IWGSC Phase II:

What's Next for the IWGSC

Kellye Eversole
IWGSC Executive Director

IWGSC Standards & Protocols Workshop
Plant & Animal Genome Conference

San Diego, California
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International Wheat Genome Sequencing Consortium

IWGSC RefSeq

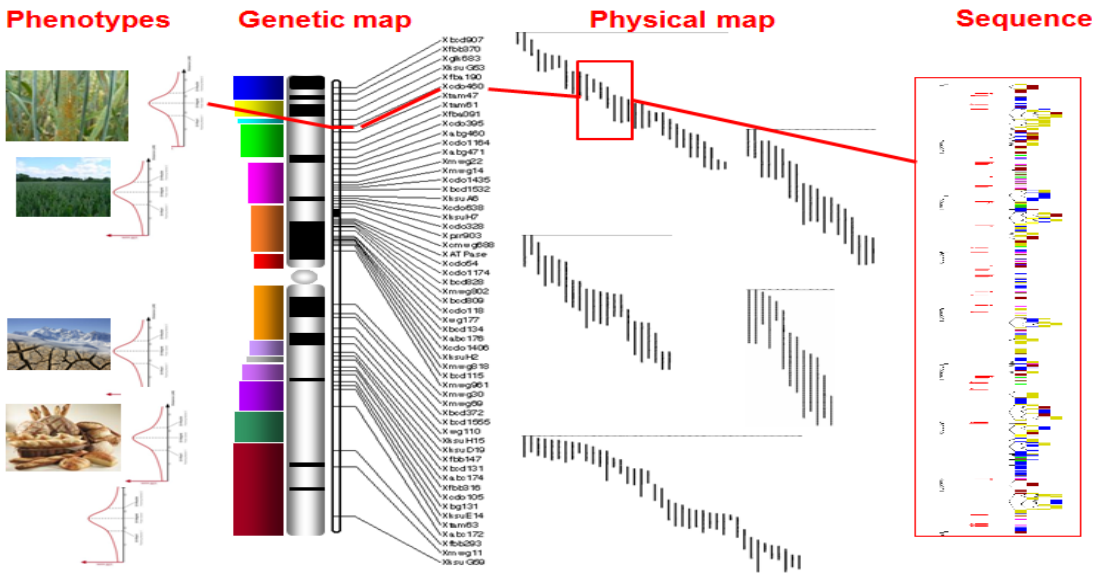
2005 – IWGSC Goal & Vision

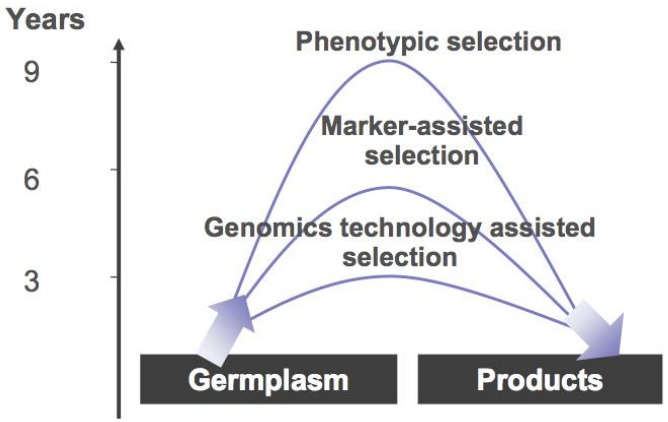
Goal

