

Genetic Stocks – *Oryza* (GSOR) Collection
 USDA ARS Dale Bumpers National Rice Research Center
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www.ars.usda.gov/spa/dbnrrc/gsor

COLLECTION CATALOG

I. **GSOR 100 - Nipponbare** - In 2005, the International Rice Genome Sequencing Project produced the complete genetic sequence of the Japanese cultivar, *Nipponbare*. This sequence information will serve as the baseline for comparison with other rice varieties to identify genes that control economically important traits. GSOR serves as an international distributor of the exact source of Nipponbare that was sequenced for use in genomic research.

II. **GSOR 310001 – 311795 - Core Collection** - With 1794 entries, the Core Collection containing about 10% of the Whole Collection was assembled by stratified random sampling method in 2002, evaluated comprehensively for 25 characteristics and proven to be highly representative of the Whole Collection. Information drawn from the Core Collection can effectively be used to assess the Whole Collection with 88% certainty. A single plant was selected from each Core accession in 2006 and bulk seed from the selection produced in 2007 is deposited in the GSOR. DNA extracted from the selected plant has been analyzed with 80 SSR (Single Sequence Repeat) markers that cover the entire rice genome about 30 cM apart. A Mini-Core Collection containing about 10% of the Core Collection has been developed and fingerprinted with some 200 SSR markers.

III. Mapping Populations - Mapping populations are used to study the genetic variation which occurs as a result of recombination of genes from two differing parental lines. The mapping populations in the collection are segregating for agronomic traits, disease resistance, maturity, yield, milling quality, and cooking quality.

GSOR 100001 – 100355 – K/Z – 353 families from the cross Kaybonnet *lpa1-1* x Zhe 733. Kaybonnet *lpa1-1* is a low phytic acid mutant of the tropical japonica cultivar Kaybonnet which is tall with glabrous leaf and hull. Zhe 733 is a semidwarf pubescent indica cultivar.

GSOR 100361 – 100600 - Early/Katy – 238 families from the cross RU9101001 (Early) x Katy. RU9101001 is an extremely early maturing long-grain experimental line that has seedling cold tolerance and has the *Pi-k^h* blast resistance gene. Katy is a mid-season, long-grain cultivar that possesses the major blast resistance genes *Pi-ta* and *Pi-k^s*.

GSOR 100602 – 100726- TeQing/Lemont (TILs) – 123 families from the TeQing into Lemont backcross introgression.

GSOR 101001 - 101300 – RiceCAP MY2 – 298 families from the cross Cypress x LaGrue.

GSOR 101301 - 101519 – RiceCAP MY1 – 217 families from the cross RT0034 x Cypress.

GSOR 101601 - 102174 – RiceCAP SB5 – 572 families from the cross Lemont x Jasmine 85.

GSOR 102501 – 102544 – BC5F3 – 42 families from the cross Katy x M202.

GSOR 200001 – 200327 – RiceCAP SB2 Doubled Haploid – 325 families from the cross Cocodrie x MCR01-0277. Cocodrie is a cultivar that is sheath blight (caused by *Rhizoctonia solani* Kühn) susceptible. MCR01-0277 has a high level of partial resistance to sheath blight.

IV. Katy Putative Mutant set - Putative mutant set of the cultivar Katy, a japonica rice well adapted for production in the southern U.S. Katy has resistance to sheath blight disease (*Rhizoctonia solani*) and possesses the major blast resistance genes *Pi-ta*, *Pi-ta2*, and *Pi-ks*.

GSOR 600001 – 615192 - The first subset of 15,192 putative mutants were treated by fast neutrons with 7.7 Gy, 26.3 Gy, and 49.4 Gy. A total of 15,192 M1 panicles were harvested from 15,192 M0 and were subsequently amplified to M4 by single seed breeding method in Stuttgart, AR, from 2003 to 2006. An evaluation of 192 randomly selected plants from the entire population in 2006 verified that they were derived from Katy based on 10 diagnostics simple sequence repeat markers. (Access the results of this evaluation on the Collection Catalog page of the GSOR Homepage.) This population has been used to identify blast susceptible mutants that can be used to study molecular mechanisms of disease resistance (Jia and Martin, 2008). This population will be useful for the identification of rice mutants that correlate with any gene in the rice genome.

GSOR 616001 – 620880 - The second subset of mutants were treated with 0.4%, 0.8%, and 1.2% ethyl methane sulfonate (EMS). A total of 4880 panicles were harvested from 4896 M0 and were subsequently amplified to M4 by single seed breeding method in Stuttgart, AR from 2004 to 2007. This population has been used to identify lesion mimic mutants (Jia 2002) and will be useful for the identification of useful mutants for crop improvement and functional genomics.

GSOR 620900 – 623669 - The third subset of mutants was treated with gamma irradiation at the rate of 60 Gy. A total of 2769 panicles were harvested from 2769 M0 and were subsequently amplified to M4 by single seed breeding method in Stuttgart, AR from 2004-2007. This population will be useful for the identification of useful mutants for crop improvement and functional genomics.

V. **GSOR 400001 – 406398** - TILLING (Targeting Induced Local Lesions in Genomes) Mutants - TILLING is a reverse genetics technique that uses traditional chemical mutagenesis to create libraries of individual rice plants that can be evaluated using high throughput screens for the discovery of mutations. Please visit the University of California-Davis TILLING Core website at http://tilling.ucdavis.edu/index.php/Main_Page for more information. (NOTE: Distribution of this material must first be approved by the TILLING Project.)

