



When Technology Meets Breeding: *Cultivating the Future of Agriculture*

July 3rd – 4th, 2026 | Shijiazhuang, China



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SYMPOSIUM INFORMATION



Under the theme "When Technology Meets Breeding: Cultivating the Future of Agriculture," this symposium bridges the gap between data science and traditional field breeding. It provides the premier platform for commercial breeders, researchers, and biotech innovators to explore the intersection of advanced technology and real-world production.

Key Focus Areas

AI-Driven Technologies & Precision Breeding: Discover how emerging artificial intelligence, machine learning, and predictive genetic modeling are revolutionizing early-stage trait selection.

Commercial Realities & ROI: Navigate the business, logistical, and financial realities of integrating high-throughput data science into traditional commercial pipelines.

Preserving Diversity While Optimizing Lines: Learn strategic approaches to balancing elite line optimization with vital germplasm diversity to ensure long-term agricultural resilience.

Networking & Site Visit

The symposium fosters strategic partnerships by uniting tech providers and seed companies. Beyond technical sessions, attendees will gain hands-on insights during an exclusive tour of the MolBreeding High-Throughput Genotyping Facility, exploring commercial molecular breeding innovations firsthand.

VENUE & LOGISTICS:

- **Conference Venue:** Hebei Grand Hotel·Anyue, Banquet Hall, 1st Floor
- **Address:** Hebei Grand Hotel·Anyue, No. 6 Anyue Street, Zhengding New Area, Zhengding, Hebei, China 河北宾馆·安悦: 正定新区安悦街6号, 正定, 河北, 中国
- **Dining:** Lunch & Dinner: Dining Area, 2nd Floor

CONTACTS & ASSISTANCE

If you require any assistance regarding the logistics, accommodations, or program agenda during the symposium, please do not hesitate to contact our organizing committee:

Mona Wu: monawu@molbreeding.com; Mobile / WhatsApp: +8613019384124



REGISTRATION

JULY 02, 2026

8:00 AM – 8:00 PM

1st Floor Lobby

Pre-Conference Registration & Badge Pick-up

PLENARY SESSION

JULY 03, 2026

8:30 - 8:40 AM

Banquet Hall, 1st Floor

WELCOME AND ANNOUNCEMENTS

8:40 - 9:10 AM

Qifa Zhang*, Huazhong Agricultural University

*Advancing the National Whole Grain Initiative:
Simultaneously Strengthening Food Security and Public
Health*

9:10 - 9:40 AM

Ning Li*, Sunlon Group

*Application of AI and Synthetic Biology in Molecular
Breeding*

9:40 - 10:10 AM

**Yunbi Xu, Peking University Institute of Modern
Agriculture / Institute of Crop Sciences, CAAS**

Enviromics and Molecular Plant Breeding

10:10 - 10:20 AM

Coffee Break

* Presentation delivered in **Chinese**. All sessions are equipped with AI real-time translation screens.



PLENARY SESSION

JULY 03, 2026

10:20 - 10:40 AM

Jianan Zhang*, MolBreeding Blotechnology

Development and Industrial Application of Industrialized Molecular Breeding Systems

10:40 - 11:10 AM

Qin Zhang*, Shandong Agricultural University

How to Interpret Missing Heritability in Molecular Breeding

11:10 - 11:40 AM

José A. Carrillo, Council on Dairy Cattle Breeding (CDCB)

Advancing U.S. Dairy Genetics: CDCB's Role in Data, Genomics, and Innovation

11:40 AM - 12:10 PM

Yong Xu, Beijing Academy of Agriculture and Forestry Sciences

Theory and Practice of Molecular Breeding in Watermelon

12:20 - 1:30 PM

Dining Area, 2nd Floor

LUNCH

* Presentation delivered in **Chinese**. All sessions are equipped with AI real-time translation screens.



SESSION I: CHINESE SPEAKER*

JULY 03, 2026

Section I: AI Application in Plant and Animal Breeding

Banquet Hall, 1st Floor

- | | |
|-----------------------|--|
| 1:30 - 2:00 PM | Jian Lv, Institute of Crop Sciences, CAAS
<i>Advances and Prospects in Maize Breeding Technology</i> |
| 2:00 - 2:30 PM | Yongcai Huang, Sichuan Agricultural University
<i>Molecular Genetic Basis of High-Protein and Nitrogen-Efficient Trait Formation in Maize</i> |
| 2:30 - 3:00 PM | Xiangfeng Wang, China Agricultural University
<i>AI-Empowered Plant Biological Breeding</i> |
| 3:00 - 3:30 PM | Man Wang, Baitu Shengke (Beijing) Intelligent Technology Co., Ltd.
<i>Exploration and Application of xTrimo Bio-Foundation Model in the Field of Agricultural Breeding</i> |
| 3:30 - 3:50 PM | Coffee Break |

* Presentation in Session I delivered in **Chinese**. All sessions are equipped with AI real-time translation screens.



SESSION I: CHINESE SPEAKER*

JULY 03, 2026

Section I: AI Application in Plant and Animal Breeding

Banquet Hall, 1st Floor

- | | |
|-----------------------|--|
| 3:50 - 4:20 PM | Guiping Zhao, Institute of Animal Sciences, CAAS
<i>Construction and Application of the ""Jiuzhou No.1""
Poultry Smart-Breeding System</i> |
| 4:20 - 4:50 PM | Hailiang Song, Beijing Academy of Agriculture and
Forestry Sciences
<i>Research and Application of Genomic Selection
Methods for Sturgeon in China</i> |
| 4:50 - 5:20 PM | Sheng Luan, Yellow Sea Fisheries Research Institute,
Chinese Academy of Fishery Sciences
<i>Intelligent Phenotyping and Genomic Selection
Breeding in Pacific White Shrimp.</i> |
| 5:20 - 5:50 PM | Zhuocheng Hou, China Agricultural University
<i>Frontier Practices in Precision Animal Reproduction and
Embryo Engineering Technology: Timed Insemination,
OPU-IVF, and Embryo Genomic Selection</i> |

6:30 - 9:30 PM
Dining Area, 2nd Floor

Welcome Banquet & Networking Reception

* Presentation in Session I delivered in **Chinese**. All sessions are equipped with AI real-time translation screens.



SECTION II: ENGLISH SPEAKER

JULY 03, 2026

Section II: When Technology Meets Breeding: *Cultivating the Future of Agriculture*

Banquet Hall, 1st Floor

1:30 - 2:10 PM

Jinliang Yang, University of Nebraska–Lincoln

AI Agent-Driven Autoresearch on Aerial Imagery to Optimize Yield Trait Estimation

2:10 - 2:50 PM

David S. Casey, Pig Improvement Company

Practical Experience Implementing AI and Genomics in Modern Pig Breeding

2:50 - 3:30 PM

Nguyen Thi Minh Nguyet, Agricultural Genetics Institute, Vietnam Academy of Agricultural Sciences

Molecular Marker and AI application in Gene Detection and Precision Breeding of Rice variety in Vietnam

3:30 - 3:40 PM

Coffee Break

* Presentation in Session II delivered in **English**. All sessions are equipped with AI real-time translation screens.



SECTION II: ENGLISH SPEAKER

JULY 03, 2026

Section II: When Technology Meets Breeding: *Cultivating the Future of Agriculture*

Banquet Hall, 1st Floor

- | | |
|-----------------------|---|
| 3:40 - 4:20 PM | Sushan Ru, Auburn University
<i>Leveraging AI-driven deep learning tools and database solutions to advance blueberry breeding</i> |
| 4:20 - 5:00 PM | Doron Cohen, Supree Zanim NRGene
<i>NRGene's Breakthrough Technology for Innovative Breeding Programs</i> |
| 5:00 - 5:40 PM | Jinkwan Jo, East West Seed, Thailand
<i>Managing Genetic Diversity in the Era of Pangenomes and Genome Editing: From Conservation to Strategic Breeding Deployment</i> |
| 5:40 - 6:20 PM | James Clugston, Western Sydney University and Montgomery Botanical Center
<i>Conserving Genetic Diversity in a Changing World: Lessons from Cycad Conservation and Genomics</i> |

6:30 - 9:30 PM
Dining Area, 2nd Floor

Welcome Banquet & Networking Reception

* Presentation in Session II delivered in **English**. All sessions are equipped with AI real-time translation screens.

AGENDA

SITE TOUR : ENGLISH ONLY

JULY 04, 2026

Site Tour : MolBreeding Product Introduction & Lab-Tour Visit

2:00 - 2:30 PM Bus to MolBreeding Headquater

2:30 - 3:30 PM Introduction on MolBreeding Services & Products

3:15 - 4:00 PM *Lab Tour (Automation Lab & Climate Room)*

4:00 - 4:30 PM Bus to Hotel

6:30 - 7:30 PM

Dining Area, 2nd Floor

Dinner

THIS TOUR SESSION WILL BE CONDUCTED CONCURRENTLY WITH THE MEETING SESSIONS AND PRESENTED IN ENGLISH ONLY.





