

GO Annotations

Locus	Gene Model(s)	GO term (links to Tair Keyword Browser) (GO ID)	cat	code	GO Slim	Reference	Made by: date last modified
AT1G58360	AT1G58360	neutral L-amino acid transmembrane transporter activity (GO:0015175)	func	IBA	transporter activity	Communication:501741973	NA 11/23/2022 00:00:00
	AT1G58360	L-glutamate transmembrane transporter activity (GO:0005313)	func	IMP	transporter activity	Publication:501760717 PMID:25005136	TAIR 11/20/2014 00:00:00
	AT1G58360	response to nematode (GO:0009624)	proc	HEP	response to external stimulus response to biotic stimulus	Publication:501718529 PMID:16478044	TAIR 12/03/2019 00:00:00
	AT1G58360	plasma membrane (GO:0005886)	comp	IDA	plasma membrane	Publication:2929 PMID:9374550	TAIR 03/31/2003 00:00:00
	AT1G58360.1	plasma membrane (GO:0005886)	comp	ISM	plasma membrane	AnalysisReference:501780126	NA 08/31/2018 00:00:00
	AT1G58360	amino acid import (GO:0043090)	proc	IMP	transport	Publication:501730163 PMID:19392706	TAIR 05/28/2009 00:00:00
	AT1G58360	membrane (GO:0016020)	comp	IBA	other membranes	Communication:501741973	NA 06/07/2023 00:00:00
	AT1G58360	L-glutamine transmembrane transporter activity (GO:0015186)	func	IMP	transporter activity	Publication:501760717 PMID:25005136	TAIR 11/20/2014 00:00:00
	AT1G58360	neutral L-amino acid transmembrane transporter activity (GO:0015175)	func	IGI	transporter activity	Publication:5123 PMID:8356039	TAIR 04/28/2003 00:00:00
	AT1G58360	L-serine transmembrane transporter activity (GO:0015194)	func	IMP	transporter activity	Publication:501760717 PMID:25005136	TAIR 11/20/2014 00:00:00
	AT1G58360	L-proline transmembrane transporter activity (GO:0015193)	func	IMP	transporter activity	Publication:501760717 PMID:25005136	TAIR 11/20/2014 00:00:00
	AT1G58360	amino acid transmembrane transport (GO:0003333)	proc	IBA	other cellular processes transport	Communication:501741973	NA 06/07/2023 00:00:00
	AT1G58360	neutral amino acid transport (GO:0015804)	proc	IBA	transport	Communication:501741973	NA 04/20/2022 00:00:00
	AT1G58360	L-alanine transport (GO:0015808)	proc	IMP	transport	Publication:501760717 PMID:25005136	TAIR 11/20/2014 00:00:00
	AT1G58360	acidic amino acid transport (GO:0015800)	proc	IBA	transport	Communication:501741973	NA 01/14/2023 00:00:00
	AT1G58360	L-glutamate import across plasma membrane (GO:0098712)	proc	IMP	other cellular processes transport	Publication:501760717 PMID:25005136	TAIR 11/20/2014 00:00:00
	AT1G58360	amino acid transmembrane transporter activity (GO:0015171)	func	ISS	transporter activity	Communication:1674994	TAIR 07/04/2007 00:00:00
	AT1G58360	L-alanine transmembrane transporter activity	func	IMP	transporter activity	Publication:501760717 PMID:25005136	TAIR 11/20/2014

