






LOCUS: Map Position cMC / BIN / cM	-1.86 / 1.01 / 29.0
GENOTYPE mutant name (full, short)	<i>striate leaves1,</i> <i>sr1</i>
Mode of Inheritance	recessive
Stock Number	101C, 101D
PHENOTYPE (appearance)	White stripes on leaves.
Original Description	M.A. Brunson, unpublished.
MaizeGDB QR Code/ Cloned?	 Not Cloned
zmXmz ID	1.029-<i>sr1</i>




LOCUS: Map Position cMC / BIN / cM	-1.79 / 1.02 / 48.0
GENOTYPE mutant name (full, short)	<i>lethal leaf spot1,</i> <i>lls1</i>
Mode of Inheritance	recessive
Stock Number	121D
PHENOTYPE (appearance)	Brown lesions on leaves.
Original Description	A. Ullstrup & A. Troyer (1967) <i>Phytopathology</i> 57:1282-1283.
Maize GDB QR Code/ Cloned?	 Cloned Gene encodes a protein that may function to degrade a phenolic mediator of plant cell death. Two consensus binding motifs of aromatic ring-hydroxylating dioxygenases are present in the predicted LLS1 protein, suggesting that it may function to degrade a phenolic mediator of cell death (Gray et al., 1997 <i>Cell</i> , 89:25–31).
zmXmz ID	1.048-lls1




LOCUS: Map Position cMC / BIN / cM	-1.76 / 1.03 / 61.5
GENOTYPE mutant name (full, short)	zebra crossbands4, zb4
Mode of Inheritance	recessive
Stock Number	105A
PHENOTYPE (appearance)	Light green bands on leaves.
Original Description	H.Hayes (1932) J. Hered. <u>23</u>:415-419.
Maize GDB QR Code/ Cloned?	 Not Cloned
zmXmz ID	1.061-zb4




LOCUS: Map Position cMC / BIN / cM	-1.54 / 1.05 / 98.0
GENOTYPE mutant name (full, short)	<i>rough sheath2, rs2</i>
Mode of Inheritance	recessive
Stock Number	111G
HWB Families (*Preferred Stock)	1809*, 1810*, 1808, 1811, 1558
PHENOTYPE (appearance)	Ligule disorganization, leaves curled, plants short, tassels compact and overly branched.
Original Description	M.Khadzhinov (1937).Bull. Appl. Bot. Gen. Plant Breed.7:247-258.
Maize GDB QR Code/ Cloned?	 Cloned Maize <i>rough sheath2</i> (<i>rs2</i>) mutant plants results from ectopic expression of <i>knotted1</i> (Tsiantis et al. <i>Science</i> 1999 284: 154-156).
zmXmz ID	1.098-rs2




LOCUS: Map Position cMC / BIN / cM	1.39 / 1.06 / 147.0
GENOTYPE mutant name (full, short)	<i>white luteus5,</i> <i>wlu5</i>
Mode of Inheritance	recessive
Stock Number	129B
HWB Families (*Preferred Stock)	1570*
PHENOTYPE (appearance)	Pale yellow lethal seedling.
Original Description	M.Neuffer (1989) Maize Genet. Coop. Newslett. 63:62.
Maize GDB QR Code/ Cloned?	 Not Cloned
zmXmz ID	1.147-wlu5




LOCUS: Map Position cMC / BIN / cM	~1.40? / 1.06 / ~150?
GENOTYPE mutant name (full, short)	<i>barren inflorescence2,</i> <i>bif2</i>
Mode of Inheritance	recessive
Stock Number	108C
HWB Families (*Preferred Stock)	1815, 1816, 1817*
PHENOTYPE (appearance)	Little or no spikelets produced, thin tassel with few branches.
Original Description	S.Briggs & G.Johal (1992) Maize Genet. Coop. Newslett.66:51.
Maize GDB QR Code/ Cloned?	Cloned  Encodes a Co-Ortholog of the <i>PINOID</i> Serine/Threonine Kinase and is Required for Organogenesis during Inflorescence and Vegetative Development in Maize (McSteen, P et al. 2007. <i>Plant Physiol</i> 144: 1000-1011).
zmXmz ID	1.150-<i>bif2</i>




LOCUS: Map Position cMC / BIN / cM	1.42 / 1.07 / 153.0
GENOTYPE mutant name (full, short)	<i>brachytic1,</i> <i>br1</i>
Mode of Inheritance	recessive
Stock Number	110K
HWB Families (*Preferred Stock)	1557, 1818
PHENOTYPE (appearance)	Short plant, shortening of the internodes, no response to gibberellins.
Original Description	J.Kempton (1920) J. Hered.11:111-115.
Maize GDB QR Code/ Cloned?	Not Cloned 
zmXmz ID	1.0153-<i>br1</i>




LOCUS: Map Position cMC / BIN / cM	1.47 / 1.07 / 157.0
GENOTYPE mutant name (full, short)	<i>Vestigial glume1, Vg1</i>
Mode of Inheritance	DOMINANT
Stock Number	114D
HWB Families (*Preferred Stock)	1820
PHENOTYPE (appearance)	Glumes small with cobs and anthers exposed, male usually sterile.
Original Description	G.Sprague (1939) J.Hered. <u>30</u>:143-145.
Maize GDB QR Code/ Cloned?	 Not Cloned
zmXmz ID	1.157-Vg1




LOCUS: Map Position cMC / BIN / cM	1.67 / 1.08 / 176.7
GENOTYPE mutant name (full, short)	<i>indeterminate growth1, id1</i>
Mode of Inheritance	recessive
Stock Number	120A
HWB Families (*Preferred Stock)	1823*,1564
PHENOTYPE (appearance)	Plant continues to grow even after death of siblings.
Original Description	W.Singleton (1946) J. Hered.<u>37</u>:61-64.
Maize GDB QR Code/ Cloned?	 Cloned Gene (id1) controls the transition to flowering in maize. It encodes a protein with zinc finger motifs, suggesting that the id1 gene product functions as a transcriptional regulator of the floral transition (Colasanti, JJ et al. 1998. <i>Cell</i> 93:593-603).
zmXmz ID	1.176-<i>id1</i>




