

C. M. Rick

T G R C

Tomato Genetics Resource Center



Roger Chetelat (Director/Curator)
Xiaoqiong Qin (Postdoctoral Researcher)
Matt Valle (Assistant Curator)
Plant Sciences Department
University of California, Davis
trchetelat@ucdavis.edu
<https://tgrc.ucdavis.edu>

ANNUAL PROGRESS REPORT

2022



Ripe fruit of *Solanum peruvianum* accession LA2741. This accession was collected in 1985 from the Rio Camarones drainage in northern Chile, near the southern limit of this species distribution, and one of the few populations known from this area. LA2741 and several other accessions of *S. peruvianum* that had not been previously grown for seed multiplication were ‘rescued’ from storage and are now available to researchers.

SUMMARY

Acquisitions. We acquired 20 new accessions in 2022, including a set of prebred lines with high zingiberene from *S. habrochaites* developed by John Snyder at Univ. of Kentucky and a collection of high acylsugar lines bred from *S. pennellii* by Martha Mutschler at Cornell Univ. Several previously inactive wild species accessions that had not been multiplied before were ‘rescued’ from our long-term seed storage and are now available. The total of number of accessions maintained by the TGRC is now 4,474.

Maintenance and Evaluation. Over 770 cultures were grown for various purposes, of which 242 were for seed increase, including 53 wild species accessions. Germination tests were run on 625 seed lots. Progeny tests were performed on 51 stocks of male-steriles and other segregating genes, or to check accessions with unexpected phenotypes. *S. sitiens* introgression lines were grown for marker assisted selection or for heat tolerance testing. Other stocks were grown for research on interspecific reproductive barriers. All plants were monitored throughout development for evidence of disease; as in previous years, TSWV and ToMV were detected at low frequency in field and greenhouse, while an outbreak of Phytophthora root rot affected wild species stocks grown in the fall greenhouse. Newly regenerated seed lots were split, with one sample stored at 4° C for filling seed requests, the other stored in foil pouches at -20° C for long term preservation. 187 seed samples were sent to the USDA and 31 to the Svalbard Global Vault for off-site security backup storage.

Distribution and Utilization. A total of 6,021 seed samples representing 2,517 different accessions were distributed in response to 216 requests from 178 researchers and breeders in 27 countries; over 18 purely informational requests were also answered. The overall utilization rate (# samples distributed / # active accessions) was 135%. Information provided by requestors indicates our stocks continue to be used to support a wide variety of research and breeding projects. Our annual literature search uncovered 115 publications that mention use of TGRC stocks.

Documentation. Records on mutant genes were updated with literature citations. New images of mutants, landraces and wild species were uploaded, and passport data on new accessions was added. A descriptive narrative and material transfer agreements associated with the newly acquired acylsugar lines were added. Seed request records and passport information on seed samples submitted for off-site back up were provided to the USDA for uploading to the GRIN-Global database.

Research. Current research focuses on identifying genes or QTLs contributing to seed vigor and seed set under heat stress conditions. For this project we are using a set of introgression lines (prebred lines) with defined chromosomal segments from the wild nightshade *S. sitiens* in the genetic background of a modern fresh market variety. This work is funded by a grant from the Foundation for Food and Agriculture Research. We continue to study the molecular mechanisms of pollen rejection in tomato interspecific crosses.

ACQUISITIONS

The TGRC acquired 20 new stocks this year. John Snyder at the Univ. of Kentucky donated several prebred lines selected for elevated leaf zingiberene content and related traits from *S. habrochaites* LA2329. The lines were bred into the Chinese cultivar Zaofen2, and are at the BC3F7 or BC4F7 generations. Two of the lines are characterized by high phellandrene, another monoterpene. Most of the lines have increased densities of glandular trichomes and swollen trichome bases. Fruit setting ability varies between the lines, some being nearly sterile under field

conditions, but all setting well in the greenhouse. These prebred lines provide new germplasm sources to breed for insect resistance or to study trichome biochemistry, for instance.

Martha Mutschler at Cornell Univ. donated a collection of tomato breeding lines selected for high acyl sugar production from *S. pennellii* LA0716. The introgressed *S. pennellii* chromosome segments in each of these lines is known down to the DNA base pair resolution. The



highest acyl sugar producing line, CU17NBL, contains five introgressions on different chromosomes (chrom. 2, 3, 7, 8 and 10), and suffers from impaired flowering and fertility caused in part by the chromosome 3 introgression. Despite the linkage drag issue, these well-defined lines provide strong, broad spectrum insect resistance and should be useful to researchers and breeders interested in studying acyl sugar production.

A few obsolete or redundant accessions were dropped. The current total of number of accessions maintained by the TGRC is 4,474.

Immature fruit of LA5340, one of several *S. habrochaites*-derived prebred lines with elevated zingiberene developed by John Snyder. These are early generation lines and some have low fertility, yet should be useful for breeding for insect resistance or studying trichome biochemistry.

Table 1. Number of accessions of each species maintained by the TGRC. The figures include accessions that are temporarily unavailable for distribution.

<i>Solanum</i> spp.	# Accessions	<i>Solanum</i> spp.	# Accessions
<i>S. lycopersicum</i>	3,062	<i>S. corneliomulleri</i>	58
<i>S. lycopersicum</i> var. <i>ceras.</i>	421	<i>S. chilense</i>	115
<i>S. pimpinellifolium</i>	332	<i>S. habrochaites</i>	120
<i>S. cheesmaniae</i>	42	<i>S. pennellii</i>	47
<i>S. galapagense</i>	28	<i>S. lycopersicoides</i>	23
<i>S. chmielewskii</i>	16	<i>S. sitiens</i>	13
<i>S. neorickii</i>	47	<i>S. juglandifolium</i>	7
<i>S. arcanum</i>	45	<i>S. ochranthum</i>	7
<i>S. peruvianum</i>	71	Other	4
<i>S. huaylasense</i>	16	Total	4,474

MAINTENANCE AND EVALUATION

The TGRC grew over 770 families for various purposes: 242 were for seed increases, of which 53 were wild species accessions, and 35 were for progeny tests to verify the presence of segregating genes (e.g. male-sterility loci) or to confirm phenotypes. Other cultures were grown for introgression and analysis of the *S. sitiens* genome or to study interspecific reproductive barriers.

Identifying accessions in need of regeneration begins with seed germination testing. We start testing seed lots after 10 years of storage. Seed samples that do not meet our minimum of

80% germination after two weeks are normally regenerated in the same year. Seed lots that exceed this threshold are retested again every two to three years. Other factors, such as available greenhouse space, age of seed and supply on hand, are also considered. Newly acquired accessions are typically regenerated in the first year or so after acquisition because seed supplies are limited and of uncertain viability. This year, 625 germ tests were run on seed lots from 2012 or earlier. Average germination rates were satisfactory overall, except for *S. chilense*, *S. corneliomulleri*, *S. habrochaites* and *S. peruvianum* for which a large number of seed lots did not meet our 80% minimum viability (Table 2). We've mostly shifted to using ½X MS media for germination testing of the wild species, except that we continue to use the blue blotter germination paper with seed of *S. galapagense* and *S. cheesmaniae* because we find it seems to give better results.

Table 2. Results of seed germination tests. Values are based on samples of 25-100 seeds per accession, and represent the % germination after 10-14 days at 25°C. Seed lots with a low germination rate are defined as those with less than 80% germination. Germination tests were performed by sowing seed on ½ MS media, except for *S. lycopersicum*, *S. galapagense*, and *S. cheesmaniae*, which were sown on blotter paper.