		(GO:0015180)					00:00:00
	AT1G58360	amino acid transmembrane transporter activity (GO:0015171)	func	IMP	transporter activity	Publication:501721440 PMID:17419840	TAIR 07/04/2007 00:00:00
	AT1G58360	plasma membrane (GO:0005886)	comp	IDA	plasma membrane	Publication:501721440 PMID:17419840	TAIR 06/21/2007 00:00:00
	AT1G58360	acidic amino acid transmembrane transporter activity (GO:0015172)	func	IBA	transporter activity	Communication:501741973	NA 06/07/2023 00:00:00
	AT1G58360	neutral amino acid transport (GO:0015804)	proc	IGI	transport	Publication:5123 PMID:8356039	TAIR 04/28/2003 00:00:00
AT5G04230	AT5G04230	response to wounding (GO:0009611)	proc	TAS	response to stress	Publication:4577 PMID:7888622	TIGR 04/17/2003 00:00:00
	AT5G04230.1	cytoplasm (GO:0005737)	comp	ISM	cytoplasm	AnalysisReference:501780126	NA 08/31/2018 00:00:00
	AT5G04230	phenylalanine ammonia-lyase activity (GO:0045548)	func	IBA	catalytic activity	Communication:501741973	NA 04/02/2021 00:00:00
	AT5G04230	protein binding (GO:0005515)	func	IPI	protein binding	Publication:501757837 PMID:24363316	TAIR 03/11/2014 00:00:00
	AT5G04230	defense response (GO:0006952)	proc	TAS	response to stress	Publication:4577 PMID:7888622	TIGR 04/17/2003 00:00:00
	AT5G04230.2	cytoplasm (GO:0005737)	comp	ISM	cytoplasm	AnalysisReference:501780126	NA 08/31/2018 00:00:00
	AT5G04230	cinnamic acid biosynthetic process (GO:0009800)	proc	IEA	other metabolic processes other cellular processes secondary metabolic process biosynthetic process	AnalysisReference:501757242	NA 09/23/2023 00:00:00
	AT5G04230	phenylalanine ammonia-lyase activity (GO:0045548)	func	ISS	catalytic activity	Publication:4577 PMID:7888622	TAIR 10/03/2008 00:00:00
AT1G08090	AT1G08090	lateral root development (GO:0048527)	proc	IMP	anatomical structure development multicellular organism development post-embryonic development	Publication:501718379 PMID:16415211	TAIR 02/09/2006 00:00:00
	AT1G08090	plasma membrane (GO:0005886)	comp	IBA	plasma membrane	Communication:501741973	NA 11/23/2022 00:00:00
	AT1G08090	nitrate transmembrane transport (GO:0015706)	proc	IMP	transport	Publication:501718379 PMID:16415211	TAIR 02/09/2006 00:00:00
	AT1G08090	membrane (GO:0016020)	comp	ISS	other membranes	Publication:501717719 PMID:16157886	TAIR 10/21/2005

						00:00:00
AT1G08090.1	plasma membrane (GO:0005886)	comp	IDA	plasma membrane	Publication:501747188 PMID:22227893	TAIR 03/22/2013 00:00:00
AT1G08090	nitrate transmembrane transporter activity (GO:0015112)	func	TAS	transporter activity	Publication:501717719 PMID:16157886	TAIR 10/21/2005 00:00:00
AT1G08090	lateral root development (GO:0048527)	proc	IMP	anatomical structure development post-embryonic development multicellular organism development	Publication:501717719 PMID:16157886	TAIR 10/21/2005 00:00:00
AT1G08090	nitrate transmembrane transporter activity (GO:0015112)	func	IBA	transporter activity	Communication:501741973	NA 11/23/2022 00:00:00
AT1G08090	nitrate transmembrane transport (GO:0015706)	proc	IBA	transport	Communication:501741973	NA 06/07/2023 00:00:00
AT1G08090	cellular response to nitrate (GO:0071249)	proc	IBA	other cellular processes response to chemical	Communication:501741973	NA 03/31/2021 00:00:00
AT1G08090	nitrate transmembrane transport (GO:0015706)	proc	IMP	transport	Publication:501738153 PMID:20561257	NA 06/11/2016 00:00:00
AT1G08090	response to nitrate (GO:0010167)	proc	IEP	response to chemical	Publication:501718378 PMID:16415212	TAIR 02/09/2006 00:00:00
AT1G08090	nitrate transmembrane transport (GO:0015706)	proc	IMP	transport	Publication:501738153 PMID:20561257	NA 03/31/2021 00:00:00
AT1G08090	nitrate transmembrane transport (GO:0015706)	proc	IMP	transport	Publication:501679374 PMID:11165253	TAIR 03/28/2003 00:00:00
AT1G08090	nitrate transmembrane transporter activity (GO:0015112)	func	ISS	transporter activity	Communication:1674994	TAIR 03/29/2003 00:00:00
AT5G09300						
AT5G09300	branched-chain amino acid catabolic process (GO:0009083)	proc	IBA	other metabolic processes catabolic process other cellular processes	Communication:501741973	NA 04/13/2023 00:00:00
AT5G09300	mitochondrial alpha-ketoglutarate dehydrogenase complex (GO:0005947)	comp	IBA	other intracellular components cytoplasm mitochondrion	Communication:501741973	NA 04/02/2021 00:00:00
AT5G09300.3	mitochondrion (GO:0005739)	comp	ISM	mitochondrion	AnalysisReference:501780126	NA 08/31/2018 00:00:00
AT5G09300.4	mitochondrion (GO:0005739)	comp	ISM	mitochondrion	AnalysisReference:501780126	NA 08/31/2018 00:00:00
AT5G09300	branched-chain amino acid catabolic process (GO:0009083)	proc	IGI	other cellular processes other	Publication:501764185 PMID:25986129	TAIR 12/29/2021 00:00:00

