IWYP International Wheat Yield Partnership

Research to Deliver Wheat for the Future

2016-2023

IWYP RELATED RESEARCH

Publications

IWYP International Wheat Yield Partnership

Research to Deliver Wheat for the Future

IWYP RELATED RESEARCH PUBLICATIONS (2016-23)

PROJECT PI	TITLE	YEAR
Andrew Merchant	William T Salter, Andrew Merchant, Richard M Trethowan, Richard A Richards, Thomas N Buckley, Wide variation in the suboptimal distribution of photosynthetic capacity in relation to light across genotypes of wheat, AoB PLANTS, Volume 12, Issue 5, October 2020, plaa039, https://doi.org/10.1093/aobpla/plaa039	2020
Andrew Merchant	Salter W. T, Merchant A, Buckley T. N., (2018) PARbars: cheap, easy to build ceptometers for continuous measurement of light interception in plant canopies. Journal of Visualized Experiments	2019
Andrew Merchant	Salter W. T, Merchant A, Richards, RA Trethowan R, Buckley T. N. (2019) Rate of photosynthetic acclimation to fluctuating light varies widely among genotypes of wheat. Journal of Experimental Botany	2019
Andrew Merchant	Salter, W. T., M. E. Gilbert, and T. N. Buckley. 2018. Time-Dependent Bias in Instantaneous Ceptometry Caused by Row Orientation. Plant Phenome J. 1:180004. doi:10.2135/tppj2018.07.0004	2018
Andrew Merchant	William T. Salter, Matthew E. Gilbert and Thomas N. Buckley (2018). A multiplexed gas exchange system for increased throughput of photosynthetic capacity measurements. Plant Methods 2018 14:80 https://doi.org/10.1186/s13007-018-0347-y	2018
Anthony Hall	Sales CRG, Molero G, Evans JR, et al. Phenotypic variation in photosynthetic traits in wheat grown under field versus glasshouse conditions. J Exp Bot. 2022;73(10):3221-3237. doi:10.1093/jxb/erac096	2022
Anthony Hall	Joynson R, Molero G, Coombes B, Gardiner LJ, Rivera-Amado C, Piñera-Chávez FJ, Evans JR, Furbank RT, Reynolds MP, Hall A. Uncovering candidate genes involved in photosynthetic capacity using unexplored genetic variation in Spring Wheat. Plant Biotechnol J. 2021 Feb 27. doi: 10.1111/pbi.13568. Epub ahead of print. PMID: 33638599.	2021
Anthony Hall	Evans JR and Clarke VC. (2019) The nitrogen cost of photosynthesis. J Experimental Botany 70, 7-15	2019
Anthony Hall	Gardiner LJ, Wingen LU, Bailey P, et al. Analysis of the recombination landscape of hexaploid bread wheat reveals genes controlling recombination and gene conversion frequency. Genome Biol. 2019;20(1):69. Published 2019 Apr 15. doi:10.1186/s13059-019-1675-6	2019
Anthony Hall	Gardiner, L.-J., Brabbs, T., Akhunov, A., Jordan, K., Budak, H., Richmond, T., Singh, S., Catchpole, L., Akhunov, E., Hall, A. (2019). Integrating genomic resources to present full gene and putative promoter capture probe sets for bread wheat. GigaScience. doi.org/10.1093/gigascience/giz018	2019

PROJECT PI	TITLE	YEAR
Anthony Hall	Gardiner LJ, Joynson R, Omony J, et al. Hidden variation in polyploid wheat drives local adaptation. Genome Res. 2018;28(9):1319-1332.	2018
Arnold Bloom	Kasemsap, P.; Bloom, A.J. Breeding for Higher Yields of Wheat and Rice through Modifying Nitrogen Metabolism. Plants 2023, 12, 85. https://doi.org/10.3390/plants12010085	2023
Arnold Bloom	Knapp A, Stefani J, Katz E, Bloom AJ. Novel method for the quantification of rosette area from images of Arabidopsis seedlings grown on agar plates. Appl Plant Sci. 2022 Dec 8;10(6):e11504. doi: 10.1002/aps3.11504. PMID: 36518946; PMCID: PMC9742823.	2022
Arnold Bloom	Knapp, A., and Bloom, A. J.. 2022. Easy as piadcs: A low-cost, ultra-high-resolution data acquisition system using a Raspberry Pi. Applications in Plant Sciences 10(3): e11485. https://doi.org/10.1002/aps3.11485	2022
Arnold Bloom	Arnold J Bloom, Richard E Plant, Wheat grain yield decreased over the past 35 years, but protein content did not change, Journal of Experimental Botany, 2021;, erab343, https://doi.org/10.1093/jxb/erab343	2021
Arnold Bloom	Shi, X.; Bloom, A. Photorespiration: The Futile Cycle? Plants 2021, 10, 908. https://doi.org/10.3390/plants10050908	2021
Arnold Bloom	Bloom, A.J., Kasemsap, P. and Rubio-Asensio, J.S. (2020), Rising atmospheric CO2 concentration inhibits nitrate assimilation in shoots but enhances it in roots of C3 plants. Physiol Plantarum, 168: 963-972. doi:10.1111/ppl.13040	2020
Arnold Bloom	Bloom, A.J. (2019) Metal Regulation of metabolism. Current Opinion in Chemical Biology. Vol 49 33-38	2019
Arnold Bloom	Bloom, A. J. and K. M. Lancaster (2018) Manganese binding to Rubisco could drive a photorespiratory pathway that increases the energy efficiency of photosynthesis. Nature Plants 4:414-422, DOI:10.1038/s41477-018-0191-0	2018
Arnold Bloom	Bloom, A. J. and Kameritsch, P. (2017), Relative association of Rubisco with manganese and magnesium as a regulatory mechanism in plants. Physiol Plantarum, 161: 545-559. doi:10.1111/ppl.12616	2017
Barry Pogson	Coast, O., Shah, S., Ivakov, A., Gaju, O., Wilson, P.B., Posch, B.C., Bryant, C.J., Negrini, A.C.A., Evans, J.R., Condon, A.G., Silva-Pérez, V., Reynolds, M.P., Pogson, B.J., Millar, A.H., Furbank, R.T., and Atkin, O.K. Predicting dark respiration rates of wheat leaves from hyperspectral reflectance. Plant Cell Environ. 2019; 42: 2133– 2150. https://doi.org/10.1111/pce.13544	2019
Blake Meyers	Seetharam AS, Yu Y, Bélanger S, Clark LG, Meyers BC, Kellogg EA and Hufford MB (2021) The Streptochaeta Genome and the Evolution of the Grasses. Front. Plant Sci. 12:710383. doi: 10.3389/fpls.2021.710383	2021
Blake Meyers	Belanger S, Pokhrel S, Czymmek K, Meyers BC. (2020) Pre-meiotic, 24-nt reproductive phasiRNAs are abundant in anthers of wheat and barley but not rice and maize. Plant Physiology. 184:1407-1423. doi: 10.1104/pp.20.00816.	2020
Christine Raines	Simkin AJ, Lopez-Calcagno PE, Raines CA. (2019). Feeding the world: Improving photosynthetic efficiency for sustainable crop production. J Exp Bot. (doi.org/10.1093/jxb/ery445).	2019

PROJECT PI	TITLE	YEAR
Christine Raines	Alotaibi, S. S., Sparks, C. A., Parry, M., Simkin, A. J., & Raines, C. A. (2018). Identification of Leaf Promoters for Use in Transgenic Wheat. Plants (Basel, Switzerland), 7(2), 27. doi:10.3390/plants7020027	2018
Christine Raines	Driever SM, Simkin AJ, Alotaibi S, Fisk SJ, Madgwick PJ, Sparks CA, Jones HD, Lawson T, Parry MAJ, Raines CA. (2017). Increased SBPase activity improves photosynthesis and grain yield in wheat grown in greenhouse conditions. Phil. Trans. R. Soc. B.	2017
Cristobal Uauy	Brinton, J, Uauy, C (2019) A reductionist approach to dissecting grain weight and yield in wheat. J Integr Plant Biol 61: 337– 358	2019
Cristobal Uauy	Wang W, Simmonds K, Pan Q, Davidson D, He F, Battal A, Akhunova A, Trick HN, Uauy C, Akhunov E. 2019. Gene editing and mutagenesis reveal inter-cultivar differences and additivity in the contribution of TaGW2 homoeologues to grain size and weight in wheat. Theoretical and Applied Genetics	2019
Cristobal Uauy	Borrill P, Ramirez-Gonzalez R et al Uauy C. 2018. The transcriptional landscape of polyploid wheat. Science	2018
Cristobal Uauy	Watson A, Ghosh S et al 2018. Speed breeding is a powerful tool to accelerate crop research and breeding. Nature Plants 4:23-29	2018
Cristobal Uauy	Krasileva KV, Vasquez-Gross H, Howell T, Bailey P, Paraiso F, Clissold L, Simmonds J, Ramirez-Gonzalez RH, Wang X, Borrill P, Fosker C, Ayling S, Phillips A, Uauy C, Dubcovsky J (2017) Uncovering hidden variation in the young polyploid wheat genomes. PNAS. doi: 10.1073/pnas.1619268114.	2017
Cristobal Uauy	Uauy C 2017. Wheat genomics comes of age. Current Opinion Plant Biology. 36:142	2017
Cristobal Uauy	Uauy C, Wulff B, Dubcovsky J. 2017. Combining Traditional Mutagenesis with New High-Throughput Sequencing and Genome Editing to Reveal Hidden Variation in Polyploid Wheat. Annual Review in Genetics. 51: doi.org/10.1146/annurev-genet-120116-024533	2017
Cristobal Uauy	Simmonds J, Scott P, Brinton J, Mestre TC, Bush M, Del Blanco A, Dubcovsky J, Uauy C (2016) A splice acceptor site mutation in TaGW2-A1 increases thousand grain weight in tetraploid and hexaploid wheat through wider and longer grains Theoretical and Applied Genetics 129:1099–1112.	2016
Eduard Akhunov	He, F., Wang, W., Rutter, W.B. et al. Genomic variants affecting homoeologous gene expression dosage contribute to agronomic trait variation in allopolyploid wheat. Nat Commun 13, 826 (2022). https://doi.org/10.1038/s41467-022-28453-y	2022
Eduard Akhunov	Wang, W., Yu, Z., He, F., Bai, G., Trick, H.N., Akhunova, A. and Akhunov, E. (2022), Multiplexed promoter and gene editing in wheat using a virus-based guide RNA delivery system. Plant Biotechnol J, 20: 2332-2341. https://doi.org/10.1111/pbi.13910	2022