Solanum Species	Tested Seed Years	# Tested	Avg %Germ	# Low Germ
<i>S. arcanum</i>	1991 - 2012	13	86.3	2
<i>S. cheesmaniae</i>	2010 - 2012	4	87.0	1
<i>S. chilense</i>	1999 - 2012	26	78.6	9
<i>S. chmielewskii</i>	2005 - 2012	5	84.4	2
<i>S. corneliomulleri</i>	1992 - 2012	26	78.0	8
<i>S. galapagense</i>	2005 - 2012	4	80.4	2
<i>S. habrochaites</i>	1984 - 2012	52	72.0	16
<i>S. huaylasense</i>	2005 - 2012	2	90.3	0
<i>S. lycopersicum</i>	2003 - 2012	376	88.8	50
<i>S. neorickii</i>	2004 - 2012	12	96.5	0
<i>S. pennellii</i>	2003 - 2012	12	88.1	2
<i>S. peruvianum</i>	1994 - 2012	28	81.0	11
<i>S. pimpinellifolium</i>	2002 - 2012	65	86.6	8
Total		625		111

Most stocks of *S. lycopersicum* and the predominantly selfing accessions of *S. pimpinellifolium* are grown for seed multiplication in the field unless they require greenhouse culture. Each family is typically represented by 8 or 9 plants, except for segregating families (e.g. male-steriles), which are grown from larger plantings. Our field plot this year occupied approx. 1 acre. As usual, sequential plantings were made to spread the workload, with the first transplanting on April 29. Conditions were generally favorable throughout the growing season, despite the usual summer hot spells, and plants were mostly healthy, although we lost a significant fraction of plants to TSWV. Growth under drip irrigation – initially surface, then subsurface – was again quite good and we shut off the water early to keep plants to manageable size. As with last year, our plants went into ground that had not seen tomatoes in many years. As a result, there were virtually no volunteer tomatoes sprouting within the beds, which avoided the need to pull out the young plants to prevent seed admixture.

Most of the wild species, many mutants and certain other genetic stocks require greenhouse culture, either for isolation purposes or because they do not grow or flower well under field conditions. For the mutant stocks, we sow the weakest lines first, and finish with lines of normal vigor. Our schedule of greenhouse plantings of the wild species is based on photoperiod responses: those with the least sensitivity are planted first, in the early spring; those with intermediate reaction are planted in early summer; the most sensitive (i.e. flower best under short days) are planted in mid-summer for fall blooming. Optimal planting dates and other growing recommendations for each species are listed on our website. Wild accessions are grown from large population sizes (50-75 plants) to maintain diversity, maximize heterozygosity, and avoid inbreeding across successive rounds of seed increase.



We completed seed multiplications started in 2021 of several previously inactive *S. peruvianum* accessions that had never been grown at Davis. These accessions were ‘rescued’ from the original, and very old seed collections, which fortunately had not lost all seed viability, by using various tricks to coax a few seeds to germinate. We also recovered an accession of *S. habrochaites*, LA0440 – a rare population from the Sibambe/Huigra area of Ecuador – which was extinct in our collection but fortunately had been maintained by the USDA’s Geneva genebank. Given the near impossibility of getting permission to collect seed in the native region, mining the existing collections for these sorts of inactive wild accessions is one way to increase diversity of the available germplasm.

Plants of the *dumpy* mutant. This mutant is deficient in brassinosteroid responses.

Preventing the spread of seed borne pathogens is an important aspect of any seed regeneration program. We inspect all our plantings throughout the growing cycle for disease symptoms. Plants displaying signs of disease are tested with Agdia ImmunoStrips. In the field our biggest disease challenge is TSWV, vectored by the difficult to control Western flower thrips. In the greenhouse we detected ToMV in several groups, probably originating from seed transmission, forcing us to repeat seed increases on some accessions. For infected seed lots, we’ve found that heating dry seeds for 3 days at 65°C, followed by our standard bleach treatment (2.75% hypochlorite for 30 mins) is effective at preventing ToMV transmission to seedlings. This year we also had an outbreak of Phytophthora root rot (*P. parasitica*) in our fall wild species stock increases, which forced us to discard groups that had too few surviving plants to assure adequate genetic diversity. This soil pathogen was ultimately eliminated by drenching pots with Metalaxyl.

All stocks grown for seed increase or other purposes were systematically checked to verify that they expressed the expected phenotypes. New accessions were evaluated in greater detail, with the descriptors depending upon the type of accession (wild species, cultivar, mutant, chromosomal stocks, etc.). Plantings were reviewed at different growth stages to observe foliage, habit, flower morphology, fruit set, and fruit morphology. Images of selected accessions were uploaded to our website.

Many genetic stocks, including various sterilities, nutritional, and weak mutants, cannot be maintained as true-breeding lines and must be transmitted from heterozygotes. Progeny tests are therefore made after each generation of seed increase to verify that individual seed lots segregate

for the gene in question. Other accessions may show unexpected segregation or off-types due to outcrossing or mix-ups and need to be progeny tested to reestablish true breeding lines with the correct traits. This year we progeny tested 51 seed lots of male-steriles, other segregating mutants, and stocks with questionable phenotypes, including the mutants *ms-10*, *ms-15*⁴⁷, *ms-23*, *Ms-48*, *Del*, the cultivars VF145-7879, Rutgers, Marglobe, Purdue 135, and accessions of *S. arcanum* (LA1346) and *S. peruvianum* (LA2955B). We compared our stock of cv. Rutgers to accessions of the same variety from the USDA and other sources, and found that ours has abnormally small lobed fruit, and excessive vegetative growth, suggesting the possibility of cross-pollination or seed admixture in a previous generation. Accordingly, we will replace our stock of Rutgers with one



of the lines that shows the expected fruit shape and other traits.

Samples of newly regenerated seed lots were catalogued, with most of the seed stored or at -20°C for long term storage, and smaller quantities stored at 4°C for filling seed requests. Following our standard practice, samples of seed were treated with acid and bleach to prevent transmission of seed borne pathogens and to meet import requirements for certain countries. As in the past, up to 1000 seed of newly

Pollen of LA4461, a stock of the *asynaptic* (*as*) mutant, stained with Alexander's solution. This mutant disrupts normal chromosome pairing, leading to partial pollen abortion (blue). Like other sterile mutants, *asynaptic* is maintained via heterozygotes, and therefore segregates in each generation.

regenerated seed lots were sent to the USDA National Laboratory for Genetic Resources Preservation in Ft. Collins, Colorado for long-term backup storage. This year 187 backed up to NLGRP, and 31 accessions were sent to the Svalbard Global Seed vault.

DISTRIBUTION AND UTILIZATION

A total of 6,021 seed packets of 2,517 different accessions were sent in response to 216 seed requests from 178 scientists, breeders, and educators in 27 countries. Relative to the size of the TGRC collection (4,474 accessions), the number of seed samples distributed represents a utilization rate of 135%. Over half of our accessions (56%) were requested at least once in 2022, demonstrating that a large share of the collection is utilized. We also answered at least 18 purely informational requests regarding our stocks, growing recommendations, and related questions.

We continue to receive many requests for introgression lines (ILs), recombinant inbred lines (RILs), and backcross inbred lines (BILs). A total of 21 requests and 251 seed samples were processed for the *S. pennellii* ILs, 12 requests and 381 samples for the *S. habrochaites* ILs, and 11 requests and 156 samples for the *S. lycopersicoides* ILs. We also sent out 200 samples of *S. lycopersicum* x *S. pimpinellifolium* RILs and BC-RILs in response to 4 requests, and 368 samples of *S. pennellii* BILs for 6 requests. Exotic germplasm libraries such as these require considerable time and expense to develop, but the investment is clearly justified by their continued long-term use in breeding and research.

The various steps involved in filling seed requests – selecting accessions, treating and packaging seeds, entering the information into our database, providing cultural recommendations, obtaining phytosanitary certificates, etc. – involve a large time commitment. The TGRC crew worked diligently to fill seed requests in a timely manner. Overseas shipments involve ever

changing and increasingly stringent phytosanitary requirements, which we must keep up to date with. Shipment of seed to the European Union and many other countries continues to be challenging due to requirements for Tomato Brown Rugose Fruit Virus (ToBRFV) testing, however researchers can obtain a Letter of Authority or import permits granting exception to this rule. Fortunately, the ToBRFV restrictions so far apply only to seed of cultivated tomato, and not to its wild relatives. However, Spain and other EU countries now consider a phyto valid for only two weeks, even with a Letter of Authority, making shipments to the EU more challenging.