SESSION I: CHINESE SPEAKER*

JULY 04, 2026

Session I: AI application in Livestock & Animal Breeding

Banquet Hall, 1st Floor

8:30 - 9:00 AM

Dongxiao Sun, China Agricultural University

Integrating Multi-Omics Genetic Analysis for Important Traits and Breeding Innovation in Dairy Cattle

9:00 - 9:30 AM

Yachun Wang, China Agricultural University

Development of Breeding Selection Indices for Stress Resistance in Dairy Cattle Based on Multi-Source Data

9:30 - 10:00 AM

Jianbin Li, Institute of Animal Science and Veterinary Medicine, Shandong Academy of Agricultural Sciences

Genetic Breeding Technologies and Applications for Dairy Cattle Core Herds

10:00 - 10:20 AM

Coffee Break

10:20 - 10:50 AM

Li Zhu, Sichuan Agricultural University

R&D and Application of "PigSeek" Swine Intelligent Breeding Decision Center

10:50 - 11:20 AM

Wenfa Lv, Jilin Agricultural University

Establishment and Application of a Joint Breeding System for Angus Cattle

* Presentation this session delivered in **Chinese**. All sessions are equipped with AI real-time translation screens.



SESSION I: CHINESE SPEAKER*

JULY 04, 2026

Session I: AI application in Livestock & Animal Breeding

Banquet Hall, 1st Floor

11:20 - 11:50 AM

Xixia Huang, Xinjiang Agricultural University

An Overview of the Application of Genomic Selection Technology in Xinjiang Brown Cattle

12:00 - 13:30 PM

Dining Area, 2nd Floor

Lunch

1:30 - 2:00 PM

Yan Chen, Institute of Animal Sciences, CAAS

Diversity and Breed Identification of Chinese Cattle Genetic Resources

2:00 - 2:30 PM

Jie Wu, Bright Farming Co., Ltd.

Progress in Dairy Cattle Breeding Research in Shanghai

2:30 - 3:00 PM

Yongbin Liu, Inner Mongolia Agricultural University

Virtual Cells in Molecular Breeding of Meat Sheep

3:00 - 3:20 PM

Coffee Break

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SESSION I: CHINESE SPEAKER*

JULY 04, 2026

Session I: AI application in Livestock & Animal Breeding

Banquet Hall, 1st Floor

3:20 - 3:50 PM

Wentao Cai, Institute of Animal Sciences, CAAS

Technological Innovation in Meat Duck Genomic Breeding and the Development of Smart Breeding Platforms

3:50 - 4:20 PM

Xueming Zhao, Institute of Animal Sciences, CAAS

Frontier Practices in Precision Animal Reproduction and Embryo Engineering Technology: Timed Insemination, OPU-IVF, and Embryo Genomic Selection

4:20 - 4:50 PM

Xiaolong Wang, Northwest A&F University

Construction and Application of Biological Breeding Systems in Sheep

4:50 - 5:20 PM

Jinshi Zhao, Xinniu Shuzhi (Beijing) Technology Co., Ltd.

Advances and Achievements in AI-Powered Automated Measurement of Cattle Body Size and Conformation Evaluation

5:20 - 6:30 PM

MOLBREEDING LAB TOUR (Chinese Only)

6:30 - 7:30 PM

Dining Area, 2nd Floor

Dinner

* Presentation delivered in **Chinese**. All sessions are equipped with AI real-time translation screens.



SESSION II: CHINESE SPEAKER*

JULY 04, 2026

Session II: AI application in Crop & Plant Breeding

Banquet Hall, 1st Floor

8:30 - 9:00 AM

Lei Li, CCID Academy for Industry and Information Technology, MIIT

Pilot Scale Platforms, "Open Competition" Mechanism, and Iconic Product Policies in the Field of Biomanufacturing

9:00 - 9:30 AM

Xiaofeng Gu, Biotechnology Research Institute, CAAS

AI-Driven Frontier Biotechnology and Its Application in Breeding

9:30 - 10:00 AM

Guangtao Zhu, Yunnan Normal University

Genetic Dissection of Frost Tolerance and Germplasm Innovation via Distant Hybridization in Potato

10:00 - 10:20 AM

Coffee Break

10:20 - 10:50 AM

Hao Du, Zhejiang University

Establishment and Application of Synthetic Biotechnology System for Autoluminescent Plants

* Presentation delivered in **Chinese**. All sessions are equipped with AI real-time translation screens.



SESSION II: CHINESE SPEAKER*

JULY 04, 2026

Session II: AI application in Crop & Plant Breeding

Banquet Hall, 1st Floor

10:50 - 11:20 AM **Li Lu, Wuhan University**
Biosynthesis of High-Value Plant Compounds and Breeding of Functional Crops

11:20 - 11:50 AM **Zhaoke Hou, MGI Tech Co., Ltd.**
Smart and Automated Equipment Advancing Translational Applications in Molecular Breeding

12:00 - 1:30 PM
Dining Area, 2nd Floor

Lunch

1:30 - 2:00 PM **Kai Wang, Yuan Longping High-tech Agriculture Co., Ltd.**
Exploration of Intelligent Rice Breeding Technologies in Longping High-tech

2:00 - 2:30 PM **Jian Ye, Institute of Microbiology, CAS**
AI-Driven R&D and Biomanufacturing of Peptide Drugs for Citrus Huanglongbing (Citrus Greening)

2:30 - 3:00 PM **Ping Lu, Institute of Genetics and Developmental Biology, CAS**
Mining and Breeding Utilization of Disease Resistance Genes in Wheat

3:00 - 3:20 PM **Coffee Break**

* Presentation delivered in **Chinese**. All sessions are equipped with AI real-time translation screens.



SESSION II: CHINESE SPEAKER*

JULY 04, 2026

Session II: AI application in Crop & Plant Breeding

Banquet Hall, 1st Floor

3:20 - 3:50 PM

Xiangchao Gan, Nanjing Agricultural University

Rice Digital Twin Construction Technology and Whole-Genome Selection Models

3:50 - 4:20 PM

Lin Chen, Wuhan Yunzhen Technology Co., Ltd.

Construction and Application of Intelligent-Driven Precise Maize Genomic Breeding Technology System

4:20 - 4:50 PM

Peng Lv, Hebei Academy of Agricultural Forestry Sciences

Gene Discovery and Gene Editing for Agronomically Important Traits in Sorghum

4:50 - 5:20 PM

Cui Li, Oil Crops Research Institute, CAAS

Construction and Application of High-Efficiency Bt+Eb Breeding Technology System in Rapeseed

5:20 - 6:30 PM

MOLBREEDING LAB TOUR (Chinese Only)

6:30 - 7:30 PM

Dining Area, 2nd Floor

Dinner

* Presentation delivered in **Chinese**. All sessions are equipped with AI real-time translation screens.

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SPEAKERS



David S. Casey, Pig Improvement Company

Practical Experience Implementing AI and Genomics in Modern Pig Breeding

David S. Casey is the Chief Technology Officer (CTO) at PIC China (Pig Improvement Company). His responsibilities include leading product development and applied research to support business growth in China. Dr. Casey is an Industry

Professor at Huazhong Agriculture University and formerly an Adjunct Assistant Professor at North Carolina State University. David grew up on a family farm in the United States and has been working with pigs for over 40 years. He received a B.S. from Wilmington College of Ohio in 1992, a M.S. from the University of Nebraska in 1998, and a Ph.D. from Iowa State University in 2003. David has worked at PIC for the last 23 years and currently resides in Shanghai, P.R. China.



Doron Cohen, Supree Zanim | NRGene

NRGene's Breakthrough Technology for Innovative Breeding Programs

Mr. Doron Cohen, an R&D and Product Strategy Executive with over two decades of experience in the global agricultural sector. Holding both an M.Sc. and a B.Sc. in Plant Sciences from The Hebrew University of Jerusalem, alongside an MBA

from Bar-Ilan University, Mr. Cohen possesses profound expertise spanning traditional plant breeding to advanced genomic methodologies. Throughout his esteemed career, Mr. Cohen has spearheaded numerous high-impact breeding programs. His foundational work includes serving as a Tomato Breeder with the renowned Hebrew University breeding team, followed by roles as a Pepper and Corn Breeder, and Head of Solanaceae programs at Genesis Seeds, where he designed breeding programs for tomatoes, eggplants, peppers, and stevia.

Beyond his deep roots in plant genetics, Mr. Cohen is an accomplished strategist in crop protection. As Global Product Strategy Manager at ADAMA, he successfully executed global strategies for insecticide active ingredients. In this role, he created detailed business plans that increased market share and profitability while prolonging product life cycles across various markets.

More recently, as Breeding Director at NRGene Technologies, he utilized cutting-edge breeding technologies to drive successful, patent-supported product launches. Today, as Operations and R&D Manager at Supree Zanim LTD, he leads strategic variety development and product innovation.



**James Clugston, Western Sydney University
and Montgomery Botanical Center**

***Conserving Genetic Diversity in a Changing World:
Lessons from Cycad Conservation and Genomics***

Dr James Clugston is a genomics and conservation biologist whose research focuses on plant evolution, systematics, and the conservation of cycads (Cycadales) and other

gymnosperms. His work integrates phylogenomics, population genomics, landscape genomics, and biodiversity science to resolve complex evolutionary relationships, identify conservation management units, and develop genomic resources for threatened species and wild populations. By combining large-scale genomic datasets with ecological and morphological information, he seeks to better understand the processes that generate and maintain biodiversity and to translate these findings into practical conservation outcomes.

