discovery; Disease management; development of bioactive compounds from natural sources; Biodiversity-driven drug development; …

Resources

- Ensembl;
- European Variation Archive

Benefits

- Streamlined processes
- Interoperability
- Data quality assurance
- User-friendly access
- Tailored services and support

Keywords

Genomic Integration
Data Curation
Data Integration
Genetic Data Management
Web Interface Development
Dataset Tailoring

Further Reading

[1] https://doi.org/10.1093/nar/gkae1071
[2] https://doi.org/10.1093/nar/gkab960

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Intellectual Property

☒ Know-how based

☒ Copyright

Commercial Opportunity

We offer expert genome processing services, providing customized tools and curated datasets, tailored to your research or industry needs. Our services are accessible to everyone. We offer special rates for academics and SMEs. Contact us for collaborations.

Seeking:

☒ Collaborations

☒ Commercial partner

☒ Licensing

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