PROJECT PI	TITLE	YEAR
Eduard Akhunov	Wang, W., Tian, B., Pan, Q., Chen, Y., He, F., Bai, G., Akhunova, A., Trick, H. N. and Akhunov, E. (2021) Expanding the range of editable targets in the wheat genome using the variants of the Cas12a and Cas9 nucleases. Plant Biotechnol. J., https://doi.org/10.1111/pbi.13669	2021
Eduard Akhunov	Wang W., Q. Pan, B. Tian, F. He, Y. Chen, G. Bai, A. Akhunova, H.N. Trick, E. Akhunov. 2019. Gene editing of the wheat homologs of TONNEAU1recruiting motif encoding gene affects grain shape and weight in wheat. Plant J. 2019, 100(2):251-264, doi: 10.1111/tpj.14440.	2019
Eduard Akhunov	Wang W, Pan Q, He F, Akhunova A, Chao S, Trick HN, Akhunov E, Transgenerational CRISPR-Cas9 activity facilitates multiplex gene editing in allopolyploid wheat. The CRISPR Journal, 2018, 1, 65-74.	2018
Eduard Akhunov	Wang, W., Simmonds, J., Pan, Q. et al. Theor Appl Genet (2018) 131: 2463. https://doi.org/10.1007/s00122-018-3166-7	2018
Elizabete Carmo-Silva	Cristina R G Sales, Gemma Molero, John R Evans, Samuel H Taylor, Ryan Joynson, Robert T Furbank, Anthony Hall, Elizabete Carmo-Silva, Phenotypic variation in photosynthetic traits in wheat grown under field versus glasshouse conditions, Journal of Experimental Botany, 2022;, erac096, https://doi.org/10.1093/jxb/erac096	2022
Elizabete Carmo-Silva	Caruana, L., Orr, D.J. & Carmo-Silva, E. Rubiscosome gene expression is balanced across the hexaploid wheat genome. Photosynth Res (2022). https://doi.org/10.1007/s11120-022-00897-9	2021
Elizabete Carmo-Silva	Degen GE, Orr DJ, Carmo-Silva E (2021) Heat-induced changes in the abundance of wheat Rubisco activase isoforms. New Phytologist 229:1298-1311.	2021
Elizabete Carmo-Silva	Perdomo JA, Buchner P, Carmo-Silva E (2021) The relative abundance of wheat Rubisco activase isoforms is post-transcriptionally regulated. Photosynthesis Research 148:47-56	2021
Elizabete Carmo-Silva	Perdomo JA, Degen GE, Worrall D, Carmo-Silva E. Rubisco activation by wheat Rubisco activase isoform 2β is insensitive to inhibition by ADP. The Biochemical Journal. 2019 Sep;476(18):2595-2606. DOI: 10.1042/bcj20190110.	2019
Eric Ober	Makhoul M, Chawla HS, Wittkop B, Stahl A, Voss-Fels KP, Zetzsche H, Snowdon RJ, Obermeier C. Long-Amplicon Single-Molecule Sequencing Reveals Novel, Trait-Associated Variants of VERNALIZATION1 Homoeologs in Hexaploid Wheat. Front Plant Sci. 2022 Jul 15;13:942461. doi: 10.3389/fpls.2022.942461. PMID: 36420025; PMCID: PMC9676936.	2022
Eric Ober	Rambla, C., Van Der Meer, S., Voss-Fels, K.P. et al. A toolkit to rapidly modify root systems through single plant selection. Plant Methods 18, 2 (2022). https://doi.org/10.1186/s13007-021-00834-2	2022

PROJECT PI	TITLE	YEAR
Eric Ober	Riccardo Fusi, Serena Rosignoli, Haoyu Lou, Giuseppe Sangiorgi, Riccardo Bovina, Jacob K. Pattem, Aditi N. Borkar, Marco Lombardi, Cristian Forestan, Sara G. Milner, Jayne L. Davis, Aneesh Lale, Gwendolyn K. Kirschner, Ranjan Swarup, Alberto Tassinari, Bipin K. Pandey, Larry M. York, Brian S. Atkinson, Craig J. Sturrock, Sacha J. Mooney, Frank Hochholdinger, Matthew R. Tucker, Axel Himmelbach, Nils Stein, Martin Mascher, Kerstin A. Nagel, Laura De Gara, James Simmonds, Cristobal Uauy, Roberto Tuberosa, Jonathan P. Lynch, Gleb E. Yakubov, Malcolm J. Bennett, Rahul Bhosale, Silvio Salvi. (2022). Root angle is controlled by EGT1 in cereal crops employing an antigravitropic mechanism. Proceedings of the National Academy of Sciences of the United States of America, July 2022. 10.1073/pnas.2201350119	2022
Eric Ober	Ober, E.S., Alahmad, S., Cockram, J. et al. Wheat root systems as a breeding target for climate resilience. Theor Appl Genet 134, 1645–1662 (2021). https://doi.org/10.1007/s00122-021-03819-w	2021
Eric Ober	Kirschner et al. (2021) ENHANCED GRAVITROPISM 2 encodes a STERILE ALPHA MOTIVE containing protein that controls root growth angle in barley and wheat. https://doi.org/10.1101/2021.01.23.427880	2020
Eric Ober	Makhoul M, Rambla C, Voss-Fels KP, Hickey LT, Snowdon RJ, Obermeier C (2020) Overcoming polyploidy pitfalls: a user guide for effective SNP conversion into KASP markers in wheat. Theoretical and Applied Genetics 133:2413-2430. https://doi.org/10.1007/s00122-020-03608-x	2020
Erik Murchie	Murchie, E.H., Reynolds, M.P., Slafer, G.A. et al. A 'wiring diagram' for source strength traits impacting wheat yield potential, Journal of Experimental Botany, Volume 74, Issue 1, 1 January 2023, Pages 72–90, https://doi.org/10.1093/jxb/erac415	2023
Erik Murchie	Robles-Zazueta CA, Molero G, Pinto F, Foulkes MJ, Reynolds MP, Murchie EH. Field-based remote sensing models predict radiation use efficiency in wheat. J Exp Bot. 2021;72(10):3756-3773. doi:10.1093/jxb/erab115	2021
Erik Murchie	McAusland, L., Vialet-Chabrand, S., Jauregui, I., Burridge, A., Hubbart-Edwards, S., Fryer, M.J., King, I.P., King, J., Pyke, K., Edwards, K.J., Carmo-Silva, E., Lawson, T. and Murchie, E.H. (2020), Variation in key leaf photosynthetic traits across wheat wild relatives is accession dependent not species dependent. New Phytol, 228: 1767-1780. https://doi.org/10.1111/nph.16832	2020
Erik Murchie	Sabrina Flütsch, Yizhou Wang, Atsushi Takemiya, Silvere R. M. Vialet-Chabrand, Martina Klejchová, Arianna Nigro, Adrian Hills, Tracy Lawson, Michael R. Blatt, Diana Santelia, Guard Cell Starch Degradation Yields Glucose for Rapid Stomatal Opening in Arabidopsis, The Plant Cell, Volume 32, Issue 7, July 2020, Pages 2325–2344, https://doi.org/10.1105/tpc.18.00802	2020
Erik Murchie	Vialet-Chabrand S., Lawson T. (2020) Thermography methods to assess stomatal behaviour in a dynamic environment Ed J. Evans. Journal of Experimental Botany. Available at: https://academic.oup.com/jxb/advance-article/doi/10.1093/jxb/erz573/5698117	2020