A major focus of his current research is the development and application of genomic tools to support the conservation of cycads, one of the world's most threatened plant groups. He has led the development of universal target-capture probe sets and comparative genomic frameworks designed to standardise genomic data generation and analysis across all extant cycad genera, enabling research at both phylogenetic and population scales. These resources are helping overcome longstanding challenges associated with the exceptionally large and complex genomes of cycads, providing new insights into species boundaries, hybridisation, adaptation, demographic history, and patterns of genetic diversity across natural and ex situ populations. His work is contributing to a new generation of evidence-based approaches for cycad conservation and management worldwide.

His broader research interests include conservation genetics, evolutionary biology, plant diversification, and the application of emerging genomic technologies to species recovery and management. James works extensively with botanic gardens, universities, government agencies, and conservation organisations worldwide to support the conservation of threatened plant species. He is Co-Chair of the Global Conservation Consortium for Cycads (Australia) and a member of the IUCN SSC Cycad Specialist Group, where he contributes to international cycad conservation initiatives, policy development, and research prioritisation.



Jinkwan Jo, East West Seed, Thailand

Managing Genetic Diversity in the Era of Pangenomes and Genome Editing: From Conservation to Strategic Breeding Deployment

Dr. Jinkwan Jo is a pepper pre-breeder at East-West Seed, where he works on connecting genetic resources, trait discovery, and applied breeding pipelines for vegetable crop

improvement. His work focuses on the strategic use of germplasm diversity, disease resistance, molecular breeding, and genomic tools to support the development of resilient commercial varieties. He has been involved in pre-breeding activities for pepper and other vegetable crops, including the identification and utilization of diverse genetic resources, introgression of useful traits, and integration of marker-based approaches into breeding decision-making. His current work focuses on leveraging genomic resources and breeding technologies to enhance the efficient utilization of genetic diversity in vegetable breeding programs. Through his work, he aims to bridge the gap between raw genetic diversity and practical product development for changing environments and future agricultural challenges.



Jinliang Yang, University of Nebraska–Lincoln

AI Agent-Driven Autoresearch on Aerial Imagery to Optimize Yield Trait Estimation

Dr. Jinliang Yang is an Associate Professor and the Charles O. Gardner Professor of Agronomy at the University of Nebraska–Lincoln. He received his Bachelor's and Master's degrees from China Agricultural University (2001–2008) before earning his

Ph.D. from Iowa State University in 2014. From 2014 to 2017, he conducted his postdoctoral research at the University of California, Davis. He joined the University of Nebraska–Lincoln as an Assistant Professor in 2017, was promoted to Associate Professor with tenure in 2023, and was awarded the Charles O. Gardner Named Professorship in 2025.

Dr. Yang's research group integrates quantitative genetics, statistical genomics, and CRISPR-Cas9 gene-editing technologies to study multi-omics characteristic variations in modern maize, its wild ancestor (teosinte), and its close relative (sorghum). His work focuses on environmental adaptation, crop domestication, and modern breeding. He has published over 50 papers in prestigious journals, including Nature Communications, eLife, PLOS Genetics, Genetics, and The Plant Journal. Beyond his academic research, Dr. Yang is the founder of the Chinese Genomics Meet-up (CGM) and a co-founder of the scientific journal Genomics Communications.



José A. Carrillo, Council on Dairy Cattle Breeding (CDCB)

Advancing U.S. Dairy Genetics: CDCB's Role in Data, Genomics, and Innovation

Pr. José A. Carrillo received his DVM from Paraguay's National University of Asunción in 1995. He completed business postgraduate studies in Spain, obtained Spanish veterinary license in 1998, and pursued university didactics in 1999.

He engaged in livestock breeding and academia early in his career, then conducted tuberculosis animal research at NIH NIAID. He joined the University of Maryland in 2007, attaining an MS in animal genetics and breeding (2011) and a PhD in genomics and epigenomics (2016). He worked as a geneticist at PIC until 2017, joined CDCB as Genomic Data Manager in 2018, and was promoted to Chief Data Officer in 2020, overseeing genomic data strategy and governance for U.S. dairy industry. With over 50 peer-reviewed publications, he is a distinguished expert in animal genetics, genomics and data-driven livestock improvement.



Nguyen Thi Minh Nguyet, Agricultural Genetics Institute, Vietnam Academy of Agricultural Sciences

Molecular Marker and AI application in Gene Detection and Precision Breeding of Rice variety in Vietnam

Dr. Nguyen Thi Minh Nguyet is a prominent scientist with over 20 years of research experience in applying biotechnology to develop resilient rice varieties against biotic

and abiotic stresses. As a Principal Investigator, she leads national-level research projects and international collaborations with Japan and Argentina in molecular breeding. Beyond her core research, Dr. Nguyen has extensive expertise in technical analysis, international regulatory compliance, and drafting practical technical guidelines for agricultural labeling. Looking forward, her research aims to advance precision rice breeding by integrating cutting-edge molecular marker technology with artificial intelligence (AI).



Sushan Ru, Auburn University

Leveraging AI-driven deep learning tools and database solutions to advance blueberry breeding

Sushan Ru is an Assistant Professor at Auburn University, where she leads the first small fruit breeding program in Alabama since 2021. Her breeding program focuses on develop new blueberry cultivars with improved stress

tolerance, disease resistance, and fruit quality to support regional growers. Her research integrates interdisciplinary approaches, including high-throughput phenotyping and genetic analysis, to enhance breeding efficiency and understand the genetic architecture of key traits. She is also committed to student training and mentoring in plant breeding and data-driven research.

Sushan received her M.S. and PhD degrees from Washington State University, where she worked on marker-assisted breeding in tree fruit, and completed her postdoctoral training at the University of Minnesota and University of Wisconsin-Madison, focusing on optimizing targeted introgression in soybean and genotyping accuracy in potato. Her program is driven by a passion for developing high-quality, nutritious berry crops and advancing innovative breeding strategies.



Cui Li, Oil Crops Research Institute, CAAS

Construction and Application of High-Efficiency Bt+Eb Breeding Technology System in Rapeseed

Dr. Cui Li holds a Ph.D. in Agronomy and is a key member of the Rapeseed Genetics and Breeding Team at the Oil Crops Research Institute, Chinese Academy of Agricultural Sciences (OCRI, CAAS). Her research primarily focuses on molecular

breeding and sclerotinia stem rot resistance breeding in rapeseed.

The team is deeply dedicated to the genetic improvement of rapeseed, focusing on trait mechanism dissection, the discovery of disease-resistant and high-quality genes, the innovation of high-efficiency breeding technologies, the selection of new machine-harvestable varieties, and the transformation of scientific achievements. Over the past decade, the team has undertaken more than 50 domestic and international research projects, published over 60 papers, and received more than 10 provincial and ministerial-level awards. The team completed the world's first rapeseed genome sequencing, elucidated the maternal regulatory mechanism of seed oil content, proposed the novel heterosis theory of "aggregation over hybridity" (ju bu zai za), and revealed the

genetic mechanism of high selenium efficiency in rapeseed. Furthermore, they constructed a comprehensive marker-assisted selection (MAS) breeding system for rapeseed, pioneered the Bt+Eb breeding concept, and bred over 70 new varieties, including Zhongshuang No. 9 and Zhongyouza 501. These varieties have been accumulated and cultivated over 250 million mu (approx. 16.7 million hectares), providing robust varietal and technical support to enhance both the quality and efficiency of China's rapeseed industry.



Dongxiao Sun, China Agricultural University

Integrating Multi-Omics Genetic Analysis for Important Traits and Breeding Innovation in Dairy Cattle

Dongxiao Sun, Ph.D. is a Professor, Doctoral Supervisor, and Chair of the Department of Animal Genetics and Breeding at China Agricultural University. Her research focuses on dairy cattle genetics and breeding, with particular emphasis on

elucidating the genetic mechanisms underlying economically important traits and developing genomic selection technologies for dairy cattle improvement.

Prof. Sun serves as Deputy Secretary-General of the Animal Genetics and Breeding Branch of the Chinese Association of Animal Science and Veterinary Medicine, Executive Council Member of the Livestock Genetic Markers Branch, Council Member of the Cattle Science Branch, Vice Chair of the Expert Committee for the National Dairy Cattle Genetic Improvement Program, and Vice Chair of the Breeding Committee of the Dairy Association of China. She was recognized as a New Century Excellent Talent by the Ministry of Education and has led numerous national and provincial research projects, including projects under China's 14th Five-Year National Key Research and Development Program. Her research achievements have been recognized with several prestigious awards, including the Second Prize of the National Science and Technology Progress Award (2016), the Second Prize of the Ministry of Education Science and Technology Progress Award (2023), the First Prize and Second Prize of the Beijing Science and Technology Award, as well as the Second Prize of the Hebei Provincial Science and Technology Progress Award and the Second Prize of the Hebei Provincial Natural Science Award.

Prof. Sun has co-edited one academic book, published more than 150 scientific papers, and holds 14 authorized invention patents.