VI. Miscellaneous Collections – Sets of material selected/donated by an individual researcher or a project.

GSOR 30-60 AND GSOR 78-79 – Jodon mutants described by Nelson E. Jodon in the 1977 Crop Science article, this set contains “Twenty-four morphologic characters that may serve as gene markers for all except Group X of the 12 linkage groups of cultivated rice *Oryza sativa* L.”

GSOR 61- 77 – California mutant set that includes a cold tolerant selection (GSOR 61) and short stature and early maturing mutants developed by induced mutation.

GSOR 300000 – 300192 – Kinoshita mutant collection donated by Dr. Toshiro Kinoshita via Dr. Susan McCouch. Characterization completed prior to donation.

GSOR 301001 – 301422 - NSF Rice Diversity Panel (name changed in 2013 to Rice Diversity Panel 1) is 409 *Oryza sativa* accessions selected from around the world to represent the range of diversity found in cultivated Asian rice. This collection was fingerprinted with 36 simple sequence repeat (SSR) markers and evaluated for 18 agro-morphological traits. The rice diversity panel with the accompanying genetic and

phenotypic information provides a valuable foundation for association mapping, understanding the basis of both genotypic and phenotypic differences within and between subpopulations, and rice improvement programs.

GSOR 301501 – 302833 – Rice Diversity Panel 2 was received from IRRI in early 2013. Accessions are being increased for distribution.

GSOR 312001 – 312020 – OryzaSNP Set from the International Rice Functional Genomics Consortium (IRFGC) project, the OryzaSNP Consortium, to provide the rice research community extensive information on genetic variation present within and between diverse rice cultivars and landraces, as well as the genetic resources to exploit that information.

GSOR 303001 – 303014 – Jefferson Near-Isogenic-Lines (NILs) A set of introgression lines (ILs) containing chromosomal segments from *O. rufipogon* (IRGC 105491), a wild relative of *O. sativa*, in the genetic background of an elite U.S. variety, cv. Jefferson, was developed to confirm the performance of six yield-enhancing quantitative trait loci (QTLs). Twelve ILs, representing each of the six QTL targets, are available for studies on transgressive variation and as interspecific pre-breeding lines.

VII. Genetic Mutants

GSOR #	NAME/KEYWORD	COMMENT
1	Dominant male sterile	Also known as KB 1789, induced by gamma radiation of the cultivar Kaybonnet. Will produce plants that segregate 1 sterile:1 fertile.
2	Dominant male sterile	Also known as OR 1783, induced by gamma radiation of the cultivar Orion. Will produce plants that segregate 1 male sterile:1 fertile.
3	Recessive male sterile	Also known as CY 1819, induced by gamma radiation of the cultivar Cypress. Will produce plants that segregate 3 fertile:1 sterile.
4	Dominant male sterile	Also known as LG 1388, induced by gamma radiation of the cultivar LaGrue. Will produce plants that segregate 1 male sterile:1 fertile.
5	Semidwarf	Recessive, induced mutant of Labelle.
6	Brittle culm	Recessive, induced mutant of Wells.
7	Early flowering	Recessive, induced mutant of LaGrue.
8	Gold hull	Recessive, induced mutant of Orion.
9	Gold hull	Recessive, induced mutant of Bengal.
10	Elongated uppermost internode	Recessive, japonica source
11	Elongated uppermost internode	Recessive, gamma ray induced mutant of indica Guichao 2
12	Tetraploid	Also known as TG1, spontaneous 4X selection from L-202
13	Tetraploid	Also known as TG2, spontaneous 4X selection from Jackson
14	Semidwarf	Recessive, from Calrose; nonallelic to <i>sdl</i>
15	Semidwarf	Recessive, from Calrose; nonallelic to <i>sdl</i> ; pleiotropic effect for 20% reduction in seed size
16	Semidwarf	Recessive, in Colusa
17	Doubledwarf	Also known as DD1, cross of Calrose 76 and GSOR 14
18	Early flowering	Also recessive semidwarf, from Calrose
19	Early flowering	Also recessive semidwarf, from Calrose
20	Lesion mimic	Recessive, ethyl methane sulfonate induced mutant of Katy
21	Early plant death	Recessive, gamma ray induced mutant from indica Zhe733/IR64 cross
22	Narrow leaf	Recessive, gamma ray induced mutant from indica Zhe733/IR64 cross
23	Extreme dwarf	Recessive, gamma ray induced mutant from indica Zhe733/IR64 cross
24	Gold leaf	Recessive, gamma ray induced mutant from indica Zhe733/IR64 cross
25	Giant embryo	Recessive, gamma ray induced mutant from long grain, Drew
26	Albino	Recessive, gamma ray induced mutant of IR53936-60-3-2-3-1
27	Doubledwarf	Gamma ray induced mutant from indica Zhe733/IR64 cross
28	Doubledwarf	Gamma ray induced mutant from indica Zhe733/IR64 cross; pleiotropic effects for early flowering and reduced seed set
80	CMS Male Sterile	Cytoplasmic male sterile, Zhen Shan 97A, identified as male sterile in 2013 and transferred from NPGS.
81	Maintainer to GSOR 80	Zhen Shan 97B is maintainer line to CMS Zhen Shan 97A.

HOW TO ORDER GSOR MATERIAL:

1. Visit the Collection Catalog at the GSOR website at www.ars.usda.gov/spa/dbnrrc/gsor and click the link of the germplasm you would like to receive. You will be directed to the GRIN page where you will be able to request the material and you will be asked to complete an order form with your contact information.
2. You may send an email directly to the GSOR at GSOR@ars-grin.gov and request the material.
3. You may telephone the GSOR at 870-672-9300 and request the material.
4. You may send a letter with your request to GSOR, 2890 HWY 130 EAST, STUTTGART AR 72160.

NOTE: Please refer to the GSOR entry number when requesting any material.