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

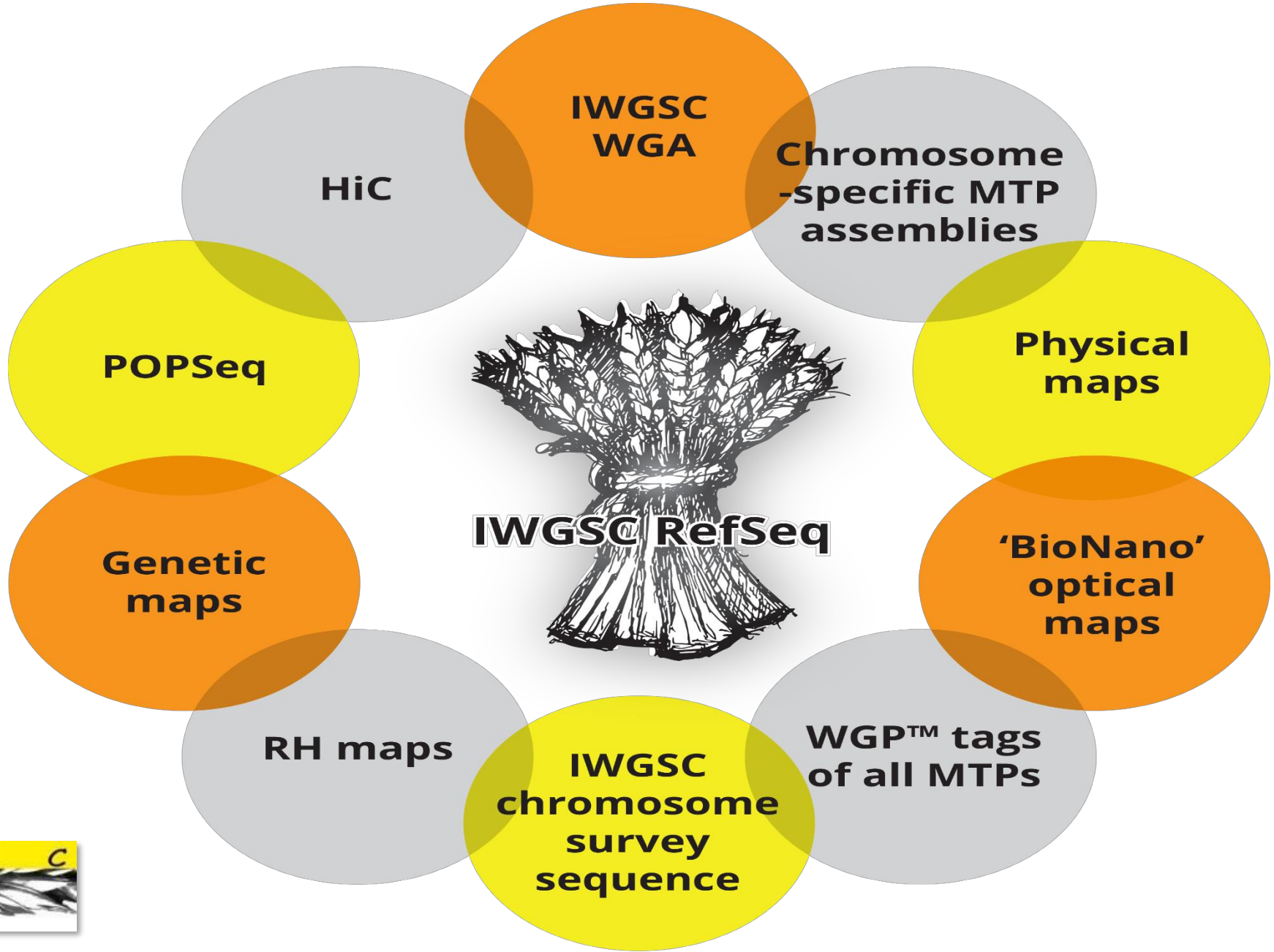
Vision

- High quality annotated genome sequence, comparable to rice
- Physical map-based, integrated and ordered sequence





Concerted integration of resources: RefSeq v1.0



IWGSC

IWGSC RefSeq

Measuring the Impact of IWGSC RefSeq v1.0

476,595 BLAST searches
22,935 downloads

2017

> 100 papers

Genome structure (9)

Genome expression (4)