Guangtao Zhu, Yunnan Normal University

Genetic Dissection of Frost Tolerance and Germplasm Innovation via Distant Hybridization in Potato

Dr. Guangtao Zhu is the Vice Dean of the School of Life Sciences and the Dean of the Potato Research Institute at Yunnan Shaanxi University (YNU). He has been honored as a "Young Scholar" under the Changjiang Scholars Award

Program by the Ministry of Education (MOE) and recognized as a "Thousand Talents Program" High-Level Talent of Yunnan Province.

Dr. Zhu's research focuses on potato genomics and genetics. As a key author, he has published more than 20 papers in top-tier (Tier-1) international journals, including *Cell*, *Science*, *Nature Genetics*, *Molecular Plant*, and *The EMBO Journal*. He holds two authorized Plant Variety Protection (PVP) rights and, as the Principal Investigator (PI), has led six national-level research projects, four provincial-level projects, and one corporate-sponsored R&D initiative. Notably, two of his research breakthroughs were selected as the "Major Progress in Agricultural Sciences of China" in 2017 and 2018, respectively.



Guiping Zhao, Institute of Animal Sciences, CAAS

Construction and Application of the "'Jiuzhou No.1'" Poultry Smart-Breeding System

Dr. Guiping Zhao is a Professor, Ph.D. supervisor, and Chief Scientist of the Chicken Genetics and Breeding Innovation Team at the Institute of Animal Sciences, Chinese Academy of

Agricultural Sciences (CAAS). With over 30 years of dedicated experience in broiler breeding since 1992, Dr. Zhao has been recognized under the National Hundred, Thousand, and Ten Thousand Talents Project and the National Ten-Thousand Talents Program as a Leading Talent in Technological Innovation. She currently serves as the Chief Scientist of the China Agriculture Research System (Broiler) and Vice Chair of the Poultry Committee of the National Commission on Livestock and Poultry Genetic Resources. Her team and leadership have received numerous prestigious national honors for excellence in scientific research and contribution.



Hao Du, Zhejiang University

Establishment and Application of Synthetic Biotechnology System for Autoluminescent Plants

Dr. Hao Du is a Professor and Doctoral Supervisor at Zhejiang University. He holds a joint appointment as a Principal Investigator at the Institute of Biological and Molecular Intelligence, Hangzhou International Science and Technology

Innovation Center, Zhejiang University. His research primarily focuses on plant synthetic biotechnology and its industrial applications. Over the past five years, Dr. Du has published more than 20 SCI-indexed research papers in prestigious journals, including *Nature*, *Cell Research*, *Trends in Biotechnology*, *Nature Food*, *Molecular Plant*, *The Plant Cell*, *Trends in Plant Science*, *Plant Biotechnology Journal*, *New Phytologist*, *Horticulture Research*, and *Plant Communications*. He has served as the Principal Investigator (PI) for nearly ten major research grants, including the Original Exploratory Program, International Cooperation Projects, and General Programs of the National Natural Science Foundation of China (NSFC), as well as projects funded by the Natural Science Foundation of Zhejiang Province.



Jian Ye, Institute of Microbiology, CAS

AI-Driven R&D and Biomanufacturing of Peptide Drugs for Citrus Huanglongbing (Citrus Greening)

Dr. Jian Ye is a Professor and Doctoral Supervisor at the Institute of Microbiology, Chinese Academy of Sciences (IMCAS), where he also serves as the Director of the Laboratory of Agricultural Microbiomics and Biotechnology.

He is a recipient of both the National Science Fund for Distinguished Young Scholars (National Jieqing) and the Excellent Young Scientists Fund (National Youqing). Dr. Ye graduated from Zhejiang University in 2000 and earned his Ph.D. from the University of Chinese Academy of Sciences (UCAS) in 2007. He subsequently conducted postdoctoral research and served as a Principal Scientist at the Temasek Life Sciences Laboratory (TLL), National University of Singapore, before returning to China full-time in 2014.

Long dedicated to molecular virology, AI+BT cutting-edge agricultural biotechnology, and the host resistance mechanisms of Citrus Huanglongbing (HLB), Dr. Ye's research centers systematically on insect-borne disease control, plant-pathogen-vector interactions, and resistance gene discovery coupled with intelligent molecular design. His team successfully elucidated the core mechanism by which *PUB21-MYC2* regulates Citrus HLB resistance, discovering that *PUB21DN* from distantly related Rutaceae plants can stabilize *MYC2* and

enhance disease resistance. Furthermore, utilizing artificial intelligence, his team screened the small peptide APP3-14 for HLB control—a breakthrough published as a cover story in *Science*. Dr. Ye has published over 70 papers in prestigious international journals, including *Science*, *Science Advances*, and *Nature Communications*. He holds 18 authorized Chinese invention patents and 4 international patents. As the Principal Investigator (PI), he has led numerous major research initiatives, including Key and General Programs of the National Natural Science Foundation of China (NSFC), CAS Strategic Priority Research Programs, and Major Projects of the Singapore National Research Foundation (NRF). He has also been honored with a Second Prize of the Provincial and Ministerial-Level Science and Technology Progress Award, alongside an Industry Association Innovation Award.



Jian Lv, Institute of Crop Sciences, CAAS

Advances and Prospects in Maize Breeding Technology

Dr. Jian Lv is a Professor and Research Scientist at the Institute of Crop Sciences, Chinese Academy of Agricultural Sciences (CAAS). He previously served as the Principal Scientist at the Syngenta Beijing Innovation Center and holds the professional title of Professor-Level Senior Engineer. Dr. Lv

is a distinguished project evaluation expert and panel member for the National Development and Reform Commission (NDRC), the Ministry of Science and Technology (MOST), and the Ministry of Agriculture and Rural Affairs (MARA). He also serves as a peer reviewer for top-tier international journals, including *Cell*, *Nature*, and *Nature Plants*. Furthermore, he is an Academic Committee Member for both the Key Laboratory of Hybrid Soybean Breeding and the Key Laboratory of Biology and Genetic Breeding of Soybean (Huang-Huai-Hai Region) under MARA, as well as an Expert Committee Member for the China-Latin America Sustainable Food Innovation Center.

Dr. Lv obtained his bachelor's degree from Shandong University in 2004 and earned his Ph.D. in Genetics from the same institution in 2010, under the supervision of Professor Guangmin Xia. From 2007 to 2008, he conducted research in epigenetics as a visiting scholar in Professor Jian-Kang Zhu's laboratory at the University of California, Riverside. His current research interests encompass transgenic breeding for crop stress resistance, the development of gene editing and innovative breeding technologies, and crop quality improvement. His research findings have been published in prestigious journals such as *Nature* and *Nature Biotechnology*. He has filed 15 PCT and national patents, and has received three provincial and ministerial-level awards as the primary contributor, alongside honors including the Zhi-Ming Wei Youth Innovation Award and being named an Innovative Leading Talent of CAAS.



Jianbin Li, Institute of Animal Science and Veterinary Medicine, Shandong Academy of Agricultural Sciences

Genetic Breeding Technologies and Applications for Dairy Cattle Core Herds

Dr. Jianbin Li is a Professor and Research Scientist at the Institute of Animal Science and Veterinary Medicine, Shandong Academy of Agricultural Sciences (SAAS). He serves as the Director of the Dairy Herd Improvement (DHI) Laboratory and a Position Expert for the China Agric Research System for Dairy (CARS-Dairy). He is also a designated member of the National Dairy Genetic Improvement Plan (2021–2035) Expert Committee and concurrently serves as a Doctoral Supervisor at China Agricultural University (CAU).

In recent years, Dr. Li has led more than 10 major research initiatives as the Principal Investigator (PI), including projects under China's "14th Five-Year" National Key R&D Program and the Shandong Provincial Agricultural Seed Industry Engineering Project. He holds 12 authorized national invention patents. In recognition of his outstanding contributions to the dairy industry, he has been honored as a Shandong Provincial High-Level Talent and has received multiple prestigious awards, including the First Prize (ranked 2nd) and the Second Prize (ranked 1st) of the Shandong Provincial Science and Technology Progress Award.



Jie Wu, Bright Farming Co., Ltd.

Progress in Dairy Cattle Breeding Research in Shanghai

Jie Wu, Ph.D., Senior Animal Husbandry Specialist, currently serves as Director of the Project Management Department at Bright Dairy Farming Co., Ltd. Her work focuses on dairy cattle genetics and breeding, research project management, and the commercialization and application of scientific and technological innovations.

Dr. Wu has led and participated in numerous research initiatives, including provincial- and ministerial-level science and technology programs and the Shanghai Joint Breeding Program, serving as a sub-project leader on several key projects. She has published four SCI-indexed papers as first author and more than ten articles in leading Chinese core journals. In addition, she contributed to the development of a Shanghai municipal technical standard and participated in the translation of a professional academic book.

In recognition of her contributions to dairy cattle breeding and technological innovation, Dr. Wu was selected for the Oriental Talent Program of Shanghai State-owned Assets and State-owned Enterprises and received the First Prize for Technological Advancement from the China Dairy Industry Association.



**Jinshi Zhao, Xinniu Shuzhi (Beijing)
Technology Co., Ltd.**

***Advances and Achievements in AI-Powered Automated
Measurement of Cattle Body Size and Conformation
Evaluation***

Jinshi Zhao, Ph.D. is the Founder of the XinNiuren Smart Farming System. He received his Ph.D. in Animal Nutrition

from China Agricultural University, completed a visiting scholarship at Cornell University, and conducted postdoctoral research in Agricultural Economics and Management at the Chinese Academy of Social Sciences.