PROJECT PI	TITLE	YEAR
Erik Murchie	Lawson, T. and Vialet-Chabrand, S. (2019), Speedy stomata, photosynthesis and plant water use efficiency. New Phytol, 221: 93-98. doi:10.1111/nph.15330	2019
Erik Murchie	McAusland L., Atkinson J.A., Lawson T., Murchie E.H. (2019) High throughput procedure utilising chlorophyll fluorescence imaging to phenotype dynamic photosynthesis and photoprotection in leaves under controlled gaseous conditions. *Plant Methods*, **15**, 109. Available at: https://plantmethods.biomedcentral.com/articles/10.1186/s13007-019-0485-x	2019
Erik Murchie	Przewieslik-Allen A.M., Burridge A.J., Wilkinson P.A., Winfield M.O., Shaw D.S., McAusland L., King J., King I.P., Edwards K.J., Barker G.L.A. (2019) Developing a High-Throughput SNP-Based Marker System to Facilitate the Introgression of Traits From Aegilops Species Into Bread Wheat (Triticum aestivum). Frontiers in Plant Science, 9, 1993. Available at: https://www.frontiersin.org/article/10.3389/fpls.2018.01993/full	2019
Erik Murchie	Vialet-Chabrand S., Lawson T. (2019) Dynamic leaf energy balance: deriving stomatal conductance from thermal imaging in a dynamic environment. *Journal of Experimental Botany*, **70**, 2839–2855. Available at: https://academic.oup.com/jxb/article/70/10/2839/5356941	2019
Erik Murchie	Jauregui I, Rothwell SA, Taylor SH, Parry MAJ, Carmo-Silva E, Dodd IC. 2018. Whole plant chamber to examine sensitivity of cereal gas exchange to changes in evaporative demand. Plant Methods 14: 97.	2018
Erik Murchie	Smith HL, McAusland L, Murchie EH. Don't ignore the green light: exploring diverse roles in plant processes. Journal of Experimental Botany. 2017 Apr;68(9):2099-2110. DOI: 10.1093/jxb/erx098.	2017
Gustavo Slafer	Slafer, G.A., Foulkes, J.M., Reynolds, M.P. et al. A 'wiring diagram' for sink strength traits impacting wheat yield potential, Journal of Experimental Botany, Volume 74, Issue 1, 1 January 2023, Pages 40–71, https://doi.org/10.1093/jxb/erac410	2023
Jared Crain	Crain, J., Wang, X., Evers, B., & Poland, J. Evaluation of field-based single plant phenotyping for plant breeding. The Plant Phenome Journal. DOI: 10.1002/ppj2.20045	2022
Jesse Poland	Wang X., P. Silva, N. Bello, D. Singh, B. Evers, S. Mondal, F. Pinto, R.P. Singh, and J. Poland (2020) Improved accuracy of high-throughput phenotyping from Unmanned Aerial Systems by extracting traits directly from orthorectified images. Frontiers in plant science 11: 1616. https://doi.org/10.3389/fpls.2020.587093	2020
Jesse Poland	Sun, J., J. A. Poland, S. Mondal, J. Crossa, P. Juliana, R. P. Singh, J. E. Rutkoski, J.-L. Jannink, L. Crespo-Herrera, G. Velu, J. Huerta-Espino and M. E. Sorrells (2019) High-throughput phenotyping platforms enhance genomic selection for wheat grain yield across populations and cycles in early stage. Theoretical and Applied Genetics 132(6): 1705-1720. DOI: 10.1007/s00122-019-03309-0	2019

PROJECT PI	TITLE	YEAR
Jesse Poland	Wang X., C. Amos, M. Lucas, G. Williams, J. Poland. (2019) Small plot identification from video streams for high-throughput phenotyping of large breeding populations with unmanned aerial systems.Autonomous Air and Ground Sensing Systems for Agricultural Optimization and Phenotyping IV. 11008(2019), 110080D. International Society for Optics and Photonics	2019
Jesse Poland	Xu Wang, Hong Xuan, Byron Evers, Sandesh Shrestha, Robert Pless, Jesse Poland, High-throughput phenotyping with deep learning gives insight into the genetic architecture of flowering time in wheat, GigaScience, Volume 8, Issue 11, November 2019, giz120, https://doi.org/10.1093/gigascience/giz120	2019
John Laurie / Andre Laroche	Tock AJ, Holland DM, Jiang W, Osman K, Sanchez-Moran E, Higgins JD, Edwards KJ, Uauy C, Franklin FCH, Henderson IR. Crossover-active regions of the wheat genome are distinguished by DMC1, the chromosome axis, H3K27me3, and signatures of adaptation. Genome Res. 2021 Sep;31(9):1614-1628. doi: 10.1101/gr.273672.120. Epub 2021 Aug 23. PMID: 34426514; PMCID: PMC8415368.	2021
Jorge Dubcovsky	Chen Y, Liu Y, Zhang J, Torrance A, Watanabe N, Adamski NM, Uauy C (2022) The Triticum ispahanicum elongated glume locus P2 maps to chromosome 6A and is associated with the ectopic expression of SVP-A1. Theor Appl Genet 135:23132331. https://doi.org/10.1007/s00122-022-04114-y	2022
Jorge Dubcovsky	Chu C, Wang S, Rudd JC, Ibrahim AMH, Xue Q, Devkota RN, Baker JA, Baker S, Simoneaux B, Opena G, Dong H, Liu X, Jessup KE, Chen MS, Hui K, Metz R, Johnson CD, Zhang ZS, Liu S (2022) A new strategy for using historical imbalanced yield data to conduct genome-wide association studies and develop genomic prediction models for wheat breeding. Mol Breeding 42:18. https://doi.org/10.1007/s11032-022-01287-8	2022
Jorge Dubcovsky	Debernardi JM, Woods DP, Li K, Li C, Dubcovsky J (2022) MiR172-APETALA2-like genes integrate vernalization and plant age to control flowering time in wheat. PLoS Genetics, 18: e1010157. https://doi.org/10.1371/journal.pgen.1010157	2022
Jorge Dubcovsky	DeWitt N, Guedira M, Murphy JP, Marshall D, Mergoum M, Maltecca C, Brown-Guedira G (2022) A network modeling approach provides insights into the environment-specific yield architecture of wheat. Genetics 221(3) iyac076. https://doi.org/10.1093/genetics/iyac076	2022
Jorge Dubcovsky	Fan M, Zhang X, Nagarajan R, Fan M, Zhang X, Nagarajan R, Zhai W, Rauf Y, Jia H, Ma Z, Yan LL (2022) Natural variants and editing events provide insights into routes for spike architecture modification in common wheat. The Crop Journal. https://doi.org/10.1016/j.cj.2022.04.009	2022
Jorge Dubcovsky	Gill HS, Halder J, Zhang J, Rana A, Kleinjan J, St. Amand P, Bernardo A, Bai G, Sehgal SK (2022) Whole-genome analysis of hard winter wheat germplasm identifies genomic regions associated with spike and kernel traits. Theor Appl Genet 135:29532967. https://doi.org/10.1007/s00122-022-04160-6	2022

PROJECT PI	TITLE	YEAR
Jorge Dubcovsky	Jiang D, Hua L, Zhang C, Li H, Wang Z, Li J, Wang G, Song R, Shen T, Li H, Bai S, Liu Y, Wanga J, Li H, Dubcovsky J, Chen S 2022. Mutations in the miRNA165/166 binding site of the HB2 gene result in pleiotropic effects on morphological traits in wheat. The Crop Journal. Online first. https://doi.org/10.1016/j.cj.2022.05.002	2022
Jorge Dubcovsky	Katz A., P. Byrne, S. Reid, S. Bratschun, S. Haley, S. Pearce. 2021. Identification and validation of a QTL for spikelet number on chromosome arm 6BL of common wheat (Triticum aestivum L.). preprint in Research Square https://orcid.org/0000-0002-1794-7618 submitted to Molecular Breeding.	2022
Jorge Dubcovsky	Morales N, Ogbonna AC, Ellerbrock BJ, Bauchet GJ, Tantikanjana T, et al. (57 co-authors including Jean-Luc Jannink, Clay Birkett, and David Waring) 2022. Breedbase: a digital ecosystem for modern plant breeding. G3. https://doi.org/10.1093/g3journal/jkac078	2022
Jorge Dubcovsky	Peters Haugrud AR, Zhang Q, Green AJ, Xu SS, Faris JD (2022) Identification of stable QTL controlling multiple yield components in a durum ◆ cultivated emmer wheat population under field and greenhouse conditions. G3 Genes|Genomes|Genetics jkac281. https://doi.org/10.1093/g3journal/jkac281	2022
Jorge Dubcovsky	Prospectus of Genomic Selection and Phenomics in Cereal, Legume and Oilseed Breeding Programs. Frontiers in Genetics 12. https://doi.org/10.3389/fgene.2021.829131	2022
Jorge Dubcovsky	Taagen E, Jordan K, Akhunov E, Sorrells ME, Jannink JL (2022) If It Aint Broke, Dont Fix It: Evaluating the Effect of Increased Recombination on Response to Selection for Wheat Breeding. G3 Genes|Genomes|Genetics jkac291. https://doi.org/10.1093/g3journal/jkac291	2022
Jorge Dubcovsky	Wu J, Qiao L, Liu Y, Fu B, Nagarajan R, Rauf Y, Jia H, Yan LL (2022) Rapid identification and deployment of major genes for flowering time and awn traits in common wheat. Frontiers in Plant Science 13. https://doi.org/10.3389/fpls.2022.992811	2022
Jorge Dubcovsky	Zhang XY, Jia HY, Li T, Wu JZ, Nagarajan R, Lei L, Powers C, Kan CC, Hua W, Liu ZY, Chen C, Carver BF, Yan LL (2022) TaCol-B5 modifies spike architecture and enhances grain yield in wheat. Science 376:180183. https://doi.org/10.1126/science.abm0717	2022
Jorge Dubcovsky	Chu, C., S. Wang, J.C. Rudd, Q. Xue, A.M.H. Ibrahim, R. Metz, C.D. Johnson, and S.-Y. Liu. 2021. RNA-seq analysis reveals different drought tolerance mechanisms in broadly adapted wheat cultivars TAM 111 and TAM 112. Nature Scientific Reports. 11:4301	2021
Jorge Dubcovsky	DeWitt, N., M. Guedira, E. Lauer, J.P. Murphy, D. Marshall, M. Mergoum, J. Johnson, J.B. Holland, G. Brown-Guedira. 2021. Characterizing the oligogenic architecture of plant growth phenotypes informs genomic selection approaches in a common wheat population. BMC Genomics. 22:1-8	2021

