



ANNUAL REPORT

2023

**International Wheat
Genome Sequencing
Consortium**





MESSAGE

from the Executive Director

I am pleased to welcome you to the 2023 Annual Report where we reflect on the achievements and progress made over the past year. Our efforts in 2023 have been guided by our continuous commitment to advancing wheat research and fostering collaboration and knowledge sharing within the community.

One of the significant news items this year was the successful funding of the **Wheat Diversity Project** by the U.S. National Science Foundation (NSF). This project, a collaboration between the IWGSC and partners in France (funded by the European Research Council and INRAE), aims to sequence 12 landrace genomes and update the IWGSC Chinese Spring reference sequence. The project will not only enhance our understanding of wheat diversity but will also provide valuable resources for wheat breeding through the development of a Practical Haplotype Graph. All data generated will be made publicly available, continuing our commitment to open science and collaborative research.

Another notable accomplishment this year was the publication of **The Wheat Genome Book**, a comprehensive resource representing the collaborative work of over 60 authors and edited by leaders of the IWGSC. With funding from several sponsors, we were able to make the book freely available to all. It is our hope that this publication will serve as a valuable reference for researchers, educators, and agricultural practitioners, providing insights into the complexities of the wheat genome and its implications for crop improvement efforts worldwide.

We also continued our ongoing **collaboration with service providers**, such as Daicel Arbor Biosciences, for the development of wheat genomics tools for the community and we aim to continue developing such collaborations with providers in the future.

In 2023, we organized three **workshops** and six **webinars**, covering a wide range of topics important to wheat science and breeding. With these events, we aim to provide platforms for discussion, facilitate the exchange of ideas and contribute to the advancement of wheat research.

Furthermore, marking an expansion of our focus from fundamental genome sequencing to more direct application to wheat improvement, two new members joined the Board of Directors: **Susanne Dreisigacker** (CIMMYT) and **Rajeev Varshney** (Murdoch University). Their leadership and vision are a great addition to the Board, and we welcome their input on strategies and priorities for the IWGSC activities in the coming years.

I want to thank our **sponsors** for their support of the IWGSC in 2023: Daicel Arbor Biosciences, BASF, CIMMYT, Florimond Desprez, Illumina, INRAE, Kansas Wheat, RAGT, and Syngenta. Their continuous support is crucial in helping us achieve our mission to accelerate wheat improvement.

I look forward to seeing you in person at one of the meetings this year or in early 2025 in San Diego to celebrate twenty years of the IWGSC!

Kellye Eversole
IWGSC Executive Director

ABOUT the IWGSC

The IWGSC is an international, collaborative consortium, established in 2005 by a group of wheat growers, plant scientists, and public and private breeders.

The IWGSC provides tools and resources that serve as a foundation for the accelerated development of improved varieties and that empower all aspects of basic and applied wheat science.

The IWGSC is a 501(c)(3) nonprofit organization registered in the United States.