				metabolic processes catabolic process		
AT5G09300	3-methyl-2-oxobutanoate dehydrogenase (2-methylpropanoyl-transferring) activity (GO:0003863)	func	IEA	catalytic activity	AnalysisReference:501756967	NA 09/23/2023 00:00:00
AT5G09300.1	chloroplast (GO:0009507)	comp	ISM	chloroplast	AnalysisReference:501780126	NA 08/31/2018 00:00:00
AT5G09300	oxidoreductase activity, acting on the aldehyde or oxo group of donors, disulfide as acceptor (GO:0016624)	func	IEA	catalytic activity	AnalysisReference:501756966	NA 09/23/2023 00:00:00
AT5G09300	mitochondrion (GO:0005739)	comp	IDA	mitochondrion	Publication:501711954 PMID:14764908	NA 01/10/2005 00:00:00
AT5G09300	mitochondrion (GO:0005739)	comp	HDA	mitochondrion	Publication:501711651 PMID:14671022	NA 04/15/2021 00:00:00
AT5G09300.2	chloroplast (GO:0009507)	comp	ISM	chloroplast	AnalysisReference:501780126	NA 08/31/2018 00:00:00
AT2G24762						
AT2G24762.1	chloroplast (GO:0009507)	comp	ISM	chloroplast	AnalysisReference:501780126	NA 08/31/2018 00:00:00
AT2G24762	molecular function unknown (GO:0003674)	func	ND	unknown molecular functions	Communication:1345790	TIGR 10/04/2003 00:00:00
AT2G24762	regulation of amino acid export (GO:0080143)	proc	IMP	other cellular processes transport	Publication:501735673 PMID:20018597	NA 01/25/2010 00:00:00
AT3G45660						
AT3G45660	transmembrane transport (GO:0055085)	proc	IEA	other cellular processes transport	AnalysisReference:501756966	NA 09/23/2023 00:00:00
AT3G45660	transmembrane transport (GO:0055085)	proc	IBA	transport other cellular processes	Communication:501741973	NA 06/07/2023 00:00:00
AT3G45660.2	extracellular region (GO:0005576)	comp	ISM	extracellular region	AnalysisReference:501780126	NA 08/31/2018 00:00:00
AT3G45660	transmembrane transporter activity (GO:0022857)	func	IBA	transporter activity	Communication:501741973	NA 06/07/2023 00:00:00
AT3G45660	transmembrane transporter activity (GO:0022857)	func	IEA	transporter activity	AnalysisReference:501756966	NA 09/23/2023 00:00:00
AT3G45660	plasma membrane (GO:0005886)	comp	IBA	plasma membrane	Communication:501741973	NA 06/07/2023 00:00:00
AT4G34710						
AT4G34710.1	nucleus (GO:0005634)	comp	ISM	nucleus	AnalysisReference:501780126	NA 08/31/2018 00:00:00
AT4G34710	chloroplast (GO:0009507)	comp	IDA	chloroplast	Publication:501774152 PMID:28109885	NA 11/23/2017 00:00:00
AT4G34710	protein binding (GO:0005515)	func	IPI	protein binding	Publication:501774152 PMID:28109885	NA 04/01/2021