PROJECT PI	TITLE	YEAR
Jorge Dubcovsky	Dhakal, S., X. Liu, A. Girard, C. Chu, Y. Yang, S. Wang, Q. Xue, J.C. Rudd, A.M.H. Ibrahim, J.M. Awika, K.E. Jessup, J.A. Baker, L. Garza, R.N. Devkota, S. Baker, C.D Johnson, R.P. Metz, S.-Y. Liu. 2021. Genetic dissection of end-use quality traits in two widely adapted wheat cultivars TAM 111 and TAM 112. Crop Sci. 61:1944-1959 https://doi.org/10.1002/csc2.20415	2021
Jorge Dubcovsky	Fan, M., F. Miao, H. Jia, G. Li, C. Powers, R. Nagarajan, P.D. Alderman, Z. Ma, B.F. Carver, L. Yan. 2021. O-linked N-acetylglucosamine transferase is involved in fine regulation of flowering time in winter wheat. Nature Communications. 12: 2303	2021
Jorge Dubcovsky	Gabay, G., J. Zhang, G. F. Burguener, T. Howell, H. Wang, T. Fahima, A. Lukaszewski, J. I. Moriconi, G. E. Santa Maria, J. Dubcovsky. 2021. Structural rearrangements in wheat (1BS)rye (1RS) recombinant chromosomes affect gene dosage and root length. The Plant Genome, 2021:e20079	2021
Jorge Dubcovsky	Gill, H.S., J. Halder, J. Zhang, N. Brar, T.S. Rai, C. Hall, A. Bernardo, P.St. Amand, G Bai, E. Olson, S. Ali, B. Turnipseed, S.K. Sehgal. 2021. Multi-trait multi-environment genomic prediction of agronomic traits in advanced breeding lines of winter wheat. Frontiers in Plant Science. 12:709545.https://doi.org/10.3389/fpls.2021.709545	2021
Jorge Dubcovsky	Glenn, P., Zhang, J., Brown-Guedira, G., DeWitt, N., Cook, J.P., Li, K., Akhunov, E., and Dubcovsky, J. (2021). Identification and characterization of a natural polymorphism in FT-A2 associated with increased number of grains per spike in wheat. Theor. Appl. Genet. 10.1007/s00122-021-03992-y	2021
Jorge Dubcovsky	Isham K, Wang R, Zhao W, Wheeler J, Klassen N, Akhunov E, Chen J. QTL mapping for grain yield and three yield components in a population derived from two high-yielding spring wheat cultivars. Theor Appl Genet. 2021 Jul;134(7):2079-2095. doi: 10.1007/s00122-021-03806-1. Epub 2021 Mar 9. PMID: 33687497; PMCID: PMC8263538.	2021
Jorge Dubcovsky	Jones, B.H., Blake, N.K., Heo, HY. et al. Allelic response of yield component traits to resource availability in spring wheat. Theor Appl Genet 134, 603–620 (2021). https://doi.org/10.1007/s00122-020-03717-7	2021
Jorge Dubcovsky	Jordan KW, Bradbury PJ, Miller ZR, et al. Development of the Wheat Practical Haplotype Graph database as a resource for genotyping data storage and genotype imputation. G3 (Bethesda). 2022;12(2):jkab390. doi:10.1093/g3journal/jkab390	2021
Jorge Dubcovsky	Kun Li, Juan M Debernardi, Chengxia Li, Huiqiong Lin, Chaozhong Zhang, Judy Jernstedt, Maria von Korff, Jinshun Zhong, Jorge Dubcovsky, Interactions between SQUAMOSA and SHORT VEGETATIVE PHASE MADS-box proteins regulate meristem transitions during wheat spike development, The Plant Cell, Volume 33, Issue 12, December 2021, Pages 3621–3644, https://doi.org/10.1093/plcell/koab243	2021
Jorge Dubcovsky	Kuzay S, Lin H, Li C, Chen S, Woods DP, Zhang J, et al. (2022) WAPO-A1 is the causal gene of the 7AL QTL for spikelet number per spike in wheat. PLoS Genet 18(1): e1009747. https://doi.org/10.1371/journal.pgen.1009747	2021

PROJECT PI	TITLE	YEAR
Jorge Dubcovsky	Nyine M., E. Adhikari, M. Clinesmith, R. Aiken, B. Betzen, W. Wang, D. Davidson, Z. Yu, Y. Guo, F. He, A. Akhunova, K.W. Jordan, A.K. Fritz, E. Akhunov. 2021. The haplotype-based analysis of Aegilops tauschii introgression into hard red winter wheat and its impact on productivity traits. Front. Plant Sci. 12:716955. doi: 10.3389/fpls.2021.716955	2021
Jorge Dubcovsky	Sandhu, K.S., D.N. Lozada, Z. Zhang, M.O. Pumphrey, A.H. Carter. 2021. Deep learning for predicting complex traits in spring wheat. Frontiers in Plant Science 11:613325 doi:10.3389/fpls.2020.613325	2021
Jorge Dubcovsky	Sandhu, K.S., S.S. Patil, M.O. Pumphrey, A.H. Carter. 2021. Multi-trait machine and deep learning models for genomic selection using spectral information in a wheat breeding program. The Plant Genome doi:10.1101/2021.04.12.439532	2021
Jorge Dubcovsky	Taagen, E., Tanaka, J., Gul, A., Sorrells, M. E., Positional-based cloning fail-safeapproach is overpowered by wheat chromosome structural variation. 2021. The Plant Genome https://doi.org/10.1002/tpg2.20106	2021
Jorge Dubcovsky	Winn Z.J., D.L. Larkin, J.T. Murry, D.E. Moon, R.E. Mason 2021. Phenotyping anther extrusion of wheat using image analysis. Agronomy 11(6), 1244	2021
Jorge Dubcovsky	Bernardo, A., P.St. Amand, H.Q. Le, Z. Su, and G. Bai. 2020. Multiplex restriction amplicon sequencing: a novel next-generation sequencing-based marker platform for high-throughput genotyping. Plant Biotechnol. J., 18:254-265.	2020
Jorge Dubcovsky	Cook, J.P., R. K. Acharya, J. M. Martin, N. K. Blake, I. J. Khan, H.-Y. Heo, K. D. Kephart, J. Eckhoff, L.E. Talbert, and J. D. Sherman. 2020. Genetic analysis of stay-green, yield and agronomic traits in spring wheat (Triticum aestivum L.). Crop Science. https://doi.org/10.1002/csc2.20302	2020
Jorge Dubcovsky	Debernardi, J.M., Greenwood, J.R., Jean Finnegan, E., Jernstedt, J. and Dubcovsky, J. (2020), APETALA 2-like genes AP2L2 and Q specify lemma identity and axillary floral meristem development in wheat. Plant J, 101: 171-187. doi:10.1111/tpj.14528	2020
Jorge Dubcovsky	Debernardi, J.M., Tricoli, D.M., Ercoli, M.F. et al. A GRF–GIF chimeric protein improves the regeneration efficiency of transgenic plants. Nat Biotechnol 38, 1274–1279 (2020). https://doi.org/10.1038/s41587-020-0703-0	2020
Jorge Dubcovsky	Jones, BH, Blake, NK, Heo, H-Y, et al. Improving hexaploid spring wheat by introgression of alleles for yield component traits from durum wheat. Crop Science. 2020; 60: 759– 771. https://doi.org/10.1002/csc2.20011	2020
Jorge Dubcovsky	Jordan KW, He F, DeSoto MF, Akhunova A, Akhunov E. 2020. Differential chromatin accessibility landscape reveals structural and functional features of the allopolyploid wheat chromosomes. Genome Biol. 21:176	2020
Jorge Dubcovsky	Kan, CC., Jia, H., Powers, C. et al. Genetic characterization and deployment of a major gene for grain yield on chromosome arm 1BS in winter wheat. Mol Breeding 40, 26 (2020). https://doi.org/10.1007/s11032-020-1106-0	2020
Jorge Dubcovsky	Kippes, N., C. van Gessel, J. Hamilton, A. Akpinar, H. Budak, J. Dubcovsky and S. Pearce. 2020. Effect of phyB and phyC loss-of-function mutations on wheat transcriptome under short and long day photoperiods. BMC Plant Biology. 20: 297.	2020