Information provided by recipients regarding intended uses of our stocks are summarized in Table 3. As in previous years, there was a notable emphasis on biotic stresses, especially viral, bacterial and fungal diseases, both for breeding purposes and for basic research. Many stocks were requested for screening against ToBRFV, a major threat to production in many areas, as well as bacterial speck, bacterial wilt, and *Fusarium* species. Research and breeding for resistance to *Tuta absoluta* leaf miner was also emphasized, reflecting the spread of this insect pest. There were also



several requests for research on the soil/root microbiome. There was also much interest in abiotic stress responses, especially drought and salinity. Many other requests mentioned fruit traits (quality, color, etc), or breeding-related uses, notably marker development or selection for vertical farming or other controlled environment systems. Our stocks were again requested for a broad array of physiological or developmental studies, with some emphasis this year of reproductive biology (pollen competition, seed development, pollination, etc).

Purplish immature fruit of the AuberGINE mutant, LA4425, bred from *S. lycopersicoides*. This stock also carries the *anthocyanin gainer* mutation which reduces anthocyanins in vegetative tissues.

Table 3. Intended uses of TGRC stocks as reported by requestors. Values represent the total number of requests mentioning each area of investigation. Requests addressing multiple topics may be counted more than once.

Biotic Stresses				Abiotic Stresses	
Viruses:		<i>Fusarium falciforme</i>	1	Drought	6
ToBRFV	4	<i>Fusarium</i> wilt	4	Flooding	1
ToMV	1	<i>Oidium</i>	1	High temperatures	5
TSWV	2	Powdery mildew	2	Heavy metal toxicity	2
TYLCV	1	<i>Septoria</i>	1	Phosphate efficiency	3
Unspecified viruses	1	<i>Trichoderma</i>	1	Salinity	8
Bacteria:		<i>Verticillium</i>	3	Unspec. abiotic stresses	9
Bacterial canker	1	Nematodes	2		
Bacterial spot	1	Unspecified diseases	18	Fruit Traits	
Bacterial speck	3	Microbiome	6	Alkaloids	1
Bacterial wilt	3	Microcystin-LR	1	Anthocyanins	4
Fungi:		Insect pests:		Carotenoids, color	5
<i>Alternaria solani</i>	2	Leaf miners	1	Flavonoids	2
<i>Botrytis cinerea</i>	1	<i>Tuta absoluta</i>	3	Flavor, volatiles	1
<i>Fusarium</i> crown rot	1	Whiteflies	2	Fruit develop., ripening	1
		Unspecified insects	13	Fruit quality	6
		Unspec. biotic stresses	7		

Fruit shape	1	Evolution	3	Metabolomics	3
Other Breeding		Gene editing/CRISPR	5	PAMPs	2
Grafting, rootstocks	3	Gene mining	1	Photosynthesis	2
Germplasm diversity	1	Genomics	1	Pollen competition	2
Marker development	12	Mapping, QTLs	2	Pollination	1
Hortic./morphol. traits	2	Pluripotency	1	Seed develop., germin.	3
Molecular breeding	1	Recombination	1	Stomatal responses	2
Prebreeding, wide cross	2	Transformation	1	Self-incompatibility	1
Plant architecture	1	Trisomics	1	Trichomes	3
Vertical/CE farming	4	Unspecified genetics	6	Tritrophic interactions	1
Yield	3	Physiology / Develop.		Wounding, herbivory	4
Unspecified breeding	16	ABA responses	4		
Genetic Studies		Acylsugars	2	Miscellaneous	
Association studies	2	Daylength, light response	4	Seed backup storage	2
Cytology/cytogenetics	1	Edema	3	Instructional uses	1
Diversity	1	Hormone mutants	2	Unspecified research	13
Epigenetics	1	Ion transfer	2		
Epistasis	3	Leaf volatiles	1		

Our survey of the 2022 literature and unreviewed papers of previous years uncovered 115 journal articles, abstracts, theses, patents, and other publications that mention use of TGRC stocks (see Bibliography below). Many additional papers were undoubtedly missed, and cases of utilization by the private sector are generally not publicized. These publications, including many in high impact journals, demonstrate the positive impact of TGRC germplasm on basic and applied research and tomato breeding.

DOCUMENTATION

Our database and website were expanded and updated in various ways. Our records on mutant genes were enriched by the inclusion of literature citations for each gene and allele. The goal was to cite the original publication describing the mutant phenotype, and where available, any allele tests or changes in gene nomenclature, as well as tests for linkage to other genes. We also listed papers describing isolation of the underlying genes for those that have been cloned. Our database describes every mutant gene represented by an accession(s) in our collection. Additional images of mutants, wild species, and landrace accessions were uploaded to our database and are accessible via our website. We created passport records for new accessions, including links to associated material transfer agreements, and fixed errors or missing data on existing accession records. Records on seed inventory, seed requests, plant cultures, and researcher contact information were updated on an almost daily basis. On our website we added a page describing the newly acquired acylsugar lines. We also updated guidelines for international requests to reflect the most recent changes in phytosanitary restrictions and trade regulations. And we updated links to publications. We provided the USDA National Plant Germplasm System with basic passport data on accessions backed up to Ft. Collins for uploading into the GRIN-Global database, as well as seed distribution records and the numbers of requests from different organizational categories (i.e. domestic or foreign, public or commercial, etc.).

RESEARCH

We completed the year 2 of a new research project funded by the FFAR (the Foundation for Food and Agriculture Research) to investigate seed quality and responses to high temperature stress. The other participants are Dr. Kent Bradford (PI, UC Davis), Dr. Barbara Blanco-Ulate

(coPI, UC Davis), and Dr. Alfred Huo (coPI, University of Florida). Our group is using the *S. sitiens* introgression lines to map the genetic regions (QTLs) contributing to variation in seed dormancy, seed germination vigor, seed weight, and fruit and seed set under heat stress vs control conditions. Separately, we continued to isolate recombinant sublines of the *S. sitiens* ILs that break up large introgressions and improve their mapping resolution.

We are also continuing our studies on reproductive barriers. RTC presented a talk at the EUCARPIA meeting summarizing our most recent findings. This work focuses on a pair of pollen and pistil genes encoding farnesyl pyrophosphate synthase (*FPS2*) or ornithine decarboxylase (*ODC2*) proteins, respectively. We showed previously that high expression of the *ODC2* gene in pistils of *S. pennellii* leads to rejection of pollen from cultivated tomato and other species with low *FPS2* expression. These two genes are key elements of a pollen rejection (unilateral incompatibility) mechanism that acts independently of the S-RNase based pollen rejection system. Our current research seeks to characterize the evolutionary diversity of *ODC2/FPS2*-based incompatibility within the tomato clade.

PUBLICATIONS

Qin, X, and R. T. Chetelat (2022) The molecular genetic basis of pollen rejection in tomato wide crosses. Proc's XXth EUCARPIA Meeting of the Tomato Working Group, Valencia, Spain. Page 23.

SERVICE AND OUTREACH

RTC gave lectures on the TGRC, its research projects, and related topics to HRT 200B (a UCD graduate course in horticulture), the Seed Biotech. Center's Plant Breeding Academy, the UCD Plant Sciences Dept. seminar, Michigan State Univ., and the EUCARPIA tomato working group conference in Valencia, Spain. RTC, MV and/or XQ gave tours to and/or consulted with scientists from the Campbell Soup Co., NatureSweet, Kagome, Claris LLC, x.company, the Foundation for Food and Agriculture Research, Norfolk Healthy Produce, the European Plant Breeding Academy, the University of Wisconsin, and various UC Davis units (Dubcovsky, Funk and Grettenberger labs, CAES Dean's office).

PERSONNEL

Matthew Valle, Assistant Curator, supervised undergraduate students Naomi Lavin, Sabrina Colación and Jessica Carver in the greenhouse, field and seed lab, as well as Jay Francisco, our seed request specialist. Maxine Nixon and Reilly Blair both graduated and moved on: Maxine now works in environmental monitoring, and Reilly is a graduate student in plant pathology at Cal Poly. Dr. Xiaoqiong Qin continues to lead our research on pollen thermotolerance and seed vigor using *S. sitiens* introgression lines, and the mechanisms of pollen-pistil incompatibility, aided by student assistant Sarah Ng and intern Sabrina Colación. Qin and her students also provided DNA marker services to the TGRC.