Dr. Zhao has dedicated his career to the application of information and intelligent technologies across livestock production, breeding, and product processing management. He has developed industry-leading digital and AI-driven solutions for dairy cattle, beef cattle, sheep production, and poultry breeding, with broad commercial adoption throughout China.

In May 2012, he launched XinNiuren, China's first cloud-based dairy farm management platform. To date, the system has been deployed on more than 3,000 farms and serves over two million dairy and beef cattle nationwide. His team has developed a proprietary ultra-high-density, high-throughput AI-powered cattle identification algorithm capable of visual animal tracking, posture recognition, and precision phenotyping.

Dr. Zhao's innovations also include intelligent 3D vision systems for automated measurement of body height, body dimensions, and body condition traits, as well as advanced animal behavior recognition technologies that enable real-time monitoring of feeding, drinking, health status, and overall livestock performance. His work has played a significant role in advancing precision livestock farming and smart agriculture in China.



**Kai Wang, Yuan Longping High-tech
Agriculture Co., Ltd.**

***Exploration of Intelligent Rice Breeding Technologies in
Longping High-tech***

Dr. Kai Wang (born August 1985) is a Professor and Research Scientist. He serves as a member of the expert drafting panel for China's "14th Five-Year" National Key R&D Program. Dr.

Wang has been recognized as a Class-C High-Level Talent in Changsha, a "Huxiang Young Talent" of Hunan Province, a Science and Technology Leading Talent under the Furong Project, and a recipient of the Hunan Provincial Youth Science and Technology Award. He currently holds the positions of Vice President of the Longping High-tech Seed Industry Research Institute and

General Manager of Longping High-tech (Hainan) Overseas Seed Industry R&D Co., Ltd. Additionally, he serves as the Deputy Director of both the National Key Laboratory of Hybrid Rice and the Key Laboratory of Southern Rice Variety Innovation under the Ministry of Agriculture and Rural Affairs (MARA), and is a Committee Member of the Hunan Provincial Rice Variety Approval Committee.

Long dedicated to rice molecular breeding, Dr. Wang has achieved a series of groundbreaking outcomes in fields such as rice molecular design breeding, intelligent breeding, heterosis genetic dissection, and the discovery and utilization of elite genes. Since the "13th Five-Year" period, he has led or contributed to more than 10 national and provincial-level research initiatives as the Principal Investigator (PI). He has co-bred over 20 new hybrid rice varieties, secured 21 Plant Variety Protection (PVP) rights, and filed 17 invention patents. As the first or corresponding author, he has published over 30 research papers in top-tier international journals, including *Theoretical and Applied Genetics (TAG)* and *Plant Biotechnology Journal*. Furthermore, he has co-authored one monograph and has been honored with the Grand Prize of the Dabeinong Science and Technology Award, alongside two Grand Prizes of the CITIC Group Science and Technology Award.



Lei Li, CCID Academy for Industry and Information Technology, MIIT

Pilot Scale Platforms, "Open Competition" Mechanism, and Iconic Product Policies in the Field of Biomanufacturing

Dr. Lei Li is an Associate Research Fellow and a former Postdoctoral Fellow at Peking University. He has long been

dedicated to research in microbiology, gene function dissection, and biomanufacturing. Dr. Li has achieved a series of significant research outcomes focused on pathogenic mechanisms, bacterial secretion systems, antimicrobial resistance (AMR), and gene functions. His findings have been published in numerous high-impact, internationally renowned journals, with multiple studies featuring him as the first or corresponding author.

In recent years, his expertise has expanded into the strategic and developmental research of the biomanufacturing industry. He has been deeply involved in the formulation of biomanufacturing policies, industrial planning, and major research initiatives for national ministries and local governments. He has led or contributed to multiple biomanufacturing industrial development projects commissioned by the Ministry of Industry and Information Technology (MIIT) and various provinces and municipalities. Notably, Dr. Li participated in the compilation of the 2023 National Biomanufacturing Industry White Paper and served as the lead author for the biomanufacturing chapter of the major national manufacturing powerhouse initiative, titled Research on Key Strategic Layouts of

Industrial Science and Technology Innovation for Cultivating New Quality Productive Forces. Furthermore, he actively contributed to the formulation of local industrial blueprints, including the Three-Year Action Plan for Promoting High-Quality Development of the Biomanufacturing Industry in Hainan Province (2025–2027).



Li Zhu, Sichuan Agricultural University

R&D and Application of "PigSeek" Swine Intelligent Breeding Decision Center

Dr. Li Zhu is a Professor, a Leading Talent under the National High-Level Talent Special Support Program ("Wanren Plan"), and an expert enjoying the Special Government Allowance from the State Council. He serves as a Position Scientist for

the China Agriculture Research System of Pygmy and Large Swine (CARS), a Member of the National Swine Genetic Improvement Plan Expert Committee, and a Member of the National Livestock and Poultry Genetic Resources Committee. He is also the Deputy Director of the National Key Laboratory of Swine and Poultry Breeding, an Academic Committee Member of the Professional Project Management Agency under the Science and Technology Development Center of the Ministry of Agriculture and Rural Affairs (MARA), a Sichuan Provincial Academic and Technical Leader, and an Outstanding Expert with Distinguished Contributions to Sichuan Province.

At Sichuan Agricultural University, Dr. Zhu serves as the Dean of the College of Animal Science and Technology and the Head of the Animal Husbandry Discipline. Concurrently, he holds key leadership roles in the industry, including Vice President of the Swine Science Branch of the Chinese Society of Animal Science and Veterinary Medicine (CSAVM), a Board Member of the 15th Council of CSAVM, and Chairman of the Sichuan Provincial Teaching Guidance Committee for Animal and Aquatic Sciences.

Dr. Zhu's research primarily focuses on the conservation, exploitation, and utilization of swine genetic resources, alongside the genetic selection and regulatory mechanisms of key economic traits in swine. He also closely collaborates with major swine production conglomerates to implement full-industrial-chain breeding and the integration and demonstration of standardized farming technology systems. He spearheaded the rediscovery, conservation, and development of the unique "Hao-Gan-Zui" type Neijiang pig (Wuhuang pig) and, as a principal researcher, has successfully bred two new swine varieties. As the primary contributor, he has been awarded the First, Second, and Third Prizes of the Sichuan Provincial Science and Technology Progress Award and has published over 200 research papers.



Li Lu, Wuhan University

Biosynthesis of High-Value Plant Compounds and Breeding of Functional Crops

Dr. Li Lu is a Distinguished Research Fellow at the School of Pharmaceutical Sciences, Wuhan University, and a Permanent Researcher at the Hongshan Laboratory in Hubei Province. Her research centers on the biosynthesis of high-value plant metabolites—such as pesticides, fragrances, and pharmaceutical molecules—and the breeding of functional crops. By integrating biosynthetic pathway elucidation, synthetic biology, and artificial intelligence (AI)-assisted enzyme discovery and mechanistic studies, she has successfully achieved the biosynthesis of various plant natural products, including salidroside, elemene, and nootkatone.

Dr. Lu has published a series of high-impact research papers in top-tier journals, including *Nature Communications*, *Journal of the American Chemical Society* (JACS), *Journal of Advanced Research*, and *Plant Biotechnology Journal*. She has spearheaded multiple research initiatives as the Principal Investigator (PI), including projects funded by the National Natural Science Foundation of China (NSFC) and sub-projects under the National Key R&D Program of China ("Synthetic Biology" Special Program). In recognition of her academic contributions, she was selected for the "Hubei Provincial Top-Notch Young Talents Program" and named a "Chutian Scholar of Hubei Province." Over the past two years, she has delivered six invited presentations at prominent academic conferences, including the 5th International Conference on Plant Metabolism (Sanya, 2024).

Additionally, she serves as a peer reviewer for prestigious international journals, such as *Nature Communications*, *Plant Communications*, *Plant Physiology*, *Journal of Agricultural and Food Chemistry*, and *ACS Chemical Biology*.



Lin Chen, Wuhan Yunzhen Technology Co., Ltd

Construction and Application of Intelligent-Driven Precise Maize Genomic Breeding Technology System

Dr. Lin Chen holds a Ph.D. and completed his postdoctoral research at China Agricultural University. He currently serves as a Senior Researcher at both the Nanchang Innovation Institute of Peking University and the Macro Agriculture

Research Institute of Huazhong Agricultural University. He is also the Founder & CEO of Wuhan Yunzhen Technology and a Standing Committee Member of the Smart Agriculture Branch of the Chinese Society of Agricultural Sciences. Previously the Co-founder and COO of ACON, Dr. Chen has dedicated over 20 years to the agricultural sector, making him one of China's earliest pioneers in applying artificial intelligence to biological breeding and smart farming. His long-term research focuses on agricultural large models, where he successfully established an intelligent breeding decision-making framework integrating "Genotype-Phenotype-Environment" multi-omics, providing crucial technological assurance for the digital transformation of biological breeding.



Man Wang, Baitu Shengke (Beijing) Intelligent Technology Co., Ltd.