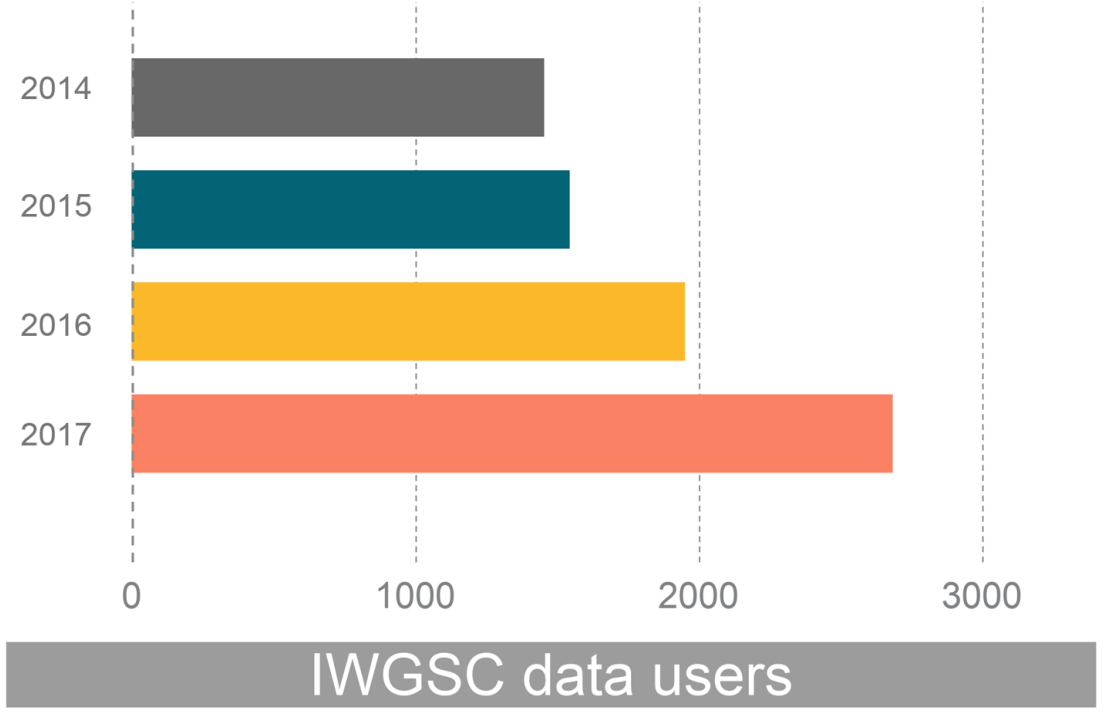
Genetic diversity (18)

Trait genomics (67)

Genome enabled breeding (9)

# of papers referencing use of IWGSC RefSeq related resources since January 2017

Measuring the Impact of IWGSC RefSeq v1.0



Progress

2005

Vision

- High quality annotated genome sequence, comparable to rice
- Physical map-based, integrated and ordered sequence

