Position Description

Position title	Quantitative Genomics Scientist
Reports to	Breeding Technology Lead
Business unit	Variety Development
Location	The position is located primarily in Meringa (Flexible)
Direct reports	NA

Position details

SRA purpose	Sugar Research Australia invests in and manages a portfolio of research, development and adoption projects that drive productivity, profitability and sustainability for the Australian sugarcane industry. We have highly dedicated and passionate people working on industry-critical projects to deliver tangible value outcomes and impact for our industry stakeholders.
Business unit purpose	The Variety Development business unit leads the development of world-class varieties to maximise a whole-of-industry profitability for sugar production, from the creation of new germplasm through to supply of new varieties to productivity service organisations for distribution to growers. The business unit continuously seeks to innovate variety production methods to improve efficiency for the industry and identify bio-security threats to protect the Sugar Industry. It incorporates novel traits into elite new varieties to improve profitability in current and future markets and identifies industry trends and issues impacting commercial variety performance. Long-term perspectives and plans are required to support future product diversification opportunities and potential changes to the production environment.
Position purpose	The Quantitative Genomics Scientist will drive the development and deployment of genomics-driven computational breeding, integrating high-dimensional genomic and phenotypic information through advanced statistical methods to translate multi-omics data into trait prediction models, crossing strategies, and simulations that inform breeding decisions across the pipeline.
Key responsibilities	• Develop, validate, and continuously refine genomic and genotype-to-phenotype prediction models (GBLUP, Bayesian, machine learning-based models) for key agronomic, physiological, quality, and disease resistance traits. • Benchmark and continuously improve prediction accuracy using cross-validation, forward-prediction schemes, and updated training populations. • Incorporate multi-environment trial data, GxE interactions, and improved phenotypic data into prediction frameworks. • Integrate multi-omics data streams (genomics, phenomics, environomics) where available and construct multi-trait prediction equations to improve model performance. • Support the design and implementation of simulation-based breeding program optimisation strategies (genetic gain vs cost vs cycle time). • Develop and refine genomic prediction models tailored to complex polyploid allele dosage dynamics and non-additive genetic effects. • Contribute to the development of in-silico genomics-driven crossing simulation tools to predict progeny performance and optimise crossing designs and mate allocation strategies. • Work closely with Variety Development leadership team to deliver actionable insights and to ensure alignment of computational tools with breeding program needs. • Publish research outputs in high-impact journals and communicate findings via conference presentations and technical reports. • Contribute to or lead competitive research grant applications in alignment with program needs.

	• Demonstrates commitment to fostering the continuous development of a safer, healthier and more sustainable workplace at SRA, in a way that would be expected for this position. • Adhere to SRA's policies, procedures, and Code of Conduct for Staff. • Ensure compliance obligations are upheld, and risks are managed. • Own your professional growth by engaging in development opportunities which enhance your skills and career. • Any other duties as required from time to time.

Key success factors

Experience, knowledge and capabilities	**Essential** • 3+ years of postdoctoral or industry experience in quantitative genetics, genomics, computational biology, or related field. • Strong background in quantitative genetics and genomic analysis methods. • Practical experience building and deploying genomic selection models for plant breeding. • Demonstrated experience in working in crop improvement programs and translating computational findings to applied breeding outcomes. • Demonstrated experience with handling high-throughput genomic and phenotypic data. • Advanced proficiency in developing reproducible statistical pipelines in R/Python. • Strong track record of peer-reviewed publications in high-impact journals. • Demonstrated ability to work collaboratively within multidisciplinary research teams. **Desirable** • Relevant research experience in sugarcane or other polyploid crops. • Experience with multi-omics data integration and machine learning frameworks. • Familiarity with crossing simulation, mate allocation, or breeding program simulation approaches.
Qualifications, licences and training	**Essential** • Ph.D. in Quantitative Genetics, Plant Breeding, Bioinformatics, Genomics, or related field. • A current manual driver's licence is required to drive SRA vehicles. **Desirable** • Postgraduate qualification with a demonstrated focus on complex or polyploid crops.