LOCUS: Map Position cMC / BIN / cM	1.77 / 1.06 / 183.0
GENOTYPE mutant name (full, short)	<i>Tillered1,</i> <i>Tlr1</i>
Mode of Inheritance	DOMINANT
Stock Number	127G
HWB Families (*Preferred Stock)	1569,1813
PHENOTYPE (appearance)	Small, primitive ear.
Original Description	M.Neuffer et. al (1987) Maize Genet. Coop. News Lett.61:50-51.
Maize GDB QR Code	 Not Cloned
zmXmz ID	1.183-<i>Tlr1</i>




LOCUS: Map Position cMC / BIN / cM	1.81 / 1.09 / 198.7
GENOTYPE mutant name (full, short)	<i>teosinte branched1,</i> <i>tb1</i>
Mode of Inheritance	recessive
Stock Number	117D
HWB Families (*Preferred Stock)	1824*
PHENOTYPE (appearance)	Many tillers, tassel-like ears with few kernels, teosinte-like growth.
Original Description	C.Burnham (1961) Maize Genet. Coop. News Lett.35:87.
Maize GDB QR Code	 Cloned Cloned <i>tb1</i> by transposon tagging; encodes a protein with homology to the cycloidea gene of snapdragon (Doebley, JF et al. 1997. <i>Nature</i> 386:485-488).
zmXmz ID	1.198-<i>tb1</i>




LOCUS: Map Position cMC / BIN / cM	1.82 / 1.10 / 202
GENOTYPE mutant name (full, short)	<i>Knotted1,</i> <i>Kn1</i>
Mode of Inheritance	DOMINANT
Stock Number	117E
HWB Families (*Preferred Stock)	1563, 1773
PHENOTYPE (appearance)	gain-of-function mutant that alters leaf development, tissues around veins often appear as outpockets or knots of growth
Original Description	Vollbrecht, Veit, Sinha & Hake (1991) Nature 350:241.
Maize GDB QR Code	 Cloned Kn1 encodes a homeodomain protein (Vollbrecht, E et al. 1991. <i>Nature</i> 350:241-243).
zmXmz ID	1.202-Kn1




LOCUS: Map Position cMC / BIN / cM	-2.93 / 2.01 / 7.4
GENOTYPE mutant name (full, short)	<i>albescens plant1,</i> <i>al1 “ghost plant”</i>
Mode of Inheritance	recessive
Stock Number	203B
PHENOTYPE (appearance)	Partially or completely white leaves, white kernels
Original Description	I.Phipps (1929) <i>Cornell Univ. Agric. Exp. Stn. Memoir</i> <u>125</u>:1-63.
Maize GDB QR Code/ Cloned?	 Not Cloned
zmXmz ID	2.007-<i>al1</i>




LOCUS: Map Position cMC / BIN / cM	-2.93 / 2.01 / 7.4
GENOTYPE mutant name (full, short)	<i>albescens plant1-Brawn,</i> <i>al1-Brawn</i>
Mode of Inheritance	recessive
Stock Number	203BA
PHENOTYPE (appearance)	Partially or completely white or light green leaves, white kernels,
Original Description	I. Phipps (1929) <i>Cornell Univ. Agric. Exp. Stn. Memoir</i> 125:1-63.
Maize GDB QR Code/ Cloned?	 Not Cloned
zmXmz ID	2.007-<i>al1-brawn</i>




LOCUS: Map Position cMC / BIN / cM	-2.76 / 2.02 / 42.0
GENOTYPE mutant name (full, short)	<i>dwarf plant5, d5</i>
Mode of Inheritance	recessive
Stock Number	214C
PHENOTYPE (appearance)	Short, compact plant.
Original Description	A.Suttle (1924) The genetic interrelations of different types of dwarf corn. Unpublished thesis. Cornell University, Ithaca, New York.
Maize GDB QR Code/ Cloning?	 Not Cloned
zmXmz ID	2.042-d5




LOCUS: Map Position cMC / BIN / cM	2.13 / 2.04 / 87.0
GENOTYPE mutant name (full, short)	<i>tassel seed1, ts1</i>
Mode of Inheritance	recessive
Stock Number	207B
PHENOTYPE (appearance)	Tassel pistillate and pendant shape.
Original Description	R.Emerson (1920) <i>J. Hered.</i> <u>11</u>:65-76.
Maize GDB QR Code/ Cloned?	Cloned The TS1 protein encodes a plastid-targeted lipoxygenase with predicted 13-lipoxygenase specificity, which suggests that TS1 may be involved in the biosynthesis of the plant hormone jasmonic acid. In the absence of a functional <i>ts1</i> gene, lipoxygenase activity was missing and endogenous jasmonic acid concentrations were reduced in developing inflorescences (Acosta, I, et al. 2009. <i>Science</i> . 323:262-265). 
zmXmz ID	2.087-<i>ts1</i>




LOCUS: Map Position cMC / BIN / cM	2.91 / 2.08 / 159.0
GENOTYPE mutant name (full, short)	<i>Dwarf plant10, D10</i>
Mode of Inheritance	DOMINANT
Stock Number	206C
PHENOTYPE (appearance)	Short plant with erect leaves.
Original Description	M.Neuffer & D.England (1995) <i>Maize Genet. Coop. Newslett.</i> 69:43.
Maize GDB QR Code	Not Cloned 
zmXmz ID	2.159-D10




LOCUS: Map Position cMC / BIN / cM	2.94 / 2.09 / 188.0
GENOTYPE mutant name (full, short)	<i>Chocolate pericarp1, Ch1</i>
Mode of Inheritance	DOMINANT
Stock Number	219C
PHENOTYPE (appearance)	Chocolate colored kernels.
Original Description	R.Emerson & E.Anderson (1932) <i>Genetics</i> 17:503-509.
Maize GDB QR Code/ Cloned?	Not Cloned 
zmXmz ID	2.188-<i>Ch1</i>