						00:00:00
AT4G34710	response to jasmonic acid (GO:0009753)	proc	IEP	response to endogenous stimulus response to chemical	Publication:501682524 PMID:12428010	TAIR 06/13/2006 00:00:00
AT4G34710	seed development (GO:0048316)	proc	IGI	reproduction post-embryonic development anatomical structure development multicellular organism development	Publication:501714982 PMID:15733873	TAIR 06/13/2006 00:00:00
AT4G34710.2	nucleus (GO:0005634)	comp	ISM	nucleus	AnalysisReference:501780126	NA 08/31/2018 00:00:00
AT4G34710	cytosol (GO:0005829)	comp	IDA	cytosol	Publication:501774152 PMID:28109885	NA 11/23/2017 00:00:00
AT4G34710	response to osmotic stress (GO:0006970)	proc	IMP	response to abiotic stimulus response to stress	Publication:1199 PMID:10481069	TAIR 06/13/2006 00:00:00
AT4G34710	protein homodimerization activity (GO:0042803)	func	IPI	protein binding	Publication:501774152 PMID:28109885	NA 04/01/2021 00:00:00
AT4G34710	arginine decarboxylase activity (GO:0008792)	func	IBA	catalytic activity	Communication:501741973	NA 11/23/2022 00:00:00
AT4G34710	polyamine biosynthetic process (GO:0006596)	proc	IMP	other metabolic processes other cellular processes biosynthetic process	Publication:1199 PMID:10481069	TAIR 06/13/2006 00:00:00
AT4G34710	putrescine biosynthetic process (GO:0009446)	proc	IMP	other cellular processes other metabolic processes biosynthetic process	Publication:501714982 PMID:15733873	TAIR 06/13/2006 00:00:00
AT4G34710	arginine decarboxylase activity (GO:0008792)	func	IMP	catalytic activity	Publication:1199 PMID:10481069	TAIR 06/13/2006 00:00:00
AT4G34710	response to abscisic acid (GO:0009737)	proc	IEP	response to chemical response to endogenous stimulus	Publication:501682524 PMID:12428010	TAIR 06/13/2006 00:00:00
AT4G34710	response to salt stress (GO:0009651)	proc	IMP	response to stress response to abiotic stimulus	Publication:501712246 PMID:15086823	TAIR 06/13/2006 00:00:00
AT4G34710	response to cold (GO:0009409)	proc	IMP	response to abiotic stimulus	Publication:501727501 PMID:18701673	NA 03/10/2009 00:00:00

				response to abiotic stimulus response to stress response to stress		
	AT4G34710	response to wounding (GO:0009611)	proc	IEP	response to stress	Publication:501682524 PMID:12428010 TAIR 06/13/2006 00:00:00
	AT4G34710	response to oxidative stress (GO:0006979)	proc	IEP	response to stress	Publication:501714511 PMID:15634198 TAIR 11/07/2005 00:00:00
	AT4G34710	polyamine biosynthetic process (GO:0006596)	proc	IMP	biosynthetic process other metabolic processes other cellular processes	Publication:501768744 PMID:27014322 TAIR 05/16/2016 00:00:00
	AT4G34710	arginine catabolic process (GO:0006527)	proc	IEA	other metabolic processes other cellular processes catabolic process	AnalysisReference:501756966 NA 09/23/2023 00:00:00
AT4G08290	AT4G08290	transmembrane transporter activity (GO:0022857)	func	IEA	transporter activity	AnalysisReference:501756966 NA 09/23/2023 00:00:00
	AT4G08290	biological process unknown (GO:0008150)	proc	ND	unknown biological processes	Communication:1345790 TAIR 08/08/2023 00:00:00
	AT4G08290	plasma membrane (GO:0005886)	comp	IBA	plasma membrane	Communication:501741973 NA 06/07/2023 00:00:00
AT2G13810	AT2G13810	transaminase activity (GO:0008483)	func	IDA	transferase activity	Publication:501711783 PMID:14729919 NA 04/01/2021 00:00:00
	AT2G13810	systemic acquired resistance (GO:0009627)	proc	IDA	response to biotic stimulus response to stress response to external stimulus	Publication:501774810 PMID:28330936 NA 04/12/2018 00:00:00
	AT2G13810.1	chloroplast (GO:0009507)	comp	ISM	chloroplast	AnalysisReference:501780126 NA 08/31/2018 00:00:00
	AT2G13810	defense response to bacterium (GO:0042742)	proc	IMP	response to external stimulus response to stress response to biotic stimulus	Publication:501711783 PMID:14729919 NA 03/31/2021 00:00:00
	AT2G13810	systemic acquired resistance, salicylic acid mediated signaling pathway (GO:0009862)	proc	IMP	response to stress response to chemical response to biotic stimulus response to external stimulus	Publication:501711783 PMID:14729919 NA 03/31/2021 00:00:00