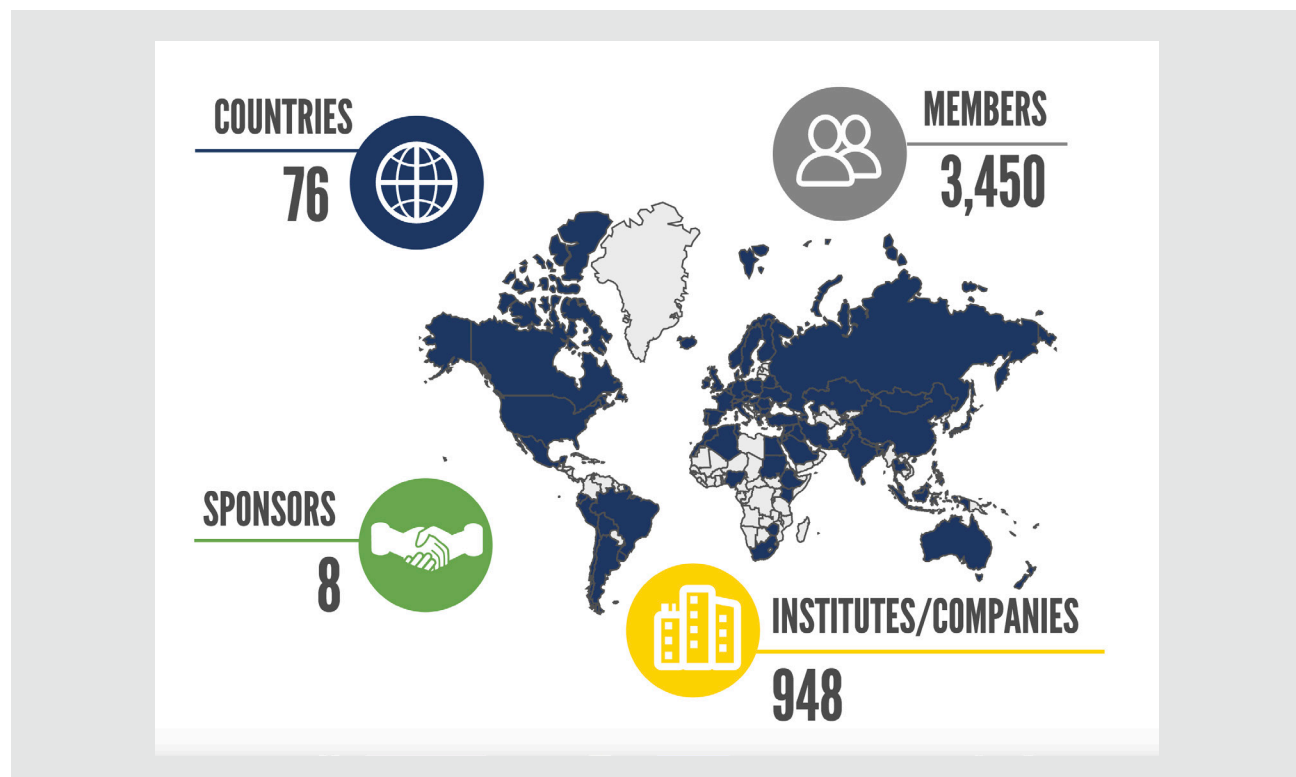
VISION

Enhance wheat breeding through an increased understanding of the molecular basis of traits and their allelic diversity.

GOAL

- Lay a foundation to accelerate wheat improvement
- Increase profitability throughout the industry

The IWGSC in Numbers - as of 31 December 2023 -



Board of Directors

The **Board** establishes the overall vision and mission of the Consortium and ensures the implementation of the strategic decisions made by the **Coordinating Committee**, a group of 57 representatives of universities, research institutions, governmental agencies, and grower organizations, as well as small, medium, and large wheat breeding and seed companies.



Rudi Appels
University of
Melbourne & Agribio,
Australia



Ute Baumann
University of Adelaide,
Australia



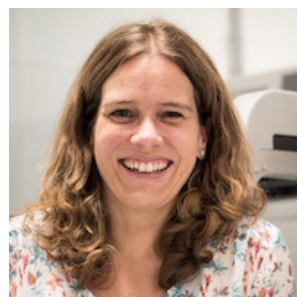
Hikmet Budak
Arizona Western
College, USA



Chris Burt
RAGT, UK



Pierre Devaux
Florimond Desprez,
France



**Susanne
Dreisigacker**
CIMMYT, Mexico



Kellye Eversole
Chair of the Board of
Directors and IWGSC
Executive Director



John Jacobs
BASF, Belgium



Yann Manès
Syngenta, France



Pierre Sourdille
INRAE, France



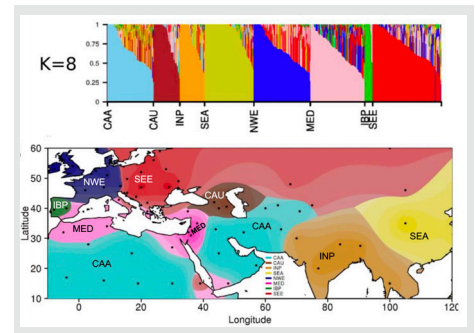
Rajeev Varshney
Murdoch University,
Australia

2023 HIGHLIGHTS



IWGSC Wheat Diversity Project

- In 2023, the IWGSC finalized a proposal, submitted it, and received funding from the U.S. National Science Foundation (NSF grant #2322957) for the Wheat Diversity Project.
- In this project, the IWGSC and collaborators in France (funded by the European Research Council and INRAE) will sequence 12 landrace genomes and update the IWGSC Chinese Spring reference sequence (IWGSC RefSeq).
- All genomes will be annotated using established pipelines and accession-derived transcriptome data; further, the IWGSC RefSeq annotation will be updated.
- Existing annotations in the IWGSC RefSeq, including thousands of community-contributed and manually curated gene models, will be preserved in the new RefSeq version.
- A Practical Haplotype Graph (PHG) will be developed to make these resources immediately applicable to advance wheat breeding.
- All data will be publicly available and accessible to the wheat community via the IWGSC Data Repository at INRAE-URGI and via the USDA data repository GrainGenes.



Balfourier et al., 2019



IWGSC Reference Sequence & Annotation

- All IWGSC RefSeq, RefSeq annotation and associated resources are publicly available at the IWGSC data repository at URGI-INRAE Versailles, France (<https://wheat-urgj.versailles.inra.fr>).
- The data are also available at Ensembl Plants, GrainGenes and WheatIS.
- The latest versions of IWGSC RefSeq assembly and annotation are versions v2.1.

IWGSC-URGI
data repository



- 24,909 visits
- 25,141 downloads
- 43,520 BLAST searches
- 37,252 wheat browser visits



Genomics Tools

- The IWGSC is continuously discussing opportunities with service providers to develop tools of value for the wheat community.
- The IWGSC has an ongoing collaboration with Daicel Arbor Biosciences for the development of wheat arrays, target capture panel for promoters, and other regulatory elements.
- Collaborations with other entities are currently being discussed.