TESTIMONIALS

“I want to thank you for all of your great assistance and what you are all doing to the plant research community.” – Mark Massoudi, Ag Biotech

“Thank you very much for your generosity and services you are extending to the tomato research community at the global level.” – H.C. Prasanna, Indian Inst. Hort. Research

“Thank you! Your service to the research community is appreciated, even if we forgot to say so often enough!!” – Gloria Muday, Wake Forest University

“The TGRC germplasm set is a valuable addition to East West Seed’s collection for research and prebreeding purposes.” – Marilyn Belarmino, East West Seed

“I am always impressed by your wealth of knowledge every time that we have interacted.” – Frank Zalom, UC Davis

ACKNOWLEDGEMENTS

The TGRC thanks the following organizations for their financial support in 2022:



BIBLIOGRAPHY

(list of publications citing use of TGRC stocks)

- Abbas, M., Sharma, G., Dambire, C., Marquez, J., Alonso-Blanco, C., Proano, K. and Holdsworth, M. J. (2022) An oxygen-sensing mechanism for angiosperm adaptation to altitude. *Nature*, **606**, 565-569. <http://dx.doi.org/10.1038/s41586-022-04740-y>
- Adato, A., Mandel, T., Mintz-Oron, S., Venger, I., Levy, D., Yativ, M., . . . Aharoni, A. (2009) Fruit-surface flavonoid accumulation in tomato is controlled by a SIMYB12-regulated transcriptional network. *PLoS Genet*, **5**, e1000777. <http://dx.doi.org/10.1371/journal.pgen.1000777>
- Akiyama, R., Watanabe, B., Kato, J., Nakayasu, M., Lee, H. J., Umemoto, N., . . . Mizutani, M. (2022) Tandem Gene Duplication of Dioxygenases Drives the Structural Diversity of Steroidal Glycoalkaloids in the Tomato Clade. *Plant and Cell Physiology*, **63**. <http://dx.doi.org/10.1093/pcp/pcac064>

- Ali, A. A. M., Romdhane, W. B., Tarroum, M., Al-Dakhil, M., Al-Doss, A., Alsadon, A. A. and Hassairi, A.** (2021) Analysis of Salinity Tolerance in Tomato Introgression Lines Based on Morpho-Physiological and Molecular Traits. *Plants*, **10**. <http://dx.doi.org/10.3390/plants10122594>
- Americo, S. and al., e.** (2022) Searching for new tomato salt stress tolerance candidate genes, using introgressions lines (ILs) of *Solanum pennellii* x *Solanum lycopersicum* grown in vitro. *Proc's XXth EUCARPIA Tomato Working Group*.
- Arafa, R. A., Kamel, S. M., Taher, D. I., Solberg, S. Ø. and Rakha, M. T.** (2022) Leaf Extracts from Resistant Wild Tomato Can Be Used to Control Late Blight (*Phytophthora infestans*) in the Cultivated Tomato. *Plants*, **11**. <http://dx.doi.org/10.3390/plants11141824>
- Asins, M. J., Romero-Aranda, M. R., Espinosa, J., Gonzalez-Fernandez, P., Jaime-Fernandez, E., Traverso, J. A., . . . Belver, A.** (2022) HKT1;1 and HKT1;2 Na(+) Transporters from *Solanum galapagense* Play Different Roles in the Plant Na(+) Distribution under Salinity. *Int J Mol Sci*, **23**. <http://dx.doi.org/10.3390/ijms23095130>
- Aslan, B., Birgucu, A. K., Uluisik, S. and Karaca, I.** (2022) Life table parameters of *Tuta absoluta* (Meyrick, 1917) (Lepidoptera: Gelechiidae) on four wild tomato species. *Turkiye Entomoloji Dergisi*, **46**, 175-186. <http://dx.doi.org/10.16970/entoted.1016214>
- Aslan, B., BİRgÜCÜ, A. K., UluiŞIK, S. and Karaca, İ.** (2022) *Tuta absoluta* (Meyrick, 1917) (Lepidoptera: Gelechiidae)'nın dört yabani domates türü üzerinde yaşam çizelgesi parametreleri. *Turkish Journal of Entomology*, **46**, 175-186. <http://dx.doi.org/10.16970/entoted.1016214>
- Aydin, G. and Aktaş, H.** (2022) Determination of The Response of Wild and Cultivated Tomato Genotypes to Some Disease and Pests by Molecular Markers. *Horticultural Studies*, 15-21. <http://dx.doi.org/10.16882/hortis.1069414>
- Barone, A. and al., e.** (2022) Enhancing tolerance to abiotic stresses: a multi-combined approach to face high temperatures in tomato. *Proc's XXth EUCARPIA Tomato Working Group*, 60.
- Bashary, N., Miller, G. and Lieberman-Lazarovich, M.** (2022) Characterization of *Solanum pimpinellifolium* backcross inbred lines as a resource for heat tolerance in tomato. *Proc's XXth EUCARPIA Tomato Working Group*, 61.
- Batista-Silva, W., Carvalho de Oliveira, A., Martins, A. O., Siqueira, J. A., Rodrigues-Salvador, A., Omena-Garcia, R. P., . . . Araujo, W. L.** (2022) Reduced auxin signalling through the cyclophilin gene *DIAGEOTROPICA* impacts tomato fruit development and metabolism during ripening. *J Exp Bot*, **73**, 4113-4128. <http://dx.doi.org/10.1093/jxb/erac143>
- Biermann, R. T. and al., e.** (2022) Using heat-coupling proteomics with phenotypic classification to identify suitable germplasm for breeding of heat stress tolerant tomato. *Proc's XXth EUCARPIA Tomato Working Group*, 65.
- Bigot, S., Martínez, J. P., Lutts, S. and Quinet, M.** (2022) Strategies of Na and Cl accumulation in *Solanum lycopersicum* and its wild halophyte relative *Solanum chilense* under salt stress. *Proc's XXth EUCARPIA Tomato Working Group*, 66.
- Bigot, S., Pongrac, P., Šala, M., van Elteren, J. T., Martínez, J.-P., Lutts, S. and Quinet, M.** (2022) The Halophyte Species *Solanum chilense* Dun. Maintains Its Reproduction despite Sodium Accumulation in Its Floral Organs. *Plants*, **11**. <http://dx.doi.org/10.3390/plants11050672>
- Blanca, J. and al., e.** (2022) Haplotype analyses reveal novel insights into tomato history and domestication driven by long-distance migrations and latitudinal adaptations. *Horticulture Research*, **9**, uhac030. <http://dx.doi.org/10.1093/hortre/uhac030>
- Blanca, J., Sanchez-Matarredona, D., Ziarsolo, P., Montero-Pau, J., van der Knaap, E., Diez, M. J. and Canizares, J.** (2022) Haplotype analyses reveal novel insights into tomato history and domestication driven by long-distance migrations and latitudinal adaptations. *Hortic Res*. <http://dx.doi.org/10.1093/hr/uhac030>
- Bonarota, M. S., Kosma, D. K. and Barrios-Masias, F. H.** (2022) Salt tolerance mechanisms in the *Lycopersicon* clade and their trade-offs. *AoB Plants*, **14**, plab072. <http://dx.doi.org/10.1093/aobpla/plab072>