LOCUS: Map Position cMC / BIN / cM	2.99 / 2.10 / 206.0
GENOTYPE mutant name (full, short)	<i>Gnarley1::Ds,</i> <i>Gn1::Ds</i>
Mode of Inheritance	DOMINANT
Stock Number	2021
PHENOTYPE (appearance)	Gnarley and knotted growth in leaf and sheath
Original Description	Foster, T and Hake, S. 1994. MNL 68:2
Maize GDB QR Code/ Cloned?	Not Cloned 
zmXmz ID	2.1206-<i>Gn1</i>




LOCUS: Map Position cMC / BIN / cM	-3.99 / 3.00 / -2.0
GENOTYPE mutant name (full, short)	<i>golden plant2,</i> <i>g2</i>
Mode of Inheritance	recessive
Stock Number	303F
PHENOTYPE (appearance)	Seedling and plant have a distinct yellow cast, with whitish yellow-green sheaths.
Original Description	M.Jenkins(1926) <i>Am. Nat.</i> 60:484-488.
Maize GDB QR Code/ Cloned?	Cloned A pair of g2-like transcription factors is required for normal chloroplast development in land plant species. In the C(4) plant maize, compartmentalized function of the two GLK genes in bundle sheath and mesophyll cells regulates dimorphic chloroplast differentiation (Belcher, S et al. 2015. <i>Biochem Biophys Acta</i> 1847:1004-1016). 
zmXmz ID	3.002-g2




LOCUS: Map Position cMC / BIN / cM	-3.41 / 3.04 / 53.0
GENOTYPE mutant name (full, short)	<i>Ragged leaves1,</i> <i>Rg1</i>
Mode of Inheritance	DOMINANT
Stock Number	315C
PHENOTYPE (appearance)	Holes and tearing in leaves.
Original Description	R.Brink & P.Senn (1931) <i>J. Hered.</i> <u>22:155-161.</u>
Maize GDB QR Code/ Cloned?	Not Cloned 
zmXmz ID	3.053-<i>Rg1</i>




LOCUS: Map Position cMC / BIN / cM	3.75 / 3.07 / 108.0
GENOTYPE mutant name (full, short)	<i>nana plant1,</i> <i>na1</i>
Mode of Inheritance	recessive
Stock Number	318G
PHENOTYPE (appearance)	Short, erect dwarf plant.
Original Description	C.Hutchinson (1922) <i>Cornell Agric. Exp. Stn. Memoir</i> 60:1421-1473.
Maize GDB QR Code	Cloned Cloning efforts identified a candidate gene, Bcr1-c1, linked to the bcr1 phenotype Hartwig, T et al. 2011. <i>PNAS</i> , USA 108:19814. 
zmXmz ID	3.108-<i>na1</i>




LOCUS: Map Position cMC / BIN / cM	3.95 / 3.09 / 140
GENOTYPE mutant name (full, short)	<i>anthocyaninless1, a1-x1/a1-m1</i>
Mode of Inheritance	recessive
Stock Number	325C
PHENOTYPE (appearance)	Colorless seeds and green or brown plants.
Original Description	R.Emerson (1918) <i>Cornell Univ. Agric. Exp. Stn. Memoir</i> 16:225-289.
Maize GDB QR Code	Cloned 2.5 Dihydroflavonol 4-Reductase (DFR) DFR is encoded by the anthocyaninless1 (a1) gene (REF?) 
zmXmz ID	3.140-a1-x1/a1-m1




LOCUS: Map Position cMC / BIN / cM	-4.74 / 4.03 / 55.0
GENOTYPE mutant name (full, short)	<i>Tassel seed5, Ts5</i>
Mode of Inheritance	DOMINANT
Stock Number	402D
PHENOTYPE (appearance)	Tassel with short, scattered silks.
Original Description	R. Emerson (1932) <i>Proc. VI Int. Congr. Genetics</i> 1:141-152.
Maize GDB QR Code/ Cloned?	 Not Cloned
<i>zmXmz ID</i>	4.055-Ts5




LOCUS: Map Position cMC / BIN / cM	-4.72 / 4.03 / 48.0
GENOTYPE mutant name (full, short)	<i>lazy plant1,</i> <i>la1</i>
Mode of Inheritance	recessive
Stock Number	405B
PHENOTYPE (appearance)	Plants grow along the ground.
Original Description	M. Jenkins & F. Gerhardt (1931) <i>Iowa Agric. Exp. Stn. Res. Bull.</i> 138:121-151.
Maize GDB QR Code/ Cloned?	Cloned The next evidence came from the cloning of LAZY1 (LA1) of rice, which has defects in auxin transport and tiller angle (Li et al. 2007. Yoshihara and Iino 2007). 
zmXmz ID	4.048-la1




LOCUS: Map Position cMC / BIN / cM	4.70 / 4.07 / 116.0
GENOTYPE mutant name (full, short)	<i>Tunicate1, Tu1 (aka pod corn)</i>
Mode of Inheritance	DOMINANT
Stock Number	416A
PHENOTYPE (appearance)	Kernels are enclosed in large, coarse glumes.
Original Description	G. Collins (1917) <i>PNAS. USA</i> 3:345-349.
Maize GDB QR Code/ Cloned?	Cloned: Pod corn is caused by a cis-regulatory mutation and duplication of the ZMM19 MADS-box gene.... mutation and duplication of ZMM19 in Tu lead to ectopic expression of the gene in the inflorescences, thus conferring vegetative traits to reproductive organs. Wingen, et al. 2012. <i>PNAS, USA</i> 109:7115-20. 
zmXmz ID	4.116-Tu1