Exploration and Application of xTrimo Bio-Foundation Model in the Field of Agricultural Breeding

Man Wang is the Director of Agricultural Products at BioMap. She graduated from the Swiss Federal Institute of Technology with a major in Chemical Biology, bringing a multi-

disciplinary background spanning life sciences, venture capital, and technology transfer. Previously a veteran investor in agritech, she successfully invested in and incubated multiple agricultural unicorns across breeding, biomanufacturing, genomic sequencing, and animal health, developing a systematic expertise in industry analysis and venture incubation to bridge advanced breeding research with commercial application. Joining BioMap in 2024, she now leads the solution design, market outreach, and commercialization of Life Science Large Language Models (LLMs) in agricultural scenarios. Her work focuses on AI-driven smart breeding, accelerating the integration of LLM technology with the agricultural industry to enhance breeding efficiency and upgrade the agricultural innovation ecosystem.



Ning Li, Sunlon Group

Application of AI and Synthetic Biology in Molecular Breeding

Prof. Ning Li is Chief Scientist of Beijing Capital Agribusiness Group Co., Ltd. and a distinguished scientist in animal molecular genetics and breeding. He previously served as a Chair Professor at China Agricultural University and Director of the State Key Laboratory of Agricultural Biotechnology.

Prof. Li has held numerous national leadership positions in China's agricultural science and technology programs, including Chair of the Expert Committee for Agriculture under the National High-Tech Research and Development Program (863 Program), Chair of the Expert Committee on Reproduction and Development under the National Basic Research Program (973 Program), and Deputy Chief Engineer of the National Major Program for New Variety Breeding of Genetically Modified Organisms. He has also served as Chief Scientist for National 973 Projects and for a Major Innovative Research Group funded by the National Natural Science Foundation of China.

A pioneer in animal genetics and breeding, Prof. Li has made outstanding contributions to agricultural biotechnology and animal breeding innovation. He is a recipient of the National Science Fund for Distinguished Young Scholars, the First Prize of the Yangtze River Scholar Achievement Award from the Ministry of Education, the National May 1st Labor Medal, and the honorary title of National Model Worker.

His research achievements have been recognized with two National Technological Invention Awards (Second Class) and four National Science and Technology Progress Awards (Second Class). As first or corresponding author, he has published more than 800 SCI-indexed papers in leading international journals, including *Nature*, *Nature Genetics*, *Proceedings of the National Academy of Sciences (PNAS)*, *Cell Research*, *Cell Discovery*, *Science Bulletin*, *Genome Research*, and *PLOS Genetics*. He also holds more than 50 international PCT and Chinese invention patents.



Ping Lu, Institute of Genetics and Developmental Biology, CAS

Mining and Breeding Utilization of Disease Resistance Genes in Wheat

Dr. Ping Lu is an Associate Professor at the Institute of Genetics and Developmental Biology, Chinese Academy of Sciences (CAS). He is recognized as a National-Level

Outstanding Young Talent and is a member of the Youth Innovation Promotion Association of CAS. Dr. Lu's research primarily focuses on the cloning of wheat disease resistance genes, the elucidation of their underlying molecular mechanisms, and the innovation of disease-resistant, high-yielding germplasm. His groundbreaking work has been published in prestigious international scientific journals, including Science, Nature Communications, and Developmental Cell. Additionally, he holds 4 authorized domestic invention patents (out of 9 applications), has contributed to the registration of 2 wheat varieties, and leads several national research initiatives funded by the National Natural Science Foundation of China (NSFC) and the National Key R&D Program of China.



Qin Zhang, Shandong Agricultural University

How to Interpret Missing Heritability in Molecular Breeding

Qin Zhang, Ph.D. is a Professor and Doctoral Supervisor at Shandong Agricultural University and a recipient of the National Science Fund for Distinguished Young Scholars of China.

Prior to joining Shandong Agricultural University, Prof. Zhang served as a Professor at China Agricultural University. He has held numerous leadership positions in the field of animal genetics and breeding, including Executive Council Member of the Chinese Association of Animal Science and Veterinary Medicine, Chair of both the Animal Genetics and Breeding Branch and the Information Technology Branch, Director of the Key Laboratory of Animal Genetics, Breeding and Reproduction of the Ministry of Agriculture, Member of the Swine Committee of the National Commission on Animal Genetic Resources, and Deputy Chair of the Expert Committee for the National Swine Genetic Improvement Program.

Prof. Zhang's research focuses on animal statistical genetics and molecular breeding. His work has made significant contributions to the development and application of quantitative genetic methodologies, genomic analysis, and molecular breeding technologies for livestock genetic improvement.



Sheng Luan, Yellow Sea Fisheries Research Institute, Chinese Academy of Fishery Sciences

Intelligent Phenotyping and Genomic Selection Breeding in Pacific White Shrimp.

Sheng Luan, Ph.D. is a Professor and Doctoral Supervisor, serving as Deputy Director of the Breeding Research Division

at the Yellow Sea Fisheries Research Institute, Chinese Academy of Fishery Sciences. He is also a member of the 6th and 7th National Committee for the Evaluation and Approval of Aquatic Germplasm and Improved Varieties.

His research focuses on genetic breeding and key technologies for the aquaculture seed industry, particularly in shrimp species. As a principal contributor, he has played a leading role in the development of nine nationally approved new aquatic varieties in China.

Dr. Luan currently serves as Position Scientist of the National Shrimp and Crab Industry Technology System and has led more than ten national research projects, including grants from the National Natural Science Foundation of China and the National Key Research and Development Program of China.

He has received six first-class awards at the provincial, ministerial, and industry levels. In recognition of his scientific achievements and contributions to aquaculture breeding, he was selected for the Ministry of Agriculture and Rural Affairs' Shennong Young Talent Program and appointed as a Distinguished Expert under the Taishan Scholars Program of Shandong Province. He is also a recipient of the Shandong May 1st Labor Medal.



Wenfa Lv, Jilin Agricultural University

Establishment and Application of a Joint Breeding System for Angus Cattle

Wenfa Lü, Ph.D. is a Distinguished Professor (Level II), Doctoral Supervisor, and Vice President of Jilin Agricultural University. He is a recipient of the State Council Special Government Allowance and has been selected for China's

National Major Talent Program. He currently serves as Chief Scientist of a National Key Research and Development Program project, Director and Position Scientist of the Genetic Improvement Research Division of the National Beef Cattle and Yak Industry Technology System, a member of the Cattle Committee of the National Commission on Livestock and Poultry Genetic Resources, and Chair of the Cattle Committee of the China Association of Agricultural Science Societies.

Prof. Lü has devoted his career to the innovation of cattle germplasm resources and reproductive regulation. His research focuses on the genetic and molecular mechanisms underlying heterosis in cattle, reproductive physiology and its regulatory pathways, as well as the development of cryopreservation and embryo biotechnologies for the conservation and rapid propagation of valuable cattle genetic resources.

He has led more than 40 national and international research projects, including projects under the National Key Research and Development Program of China, the Regional Innovation and Development Joint Fund of the National Natural Science Foundation of China (NSFC), and NSFC international cooperation programs. He has published over 200 scientific papers, including more than 80 articles indexed in SCI journals. His achievements have been recognized with two First-Class, two Second-Class, and two Third-Class Science and Technology Progress Awards of Jilin Province. In addition, he holds four authorized patents.



**Wentao Cai, Institute of Animal Sciences,
CAAS**

***Technological Innovation in Meat Duck Genomic Breeding
and the Development of Smart Breeding Platforms***

Wenfa Lü, Ph.D. is a Distinguished Professor (Level II),
Doctoral Supervisor, and Vice President of Jilin Agricultural
University. He is a recipient of the State Council Special

Government Allowance and has been selected for China's Dr. Wentao Cai
specializes in the development of genetic evaluation and breeding algorithms
for livestock and poultry, genomic selection technologies, and the genetic
dissection of complex traits. He established a comprehensive genomic selection
system for White Pekin ducks and developed IASBLUP, an efficient breeding
value evaluation algorithm. He also created the IASBreeding intelligent breeding
platform, which integrates phenotype management, genetic evaluation,
selection, and mating optimization, providing key technological support for
precision and smart breeding in the duck industry.

As first or corresponding author, Dr. Cai has published more than 20 SCI-indexed
papers in leading journals, including *Genome Research*, *PLOS Genetics*, and
Genomics, Proteomics & Bioinformatics. He is also the first inventor of four
granted Chinese invention patents.

Dr. Cai has been selected for the Beijing Young Talent Support Program and the
Young Innovation Program of the Chinese Academy of Agricultural Sciences
(CAAS).



**Xiangchao Gan, Nanjing Agricultural
University**

***Rice Digital Twin Construction Technology and Whole-
Genome Selection Models***

Dr. Xiangchao Gan is a Professor and Doctoral Supervisor at
the College of Agronomy, Nanjing Agricultural University. He
previously served as a Genetic Statistician at the Wellcome

Centre for Human Genetics, University of Oxford, and subsequently as a Research
Group Leader and Independent PI at the Max Planck Institute for Plant Breeding
Research in Germany. Dr. Gan's research primarily focuses on big data analytics
and genomics, with a dedicated emphasis on developing foundational
technologies for intelligent design breeding through artificial intelligence and
statistical frameworks.