- Castaneda, L., Gimenez, E., Pineda, B., Garcia-Sogo, B., Ortiz-Atienza, A., Micol-Ponce, R., . . . Lozano, R.** (2022) Tomato CRABS CLAW paralogues interact with chromatin remodelling factors to mediate carpel development and floral determinacy. *New Phytol*, **234**, 1059-1074. <http://dx.doi.org/10.1111/nph.18034>
- Celik, I. and Kabaş, A.** (2021) Development of biotic stress resistant F1 interspecific hybrid rootstock derived from *Solanum lycopersicum* and *Solanum habrochaites*. *Acta Scientiarum Polonorum Hortorum Cultus*, **20**, 107-118. <http://dx.doi.org/10.24326/asphc.2021.5.10>
- Chacko Kaitholil, S. R.** (2022) Development of a bioinformatics pipeline for comparative genomics analysis. *M.S. Thesis, Cranfield Univ.* <http://dx.doi.org/10.13140/RG.2.2.36416.20482>
- Chechanovsky, N., Hovav, R., Frenkel, R., Faigenboim, A., Eselson, Y., Petreikov, M., . . . Schaffer, A. A.** (2019) Low temperature upregulates cwp expression and modifies alternative splicing patterns, increasing the severity of cwp-induced tomato fruit cuticular microfissures. *Hortic Res*, **6**, 122. <http://dx.doi.org/10.1038/s41438-019-0204-9>
- Choi, Y. and al., e.** (2022) Identification of genomic region associated with the resistance to black leaf mold based on the genotyping-by-sequencing of *Solanum habrochaites* (LA1777) introgression lines. *Proc 's XXth EUCARPIA Tomato Working Group*, 99.
- Colak, N. G., Eken, N. T., Ulger, M., Frary, A. and Doganlar, S.** (2020) Exploring wild alleles from *Solanum pimpinellifolium* with the potential to improve tomato flavor compounds. *Plant Sci*, **298**, 110567. <http://dx.doi.org/10.1016/j.plantsci.2020.110567>
- Colling, A.** (2022) *Etude du dialogue epigenetique chez une plante greffe d'interet agronomique: la tomate.*, University of Bordeaux.
- David, S., Levin, E., Fallik, E., Alkalai-Tuvia, S., Foolad, M. R. and Lers, A.** (2022) Physiological genetic variation in tomato fruit chilling tolerance during postharvest storage. *Frontiers in Plant Science*, **13**, 991983. <http://dx.doi.org/10.3389/fpls.2022.991983>
- Dawood, M. H. S. A.** (2020) *Arthropod Resistant Tomatoes: Screening Tools, Yield and Nutritional Quality of Interspecific Hybrids*. Ph.D., University of Kentucky.
- de Lima Filho, R. B., Resende, J. T. V., de Oliveira, J. R. F., Nardi, C., Silva, P. R., Rech, C., . . . Ribeiro Silva, A. L. B.** (2022) Relationship between Acylsugars and Leaf Trichomes: Mediators of Pest Resistance in Tomato. *Insects*, **13**, 738. <http://dx.doi.org/10.3390/insects13080738>
- de Resende, J. T. V., Dias, D. M., Erpen-Dalla Corte, L., Constantino, L. V., Ventura, M. U., de Lima Filho, R. B., . . . Da-Silva, P. R.** (2021) The introgression of resistance to *Tuta absoluta* in tomato based on glandular trichomes. *Arthropod-Plant Interactions*, **16**, 87-99. <http://dx.doi.org/10.1007/s11829-021-09873-x>
- de Souza Marinke, L., de Resende, J. T. V., Hata, F. T., Dias, D. M., de Oliveira, L. V. B., Ventura, M. U., . . . de Lima Filho, R. B.** (2022) Selection of tomato genotypes with high resistance to *Tetranychus evansi* mediated by glandular trichomes. *Phytoparasitica*, **50**, 629-643. <http://dx.doi.org/10.1007/s12600-022-00984-6>
- Dzakovich, M. P., Francis, D. M. and Cooperstone, J. L.** (2022) Steroidal alkaloid biosynthesis is coordinately regulated and differs among tomatoes in the red-fruited clade. *Plant Genome*, e20192. <http://dx.doi.org/10.1002/tpg2.20192>
- Efremov, G. I., Dzhos, E. A., Ashikhmin, A. A., Kochieva, E. Z. and Shchennikova, A. V.** (2022) Effect of the Carotenoid Content and Activity of the Carotene cis-trans Isomerase CRTISO on Tomato Fruit Color. *Russian Journal of Plant Physiology*, **69**. <http://dx.doi.org/10.1134/s1021443722040045>
- Farinon, B., Picarella, M. E., Siligato, F., Rea, R., Taviani, P. and Mazzucato, A.** (2022) Phenotypic and Genotypic Diversity of the Tomato Germplasm From the Lazio Region in Central Italy, With a Focus on Landrace Distinctiveness. *Frontiers in Plant Science*, **13**. <http://dx.doi.org/10.3389/fpls.2022.931233>
- Fenstemaker, S., Cho, J., McCoy, J. E., Mercer, K. L. and Francis, D. M.** (2022) Selection strategies to introgress water deficit tolerance derived from *Solanum galapagense* accession LA1141 into cultivated tomato. *Frontiers in Plant Science*, **13**, 947538. <http://dx.doi.org/10.3389/fpls.2022.947538>
- Fenstemaker, S., Miller, J., Cooperstone, J. and Francis, D.** (2021) Estimating parental contributions to hybrid rootstocks in grafted tomato. *Acta Horticulturae*, 241-250. <http://dx.doi.org/10.17660/ActaHortic.2021.1302.32>

- Fenstemaker, S., Sim, L., Cooperstone, J. and Francis, D.** (2022) *Solanum galapagense*-derived purple tomato fruit color is conferred by novel alleles of the *Anthocyanin fruit* and *atroviolacium* loci. *Plant Direct*, **6**. <http://dx.doi.org/10.1002/pld3.394>
- Fonseca, R., Capel, C., Nieto-Canseco, R., Ortiz-Atienza, A., Bretones, S., Lopez-Fabregas, J. D., . . . Lozano, R.** (2022) A Tomato EMS-Mutagenized Population Provides New Valuable Resources for Gene Discovery and Breeding of Developmental Traits. *Plants-Basel*, **11**, 2453. <http://dx.doi.org/10.3390/plants11192453>
- Fonseca, R., Capel, C., Yuste-Lisbona, F. J., Quispe, J. L., Gomez-Martin, C., Lebron, R., . . . Capel, J.** (2022) Functional characterization of the tomato *HAIRPLUS* gene reveals the implication of the epigenome in the control of glandular trichome formation. *Hortic Res.* <http://dx.doi.org/10.1093/hr/uhab015>
- Fuentes, R. R., de Ridder, D., van Dijk, A. D. J. and Peters, S. A.** (2022) Domestication Shapes Recombination Patterns in Tomato. *Mol Biol Evol.* **39**. <http://dx.doi.org/10.1093/molbev/msab287>
- Gao, Y., Liang, Y., Fu, Y., Si, Z. and Hamani, A. K. M.** (2022) Interactive Effects of Intraspecific Competition and Drought on Stomatal Conductance and Hormone Concentrations in Different Tomato Genotypes. *Horticulturae*, **8**. <http://dx.doi.org/10.3390/horticulturae8010045>
- Gonzalo, M. J. and al., e.** (2022) Genetic control of reproductive traits under different temperature regimens in segregating tomato populations. *Proc's XXth EUCARPIA Tomato Working Group*, 67.
- Gonzalo, M. J., da Maia, L. C., Najera, I., Baixauli, C., Giuliano, G., Ferrante, P., . . . Monforte, A. J.** (2022) Genetic Control of Reproductive Traits under Different Temperature Regimes in Inbred Line Populations Derived from Crosses between *S. pimpinellifolium* and *S. lycopersicum* Accessions. *Plants (Basel)*, **11**. <http://dx.doi.org/10.3390/plants11081069>
- Graham, E., Grit, A., Pape, G., Pedroni, S. J. and West, M.** (2022) *Tomato plants with improved disease resistance*. Patent US 11479788.
- Gu, M., Lu, Q., Liu, Y., Cui, M., Si, Y., Wu, H., . . . Ling, H.-Q.** (2022) Requirement and functional redundancy of two large ribonucleotide reductase subunit genes for cell cycle, chloroplast biogenesis and photosynthesis in tomato. *Annals of Botany (London)*, **130**. <http://dx.doi.org/10.1093/aob/mcac078>
- Guayson, H.** (2022) High-quality de novo genome assembly of the *Solanum pimpinellifolium* TO-937 genome using PacBio HiFi Long Read technology. *Proc's XXth EUCARPIA Tomato Working Group*, 104.
- Guo, M., Yang, F., Liu, C., Zou, J., Qi, Z., Fotopoulos, V., . . . Zhou, J.** (2022) A single-nucleotide polymorphism in *WRKY33* promoter is associated with the cold sensitivity in cultivated tomato. *New Phytologist*, **236**. <http://dx.doi.org/10.1111/nph.18403>
- Gupta, P., Rodriguez-Franco, M., Bodanapu, R., Sreelakshmi, Y. and Sharma, R.** (2022) *Phytoene synthase 2* in tomato fruits remains functional and contributes to abscisic acid formation. *Plant Sci*, **316**, 111177. <http://dx.doi.org/10.1016/j.plantsci.2022.111177>
- Huang, S., Wang, B., Li, N., Wang, J., Yu, Q. and Gao, J.** (2022) iTRAQ and PRM -based proteomics analysis for the identification of differentially abundant proteins related to male sterility in *ms-7* mutant tomato (*Solanum lycopersicum*) plants. *J Proteomics*, **261**, 104557. <http://dx.doi.org/10.1016/j.jprot.2022.104557>
- Iakovidis, M. and al., e.** (2022) n-Tomatomics: the profile of Greek tomato landraces. *Proc's XXth EUCARPIA Tomato Working Group*, 30.
- Ibitoye, D., Kolawole, A. and Feyisola, R.** (2020) Assessment of wild tomato accessions for fruit yield, physicochemical and nutritional properties under a rain forest agro-ecology. *Genetic Resources*, **1**, 1-11. <http://dx.doi.org/10.46265/genresj.BJCV8100>
- Jewehan, A., Salem, N., Toth, Z., Salamon, P. and Szabo, Z.** (2022) Evaluation of responses to tomato brown rugose fruit virus (ToBRFV) and selection of resistant lines in *Solanum habrochaites* and *Solanum peruvianum* germplasm. *Journal of General Plant Pathology*, **88**. <http://dx.doi.org/10.1007/s10327-022-01055-8>
- Jewehan, A., Salem, N., Toth, Z., Salamon, P. and Szabo, Z.** (2022) Screening of *Solanum* (sections *Lycopersicon* and *Juglandifolia*) germplasm for reactions to the tomato brown rugose fruit virus (ToBRFV). *Journal of Plant Diseases and Protection*, **129**. <http://dx.doi.org/10.1007/s41348-021-00535->