LOCUS: Map Position cMC / BIN / cM	4.81 / 4.08 / 124.0
GENOTYPE mutant name (full, short)	<i>japonica striping2, j2</i>
Mode of Inheritance	recessive
Stock Number	415A
PHENOTYPE (appearance)	White stripes on plant.
Original Description	R. Emerson et al. (1935) <i>Cornell Univ. Agric. Exp. Stn. Memoir</i> <u>180</u>:1-83.
Maize GDB QR Code/ Cloned?	 Not Cloned
zmXmz ID	4.0124-j2




LOCUS: Map Position cMC / BIN / cM	4.91 / 4.08 / 128.2
GENOTYPE mutant name (full, short)	<i>colorless2-mutable1,</i> <i>c2-m1::Spm ACR</i>
Mode of Inheritance	recessive
Stock Number	419H
PHENOTYPE (appearance)	Colorless aleurone, reduced plant color.
Original Description	R.Brink & I.Greenblatt (1954) <i>J. Hered.</i> <u>45:47-50.</u>
Maize GDB QR Code/ Cloned?	 Cloned Chalcone synthase (anthocyanin pathway)
zmXmz ID	4.0128-c2-m1




LOCUS: Map Position cMC / BIN / cM	-5.06 / 5.04 / 92.0
GENOTYPE mutant name (full, short)	<i>brown midrib1, bm1</i>
Mode of Inheritance	recessive
Stock Number	515D
PHENOTYPE (appearance)	Brown pigment over vascular bundles of lead sheath, midrib, and blade.
Original Description	W. Eyster (1926) <i>Science</i> 64:22.
Maize GDB QR Code/ Cloned?	 Cloned
zm10mx ID	5.092-bm1



LOCUS: Map Position cMC / BIN / cM	-5.06 / 5.04 / ?
GENOTYPE mutant name (full, short)	<i>camoflauge1,</i> <i>cf1</i>
Mode of Inheritance	recessive
Stock Number	521D
PHENOTYPE (appearance)	leaf lamina affected, colored patches on leaves
Original Description	(David Braun, Huang et al., 2009)
Maize GDB QR Code/ Cloned?	Cloned  The <i>cf1</i> gene was cloned by transposon tagging and found to encode porphobilinogen deaminase (PBGD) , an enzyme that functions early in chlorophyll and heme biosynthesis (Huang et al. 2009).
<i>zm10mx ID</i>	5.04?-<i>cf1</i>



LOCUS: Map Position cMC / BIN / cM	5.17 / 5.04 / 93.0
GENOTYPE mutant name (full, short)	<i>brittle endosperm1, bt1-R</i>
Mode of Inheritance	recessive
Stock Number	516B
PHENOTYPE (appearance)	Collapsed, angular, translucent and brittle kernels.
Original Description	P. Mangelsdorf (1926) <i>Conn. Agric. Exp. Stn. Bull.</i> 279:509-614.
Maize GDB QR Code/ Cloned?	Cloned: amino terminus and sequence similarity to several mitochondrial inner-envelope translocator proteins, suggesting a possible role in amyloplast membrane transport. Sullivan, TD et al. 1991. <i>Plant Cell</i> 3:1337-1348. 
zm10mx ID	5.093-bt1-R


zmXmz, the maize-10-maze project, FSU Biology

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LOCUS: Map Position cMC / BIN / cM	5.17 / 5.04 / 73.8
GENOTYPE mutant name (full, short)	<i>thick tassel dwarf1,</i> <i>td1</i>
Mode of Inheritance	recessive
Stock Number	516DA
PHENOTYPE (appearance)	Plants shortened, tassel dense.
Original Description	E.G. Anderson, unpublished.
Maize GDB QR Code/ Cloned?	Cloned: Thick tassel dwarf1 (<i>td1</i>) encodes a putative maize ortholog of the Arabidopsis CLAVATA1 leucine-rich repeat receptor-like kinase . Bommert, P et al. 2005. <i>Development</i> 132 :1235-1245. 
zm10mx ID	5.073-td1




LOCUS: Map Position cMC / BIN / cM	5.28 / 5.04 / 98.0
GENOTYPE mutant name (full, short)	<i>brevis plant1, bv1 & pr1</i>
Mode of Inheritance	recessive
Stock Number	507H
PHENOTYPE (appearance)	Short plant with no response to gibberellins.
Original Description	H. Li (1931) <i>J. Hered.</i> <u>22</u>:14-16.
Maize GDB QR Code/ Cloned?	 bv1-Cloned pr1-Cloned The maize (<i>Zea mays</i>) red aleurone1 (pr1) encodes a CYP450-dependent flavonoid 3'-hydroxylase (ZmF3'H1) required for the biosynthesis of purple and red anthocyanin pigments. (Sharma <i>BMC Plant Biol.</i> 2012. 12: 196). 
zm10mx ID	5.098-bv1 & pr1




LOCUS: Map Position cMC / BIN / cM	5.54 / 5.05 / 110.0
GENOTYPE mutant name (full, short)	<i>lemon white2,</i> <i>lw2</i>
Mode of Inheritance	recessive
Stock Number	518D
HWB Families (*Preferred Stock)	1940
PHENOTYPE (appearance)	Pale yellow endosperm with white seedling.
Original Description	S. Tulpule (1954) <i>Am. J. Bot.</i> <u>41</u>:294-301.
Maize GDB QR Code/ Cloned?	 Not Cloned
zm10mx ID	5.110-lw2




LOCUS: Map Position cMC / BIN / cM	5.63 / 5.05 / 122.0
GENOTYPE mutant name (full, short)	<i>yellow stripe1,</i> <i>ys1</i>
Mode of Inheritance	recessive
Stock Number	519AB
HWB Families (*Preferred Stock)	1632*, 1937, 1938
PHENOTYPE (appearance)	Yellow stripes between leaf veins.
Original Description	G.Beadle (1929) <i>Am. Nat.</i> 63:189-192.
Maize GDB QR Code/ Cloned?	Cloned: YS1 protein contains multiple putative transmembrane domains (Roberts et al. 2004. <i>Plant Physiol</i> 135: 112-120). 
zm10mx ID	5.112-ys1