Xiangfeng Wang, China Agricultural University

AI-Empowered Plant Biological Breeding

Dr. Xiangfeng Wang is a Professor and Doctoral Supervisor in the Department of Crop Genetics and Breeding, College of Agronomy, China Agricultural University (CAU). He also serves as the Deputy Director of the National Maize Improvement

Center. Dr. Wang earned his Ph.D. in Bioinformatics from Peking University, followed by postdoctoral research in the Department of Molecular, Cellular and Developmental Biology at Yale University and the Harvard T.H. Chan School of Public Health. He previously served as an Assistant Professor in the College of Agriculture and Life Sciences at the University of Arizona.

Dr. Wang's research primarily focuses on intelligent biological breeding in plants and animals. His work leverages artificial intelligence to develop agro-biological large language models (LLMs), alongside advanced computational models and tools for protein design, gene regulatory elements, and gene editing site selection. These technologies aim to achieve the intelligent design and targeted improvement of agricultural biological traits, breaking through traditional bottlenecks in utilizing natural variation for breeding. He has published over 90 papers in prestigious international journals, including *Genome Biology*, *Trends in Plant Science*, *Science Bulletin*, *The Plant Cell*, *PNAS*, *Molecular Plant*, and *The Plant Journal*.



Xiaofeng Gu, Biotechnology Research Institute, CAAS

AI-Driven Frontier Biotechnology and Its Application in Breeding

Dr. Xiaofeng Gu is a Tier-2 Professor/Research Scientist at the Chinese Academy of Agricultural Sciences (CAAS) and serves as the Deputy Director-General of the Department of Major

S&T Projects at CAAS. He was selected for the National Overseas High-Level Talents Program (Young Professionals) in 2015, the National High-Level Talent Special Support Program (Leading Talents in Science and Technology Innovation) in 2021, and was awarded the State Council Special Government Allowance in 2023. By integrating multidisciplinary approaches across artificial intelligence, synthetic biology, and epigenetics, Dr. Gu's research focuses on the intelligent prediction and design of complex crop traits. Over the past five years, he has led numerous national-level initiatives as the Principal Investigator (PI), including the National Key R&D Program of China and Key Projects of the National Natural Science Foundation of China (NSFC). He has published over 30

research papers in prestigious journals such as Nature, Cell Research, and Molecular Plant, with a cumulative impact factor exceeding 300. Additionally, Dr. Gu serves as the Director of the Key Laboratory of Agricultural Genomics (Beijing) of the Ministry of Agriculture and Rural Affairs (MARA), Executive Deputy Director of the National Innovation Sub-Center for Digital Seed Industry (Crop Breeding), Standing Director and Secretary-General of the Chinese Society of Agricultural Biotechnology, and Standing Director of the Crop Science Society of China.



Xiaolong Wang, Northwest A&F University

Construction and Application of Biological Breeding Systems in Sheep

Xiaolong Wang, Ph.D. is a Distinguished Professor (Level II) at Northwest A&F University and a Changjiang Distinguished Professor appointed by the Ministry of Education of China. He serves as a Position Scientist of the National Technical System

for Cashmere Goat Industry, Director of the Shaanxi Provincial Innovation Team for Key Research Areas, Director of the Shaanxi Engineering Research Center for Gene Editing and Breeding of Livestock, and Chair of the Gene-Edited Animals Committee of the International Society for Animal Genetics (ISAG).

Professor Wang also serves as Executive Council Member of both the Animal Genetics and Breeding Branch and the Sheep Science Branch of the Chinese Association of Animal Science and Veterinary Medicine. In addition, he is Associate Editor or Editorial Board Member of several journals, including Reproduction, Fertility & Development, Transgenic Research, Stress Biology, Animal Research and One Health (AROH), China Agricultural Science and Technology Review, and Chinese Journal of Animal Science.

His research focuses on sheep molecular breeding and gene-editing technologies. He has led more than 20 major research projects, including the National Major Special Program for Biological Breeding, the National Key Research and Development Program of China, and Joint Funds of the National Natural Science Foundation of China. As corresponding author, he has published more than 40 papers in leading journals, including Nature, Nature Chemical Biology, Cell Research, Nature Communications, and Genome Biology. Professor Wang has received numerous honors and awards, including the First Prize of the Shaanxi Provincial Science and Technology Progress Award, the Second Prize of the DBN Science and Technology Award, the Baosteel Outstanding Teacher Award, the Youth Science and Technology Award of the Chinese Association of Agricultural Science Societies, and the Shaanxi Provincial Youth Science and Technology Award.



Xixia Huang, Xinjiang Agricultural University

An Overview of the Application of Genomic Selection Technology in Xinjiang Brown Cattle

Prof. Xixia Huang is a Distinguished Professor (Level II) and Ph.D. Supervisor at Xinjiang Agricultural University. She has dedicated her career to teaching, research, and extension in animal genetics, breeding, and cattle production. Prior to joining academia, she spent three years at the Hutubi Breeding Cattle Farm in Xinjiang, where she gained extensive hands-on experience in cattle breeding and reproduction.

Prof. Huang currently serves as Vice Chair of the China Dual-Purpose Dairy and Beef Cattle Breeding Innovation Alliance, Vice Chair of the China Simmental Cattle Breeding Committee, Chief Expert of the Xinjiang Beef Cattle Industry Technology System, and Lead Expert of the Xinjiang Livestock and Poultry Seed Industry Enhancement Program.

Her research focuses on cattle genetic improvement, breeding technologies, and sustainable livestock production. She has led more than 20 national and provincial research projects, including grants from the National Natural Science Foundation of China and subprojects under the National Key Research and Development Program during China's 14th Five-Year Plan period.

Prof. Huang has published more than 150 papers in leading Chinese journals as corresponding author, including over 40 SCI-indexed publications. She has contributed to the development of 12 industry and regional standards, holds 20 authorized patents and 5 software copyrights, and has co-authored six academic books.

Her contributions have been recognized with numerous honors, including the Da Bei Nong Science and Technology Award, the First Prize of the Xinjiang Uygur Autonomous Region Science and Technology Progress Award, four Second Prizes, and three Third Prizes of the same award.



Yachun Wang, China Agricultural University

Development of Breeding Selection Indices for Stress Resistance in Dairy Cattle Based on Multi-Source Data

Yachun Wang, Ph.D. received her doctoral degree in Animal Genetics and Breeding from the University of Guelph, Canada, in 2002. She is currently a Professor and Doctoral Supervisor in the College of Animal Science and Technology

at China Agricultural University, where she teaches core courses including Biostatistics in Animal Science and Animal Breeding.

Prof. Wang serves as Director of the Genetic Improvement Research Division of the National Dairy Industry Technology System and Position Scientist for Breeding Program Design and Nucleus Herd Development. She is also Chair of the Expert Committee for the National Dairy Cattle Genetic Improvement Program, Executive Vice Chair of the Breeding Committee of the Dairy Association of China, and Deputy Chair of the Cattle Committee of the National Commission on Livestock and Poultry Genetic Resources.

She has led numerous national and provincial research projects, including major initiatives under China's National Science and Technology Support Program. Her research focuses on dairy cattle breeding strategies and nucleus herd development, the genetic basis of functional traits, and the development and application of novel breeding traits and technologies for genetic improvement. Prof. Wang is internationally recognized for her contributions to dairy cattle genetics and breeding, particularly in breeding program design, genetic evaluation, and the integration of genomic technologies into dairy cattle improvement programs in China.



Yan Chen, Institute of Animal Sciences, CAAS

Diversity and Breed Identification of Chinese Cattle Genetic Resources

Dr. Yan Chen received her Ph.D. from the Chinese Academy of Sciences in 2010 and completed postdoctoral training at the Institute of Microbiology, Chinese Academy of Sciences, from 2010 to 2013. She was a Visiting Scholar at Washington

State University, USA, from 2018 to 2019. Since 2013, she has been with the Institute of Animal Sciences, Chinese Academy of Agricultural Sciences (CAAS), where she focuses on beef cattle breeding, bovine genomics, and the characterization and evaluation of animal genetic resources.

Dr. Chen currently serves as a core expert of the Cattle Genetics and Breeding Innovation Team and as a council member of the Cattle Science Branch of the Chinese Society of Animal Science and Veterinary Medicine. Her research centers on genetics and genomics, with particular emphasis on beef cattle genetic

improvement, conservation and utilization of germplasm resources, and the development and dissemination of new cattle breeds.

Her major contributions include: (1) supporting the development of new beef cattle breeds, including Huaxi Cattle and Pingliang Red Cattle, through studies on population genetics, production performance, and meat quality improvement; (2) leading the design and development of a molecular breeding SNP chip for Chinese beef cattle, significantly improving the accuracy and cost-effectiveness of genomic selection; (3) applying multi-omics approaches to investigate the genetic architecture of economically important traits, including growth, carcass characteristics, meat quality, and flavor; (4) contributing to the Third National Survey of Livestock and Poultry Genetic Resources, cattle breed identification systems, and conservation programs for endangered breeds, while conducting comprehensive analyses of the genetic diversity and population structure of indigenous Chinese cattle breeds to support precise characterization and scientific evaluation of cattle germplasm resources; and (5) participating in the establishment of breeding and joint breeding innovation technologies for Huaxi Cattle, a project that received the First Prize of the Beijing Science and Technology Award.