- Johnston-Monje, D., Gutierrez, J. P. and Lopez-Lavalle, L. A. B.** (2021) Seed-Transmitted Bacteria and Fungi Dominate Juvenile Plant Microbiomes. *Front Microbiol*, **12**, 737616. <http://dx.doi.org/10.3389/fmicb.2021.737616>
- Kabas, A., Fidan, H., Kucukaydin, H. and Atan, H. N.** (2022) Screening of wild tomato species and interspecific hybrids for resistance/tolerance to Tomato brown rugose fruit virus (ToBRFV). *Chilean journal of agricultural research*, **82**, 189-196. <http://dx.doi.org/10.4067/s0718-58392022000100189>
- Kang, M.-S., Kim, Y. J., Heo, J., Rajendran, S., Wang, X., Bae, J. H., . . . Park, S. J.** (2022) Newly Discovered Alleles of the Tomato Antiflorigen Gene *SELF PRUNING* Provide a Range of Plant Compactness and Yield. *International Journal of Molecular Sciences*, **23**. <http://dx.doi.org/10.3390/ijms23137149>
- Karniel, U., Adler Berke, N., Mann, V. and Hirschberg, J.** (2022) Perturbations in the Carotenoid Biosynthesis Pathway in Tomato Fruit Reactivate the Leaf-Specific *Phytoene Synthase 2*. *Front Plant Sci*, **13**, 844748. <http://dx.doi.org/10.3389/fpls.2022.844748>
- Kreslavski, V. D., Strokina, V. V., Pashkovskiy, P. P., Balakhnina, T. I., Voloshin, R. A., Alwasel, S., . . . Allakhverdiev, S. I.** (2020) Deficiencies in phytochromes A and B and cryptochrome 1 affect the resistance of the photosynthetic apparatus to high-intensity light in *Solanum lycopersicum*. *J Photochem Photobiol B*, **210**, 111976. <http://dx.doi.org/10.1016/j.jphotobiol.2020.111976>
- Lapidot, M.** (2022) Tolerance and resistance to tomato brown rugose fruit virus (ToBRFV). *Proc's XXth EUCARPIA Tomato Working Group*, 88.
- Li, J., Chitwood-Brown, J., Kaur, G., Labate, J. A., Vallad, G. E., Lee, T. G. and Hutton, S. F.** (2022) Novel Sources of Resistance to *Fusarium oxysporum* f. sp. *lycopersici* Race 3 Among *Solanum pennellii* Accessions. *Journal of the American Society for Horticultural Science*, **147**, 35-44. <http://dx.doi.org/10.21273/jashs05080-21>
- Li, N., Wang, Z., Wang, B., Wang, J., Xu, R., Yang, T., . . . Yu, Q.** (2022) Identification and Characterization of Long Non-coding RNA in Tomato Roots Under Salt Stress. *Frontiers in Plant Science*, **13**, 834027. <http://dx.doi.org/10.3389/fpls.2022.834027>
- Li, Q., Feng, Q., Snouffer, A., Zhang, B., Rodriguez, G. R. and van der Knaap, E.** (2022) Increasing Fruit Weight by Editing a Cis-Regulatory Element in Tomato *KLUH* Promoter Using CRISPR/Cas9. *Front Plant Sci*, **13**, 879642. <http://dx.doi.org/10.3389/fpls.2022.879642>
- Li, R., Sun, S., Wang, H., Wang, K., Yu, H., Zhou, Z., . . . Cui, X.** (2020) *FIS1* encodes a GA2-oxidase that regulates fruit firmness in tomato. *Nat Commun*, **11**, 5844. <http://dx.doi.org/10.1038/s41467-020-19705-w>
- Li, R., Wang, X., Zhang, S., Liu, X., Zhou, Z., Liu, Z., . . . Cui, X.** (2021) Two zinc-finger proteins control the initiation and elongation of long stalk trichomes in tomato. *Journal of Genetics and Genomics*, **48**, 1057-1069. <http://dx.doi.org/10.1016/j.jgg.2021.09.001>
- Li, Y., Zhang, H., Liang, S., Chen, X., Liu, J., Zhang, Y. and Wang, A.** (2022) Identification of CDPK Gene Family in *Solanum habrochaites* and Its Function Analysis under Stress. *Int J Mol Sci*, **23**. <http://dx.doi.org/10.3390/ijms23084227>
- Lian, Q., He, X., Zhang, B., Wang, Y. and Ma, Q.** (2022) Identification and Characterization of WRKY41, a Gene Conferring Resistance to Powdery Mildew in Wild Tomato (*Solanum habrochaites*) LA1777. *Int J Mol Sci*, **23**. <http://dx.doi.org/10.3390/ijms23031267>
- Liscombe, D. K., Kamiyoshihara, Y., Ghironzi, J., Kempthorne, C. J., Hooton, K., Bulot, B., . . . Goulet, C.** (2022) A flavin-dependent monooxygenase produces nitrogenous tomato aroma volatiles using cysteine as a nitrogen source. *Proc Natl Acad Sci U S A*, **119**. <http://dx.doi.org/10.1073/pnas.2118676119>
- Liu, L., Zhang, K., Bai, J., Lu, J., Lu, X., Hu, J., . . . Li, J.** (2022) All-flesh fruit in tomato is controlled by reduced expression dosage of *AFF* through a structural variant mutation in the promoter. *J Exp Bot*, **73**, 123-138. <http://dx.doi.org/10.1093/jxb/erab401>
- Liu, Y., Qi, Z., Wei, J., Yu, J. and Xia, X.** (2022) Brassinosteroids promote starch synthesis and the implication in low-light stress tolerance in *Solanum lycopersicum*. *Environmental and Experimental Botany*, **201**. <http://dx.doi.org/10.1016/j.envexpbot.2022.104990>