LOCUS: Map Position cMC / BIN / cM	5.81 / 5.06 / 135.0
GENOTYPE mutant name (full, short)	<i>Hairy sheath frayed1, Hsf1</i>
Mode of Inheritance	recessive
Stock Number	528A
HWB Families (*Preferred Stock)	1637, 1941
PHENOTYPE (appearance)	Fuzzy plant, hairy sheath, frayed leaf margins
Original Description	R. Bird & M. Neuffer (1985) <i>Maize Genet. Coop. News Lett.</i> 59:42.
Maize GDB QR Code/ Cloned?	 Cloned Our previous data have demonstrated that maize cytosolic HSP70 protein could bind to CaM in the presence of Ca ²⁺ and the CaM-binding site in HSP70 was identified (Liu, Hong. Sun, D. et al. 2005. <i>Plant, Cell & Environ.</i> 28:1276-1284).
zm10mx ID	5.135-Hsf1




LOCUS: Map Position cMC / BIN / cM	6.23 / 6.01 / 36.0
GENOTYPE mutant name (full, short)	<i>yellow endosperm1,</i> <i>y1</i>
Mode of Inheritance	recessive
Stock Number	602C
HWB Families (*Preferred Stock)	1638, 1951
PHENOTYPE (appearance)	White seeds.
Original Description	G. Beadle (1929) <i>Am. Nat.</i> <u>63</u>:189-192.
Maize GDB QR Code	 Cloned Y1 encodes phytoene synthase (Buckner et al <i>Genetics</i> 1996 143:479-488).
zm10mx ID	6.036-y1




LOCUS: Map Position cMC / BIN / cM	6.10 / 6.01 / 37.0
GENOTYPE mutant name (full, short)	<i>Lesion13, Les13-N2003</i>
Mode of Inheritance	DOMINANT
Stock Number	608D
HWB Families (*Preferred Stock)	1959*, 1644, 1955, 1956, 1957, 1958
PHENOTYPE (appearance)	Small to medium necrotic spots on the leaf blade, sheath, and culm.
Original Description	M. Neuffer (1992) <i>Maize Genet. Coop. News Lett.</i> <u>66</u>:39-40.
Maize GDB QR Code/ Cloned?	 Not Cloned
zm10mx ID	6.037-Les13




LOCUS: Map Position cMC / BIN / cM	6.31 / 6.02 / 39.0
GENOTYPE mutant name (full, short)	<i>male sterile1</i> <i>ms1</i>
Mode of Inheritance	recessive
Stock Number	604HA
HWB Families (*Preferred Stock)	1964*
PHENOTYPE (appearance)	Shriveled anthers.
Original Description	W. Singleton & D. Jones (1930) <i>J. Hered.</i> <u>21</u>:266-268.
Maize GDB QR Code/ Cloned?	 Not Cloned
zm10mx ID	6.039-ms1




LOCUS: Map Position cMC / BIN / cM	6.32? / 6.04 / 75.0
GENOTYPE mutant name (full, short)	<i>Purple plant1,</i> <i>PI1-Bh (blotched)</i>
Mode of Inheritance	DOMINANT
Stock Number	611A
HWB Families (*Preferred Stock)	1646, 1641
PHENOTYPE (appearance)	Purple or pink anthers and plant color.
Original Description	R.Emerson (1921) <i>Cornell Univ. Agric. Exp. Stn. Memoir</i> 39:1-156.
Maize GDB QR Code/ Cloned?	 Not Cloned.
zm10mx ID	6.075-PI1-bh




LOCUS: Map Position cMC / BIN / cM	6.70? / 6.04 / 84.0
GENOTYPE mutant name (full, short)	<i>Polytypic ear1, Pt1</i>
Mode of Inheritance	DOMINANT
Stock Number	611D
HWB Families (*Preferred Stock)	1647, 1968
PHENOTYPE (appearance)	Abnormal growth on ear and tassel
Original Description	S.Postlethwait & O.Nelson (1957) <i>Am. J. Bot.</i> <u>44</u>:628-633.
Maize GDB QR Code/ Cloned?	 Not Cloned
zm10mx ID	6.084-Pt1




LOCUS: Map Position cMC / BIN / cM	6.75 / 6.05? / ~100?
GENOTYPE mutant name (full, short)	<i>sunburned1,</i> <i>sbd1</i>
Mode of Inheritance	recessive
Stock Number	608C
HWB Families (*Preferred Stock)	1954*, 1643
PHENOTYPE (appearance)	Leaf turns grey when sunlight hits the surface.
Original Description	M. Neuffer (1990) <i>Maize Genet. Coop. News Lett.</i> 64:52.
Maize GDB QR Code/ Cloned?	 Not Cloned
zm10mx ID	6.100-sbd1




LOCUS: Map Position cMC / BIN / cM	6.77 / 6.05 / 100.0
GENOTYPE mutant name (full, short)	<i>striate leaves4,</i> <i>sr4</i>
Mode of Inheritance	recessive
Stock Number	611N
HWB Families (*Preferred Stock)	1961
PHENOTYPE (appearance)	Longitudinal white and light green stripes on plant.
Original Description	M. Neuffer (1989) <i>Maize Genet. Coop. News Lett.</i> <u>63</u>:62.
Maize GDB QR Code/ Cloned?	 Not Cloned
zm10mx ID	6.0100-sr4




LOCUS: Map Position cMC / BIN / cM	6.97 / 6.05 / 96.0
GENOTYPE mutant name (full, short)	<i>tangled1-pigmy, tan1-py</i>
Mode of Inheritance	recessive
Stock Number	6121
HWB Families (*Preferred Stock)	1971*
PHENOTYPE (appearance)	Short and pointed leaves with fine white streaks.
Original Description	A. Suttle (1924) Unpublished thesis. Cornell University, Ithaca, New York.
Maize GDB QR Code/ Cloned?	 Not Cloned
zm10mx ID	6.096-tan1 py