PROJECT PI	TITLE	YEAR
Jorge Dubcovsky	Shaw, L. M., C. Li, D. P. Woods1, M. A. Alvarez, H. Lin, M. Y. Lau, A. Chen, and J. Dubcovsky. 2020. Epistatic interactions between PHOTOPERIOD1, CONSTANS1 and CONSTANS2 modulate the photoperiodic response in wheat. PLoS Genetics. 16: e1008812	2020
Jorge Dubcovsky	Sidhu J.S., D. Singh, H.S. Gill, N.K. Brar, Y. Qiu, J. Halder, R. Al Tameemi, B. Turnipseed and S.K. Sehgal. 2020. Genome-wide association study uncovers novel genomic regions associated with coleoptile length in hard winter wheat. Frontiers in Genetics. 10:1345.	2020
Jorge Dubcovsky	Taagen E., A.J. Bogdanove, and M.E. Sorrells. 2020. Counting on crossovers: Controlled recombination for plant breeding. Trends in Plant Science. 25:455-465.	2020
Jorge Dubcovsky	Taagen, E., A.J. Bogdanove, M.E. Sorrells. 2020. Achieving controlled recombination with targeted cleavage and epigenetic modifiers. Trends in Plant Science. 25:513-514. https://doi.org/10.1016/j.tplants.2019.12.018	2020
Jorge Dubcovsky	Yang, Y., S. Dhakal, C. Chu, S. Wang, Q. Xue, J.C. Rudd, A.M.H. Ibrahim, K. Jessup, J. Baker, M.P. Fuentealba, R. Devkota, S. Baker, C.D. Johnson, R. Metz, S.-Y. Liu. 2020. Genome wide identification of QTL associated with yield and yield components in two popular wheat cultivars TAM 111 and TAM 112, PLOS ONE 15(12) e0237293. https://doi.org/10.1371/journal.pone.0237293	2020
Jorge Dubcovsky	DeWitt, N., M. Guedira, E. Lauer, M. Sarinelli, P. Tyagi, D. Fu, Q. Hao, J.P. Murphy, D. Marshall, A. Akhunova, K. Jordan, E. Akhunov, and G. Brown-Guedira. 2019. Sequence based mapping identifies AWNS1, a candidate transcription repressor underlying awn suppression at the B1 locus in wheat. New Phytologist. doi: 10.1111/nph.16152	2019
Jorge Dubcovsky	Hayat, H., Mason, R.E., Lozada, D.N., Acuna, A., Holder, A., Larkin, D.L., Winn, Z., Murry, J., Murphy, P., Moon, D.E., Miller, R.G. 2019. Effects of allelic variation at Rht-B1 and Rht-D1 on grain yield and agronomic traits of southern US soft red winter wheat. Euphytica. DOI: 10.1007/s10681-019-2478-2	2019
Jorge Dubcovsky	He F., R. Pasam, F. Shi, S. Kant, G. Keeble-Gagnere, P. Kay, K. Forrest, A. Fritz, P. Hucl, K. Wiebe, R. Knox, R. Cuthbert, C. Pozniak, A. Akhunova, P.L. Morrell, J.P. Davies, S.R. Webb, G. Spangenberg, B. Hayes, H. Daetwyler, J. Tibbits, M. Hayden, E. Akhunov. 2019. Exome sequencing highlights the role of wild relative introgression in shaping the adaptive landscape of the wheat genome. Nat Genet. 51:896904.	2019
Jorge Dubcovsky	Krause, M.R., L. Gonzalez-Perez, J. Crossa, P. Perez-Rodriguez, O. Montesinos-Lopez, R.P. Singh, S. Dreisigacker, J. Poland, J. Rutkoski, M.E. Sorrells, M.A. Gore, and S. Mondal. 2019. Hyperspectral reflectance-derived relationship matrices for genomic prediction of grain yield in wheat. Genes Genomes Genetics. 9:1231-1247	2019

PROJECT PI	TITLE	YEAR
Jorge Dubcovsky	Kuzay, S., Y. Xu, J. Zhang, A. Katz, S. Pearce, Z. Su, M. Fraser, J. A. Anderson, G. Brown-Guedira, N. DeWitt, A. Peters Haugrud, J.D. Faris, E. Akhunov, G. Bai, J. Dubcovsky. 2019. Identification of a candidate gene for a QTL for spikelet number per spike on wheat chromosome arm 7AL by high-resolution genetic mapping. Theor. Appl. Genet. 132:26892705	2019
Jorge Dubcovsky	Larkin, D.L., D.N. Lozada, and R.E Mason. 2019. Genomic selection considerations for successful implementation in wheat breeding programs. Agronomy. doi:10.3390/agronomy9090479	2019
Jorge Dubcovsky	Li, C., H. Lin, A. Chen, M. Lau, J. Jernstedt, and J. Dubcovsky. 2019. Wheat VRN1, FUL2 and FUL3 play critical and redundant roles in spikelet meristem identity and spike determinacy. Development. 146: On line first. doi:10.1242/dev.175398	2019
Jorge Dubcovsky	Lozada, D.L., R.E. Mason, J.M. Sarinelli, and G. Brown-Guedira. 2019 Accuracy of genomic selection for grain yield and agronomic traits in soft red winter wheat. BMC Genetics	2019
Jorge Dubcovsky	Santantonio, N., J.L. Jannink, and M.E. Sorrells. 2019. Homeologous epistasis in wheat: the search for an immortal hybrid. Genetics. doi.org/10.1534/genetics.118.301851	2019
Jorge Dubcovsky	Sarinelli, J.M., J.P. Murphy, P. Tyagi, J.B. Holland, J.W. Johnson, M. Mergoum, R.E. Mason, A. Babar, S. Harrison, R. Sutton, C.A. Griffey, and G. Brown Guedira. 2019. Training population selection and use of fixed effects to optimize genomic predictions in a historical USA winter wheat panel. Theor. Appl. Genet. 132: 12471261	2019
Jorge Dubcovsky	Shaw, L. B. Lyu, R. Turner, C. Li, F. Chen, X. Han, D. Fu, and J. Dubcovsky. 2019. FLOWERING LOCUS T2 (FT2) regulates spike development and fertility in temperate cereals. J. of Exp. Bot. 70: 193-204	2019
Jorge Dubcovsky	Ward, B.P., G.L. Brown-Guedira, F.L. Kolb, D.A. Van Sanford, P. Tyagi, C.H. Sneller and C.A. Griffey. 2019. Genome-wide association studies for yield-related traits in soft red winter wheat grown in Virginia. PLoS ONE, 14, p.e0208217	2019
Jorge Dubcovsky	Ward, B.P., G.L. Brown-Guedira, P. Tyagi, F.L. Kolb, D.A. Van Sanford, C.H. Sneller and C.A. Griffey 2019. Multi-environment and multi-trait genomic selection models in unbalanced early-generation wheat yield trials. Crop Science. 59:491-507	2019
Jorge Dubcovsky	Blake, N. K., A. C. Varella, B. Bicego, J. M. Martin, J. P. Cook, H.-Y. Heo, R. Acharya, J. D. Sherman, D. Nash, L. E. Talbert. 2018. Maturity traits related to climate adaptation impact quality characteristics in hard red spring wheat. Crop Sci. 58:1954-1963	2018
Jorge Dubcovsky	El-Feki, W.M., P.F. Byrne, S.D. Reid, and S.D. Haley. 2018. Mapping quantitative trait loci for agronomic traits in winter wheat under different soil moisture levels. Agronomy 8: 133. doi:10.3390/agronomy8080133	2018