- Lizardo, R. C. M., Pinili, M. S., Diaz, M. G. Q. and Cumagun, C. J. R.** (2022) Screening for Resistance in Selected Tomato Varieties against the Root-Knot Nematode *Meloidogyne incognita* in the Philippines Using a Molecular Marker and Biochemical Analysis. *Plants-Basel*, **11**, 1354. <http://dx.doi.org/10.3390/plants11101354>
- Lv, J., Deng, M., Jiang, S., Zhu, H., Li, Z., Wang, Z., . . . Zhao, K.** (2022) Mapping and functional characterization of the tomato spotted wilt virus resistance gene *SICH53* in *Solanum lycopersicum*. *Molecular Breeding*, **42**. <http://dx.doi.org/10.1007/s11032-022-01325-5>
- Marin-Montes, I. M., Lobato-Ortiz, R., Carrillo-Castañeda, G., Rodríguez-Pérez, J. E., García-Zavala, J. J., Hernández-Rodríguez, M. and Velasco-García, Á. M.** (2021) PARÁMETROS GENÉTICOS DE LAS GENERACIONES F1 Y F2 DEL CRUZAMIENTO *Solanum lycopersicum* L. × *S. habrochaites* LA1223. *Revista Fitotecnia Mexicana*, **44**. <http://dx.doi.org/10.35196/rfm.2021.4.503>
- Mattia, M. R. and Scott, J. W.** (2017) Effect of Immature Green Tomato Fruit Color on Yellow Shoulder Incidence and Soluble Solids Content of Ripe Fruit. *Journal of the American Society for Horticultural Science*, **142**, 444-453. <http://dx.doi.org/10.21273/jashs04185-17>
- Menconi, J., Perata, P. and Gonzali, S.** (2022) Molecular characterization of the *Aubergine* mutation and its relevance in the anthocyanin enrichment of tomato fruits. *Proc's XXth EUCARPIA Tomato Working Group*, 37.
- Miao, S., Li, F., Han, Y., Yao, Z., Xu, Z., Chen, X., . . . Wang, A.** (2022) Identification of *OSCA* gene family in *Solanum habrochaites* and its function analysis under stress. *BMC Genomics*, **23**, 547. <http://dx.doi.org/10.1186/s12864-022-08675-6>
- Micol-Ponce, R., Garcia-Alcazar, M., Lebron, R., Capel, C., Pineda, B., Garcia-Sogo, B., . . . Lozano, R.** (2022) The tomato *POD2* encodes a G-type lectin receptor kinase required for viable pollen grain formation. *J Exp Bot*. <http://dx.doi.org/10.1093/jxb/erac419>
- Mumtaz, M. A., Wang, Y., Li, F., Shang, L., Wang, Y., Zhang, X., . . . Zhang, Y.** (2022) Hindered tomato reproductive development by altered *brassinosteroid sensitivity1* mutant. *Plant Growth Regulation*, **96**, 473-481. <http://dx.doi.org/10.1007/s10725-022-00799-9>
- Mutschler, M. A.** (2021) Breeding for acylsugar-mediated control of insects and insect-transmitted virus in tomato. *Plant Breeding Reviews*, 345-409.
- Nekoval, S., Zakharchenko, A., Sadovaya, A., Churikova, A. and Fedoryanskaya, I.** (2022) Assessment of mutant tomato lines as a starting material for breeding varieties resistant to *Alternaria alternata*. *Saudi J Biol Sci*, **29**, 1061-1072. <http://dx.doi.org/10.1016/j.sjbs.2021.09.066>
- Pashkovskiy, P., Kreslavski, V., Khudyakova, A., Ashikhmin, A., Bolshakov, M., Kozhevnikova, A., . . . Allakhverdiev, S. I.** (2021) Effect of high-intensity light on the photosynthetic activity, pigment content and expression of light-dependent genes of photomorphogenetic *Solanum lycopersicum* *hp* mutants. *Plant Physiol Biochem*, **167**, 91-100. <http://dx.doi.org/10.1016/j.plaphy.2021.07.033>
- Paudel, S., Felton, G. W. and Rajotte, E. G.** (2022) Anti-Herbivore Resistance Changes in Tomato with Elevation. *Journal of Chemical Ecology*, **48**. <http://dx.doi.org/10.1007/s10886-021-01341-3>
- Pereyra-Bistrain, L. I., Ovando-Vazquez, C., Rougon-Cardoso, A. and Alpuche-Solis, A. G.** (2021) Comparative RNA-Seq Analysis Reveals Potentially Resistance-Related Genes in Response to Bacterial Canker of Tomato. *Genes (Basel)*, **12**. <http://dx.doi.org/10.3390/genes12111745>
- Pessoa, H. P., Santos de Carvalho Rocha, J. R. d. A., Alves, F. M., Ferreira Copati, M. G., Dariva, F. D., da Silva, L. J., . . . Gomes, C. N.** (2022) Multi-trait selection of tomato introgression lines under drought-induced conditions at germination and seedling stages. *Acta Scientiarum Agronomy*, **44**, e55876. <http://dx.doi.org/10.4025/actasciagron.v44i1.55876>
- Prinzenberg, A. E., van der Schoot, H., van Deth, O., Ouzounis, T., Gabriëls, S., Meijer-Dekens, F., . . . Schouten, H. J.** (2022) Does tomato breeding for improved performance under LED supplemental lighting make sense? *Euphytica*, **218**. <http://dx.doi.org/10.1007/s10681-022-02981-6>
- Romero-Aranda, M. R., Espinosa, J., Gonzalez-Fernandez, P., Jaime-Fernandez, E., Traverso, J. A., Asins, M. J. and Belver, A.** (2021) Role of Na(+) transporters HKT1;1 and HKT1;2 in tomato salt tolerance. I. Function loss of *cheesmaniae* alleles in roots and aerial parts. *Plant Physiol Biochem*, **168**, 282-293. <http://dx.doi.org/10.1016/j.plaphy.2021.10.018>