LOCUS: Map Position cMC / BIN / cM	6.77 / 6.07 / 156.0
GENOTYPE mutant name (full, short)	<i>green stripe3,</i> <i>gs3</i>
Mode of Inheritance	recessive
Stock Number	608A
HWB Families (*Preferred Stock)	1642*, 1962, 1963
PHENOTYPE (appearance)	Small plant with pale green stripes on leaves..
Original Description	M. Neuffer & J. Beckett (1987) <i>Maize Genet. Coop. News Lett.</i> 61:50.
Maize GDB QR Code/ Cloned?	 Cloned Cloning and characterization of a putative GS3 ortholog involved in maize kernel development (Li et al. 2010. <i>Theor Appl Genet</i> 120:753-763).
zm10mx ID	6.0156-gs3




LOCUS: Map Position cMC / BIN / cM	6.80 / 6.07-8 / 157
GENOTYPE mutant name (full, short)	<i>tie-dyed1, tdy1</i>
Mode of Inheritance	recessive
Stock Number	
HWB Families (*Preferred Stock)	2081
PHENOTYPE (appearance)	tie-dyed colored patches on the leaves
Original Description	David Braun (2000) unpublished
Maize GDB QR Code/ Cloned?	 Cloned: Tdy1 appears to be a grass-specific gene that encodes a novel, predicted membrane-localized protein (Ma et al. 2008. <i>Planta</i> 227:527-538).
zm10mx ID	6.157-tdy1




LOCUS: Map Position cMC / BIN / cM	-7.99 / 7.00 / 12.0
GENOTYPE mutant name (full, short)	<i>Rough sheath1,</i> <i>Rs1-0</i>
Mode of Inheritance	DOMINANT
Stock Number	703D
PHENOTYPE (appearance)	<i>Rough sheath, knotted leaf, and</i> <i>disorganized ligule.</i>
Original Description	M.Khadzhinov (1937) <i>Bull. Appl. Bot.</i> <i>Gen. Plant Breed.</i> <u>7</u>:247-258.
Maize GDB QR Code/ Cloned?	Cloned Rs1 plays a role in pattern formation associated with the establishment of boundaries between organ primordia in the meristem (Schneeberger, R; Tyers, R; Freeling, M.1996). 
zmXmz	7.012-Rs1




LOCUS: Map Position cMC / BIN / cM	-7.95 / 7.00 / 18.0
GENOTYPE mutant name (full, short)	<i>Hairy sheath1,</i> <i>Hs1</i>
Mode of Inheritance	DOMINANT
Stock Number	701F
PHENOTYPE (appearance)	Excess of hairs on the leaf sheath.
Original Description	A.Tavcar (1932) <i>Jugosl. Akad. Znanosti Umjetnosti</i> 244:74-93.
Maize GDB QR Code/ Cloned?	Not Cloned 
zmXmz	7.018-Hs1




LOCUS: Map Position cMC / BIN / cM	-7.32 / 7.02 / 49.0
GENOTYPE mutant name (full, short)	<i>virescent5,</i> <i>v5</i>
Mode of Inheritance	recessive
Stock Number	702B
PHENOTYPE (appearance)	Yellowish white seedling that greens rapidly in longitudinal darker green streaks. Later, green leaves with small, white, longitudinal stripes on leaf blades.
Original Description	M. Demerec (1924) <i>Cornell Univ. Agric. Exp. Stn. Memoir</i> 84:1-38.
Maize GDB QR Code/ Cloned?	 Not Cloned
<i>zmXmz</i>	7.049-v5/ra1




LOCUS: Map Position cMC / BIN / cM	7.24 / 7.02 / 51.0
GENOTYPE mutant name (full, short)	<i>ramosa1,</i> <i>ra1</i>
Mode of Inheritance	recessive
Stock Number	708A
HWB Families (*Preferred Stock)	1986*, 1658, 1984, 1985
PHENOTYPE (appearance)	Many-branched ears and tassels.
Original Description	W. Gernert (1912) <i>Am. Nat.</i> <u>46</u>:616-622.
Maize GDB QR Code/ Cloned?	 Cloned: ramosa1 encodes a transcription factor that appears to be absent in rice, is heterochronically expressed in sorghum, and may have played an important role in maize domestication and grass evolution. Vollbrecht, E. et al., 2005. <i>Nature</i> 436 :1119-112.6
zmXmz	7.051-ra1




LOCUS: Map Position cMC / BIN / cM	7.53 / 7.03 / 69.0
GENOTYPE mutant name (full, short)	<i>Teopod1, Tp1</i>
Mode of Inheritance	DOMINANT
Stock Number	711A
HWB Families (*Preferred Stock)	1992*, 1991, 1659
PHENOTYPE (appearance)	Many tillers, narrow leaves, many small, partially podded ears and a simple tassel.
Original Description	E. Lindstrom (1925) <i>J. Hered.</i> 16:135-140.
Maize GDB QR Code/ Cloned?	 Not Cloned
<i>zmXmz</i>	7.069-Tp1




LOCUS: Map Position cMC / BIN / cM	7.67 / 7.03 / 78.0
GENOTYPE mutant name (full, short)	<i>slashed leaves1, sl1 o2</i>
Mode of Inheritance	recessive
Stock Number	706A
HWB Families (*Preferred Stock)	1655*, 1989, 1990, 1659
PHENOTYPE (appearance)	Longitudinally slit leaves.
Original Description	H. Hayes & H. Brewbaker (1928) <i>Am. Nat.</i> 62:228-235.
Maize GDB QR Code/ Cloned?	 Not Cloned
<i>zmXmz</i>	7.078-sl1