PROJECT PI	TITLE	YEAR
Jorge Dubcovsky	Gizaw S.A., J.G. Godoy, M.O. Pumphrey, and A.H. Carter. 2018. Spectral reflectance for indirect selection and genome-wide association analysis of grain yield and drought tolerance in North American spring wheat (Triticum aestivum L.). Crop Sci. 58: 2289-2301	2018
Jorge Dubcovsky	Gizaw, S.A., J.G.V. Godoy, K. Garland-Campbell, A.H. Carter. 2018. Using spectral reflectance as proxy phenotypes for genome-wide association studies of yield and yield stability in Pacific Northwest winter wheat. Crop Science 58:1232-1241. doi:10.2135/cropsci2017.11.0710	2018
Jorge Dubcovsky	Godoy, J., S. Gizaw, S. Chao, N. Blake, A. Carter, R. Cuthbert, J. Dubcovsky, P. Hucl, K. Kephart, C. Pozniak, P.V. V. Prasad, M. Pumphrey, and L. Talbert. 2018. Genome-wide association study of agronomic traits in a spring-planted North American elite hard red spring wheat panel. Crop Science 58:1838-1852	2018
Jorge Dubcovsky	Huang, M., N. Mheni, G. Brown-Guedira, A. McKendry, C. Griffey, D. Van Sanford, J. Costa, C Sneller. 2018. Genetic analysis of heading date in winter and spring wheat. Euphytica, 214: 128. doi:10.1007/s10681-018-2199-y	2018
Jorge Dubcovsky	Kippes, N., M. Guedira, L. Lin, G.L. Brown-Guedira and J. Dubcovsky. 2018. Single nucleotide polymorphisms in a regulatory site of VRN-A1 first intron are associated with differences in vernalization requirement in winter wheat. Molecular Genetics and Genomics. doi:10.1007/s0043	2018
Jorge Dubcovsky	Lozada, D.N., Mason, R.E., Sukumaran, S., Dreisigacker, S. 2018 Validation of grain yield QTL from soft winter wheat using a CIMMYT spring wheat panel. Crop Science. doi:10.2135/cropsci2018.04.0232	2018
Jorge Dubcovsky	Mo, J., T. Howell, H. Vasquez-Gross, L.A. de Haro, J. Dubcovsky, S. Pearce. 2018. Mapping causal mutations by exome sequencing in a wheat TILLING population: a tall mutant case study. Mol. Genet. Genom. 293: 463-477. doi:10.1007/s00438-017-1401-6	2018
Jorge Dubcovsky	Mo, Y., Vanzetti, L.S., Hale, I. et al. 2018. Identification and characterization of Rht25, a locus on chromosome arm 6AS affecting wheat plant height, heading time, and spike development. Theor Appl Genet (2018) 131: 2021. https://doi.org/10.1007/s00122-018-3130-6	2018
Jorge Dubcovsky	Nyine, M., S. Wang, K. Kiani, K. Jordan, S.Y. Liu, P. Byrne, S. Haley, S. Baenziger, S. Chao, R. Bowden, E. Akhunov. 2018. Genotype imputation in winter wheat using first-generation haplotype map SNPs improves genome-wide association mapping and genomic predictions of traits. G3 9:125-133. G3/2018/200664	2018
Jorge Dubcovsky	Wang R., Y. Liu, K. Isham, W. Zhao, J. Wheeler, N. Klassen, Y. Hu, J.M. Bonman, J. Chen. 2018. QTL identification and KASP marker development for productive tiller and fertile spikelet numbers in two high-yielding hard white spring wheat cultivars. Mol. Bred. 38:135	2018

PROJECT PI	TITLE	YEAR
Jorge Dubcovsky	Zhang, J., S.A. Gizaw, E. Bossolini, J. Hegarty, T. Howell, A.H. Carter, E. Akhunov, J. Dubcovsky. 2018. Identification and validation of QTL for grain yield and plant water status under contrasting water treatments in fall-sown spring wheats. Theor. Appl. Genet. 131: 1741–1759. doi:10.1007/s00122-018-3111-9	2018
Jorge Dubcovsky	Debernardi JM, Lin H, Chuck G, Faris JD, Dubcovsky J. microRNA172 plays a crucial role in wheat spike morphogenesis and grain threshability. Development. 2017;144(11):1966-1975.	2017
Julie King	King J, Grewal S, Othmeni M, Coombes B, Yang C-y, Walter N, Ashling S, Scholefield D, Walker J, Hubbart-Edwards S, Hall A and King IP (2022) Introgression of the Triticum timopheevii Genome Into Wheat Detected by Chromosome-Specific Kompetitive Allele Specific PCR Markers. Front. Plant Sci. 13:919519. doi: 10.3389/fpls.2022.919519	2022
Katherine Frels	Sade, B., Ibrahim, A. M. H., Subramanian, N., Rudd, J., Liu, S., Opena, G., & Baenziger, S. (2022). Assessment of floral characteristics for hybrid wheat (Triticum aestivum L.) production in Texas. Agrosystems, Geosciences & Environment, 5:e20228. https://doi.org/10.1002/agg2.20228	2022
Matthew Paul	Matthew J. Paul, Javier A. Miret, Cara A. Griffiths (2022). Improving rice photosynthesis and yield through trehalose 6-phosphate signaling. Molecular Plant, Volume 15, Issue 4, 2022, Pages 586-588, ISSN 1674-2052, https://doi.org/10.1016/j.molp.2022.03.004.	2022
Matthew Paul	Lyra, D.H., Griffiths, C.A., Watson, A., Joynson, R., Molero, G., Igna, A.-A., Hassani-Pak, K., Reynolds, M.P., Hall, A. and Paul, M.J. (2021), Gene-based mapping of trehalose biosynthetic pathway genes reveals association with source- and sink-related yield traits in a spring wheat panel. Food Energy Secur e292. https://doi.org/10.1002/fes3.292	2021
Matthew Paul	Matthew J. Paul, Amy Watson, Cara A. Griffiths; Trehalose 6-phosphate signalling and impact on crop yield. Biochem Soc Trans 30 October 2020; 48 (5): 2127–2137. doi: https://doi.org/10.1042/BST20200286	2020
Matthew Paul	Paul MJ, Watson A, Griffiths CA (2019) Linking fundamental science to crop improvement through understanding source and sink traits and their integration for yield enhancement. Journal of Experimental Botany, doi:10.1093/jxb/erz480	2019
Matthew Reynolds	Molero, G., Coombes, B., Joynson, R. et al. Exotic alleles contribute to heat tolerance in wheat under field conditions. Commun Biol 6, 21 (2023). https://doi.org/10.1038/s42003-022-04325-5	2023
Matthew Reynolds	Montesinos López OA, Mosqueda González BA, Montesinos López A, Crossa J. Statistical Machine-Learning Methods for Genomic Prediction Using the SKM Library. Genes (Basel). 2023 Apr 28;14(5):1003. doi: 10.3390/genes14051003. PMID: 37239363; PMCID: PMC10218433.	2023
Matthew Reynolds	Montesinos-López A, Rivera C, Pinto F, Piñera F, Gonzalez D, Reynolds M, Pérez-Rodríguez P, Li H, Montesinos-López OA, Crossa J. Multimodal deep learning methods enhance genomic prediction of wheat breeding. G3 (Bethesda). 2023 May 2;13(5):jkad045. doi: 10.1093/g3journal/jkad045. Erratum in: G3 (Bethesda). 2023 Apr 13;: PMID: 36869747; PMCID: PMC10151399.	2023

PROJECT PI	TITLE	YEAR
Matthew Reynolds	Reynolds, M.P., Slafer, G.A., Foulkes, J.M. et al. A wiring diagram to integrate physiological traits of wheat yield potential. Nat Food 3, 318–324 (2022). https://doi.org/10.1038/s43016-022-00512-z	2022
Matthew Reynolds	Robles-Zazueta CA, Pinto F, Molero G, Foulkes MJ, Reynolds MP, Murchie EH. Prediction of Photosynthetic, Biophysical, and Biochemical Traits in Wheat Canopies to Reduce the Phenotyping Bottleneck. Front Plant Sci. 2022;13:828451. Published 2022 Apr 11. doi:10.3389/fpls.2022.828451	2022
Matthew Reynolds	Matthew Reynolds, Owen K. Atkin, Malcolm Bennett, Mark Cooper, Ian C. Dodd, M. John Foulkes, Claus Frohberg, Graeme Hammer, Ian R. Henderson, Bingru Huang, Viktor Korzun, Susan R. McCouch, Carlos D. Messina, Barry J. Pogson, Gustavo A. Slafer, Nicolas L. Taylor, Peter E. Wittich. Addressing Research Bottlenecks to Crop Productivity, Trends in Plant Science,Volume 26, Issue 6, 2021, Pages 607-630, ISSN 1360-1385, https://doi.org/10.1016/j.tplants.2021.03.011.	2021
Matthew Reynolds	Volpato L, Pinto F, González-Pérez L, et al. High Throughput Field Phenotyping for Plant Height Using UAV-Based RGB Imagery in Wheat Breeding Lines: Feasibility and Validation. Front Plant Sci. 2021;12:591587. Published 2021 Feb 16. doi:10.3389/fpls.2021.591587	2021
Matthew Reynolds	Reynolds M, Chapman S, Crespo-Herrera L, Molero G, Mondal S, Pequeno DNL, Pinto F, Pinera-Chavez FJ, Poland J, Rivera-Amado C, Saint Pierre C, Sukumaran S. Breeder friendly phenotyping. Plant Sci. 2020 Jun;295:110396. doi: 10.1016/j.plantsci.2019.110396. Epub 2020 Jan 18. PMID: 32534615.	2020
Matthew Reynolds	Rivera-Amado C, Molero G, Trujillo-Negrellos E, Reynolds M, Foulkes J. Estimating Organ Contribution to Grain Filling and Potential for Source Upregulation in Wheat Cultivars with a Contrasting Source–Sink Balance. Agronomy. 2020; 10(10):1527. https://doi.org/10.3390/agronomy10101527	2020
Matthew Reynolds	Dreccer, M.F., Molero, G., Rivera-Amado, C., John-Bejai, C., Wilson, Z. 2019. Yielding to the image: How phenotyping reproductive growth can assist crop improvement and production. Plant Science 282 73-82 DOI: 10.1016/j.plantsci.2018.06.008	2019
Matthew Reynolds	Liu, C., Khodaee, M., Lopes, M.S., Sansaloni, C., Dreisigacker, S., Sukumaran, S., Reynolds, M. 2019. Multi-environment QTL analysis using an updated genetic map of a widely distributed Seri × Babax spring wheat population. Molecular Breeding 39:134 DOI: 10.1007/s11032-019-1040-1	2019
Matthew Reynolds	Liu, C., Sukumaran, S., Claverie, E., Sansaloni, C., Dreisigacker, S., Reynolds, M. 2019. Genetic dissection of heat and drought stress QTLs in phenology-controlled synthetic-derived recombinant inbred lines in spring wheat. Molecular Breeding 39 (34) DOI 10.1007/s11032-019-0938-y	2019
Matthew Reynolds	Molero, G., Joynson R., Pinera-Chavez FJ, Gardiner LJ, Rivera-Amado C, Hall A, Reynolds MP. 2019. Elucidating the genetic basis of biomass accumulation and radiation use efficiency in spring wheat and its role in yield potential. Plant Biotechnology Journal 17 1276-1288 DOI: 10.1111/pbi.13052	2019