I W G S C

Looking into the Future

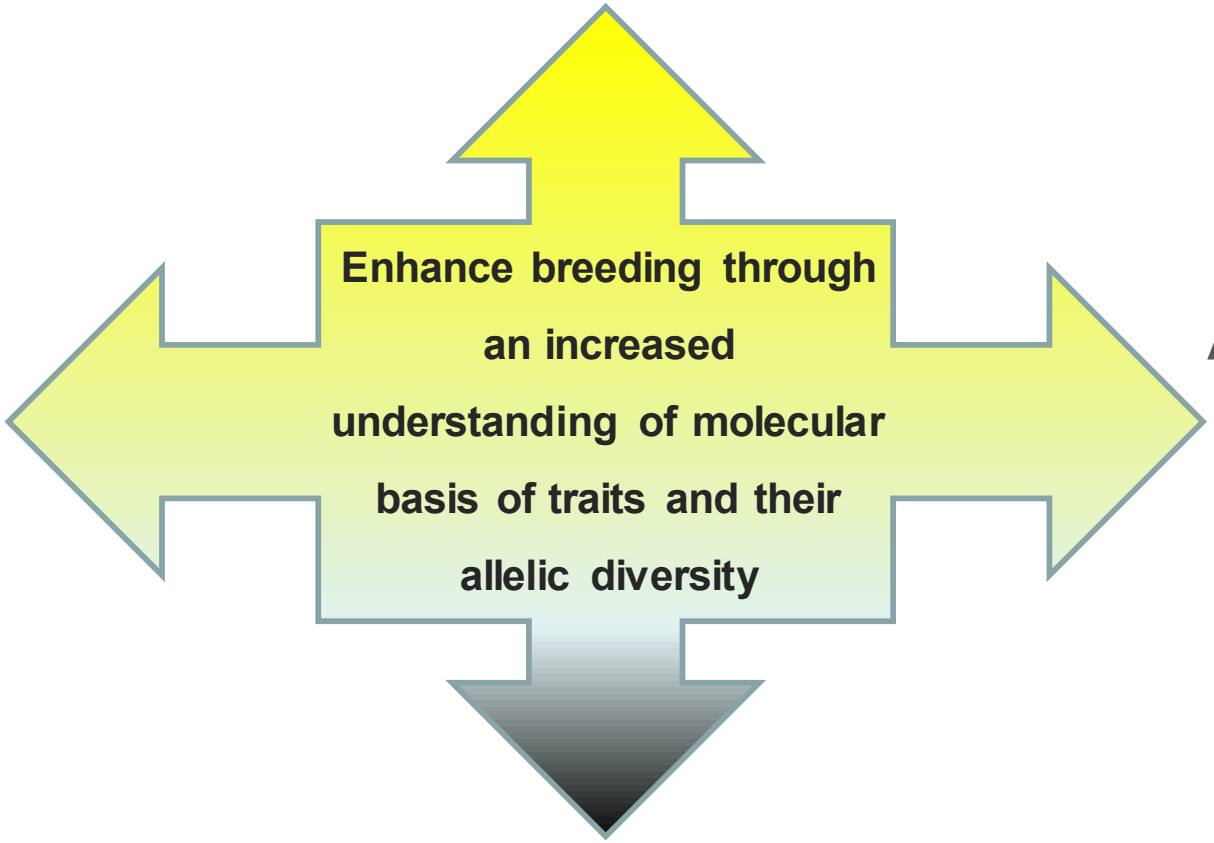
- **Achieve Gold Standard Reference**
- **Reach beyond reference to ensure a full genome-sequence based toolbox for wheat**

Goal: Accelerate wheat improvement

Vision and strategy for the IWGSC 2.0

Reference sequences with high quality functional annotations

Public, user-friendly, integrated databases and tools for all users



A wheat Pan-genome representing the worldwide diversity

An international, well connected and coordinated community

From RefSeq v1.0 to IWGSC Gold Standard

+ **Manual & Functional Annotation** =

- Pipeline for community generated manual annotation with future annotation releases
- Functional annotation
  - Gene family leaders
  - Applying machine learning techniques
- Closing gaps by incorporating new resources to build a IWGSC RefSeq v2.0
- IWGSC leaders: Rudi Appels, Fred Choulet…..

IWGSC 2.0 Activities: Pan-Genome

- Develop a wheat pan-genome that represents the breadth of worldwide wheat diversity
- Reference quality for 8-12 landraces
- Diversity panels at draft quality
- Haplotype database
- Skim-sequencing and high throughput genotyping of many lines
- IWGSC team: Etienne Paux, Sébastien Praud,…..

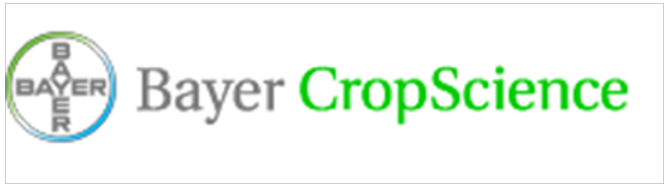
IWGSC 2.0 Activities: Database

- Develop user-friendly, integrated databases and tools
- IWGSC Pan-genome Database Task Force
  - Fred van Ex, Bayer CropScience
  - Magalie Leveugle, Biogemma
  - Matthieu Conte, Syngenta
  - Michael Alaux, URGI-INRA
  - …….
- What tools do you want?

IWGSC 2.0 Activities: IWGSC Exome Array

- Wheat exome capture array based on IWGSC RefSeq annotation v1.1.
- Accepting data until 31 January 2018 (see- Burkhard Steuernagel)
- Arbor Biosciences will offer enrichment reagents and an enrichment service
- Exome Team: Burkhard Steuernagel, Sreya Ghosh, Sébastien Praud, Hikmet Budak, Etienne Paux…..
- Discussion: What modules would you like to see?

IWGSC Sponsors



Opportunity for Community Input

Thank you for your attention!