LOCUS: Map Position cMC / BIN / cM	7.68 / 7.03 / 78.5
GENOTYPE mutant name (full, short)	<i>iojap striping1, ij1</i>
Mode of Inheritance	recessive
Stock Number	713H
HWB Families (*Preferred Stock)	1660, 1993
PHENOTYPE (appearance)	White stripes on the leaves.
Original Description	M. Jenkins (1924) <i>J. Hered.</i> <u>15</u>:467-472.
Maize GDB QR Code/ Cloned?*	 Cloned: orthologous to RsfA ribosomal silencing factor (Hauser et al 2012); IJ1 binds to chloroplast ribosomes (Han 1995)
<i>zmXmz</i>	7.078-ij1




LOCUS: Map Position cMC / BIN / cM	-8.69 / 8.01 / 43.0
GENOTYPE mutant name (full, short)	<i>compact plant1,</i> <i>ct1</i>
Mode of Inheritance	recessive
Stock Number	808A
PHENOTYPE (appearance)	Small, compact plant.
Original Description	J. Beckett & M. Neuffer (1973) <i>Maize Genet. Coop. News Lett.</i> 47:147.
Maize GDB QR Code/ Cloned?	 Not Cloned
zmXmz ID	8.043-ct1




LOCUS: Map Position cMC / BIN / cM	-8.49 / 8.02 / 51.0
GENOTYPE mutant name (full, short)	<i>Barren inflorescence1,</i> <i>Bif1</i>
Mode of Inheritance	DOMINANT
Stock Number	827c
PHENOTYPE (appearance)	Mutant plants have ear and tassel with many fewer spikelets, bare rachis appendages.
Original Description	Neuffer, MG and Sheridan, KA. 1977. MNL 51:59-60
Maize GDB QR Code/ Cloned?	Cloned BIF1 and BIF4 encode AUXIN/INDOLE-3-ACETIC ACID (Aux/IAA) proteins, which are key components of the auxin hormone signaling pathway that is essential for organogenesis (Galli, M. et al. 2015. <i>Proc Natl Acad Sci</i>).  of
zmXmz ID	8.051-bif2




LOCUS: Map Position cMC / BIN / cM	8.30 / 8.05 / 106.0
GENOTYPE mutant name (full, short)	<i>Clumped tassel1,</i> <i>Cl1</i>
Mode of Inheritance	DOMINANT
Stock Number	827E
PHENOTYPE (appearance)	Clumped tassel, small plant.
Original Description	Gelinas, DA et al.1966. <i>Am J Bot 53:615</i>
Maize GDB QR Code/ Cloned?	 Not Cloned
zmXmz ID	8.106-Cl1




LOCUS: Map Position cMC / BIN / cM	8.40 / 8.04 / 86.0
GENOTYPE mutant name (full, short)	<i>Semidwarf plant1,</i> <i>Sdw1</i>
Mode of Inheritance	DOMINANT
Stock Number	827D
PHENOTYPE (appearance)	Semi-dwarf plant, rolled leaf.
Original Description	Bird, RmCK and Neuffer, MG. 1985. MNL 59:42
Maize GDB QR Code/ Cloned?	Not Cloned 
zmXmz ID	8.086-Sdw1




LOCUS: Map Position cMC / BIN / cM	8.87 / 8.07 / 141.0
GENOTYPE mutant name (full, short)	<i>virescent21, v21</i>
Mode of Inheritance	recessive
Stock Number	804A
PHENOTYPE (appearance)	Green from tips and margins inward.
Original Description	J. Beckett & M.G. Neuffer (1973) <i>Maize Genet. Coop. News Lett.</i> <u>47</u>:147.
Maize GDB QR Code/ Cloned?	Not Cloned 
zmXmz ID	8.141-v21




LOCUS: Map Position cMC / BIN / cM	8.98 / 8.07 / 138.0
GENOTYPE mutant name (full, short)	<i>japonica striping1,</i> <i>j1</i>
Mode of Inheritance	recessive
Stock Number	810B
PHENOTYPE (appearance)	White stripes on plant and leaf sheath.
Original Description	J. Beckett & M.G. Neuffer (1973) <i>Maize Genet. Coop. News Lett.</i> <u>47</u>:147.
Maize GDB QR Code/ Cloned?	Not Cloned 
zmXmz ID	8.138-j1




LOCUS: Map Position cMC / BIN / cM	-9.91 / 9.00 / 11.5
GENOTYPE mutant name (full, short)	<i>yellow-green2,</i> <i>yg2</i>
Mode of Inheritance	recessive
Stock Number	924C
PHENOTYPE (appearance)	Yellow-green seedling and plant.
Original Description	M. Jenkins (1927) <i>Genetics</i> 12:492-518.
Maize GDB QR Code/ Cloned?	Not Cloned 
zmXmz ID	9.011-yg2




LOCUS: Map Position cMC / BIN / cM	-9.68 / 9.02 / 39.3
GENOTYPE mutant name (full, short)	<i>bronze1,</i> <i>bz1</i>
Mode of Inheritance	recessive
Stock Number	
PHENOTYPE (appearance)	Pale or reddish brown plant, yellow-fluorescent anthers.
Original Description	M.Rhoades (1952) <i>Am. Nat.</i> <u>86</u>:105-108.
Maize GDB QR Code/ Cloned?	Cloned: Encodes enzyme UDPG-flavonol 3-O- glucosyl transferase (Larson and Coe et al. 1977. <i>Biochem Genet</i> 15:153). 
zmXmz ID	9.039-bz1




LOCUS: Map Position cMC / BIN / cM	-9.68 / 9.02 / 51.0
GENOTYPE mutant name (full, short)	<i>Zebra crossbands8, Zb8</i>
Mode of Inheritance	DOMINANT
Stock Number	927E
PHENOTYPE (appearance)	Yellow-green crossbands on older leaves.
Original Description	MG Neuffer & WF Sheridan (1977) <i>Maize Genet. Coop. News Lett.</i> 51:59-60.
Maize GDB QR Code/ Cloned?	Not Cloned 
zmXmz ID	9.051-Zb8