PROJECT PI	TITLE	YEAR
Matthew Reynolds	Reynolds, M., Borrell. A., Braun, H., Edmeades, G., Flavell, R., Gwyn, J., Jordan, D., Pixley, K., Rebetzke, G., 2019. Translational Research for Climate Resilient, Higher Yielding Crops. Crop Breeding Genetics Genomics 1:e190016. https://doi.org/10.20900/cbgg20190016	2019
Matthew Reynolds	Rivera-Amado, C., Trujillo-Negrellos, E., Molero, G., Reynolds, M.P., Sylvester-Bradley, R., Foulkes, M.J. 2019. Optimizing dry-matter partitioning for increased spike growth, grain number and harvest index in spring wheat. Field Crops Research 240 154-167 DOI: 10.1016/j.fcr.2019.04.016	2019
Matthew Reynolds	Reynolds M.P.; Pask A.J.D.; Hoppitt W.J.E.; Sonder K.; Sukumaran S.; Molero G.; Saint Pierre C.; Payne T.; Singh R.; Braun H.; Gonzalez F.; Barma N.; Hakim A.; He Z.; Fan Z.; Novoselovic D.; Maghraby M.; Gad K.; ElHusseiny Galal; Hagras A.; Mohamed M.; Morad A.; Kumar U.; Singh G.; Naik R.; Kalappanavar I.; Biradar S.a; Sakuru Ve.; Chatrath R.; Sharma I.; Panchabhai K.; Sohu V.; Mavi G.; Mishra V.; Balasubramaniam A.; Jalal-Kamali M.; Khodarahmi M.; Dastfal M.; Tabib-Ghaffari S.; Jafarby J.; Nikzad A.; Moghaddam H.; Ghojogh H.; Mehraban A.; Solís-Moya E.; Camacho-Casas M.; Figueroa-López P.; Moreno J.; Alvarado-Padilla J.; Borbón-Gracia A.; Torres A.; Quiche N.; Upadhyay S.; Pandey D.; Imtiaz M.; Rehman M.; Hussain M.; Hussain M.; Ud-Din R.; Qamar M.; Kundi S.; Mujahid M.Y.; Ahmad G.; Khan A.; Sial M.; Mustatea P.; von Well E.; Ncala M.; de Groot S.; Hussein A.; Tahir I.; Idris A.; Elamein H.; Joshi A. (2017). Strategic crossing of biomass and harvest index—source and sink—achieves genetic gains in wheat. Euphytica 213: 257. https://doi.org/10.1007/s10681-017-2040-z Print ISSN: 0014-2336. Online ISSN: 1573-5060	2017
Matthew Reynolds	Sukumaran S, Lopes M, Dreisigacker S, Reynolds M (2017) Genetic analysis of multi-environmental spring wheat trials identifies genomic regions for locus-specific trade-offs for grain weight and grain number. Theor Appl Genet 1–14. doi: 10.1007/s00122-017-3037-7	2017
Matthew Reynolds	Sukumaran S, Reynolds MP, Sansaloni CP (2018) Genome-wide association analyses identify QTL hotspots for yield and component traits in durum wheat grown under yield potential, drought, and heat stress environments. Front Plant Sci 9:81. doi: 10.3389/fpls.2018.00081	2017
Matthew Reynolds	Tattaris M, Reynolds MP, Chapman SC. A Direct Comparison of Remote Sensing Approaches for High-Throughput Phenotyping in Plant Breeding. Front Plant Sci. 2016;7:1131. Published 2016 Aug 3. doi:10.3389/fpls.2016.01131	2016
Md. Ali Babar	Shahi D, Guo J, Pradhan S, et al. Multi-trait genomic prediction using in-season physiological parameters increases prediction accuracy of complex traits in US wheat. BMC Genomics. 2022;23(1):298. Published 2022 Apr 12. doi:10.1186/s12864-022-08487-8	2022
Md. Ali Babar	Sierra-Gonzalez A, Molero G, Rivera-Amado C, Babar MA, Reynolds M, Foulkes J. 2020. Exploring genetic diversity for grain partitioning traits to enhance yield in a high biomass spring wheat panel. Field Crops Research. 260. 107979. https://doi.org/10.1016/j.fcr.2020.107979.	2021

PROJECT PI	TITLE	YEAR
Scott Boden	Gauley, A, Boden, SA (2019) Genetic pathways controlling inflorescence architecture and development in wheat and barley. J Integr Plant Biol 61: 296– 309	2019
Scott Boden	Dixon, L. E., Greenwood, J. R., Bencivenga, S., Zhang, P., Cockram, J., Mellers, G., Ramm, K., Cavanagh, C., Swain, S. M., … Boden, S. A. (2018). TEOSINTE BRANCHED1 Regulates Inflorescence Architecture and Development in Bread Wheat (Triticum aestivum). The Plant cell, 30(3), 563-581.	2018
Senthold Asseng	Jose Rafael Guarin et al 2022 Environ. Res. Lett. 17 124045	2022
Senthold Asseng	Minoli S, Jägermeyr J, Asseng S, Urfels A, Müller C. Global crop yields can be lifted by timely adaptation of growing periods to climate change. Nat Commun. 2022 Nov 18;13(1):7079. doi: 10.1038/s41467-022-34411-5. PMID: 36400762; PMCID: PMC9674574.	2022
Senthold Asseng	Senapati, N., Semenov, M.A., Halford, N.G. et al. Global wheat production could benefit from closing the genetic yield gap. Nat Food (2022). https://doi.org/10.1038/s43016-022-00540-9	2022
Senthold Asseng	Sibylle Dueri, Hamish Brown, Senthold Asseng, Frank Ewert, Heidi Webber, Mike George, Rob Craigie, Jose Rafael Guarin, Diego N L Pequeno, Tommaso Stella, Mukhtar Ahmed, Phillip D Alderman, Bruno Basso, Andres G Berger, Gennady Bracho Mujica, Davide Cammarano, Yi Chen, Benjamin Dumont, Ehsan Eyshi Rezaei, Elias Fereres, Roberto Ferrise, Thomas Gaiser, Yujing Gao, Margarita Garcia-Vila, Sebastian Gayler, Zvi Hochman, Gerrit Hoogenboom, Kurt C Kersebaum, Claas Nendel, Jørgen E Olesen, Gloria Padovan, Taru Palosuo, Eckart Priesack, Johannes W M Pullens, Alfredo Rodríguez, Reimund P Rötter, Margarita Ruiz Ramos, Mikhail A Semenov, Nimai Senapati, Stefan Siebert, Amit Kumar Srivastava, Claudio Stöckle, Iwan Supit, Fulu Tao, Peter Thorburn, Enli Wang, Tobias Karl David Weber, Liujun Xiao, Chuang Zhao, Jin Zhao, Zhigan Zhao, Yan Zhu, Pierre Martre, Simulation of winter wheat response to variable sowing dates and densities in a high-yielding environment, Journal of Experimental Botany, 2022;, erac221, https://doi.org/10.1093/jxb/erac221	2022
Simon Griffiths	Hu P, Chapman SC, Sukumaran S, Reynolds M, Zheng B. Phenological optimization of late reproductive phase for raising wheat yield potential in irrigated mega-environments. J Exp Bot. 2022 Jun 24;73(12):4236-4249. doi: 10.1093/jxb/erac144. PMID: 35383843; PMCID: PMC9232205.	2022
Simon Griffiths	Basavaraddi PA, Savin R, Bencivenga S, Griffiths S, Slafer GA. Phenology and Floret Development as Affected by the Interaction between Eps-7D and Ppd-D1. Plants (Basel). 2021 Mar 12;10(3):533. doi: 10.3390/plants10030533. PMID: 33809009; PMCID: PMC8001856.	2021
Simon Griffiths	Basavaraddi PA, Savin R, Bencivenga S, Griffiths S, Slafer GA. Wheat Developmental Traits as Affected by the Interaction between Eps-7D and Temperature under Contrasting Photoperiods with Insensitive Ppd-D1 Background. Plants (Basel). 2021 Mar 13;10(3):547. doi: 10.3390/plants10030547. PMID: 33805828; PMCID: PMC7999118.	2021