				signal transduction other cellular processes		
AT2G13810	L-lysine alpha-aminotransferase (GO:0062045)	func	IMP	transferase activity	Publication:501774810 PMID:28330936	NA 05/11/2018 00:00:00
AT2G13810	plastid (GO:0009536)	comp	IDA	plastid	Publication:501774810 PMID:28330936	NA 04/12/2018 00:00:00
AT2G13810	pyridoxal phosphate binding (GO:0030170)	func	IDA	other binding	Publication:501753769 PMID:23385743	NA 04/01/2021 00:00:00
AT2G13810	L-pipecolic acid biosynthetic process (GO:0062034)	proc	IMP	other metabolic processes other cellular processes biosynthetic process	Publication:501774810 PMID:28330936	NA 05/11/2018 00:00:00
AT2G13810	leaf senescence (GO:0010150)	proc	IMP	multicellular organism development anatomical structure development	Publication:501742909 PMID:21530897	NA 03/31/2021 00:00:00
AT1G44800	amino acid import (GO:0043090)	proc	IDA	transport	Publication:501747275 PMID:22312005	NA 02/10/2012 00:00:00
AT1G44800	protein binding (GO:0005515)	func	IPI	protein binding	Publication:501743366 PMID:21798944	NA 09/23/2023 00:00:00
AT1G44800	amino acid transmembrane transporter activity (GO:0015171)	func	IDA	transporter activity	Publication:501747275 PMID:22312005	NA 06/13/2012 00:00:00
AT1G44800	amino acid transport (GO:0006865)	proc	IDA	transport	Publication:501747275 PMID:22312005	NA 02/10/2012 00:00:00
AT1G44800	intracellular amino acid homeostasis (GO:0080144)	proc	IMP	other biological processes	Publication:501747275 PMID:22312005	NA 02/10/2012 00:00:00
AT1G44800	amino acid export across plasma membrane (GO:0032973)	proc	IDA	transport other cellular processes	Publication:501747275 PMID:22312005	NA 02/10/2012 00:00:00
AT1G44800	L-amino acid efflux transmembrane transporter activity (GO:0034639)	func	IDA	transporter activity	Publication:501747275 PMID:22312005	NA 06/13/2012 00:00:00
AT1G44800	plasma membrane (GO:0005886)	comp	IBA	plasma membrane	Communication:501741973	NA 06/07/2023 00:00:00
AT1G44800.1	mitochondrion (GO:0005739)	comp	ISM	mitochondrion	AnalysisReference:501780126	NA 08/31/2018 00:00:00
AT1G44800	plasma membrane (GO:0005886)	comp	IDA	plasma membrane	Publication:501747275 PMID:22312005	NA 02/10/2012 00:00:00
AT1G01070	L-glutamine transmembrane transporter activity (GO:0015186)	func	IDA	transporter activity	Publication:501767310 PMID:26628011	TAIR 12/15/2015 00:00:00
AT1G01070	plasma membrane (GO:0005886)	comp	IBA	plasma membrane	Communication:501741973	NA 06/07/2023

						00:00:00
AT1G01070.2	mitochondrion (GO:0005739)	comp	ISM	mitochondrion	AnalysisReference:501780126	NA 08/31/2018 00:00:00
AT1G01070	seed development (GO:0048316)	proc	IMP	post-embryonic development multicellular organism development anatomical structure development reproduction	Publication:501767310PMID:26628011	TAIR 12/18/2015 00:00:00
AT1G01070	plasma membrane (GO:0005886)	comp	IDA	plasma membrane	Publication:501767310PMID:26628011	TAIR 12/15/2015 00:00:00
AT1G21890	secondary metabolic process (GO:0019748)	proc	IEA	secondary metabolic process	Publication:501796011PMID:34562334	NA 11/14/2022 00:00:00
AT1G21890.1	chloroplast (GO:0009507)	comp	ISM	chloroplast	AnalysisReference:501780126	NA 08/31/2018 00:00:00
AT1G21890	transmembrane transporter activity (GO:0022857)	func	IEA	transporter activity	AnalysisReference:501756966	NA 09/23/2023 00:00:00
AT1G21890	aromatic compound biosynthetic process (GO:0019438)	proc	IEA	biosynthetic process other cellular processes other metabolic processes	Publication:501796011PMID:34562334	NA 11/14/2022 00:00:00
AT1G21890	positive regulation of RNA metabolic process (GO:0051254)	proc	IEA	nucleobase-containing compound metabolic process other metabolic processes other cellular processes	Publication:501796011PMID:34562334	NA 11/14/2022 00:00:00
AT1G21890	plasma membrane (GO:0005886)	comp	IBA	plasma membrane	Communication:501741973	NA 06/07/2023 00:00:00
AT1G21890	macromolecule biosynthetic process (GO:0009059)	proc	IEA	biosynthetic process other metabolic processes	Publication:501796011PMID:34562334	NA 11/14/2022 00:00:00
AT1G21890	positive regulation of cellular biosynthetic process (GO:0031328)	proc	IEA	biosynthetic process other metabolic processes other cellular processes	Publication:501796011PMID:34562334	NA 11/14/2022 00:00:00
AT1G21890	organic cyclic compound biosynthetic process (GO:1901362)	proc	IEA	biosynthetic process other metabolic processes	Publication:501796011PMID:34562334	NA 11/14/2022 00:00:00
AT1G21890.2	mitochondrion (GO:0005739)	comp	ISM	mitochondrion	AnalysisReference:501780126	NA 08/31/2018 00:00:00