LOCUS: Map Position cMC / BIN / cM	-9.56 / 9.01 / 54.0
GENOTYPE mutant name (full, short)	<i>luteus7,</i> <i>l7</i>
Mode of Inheritance	recessive
Stock Number	919D
PHENOTYPE (appearance)	Yellow lethal seedling.
Original Description	W. Eyster (1934) <i>Bibliogr. Genet.</i> <u>11</u>:187-392.
Maize GDB QR Code/ Cloned?	Not Cloned 
zmXmz ID	9.054-l7




LOCUS: Map Position cMC / BIN / cM	-9.47 / 9.02 / 62.0
GENOTYPE mutant name (full, short)	<i>barren stalk fastigiate1,</i> <i>baf1</i>
Mode of Inheritance	recessive
Stock Number	913E
PHENOTYPE (appearance)	Ear shoots few or absent.
Original Description	E. Coe & J. Beckett (1987) Maize Genet. Coop. News Lett. 61:46-47.
Maize GDB QR Code/ Cloned?	Cloned Encodes a transcriptional regulator containing an AT-hook DNA binding motif (Gallavoti et al. 2011. <i>Plant Cell</i> 23: 1756-1771). 
zmXmz ID	9.062-baf1




LOCUS: Map Position cMC / BIN / cM	-9.29 / 9.03 / 66.0
GENOTYPE mutant name (full, short)	<i>dwarf3, d3</i>
Mode of Inheritance	recessive
Stock Number	917FC
PHENOTYPE (appearance)	Short, compact plant.
Original Description	M. Demerec (1926) <i>Am. Nat.</i> <u>60</u>:172-176.
Maize GDB QR Code/ Cloned?	Cloned The Dwarf3 (03) gene of maize encodes an early step in the GA biosynthesis pathway (Winkler, RG and Helentjaris, T. et al. 1995. <i>The Plant Cell</i> 1307-1317). 
<i>zmXmz ID</i>	9.066-d3




LOCUS: Map Position cMC / BIN / cM	9.37 / 9.04 / 80.0
GENOTYPE mutant name (full, short)	<i>Torn leaves1,</i> <i>Trn1</i>
Mode of Inheritance	DOMINANT
Stock Number	916G
PHENOTYPE (appearance)	Torn leaf, necrotic leaf tips, small plant.
Original Description	MG Neuffer (1993) <i>Maize Genet. Coop. News Lett.</i> 67:33.
Maize GDB QR Code/ Cloned?	Not Cloned 
zmXmz ID	9.080-Trn1




LOCUS: Map Position cMC / BIN / cM	9.99 / 9.06 / 126.0
GENOTYPE mutant name (full, short)	<i>brown midrib4,</i> <i>bm4</i>
Mode of Inheritance	recessive
Stock Number	919A
PHENOTYPE (appearance)	Brown pigment in midrib, leaf sheath, and blade.
Original Description	C.Burnham (1947) <i>Maize Genet. Coop. News Lett.</i> 21:36-37.
Maize GDB QR Code/ Cloned?	Cloned  Encodes a putative folylpolyglutamate synthase (FPGS), which functions in one carbon (C1) metabolism to polyglutamylate substrates of folate-dependent enzymes (Li, L et al. 2015. <i>Plant J</i> 81: 493-504).
zmXmz ID	9.0126-bm4




LOCUS: Map Position cMC / BIN / cM	9.99 / 9.07 / 150.0
GENOTYPE mutant name (full, short)	<i>Rolled leaf1,</i> <i>Rld1</i>
Mode of Inheritance	DOMINANT
Stock Number	927K
PHENOTYPE (appearance)	Tightly rolled leaves, upper/lower leaf surface is disrupted & mixed
Original Description	R.Bird & M.Neuffer (1985) <i>Genetics-UCLA Symposium on Plant Biology</i> pp.818-822.
Maize GDB QR Code/ Cloned?	 Not Cloned
zmXmz ID	9.0150-Rld1




LOCUS: Map Position cMC / BIN / cM	-10.79 / 10.00 / 29.0
GENOTYPE mutant name (full, short)	Lesion6, Les6
Mode of Inheritance	DOMINANT
Stock Number	X27D
PHENOTYPE (appearance)	Small to medium-sized irregularly shaped lesions on leaf and stalk.
Original Description	M.Neuffer & S.Pawar (1980) <i>Maize Genet. Coop. News Lett.</i> 54:34-35.
Maize GDB QR Code/ Cloned?	 Not Cloned
zmXmz ID	10.029-Les6



LOCUS: Map Position cMC / BIN / cM	10.27 / 10.00 / 29.0
GENOTYPE mutant name (full, short)	Lesion12, Les12
Mode of Inheritance	DOMINANT
Stock Number	X27L
PHENOTYPE (appearance)	Lesions on leaves, etched endosperm, small kernels.
Original Description	M.Neuffer (1992) <i>Maize Genet. Coop. News</i> <i>Lett.</i> 66:39-40.
Maize GDB QR Code/ Cloned?	 Not Cloned
zmXmz ID	10.029-Les12



GENOTYPE mutant name (full, short)	Colored1-marbled, R1-mb
Mode of Inheritance	DOMINANT
Stock Number	X27C
PHENOTYPE (appearance)	Red or purple color in seeds and/or anthers, leaf tip, brace roots, etc.
Original Description	E. East & H. Hayes (1911) <i>Conn. Agric. Exp. Stn. Bull.</i> 167:1-142.
Maize GDB QR Code/ Cloned?	Cloned The characteristic variegation pattern due to <i>R-mb</i> is attributed to the action of a transposable genetic element on the basis of somatic and germinal instability, occurrence of discordant endosperm-embryo phenotypes, and genetic analysis of <i>R-mb/R-st</i> and <i>R-mb/R-nj</i> heterozygotes (Prasanna, B and Sarkar, KR. et al. 1995. <i>Journal of Genetics</i> 74:99-109).  of
zmXmz ID	10.0101-R1-mb