PROJECT PI	TITLE	YEAR
Simon Griffiths	Basavaraddi PA, Savin R, Wingen LU, Bencivenga S, Przewieslik-Allen AM, Griffiths S, Slafer GA. Interactions between two QTLs for time to anthesis on spike development and fertility in wheat. Sci Rep. 2021 Jan 28;11(1):2451. doi: 10.1038/s41598-021-81857-6. PMID: 33510240; PMCID: PMC7843729.	2021
Simon Griffiths	Dreisigacker, S.; Burgueño, J.; Pacheco, A.; Molero, G.; Sukumaran, S.; Rivera-Amado, C.; Reynolds, M.; Griffiths, S. Effect of Flowering Time-Related Genes on Biomass, Harvest Index, and Grain Yield in CIMMYT Elite Spring Bread Wheat. Biology 2021, 10, 855. https://doi.org/10.3390/biology10090855	2021
Simon Griffiths	Pengcheng Hu, Scott C Chapman, Susanne Dreisigacker, Sivakumar Sukumaran, Matthew Reynolds, Bangyou Zheng, Using a gene-based phenology model to identify optimal flowering periods of spring wheat in irrigated mega-environments, Journal of Experimental Botany, 2021;, erab326, https://doi.org/10.1093/jxb/erab326	2021
Simon Griffiths	Priyanka A. Basavaraddi, Roxana Savin, Sivakumar Sukumaran, Matthew P. Reynolds, Simon Griffiths, Gustavo A. Slafer, Genotypic differences in wheat yield determinants within a NAM population based on elite parents, European Journal of Agronomy, Volume 123, 2021, 126223, ISSN 1161-0301, https://doi.org/10.1016/j.eja.2020.126223.(https://www.sciencedirect.com/science/article/pii/S1161030120302306)	2021
Simon Griffiths	Laura E. Dixon, Ildiko Karsai, Tibor Kiss, Nikolai M. Adamski, Zhenshan Liu, Yiliang Ding, Vincent Allard, Scott A. Boden, Simon Griffiths. 2019. VERNALIZATION1 controls developmental responses of winter wheat under high ambient temperatures. Development 2019 146: dev172684 doi: 10.1242/dev.172684	2019
Stephen Baenziger	Adhikari, A., A. M. H. Ibrahim, J. C. Rudd, P. S. Baenziger, and J.-B. Sarazin. 2020. Estimation of Heterosis and Combining Abilities of U.S. Winter Wheat Germplasm for Hybrid Development in Texas. Crop Science 60:788-803	2020
Stephen Baenziger	Adhikari, A., A.M.H. Ibrahim, J.C. Rudd, P.S. Baenziger, A. Easterly, N. Garst, V. Belamkar, J.-B. Sarazin. 2020. Supplementing selection decisions in a hybrid wheat breeding program by using F2 yield as a proxy of F1 performance. Euphytica 216: 130. [https://doi.org/10.1007/s10681-020-02664-0]	2020
Stephen Baenziger	Easterly, A. C., N. Garst, V. Belamkar, A. M. H. Ibrahim, J. C. Rudd, J.-B. Sarazin, and P. S. Baenziger. 2020. Evaluation of Hybrid Wheat (Triticum aestivum L.) Yield in Nebraska. Crop Science 60:1-13 . https://doi.org/10.1002/csc2.20019.	2020
Stephen Baenziger	Easterly, A. C., W. Stroup, N. Garst, V. Belamkar, J.-B. Sarazin, T. Moittie, A. M. H. Ibrahim, J. C. Rudd, E. Souza, and P. S. Baenziger. 2019. Determining the efficacy of a hybridizing agent in wheat (Triticum aestivum L) .Scientific Reports 9:1-11. https://doi.org/10.1038/s41598-019-56664-9	2019
Stephen Baenziger	Belamkar V, Guttieri MJ, Hussain W, et al. Genomic Selection in Preliminary Yield Trials in a Winter Wheat Breeding Program. G3 (Bethesda). 2018;8(8):2735-2747. Published 2018 Jun 26. doi:10.1534/g3.118.200415	2018
Stephen Baenziger	Bhatta, M., Morgounov, A., Belamkar, V., Poland, J., & Baenziger, P. S. (2018). Unlocking the novel genetic diversity and population structure of synthetic Hexaploid wheat. BMC genomics, 19(1), 591. doi:10.1186/s12864-018-4969-2	2018

PROJECT PI	TITLE	YEAR
Stuart Roy	Pathoumthong, P., Zhang, Z., Roy, S.J. et al. Rapid non-destructive method to phenotype stomatal traits. Plant Methods 19, 36 (2023). https://doi.org/10.1186/s13007-023-01016-y	2023
Stuart Roy	Menadue D.J., Riboni M., Baumann U., Schilling R.K., Plett D.C., Roy S.J. (2021) Proton-pumping pyrophosphatase homeolog expression is a dynamic trait in bread wheat (Triticum aestinum). Plant Direct, e354 https://doi.org/10.1002/pld3.354	2021
Stuart Roy	Regmi KC, Yogendra K, Gomes Farias J, Li L, Kandel R, Yadav UP, Sha S, Trittermann C, Short L, George J, Evers J, Plett D, Ayre BG, Roy SJ and Gaxiola RA (2020) Improved Yield and Photosynthate Partitioning in AVP1 Expressing Wheat (Triticum aestivum) Plants. Front. Plant Sci. 11:273. doi: 10.3389/fpls.2020.00273	2020
Stuart Roy	Regmi KC, Li L, Gaxiola RA. Alternate Modes of Photosynthate Transport in the Alternating Generations of Physcomitrella patens. Front Plant Sci. 2017;8:1956. Published 2017 Nov 13. doi:10.3389/fpls.2017.01956	2017
Stuart Roy	Gilliham, M., Able, J.A., Roy, S.J. (2016) Translating knowledge in abiotic stress tolerance to breeding programs. The Plant Journal DOI:10.1111/tpj.13456	2016
Stuart Roy	Schilling, R.K., Tester, M., Marschner, P., Plett, D.C., Roy, S.J. (2016) AVP1: one protein, many roles. Trends in Plant Science http://dx.doi.org/10.1016/j.tplants.2016.11.012	2016
Tracy Lawson	Wall S, Cockram J, Vialet-Chabrand S, Van Rie J, Gallé A, Lawson T. The impact of growth at elevated [CO2] on stomatal anatomy and behavior differs between wheat species and cultivars. J Exp Bot. 2023 Apr 27;74(9):2860-2874. doi: 10.1093/jxb/erad011. PMID: 36633860; PMCID: PMC10134898.	2023
Tracy Lawson	Wall S, Vialet-Chabrand S, Davey P, Van Rie J, Galle A, Cockram J, Lawson T. Stomata on the abaxial and adaxial leaf surfaces contribute differently to leaf gas exchange and photosynthesis in wheat. New Phytol. 2022 Sep;235(5):1743-1756. doi: 10.1111/nph.18257. Epub 2022 Jun 30. PMID: 35586964; PMCID: PMC9545378.	2022
Tracy Lawson	Moore CE, Meacham-Hensold K, Lemonnier P, et al. The effect of increasing temperature on crop photosynthesis: from enzymes to ecosystems. J Exp Bot. 2021;72(8):2822-2844. doi:10.1093/jxb/erab090	2021
Tracy Lawson	Vialet-Chabrand, S., Matthews, J.S.A. and Lawson, T. (2021), Light, power, action! Interaction of respiratory energy- and blue light-induced stomatal movements. New Phytol, 231: 2231-2246. https://doi.org/10.1111/nph.17538	2021
Tracy Lawson	Lawson, T. and Matthews, J. (2020). Guard cell metabolism and stomatal function. Annual Review of Plant Biology, 71, pp.273-302	2020
Tracy Lawson	Faralli M, Matthews J. and Lawson T (2019) Exploiting natural variation and genetic manipulation of stomatal conductance for crop improvement. Current opinion in plant biology, 49, pp.1-7	2019
Tracy Lawson	Matthews JSA, Vialet-Chabrand S. and Lawson T (2019) Role of Blue and Red Light in Stomatal Dynamic Behaviour. Journal of Experimental Botany. erz563, https://doi.org/10.1093/jxb/erz56	2019

PROJECT PI	TITLE	YEAR
Wanlong LI	Gupta A, Hua L, Zhang Z, Yang B, Li W. CRISPR-induced miRNA156-recognition element mutations in TaSPL13 improve multiple agronomic traits in wheat. Plant Biotechnol J. 2023 Mar;21(3):536-548. doi: 10.1111/pbi.13969. Epub 2022 Dec 5. PMID: 36403232; PMCID: PMC9946137.	2023
Wanlong Li	Gupta A, Hua L, Lin G, Molnár I, Doležel J, Liu S, Li W. 2021. Multiple origins of Indian dwarf wheat by mutations targeting the TREE domain of a GSK3-like kinase for drought tolerance, phosphate uptake, and grain quality. Theor Appl Genet. 134:633-645	2021
Wanlong Li	Gupta A, Li W. 2021. Genotyping strategies for detecting CRISPR mutations in polyploid species: a case study-based approach in hexaploid wheat. BioRiv. https://doi.org/10.1101/2021.11.18.469120	2021
Wanlong Li	Zhang Z, Hua L, Gupta A, Tricoli D, Edwards KJ, Yang B, Li W. 2018. Development of an Agrobacterium-delivered CRISPR/Cas9 system in wheat. Submitted to Plant Biotechnology Journal	2019
Wanlong Li	Li W, Yang B. 2017. Translational genomics of grain size regulation in wheat. Theoretical Applied Genetics.130:1765-1771	2017