Webinar Series

- A total of six webinars were organized, showcasing the IWGSC commitment to knowledge sharing.
- The webinars covered a wide range of topics: from the development of genotyping platforms tailored to small grains to the influence of grain and spike development on yield, as well as the updated guidelines for gene naming, the role of kinase fusion proteins in rust resistance, and the *Aegilops tauschii* pangenome. Additionally, we explored the importance of collaboration in interdisciplinary and international scientific projects by learning about Team Science.
- All webinars are free to attend and their recordings are posted on the IWGSC [YouTube channel](#).



- 2,467 registrations
- from 80 countries

YouTube Channel

- library of 36 webinars
- 997 subscribers
- 5,325 views in 2023
- 29,000 lifetime views



Workshops

- The IWGSC organized three workshops in conjunction with the Plant and Animal Genome Conference: two at PAG San Diego (CA, USA) and one at PAG Australia in Perth.
- The workshops highlighted recent advances in wheat research achieved by international teams, featuring talks on the utilization and development of genomic resources for wheat improvement.





The Wheat Genome Book

- With contributions from more than 60 authors, The Wheat Genome Book is the first comprehensive book about the most complex plant genome.
- The book includes articles describing the development of the reference sequence, new assemblies of commercial varieties, genome-wide studies, and the accelerated cloning of agronomically important genes. It provides valuable resources and literature for fundamental and applied research, crop improvement and teaching.
- In line with the IWGSC's commitment to provide resources for the community, the book is available in open access thanks to the generous financial support from Rudi Appels, Kellye Eversole, Catherine Feuillet, INRAE, CIMMYT, and Syngenta.



Spotlight on Key Individuals

This year, we interviewed and profiled the following key figures and leaders within the IWGSC community:



Kellye Eversole who has been at the helm of the IWGSC since its inception in 2005 and has been instrumental in all developments and successes of the consortium.



Pierre Sourdille who has been involved in the IWGSC since its creation, as a project leader, Coordinating Committee and Board member, and representative of INRAE, the French National Research Institute for Agriculture, Food and Environment.



INRAE has been supporting the IWGSC since the beginning. In particular, teams from INRAE's Plant Biology and Breeding (PBB) division have played an active role in all IWGSC projects over the past decades.



Susanne Dreisigacker and **Rajeev Varshney** who were appointed to the IWGSC Board of Directors in 2023.

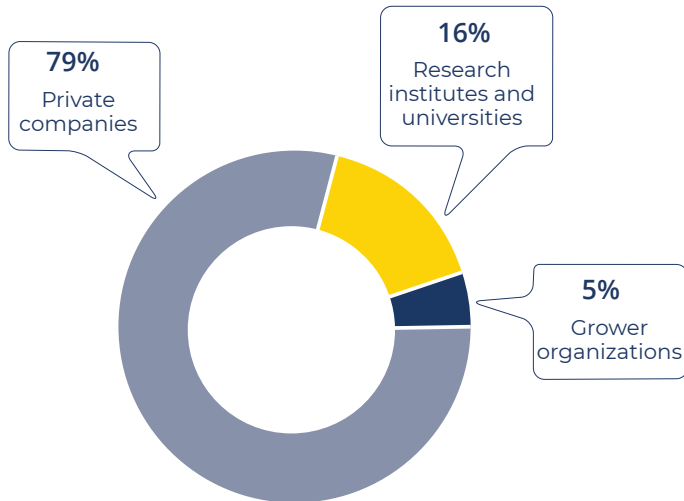


Carolyn Mukiri who was awarded the 2023 IWGSC-Feuillet Early Career Award.

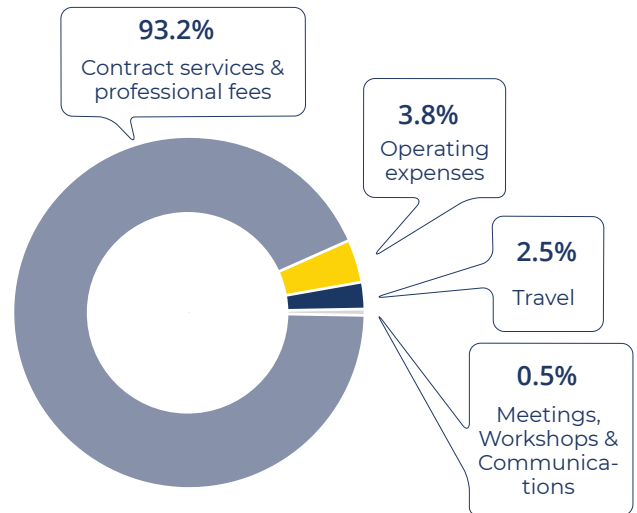
FINANCES

The IWGSC is financially supported by sponsors – private companies, research institutions, and grower organizations.

2023 Revenues



2023 Expenses



2023 SPONSORS





Icons made by Freepik, Tanah Basah & Unicornlabs from www.flaticon.com, CC 3.0 BY

www.wheatgenome.org



Connect with Us



info@iwgsc.org



[@wheatgenome](https://twitter.com/wheatgenome)



[international-wheat-genome-sequencing-consortium](https://www.linkedin.com/company/international-wheat-genome-sequencing-consortium)



[internationalwheatgenomesequencingconsortium](https://www.youtube.com/internationalwheatgenomesequencingconsortium)