- Roohanitaziani, R., Lammers, M., Molthoff, J., Tikunov, Y., Meijer-Dekens, F., Visser, R. G. F., . . . Bovy, A. G.** (2022) Phenotyping of a diverse tomato collection for postharvest shelf-life. *Postharvest Biology and Technology*, **188**. <http://dx.doi.org/10.1016/j.postharvbio.2022.111908>
- Sayed, E. G., Mahmoud, A. W. M., El-Mogy, M. M., Ali, M. A. A., Fahmy, M. A. M. and Tawfic, G. A.** (2022) The Effective Role of Nano-Silicon Application in Improving the Productivity and Quality of Grafted Tomato Grown under Salinity Stress. *Horticulturae*, **8**. <http://dx.doi.org/10.3390/horticulturae8040293>
- Seong, K., Shaw, C. L., Seo, E., Li, M., Krasileva, K. V. and Staskawicz, B.** (2022) A draft genome assembly for the heterozygous wild tomato *Solanum habrochaites* highlights haplotypic structural variations of intracellular immune receptors. *bioRxiv*. <http://dx.doi.org/10.1101/2022.01.21.477156>
- Shi, J. Y., Wang, Q., Zuo, J. H., Zheng, S. F., Gao, L. P., Liu, J. and Wang, Q.** (2022) Comparative proteomic analysis of wild-type and a *SlETR-3 (Nr)* mutant reveals an ethylene-induced physiological regulatory network in fresh-cut tomatoes. *Food Res Int*, **161**, 111491. <http://dx.doi.org/10.1016/j.foodres.2022.111491>
- Slugina, M. A., Dzhos, E. A., Schennikova, A. V. and Kochieva, E. Z.** (2021) The Sugar Content in the Tomato Ripe Fruit Correlates with the Expression Level of the *RIN2i* Isoform of the Ripening Inhibitor Gene. *Russian Journal of Plant Physiology*, **68**, 1038-1047. <http://dx.doi.org/10.1134/s1021443721050198>
- Sonawane, P. D., Jozawiak, A., Barbole, R., Panda, S., Abebie, B., Kazachkova, Y., . . . Aharoni, A.** (2022) 2-oxoglutarate-dependent dioxygenases drive expansion of steroidal alkaloid structural diversity in the genus *Solanum*. *New Phytologist*, **234**. <http://dx.doi.org/10.1111/nph.18064>
- Song, C., Acuna, T., Adler-Agmon, M., Rachmilevitch, S., Barak, S. and Fait, A.** (2022) Leveraging a graft collection to develop metabolome-based trait prediction for the selection of tomato rootstocks with enhanced salt tolerance. *Hortic Res*, **9**, uhac061. <http://dx.doi.org/10.1093/hr/uhac061>
- Song, J., Guo, L., Shang, L., Wang, W., Yu, C., Ye, Z. and Zhang, J.** (2022) *VG*, encoding a thylakoid formation protein, regulates the formation of variegated leaves in tomato. *Horticultural Plant Journal*. <http://dx.doi.org/10.1016/j.hpj.2022.04.006>
- Song, J., Shang, L., Li, C., Wang, W., Wang, X., Zhang, C., . . . Zhang, J.** (2022) Variation in the fruit development gene *POINTED TIP* regulates protuberance of tomato fruit tip. *Nat Commun*, **13**, 5940. <http://dx.doi.org/10.1038/s41467-022-33648-4>
- Song, S., Liu, G., Ma, F. and Bao, Z.** (2022) Brassinazole represses tomato hypocotyl elongation via inhibition of cell division. *Plant Growth Regulation*, **96**, 463-472. <http://dx.doi.org/10.1007/s10725-022-00798-w>
- Stamova, L. and al., e.** (2022) ORLY - another source of resistance to *Sw-5* breaking strain of TSWV. *Proc's XXth EUCARPIA Tomato Working Group*, 95.
- Su, X., Wang, B., Geng, X., Du, Y., Yang, Q., Liang, B., . . . Lin, T.** (2021) A high-continuity and annotated tomato reference genome. *BMC Genomics*, **22**, 898. <http://dx.doi.org/10.1186/s12864-021-08212-x>
- Sun, H., Ren, M. and Zhang, J.** (2022) Genome-wide identification and expression analysis of fibrillin (*FBN*) gene family in tomato (*Solanum lycopersicum* L.). *PeerJ*, **10**, e13414. <http://dx.doi.org/10.7717/peerj.13414>
- Tian, J., Dewer, Y., Qu, C., Li, F. and Luo, C.** (2022) Heat-shock protein 70-a hub gene-underwent adaptive evolution involved in whitefly-wild tomato interaction. *Pest Management Science*, **78**. <http://dx.doi.org/10.1002/ps.7065>
- Torgeman, S. and Zamir, D.** (2022) Genome-wide dissection of epistatic QTLs in tomato BILs population. *Proc's XXth EUCARPIA Tomato Working Group*, 112.
- Tyagi, K., Sunkum, A., Rai, M., Yadav, A., Sircar, S., Sreelakshmi, Y. and Sharma, R.** (2022) Seeing the unseen: a *trifoliolate* (MYB117) mutant allele fortifies folate and carotenoids in tomato fruits. *Plant J*, **112**, 38-54. <http://dx.doi.org/10.1111/tpj.15925>
- van Andel, T., Vos, R. A., Michels, E. and Stefanaki, A.** (2022) Sixteenth-century tomatoes in Europe: who saw them, what they looked like, and where they came from. *PeerJ*, **10**. <http://dx.doi.org/10.7717/peerj.12790>

- Vendemiatti, E., Therezan, R., Vicente, M. H., Pinto, M. d. S., Bergau, N., Yang, L., . . . Peres, L. E. P.** (2022) The Genetic Complexity of Type-IV Trichome Development Reveals the Steps towards an Insect-Resistant Tomato. *Plants-Basel*, **11**, 1309. <http://dx.doi.org/10.3390/plants11101309>
- Vilela de Resende, J. T., Dias, D. M., Corte, L. E.-D., Constantino, L. V., Ventura, M. U., de Lima Filho, R. B., . . . Da-Silva, P. R.** (2022) The introgression of resistance to *Tuta absoluta* in tomato based on glandular trichomes. *Arthropod-Plant Interactions*, **16**. <http://dx.doi.org/10.1007/s11829-021-09873-x>
- Wang, L., Wu, B., Chen, G., Chen, H., Peng, Y., Sohail, H., . . . Bie, Z.** (2022) The essential role of Jasmonate Signaling in *Solanum habrochaites* rootstock-mediated cold tolerance in tomato grafts. *Horticulture Research*. <http://dx.doi.org/10.1093/hr/uhac227>
- Xiong, C., Xie, Q., Yang, Q., Sun, P., Gao, S., Li, H., . . . Yang, C.** (2020) *WOOLLY*, interacting with MYB transcription factor *MYB31*, regulates cuticular wax biosynthesis by modulating *CER6* expression in tomato. *Plant J*, **103**, 323-337. <http://dx.doi.org/10.1111/tpj.14733>
- Zeist, A. R., Resende, J. T. V. d., Oliveira, G. J. A., Lima Filho, R. B. d., Henschel, J. M., Figueiredo, A. S. T., . . . Faria, M. V.** (2022) Genetic divergence among wild and hybrid tomato accessions based on morphoagronomic and physiological traits. *Horticultura Brasileira*, **40**, 326-333. <http://dx.doi.org/10.1590/s0102-0536-20220312>
- Zhang, C. and al., e.** (2021) Functional Gain of Fruit Netted-Cracking in an Introgression Line of Tomato with Higher Expression of the *Fnc* Gene. *Frontiers of Agricultural Science and Engineering*, **8**, 280-291. <http://dx.doi.org/10.15302/j-fase-2020374>
- Zhao, J., Sauvage, C., Bitton, F. and Causse, M.** (2022) Multiple haplotype-based analyses provide genetic and evolutionary insights into tomato fruit weight and composition. *Hortic Res.* <http://dx.doi.org/10.1093/hr/uhab009>
- Zhao, W., Cheng, X., Huang, Z., Fan, H., Wu, H. and Ling, H. Q.** (2011) Tomato *LeTHIC* is an Fe-requiring HMP-P synthase involved in thiamine synthesis and regulated by multiple factors. *Plant Cell Physiol*, **52**, 967-82. <http://dx.doi.org/10.1093/pcp/pcr048>
- Zhou, E., Wang, G., Weng, L., Li, M. and Xiao, H.** (2022) Comparative Analysis of Environment-Responsive Alternative Splicing in the Inflorescences of Cultivated and Wild Tomato Species. *Int J Mol Sci*, **23**. <http://dx.doi.org/10.3390/ijms231911585>
- Zhou, R., Jiang, F., Yu, X., Abdelhakim, L., Li, X., Rosenqvist, E., . . . Wu, Z.** (2022) Dominant and Priming Role of Waterlogging in Tomato at e[CO₂] by Multivariate Analysis. *International Journal of Molecular Sciences*, **23**. <http://dx.doi.org/10.3390/ijms232012121>
- Zhou, R., Yu, X., Song, X., Rosenqvist, E., Wan, H. and Ottosen, C.-O.** (2022) Salinity, waterlogging, and elevated CO₂ interact to induce complex responses in cultivated and wild tomato. *Journal of Experimental Botany*, **73**. <http://dx.doi.org/10.1093/jxb/erac080>
- Zhou, Y., Zhang, Z., Bao, Z., Li, H., Lyu, Y., Zan, Y., . . . Huang, S.** (2022) Graph pangenome captures missing heritability and empowers tomato breeding. *Nature*, **606**, 527-534. <http://dx.doi.org/10.1038/s41586-022-04808-9>
- Zhou, Z., Yuan, Y., Wang, K., Wang, H., Huang, J., Yu, H. and Cui, X.** (2022) Rootstock-scion interactions affect fruit flavor in grafted tomato. *Horticultural Plant Journal*, **8**, 499-510. <http://dx.doi.org/10.1016/j.hpj.2022.01.001>