Dr. Chen has led or participated in more than ten major research projects funded by the National Natural Science Foundation of China, the Beijing Natural Science Foundation, the National Key Research and Development Program of China, and the Ministry of Agriculture and Rural Affairs. She has published more than 70 peer-reviewed papers, including over 20 papers as first or corresponding author.



Yong Xu, Beijing Academy of Agriculture and Forestry Sciences

Theory and Practice of Molecular Breeding in Watermelon

Dr. Yong Xu is a Professor and Research Scientist at the Beijing Academy of Agriculture and Forestry Sciences (BAAFS). He previously served as the Director of the National Engineering Research Center for Vegetables, Director of the

National Watermelon and Melon Improvement Center, Chief Scientist of the China Agriculture Research System for Watermelon and Melon (CARS), Vice President of the Chinese Society for Horticultural Science, and Vice President of the China Seed Association. His research focuses primarily on the genetics, breeding, and molecular biology of watermelon and melon.

Dr. Xu successfully elucidated the genomic variation and molecular mechanisms underlying the evolution of the watermelon species, clarified the molecular regulatory mechanisms governing key quality and agronomic traits such as fruit sugar content, and established a comprehensive technological system for

marker-assisted selection (MAS) and gene editing in watermelons and melons. As a corresponding author, he has published over 150 papers in prestigious journals, including *Nature Genetics*, and holds 24 authorized national invention patents. As the primary contributor, he has bred over 40 varieties secured under Plant Variety Protection (PVP) rights, with four selected as flagship varieties by the Ministry of Agriculture and Rural Affairs (MARA) and another four featured in the National Catalog of Excellent Crop Varieties. The "Jingxin," "Jingmei," "Jingcai," and "Duomi" series of watermelon and melon varieties he developed have spearheaded the generational upgrade of watermelon and melon cultivars across China, generating profound socio-economic benefits. As the primary contributor, Dr. Xu was awarded the Second Prize of the National Science and Technology Progress Award in 2014, two First Prizes of the Beijing Science and Technology Award, and the First Prize of the Shennong China Agricultural Science and Technology Award. He is also the recipient of the 15th Guanghua Engineering Science and Technology Prize, the inaugural National Award for Excellence in Innovation, the Top Ten Outstanding Figures in the Chinese Seed Industry, and has been named a Leading Talent under the National High-Level Talent Special Support Program ("Wanren Plan").



Yongbin Liu, Inner Mongolia Agricultural University

Virtual Cells in Molecular Breeding of Meat Sheep

Prof. Yongbin Liu is President and Deputy Secretary of the Party Committee of Inner Mongolia Agricultural University. He serves as Chief Scientist of the China Agriculture Research System for Mutton Sheep and is a Distinguished Research

Professor (Level II). He is also Director of the National Sheep Genetic Evaluation Center, the Ministry of Agriculture and Rural Affairs Sheep Performance Testing Station, and the National Engineering Laboratory approved by the National Development and Reform Commission. In addition, he serves as Vice Chair of the National Sheep Committee and as a member of the National Committee for Sheep Genetic Improvement.

Prof. Liu is a nationally recognized leader in sheep genetics, breeding, and genetic evaluation. He has been honored as a National Young and Middle-Aged Expert with Outstanding Contributions under China's National Hundred, Thousand and Ten Thousand Talents Project, a recipient of the State Council Special Government Allowance, a Leading Scientist under the National Ten Thousand Talents Program, a National Outstanding Professional and Technical Talent, and a Shennong Leading Talent of the Ministry of Agriculture and Rural Affairs.

His research has made significant contributions to sheep breeding technologies, genetic evaluation systems, and the sustainable development of the sheep industry in China. He has received the Second Prize of the National Science and Technology Progress Award, two First Prizes and one Second Prize of the Inner Mongolia Autonomous Region Science and Technology Progress Award. Prof. Liu has published more than 100 peer-reviewed papers, holds two international invention patents and twelve Chinese invention patents, and has authored or co-authored five academic monographs.



Yongcai Huang, Sichuan Agricultural University

Molecular Genetic Basis of High-Protein and Nitrogen-Efficient Trait Formation in Maize

Dr. Yongcai Huang is a Professor and Doctoral Supervisor at Sichuan Agricultural University. He has been awarded the National Excellent Young Scientists Fund (National Youqing),

and is recognized as a Sichuan Provincial Academic and Technical Leader and a Sichuan Provincial Exceptional Young Scholar. He was also selected for the Young Elite Scientist Sponsorship Program by the China Association for Science and Technology (CAST). Dr. Huang has received numerous prestigious honors, including the Ministry of Education Youth Award, the Ray Wu Prize, the President's Award of the Chinese Academy of Sciences (CAS), the CAS 100 Excellent Doctoral Dissertations Award, the Outstanding Doctoral Graduate of Shanghai, the Research Rising Star Award from the Shanghai Society of Plant Physiology and Molecular Biology, and the Rising Star in Life Sciences Award at the World Life Science Conference.

His research primarily focuses on the molecular genetic mechanisms and practical applications of quality regulation and nitrogen use efficiency (NUE) in maize. Dr. Huang pioneered the cloning of THP9 and THP3—the major quantitative trait loci (QTLs) controlling high protein and high nitrogen efficiency—from wild maize, revealing the molecular mechanisms by which they synergistically enhance protein content in both grains and the whole plant by optimizing amino acid synthesis and carbon-nitrogen balance. Furthermore, his work discovered for the first time that chloroplast plastoglobules serve as a central metabolic hub for nitrogen assimilation, deciphering how key nitrogen-assimilating enzymes assemble into a metabolon within plastoglobules to achieve highly efficient nitrogen assimilation. As a (co-)first or corresponding author, he has published his groundbreaking findings in top-tier international journals, including *Nature* (3 papers), *The Plant Cell*, and *Nature Communications* (2 papers), providing core gene resources and theoretical foundations for breeding high-protein and nitrogen-efficient maize lines.



**Yunbi Xu, Peking University Institute of
Modern Agriculture / Institute of Crop
Sciences, CAAS**

Enviromics and Molecular Plant Breeding

Dr. Yunbi Xu is a Senior Research Fellow at the Beijing University Institute of Modern Agriculture, a Joint Research Fellow at the Institute of Crop Sciences, Chinese Academy of

Agricultural Sciences (CAAS), and a National Distinguished Expert. His previous appointments include Associate Professor and Deputy Chair of the Department of Agronomy at Zhejiang Agricultural University; Rice Molecular Breeding Scientist at RiceTec Inc. (USA); Postdoctoral Associate and Research Associate at Cornell University; and Principal Scientist in Maize Molecular Breeding and Director of the Applied Biotechnology Center at the International Maize and Wheat Improvement Center (CIMMYT). He has served on the editorial boards of eight international journals and as the Executive Associate Editor-in-Chief of *The Crop Journal*.

Dr. Xu has been long dedicated to plant molecular breeding, focusing on the establishment and development of theoretical frameworks, technologies, platforms, and application systems for molecular breeding. In recent years, his research has advanced into enviromics and its agricultural applications. He is the author of the landmark monographs *Molecular Quantitative Genetics* (in Chinese) and *Molecular Plant Breeding* (in English), and served as the Editor-in-Chief of the English volume *Crop Germplasmics*. He has published over 180 papers with more than 20,000 citations, and has been consistently recognized as a Highly Cited Researcher for multiple consecutive years.



Zhuocheng Hou, China Agricultural University

Frontier Practices in Precision Animal Reproduction and Embryo Engineering Technology: Timed Insemination, OPU-IVF, and Embryo Genomic Selection

Prof. Zhuocheng Hou is a Professor at the College of Animal Science and Technology, China Agricultural University. He currently serves as President of the Poultry Science Branch

and Vice President of the Information Technology Branch of the Chinese Society of Animal Science and Veterinary Medicine. He is also Executive Deputy Director of the National Engineering Laboratory for Livestock and Poultry Breeding and a member of both the National Committee on Animal Genetic Resources and the National Waterfowl Genetic Improvement Program Committee.

Prof. Hou has made significant contributions to poultry genomics and breeding. He led the assembly and analysis of the genomes of several avian species, including the Beijing duck, mallard duck, and Shaoxing duck. The Beijing duck genome has been adopted as the reference duck genome by the internationally renowned Ensembl database. His research has advanced the understanding of the genetic mechanisms underlying domestication and economically important traits in ducks, including dwarfism, fat deposition, and eggshell formation.

He established a whole-genome selection system for Beijing ducks and successfully translated this technology into commercial breeding applications, leading to the development of the new roast-duck breed, "Jingdian Beijing Duck." Together with collaborators, he was among the first to propose a stem cell-based breeding framework for livestock and poultry, which has been recognized by the Chinese Academy of Engineering as a potentially disruptive technology for next-generation animal breeding.

Prof. Hou has published more than 50 SCI-indexed papers as first or corresponding author in leading journals, including Nature Communications. His achievements have been recognized with numerous prestigious awards, including the Second Prize of the National Science and Technology Progress Award, the First Prize of the Beijing Science and Technology Award, the Second Prize of the Ministry of Education Science and Technology Progress Award, and the First Prize of the National Agriculture, Animal Husbandry and Fisheries Harvest Award.

Notes

Day:

Date & Month:

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