AT1G75500	AT1G75500.1	plasma membrane (GO:0005886)	comp	HDA	plasma membrane	Publication:501712339 PMID:15060130	NA 05/10/2021 00:00:00
	AT1G75500.2	mitochondrion (GO:0005739)	comp	ISM	mitochondrion	AnalysisReference:501780126	NA 08/31/2018 00:00:00
	AT1G75500	transmembrane transporter activity (GO:0022857)	func	IEA	transporter activity	AnalysisReference:501756966	NA 09/23/2023 00:00:00
	AT1G75500	positive regulation of tryptophan metabolic process (GO:0090358)	proc	IMP	other cellular processes other metabolic processes	Publication:501737837 PMID:20497379	NA 07/01/2010 00:00:00
	AT1G75500	unidimensional cell growth (GO:0009826)	proc	IMP	cell growth anatomical structure development growth	Publication:501737837 PMID:20497379	NA 06/02/2010 00:00:00
	AT1G75500	positive regulation of auxin metabolic process (GO:0090355)	proc	IMP	other metabolic processes other cellular processes	Publication:501737837 PMID:20497379	NA 07/01/2010 00:00:00
	AT1G75500	plasma membrane (GO:0005886)	comp	IBA	plasma membrane	Communication:501741973	NA 06/07/2023 00:00:00
	AT1G75500	auxin export across the plasma membrane (GO:0010315)	proc	IMP	transport signal transduction response to chemical other cellular processes response to endogenous stimulus cell communication	Publication:501758568 PMID:24129639	NA 06/11/2016 00:00:00
	AT1G75500.1	mitochondrion (GO:0005739)	comp	ISM	mitochondrion	AnalysisReference:501780126	NA 08/31/2018 00:00:00
	AT1G75500	plant-type vacuole membrane (GO:0009705)	comp	IDA	vacuole other membranes	Publication:501737837 PMID:20497379	NA 07/01/2010 00:00:00
	AT1G75500	plant-type secondary cell wall biogenesis (GO:0009834)	proc	IMP	other cellular processes	Publication:501737837 PMID:20497379	NA 06/02/2010 00:00:00
	AT1G75500.1	plant-type vacuole (GO:0000325)	comp	HDA	vacuole	Publication:501720626 PMID:17151019	NA 05/12/2021 00:00:00
	AT1G75500	auxin export across the plasma membrane (GO:0010315)	proc	IMP	response to endogenous stimulus signal transduction cell communication transport response to chemical other cellular processes	Publication:501758568 PMID:24129639	NA 03/31/2021 00:00:00

AT3G54140	AT3G54140.1	plasma membrane (GO:0005886)	comp	HDA	plasma membrane	Publication:501710480IPMID:14506206	NA 04/12/2021 00:00:00
	AT3G54140.2	nucleus (GO:0005634)	comp	ISM	nucleus	AnalysisReference:501780126	NA 08/31/2018 00:00:00
	AT3G54140	membrane (GO:0016020)	comp	IBA	other membranes	Communication:501741973	NA 06/07/2023 00:00:00
	AT3G54140	nitrogen compound metabolic process (GO:0006807)	proc	IMP	other metabolic processes	Publication:501727427IPMID:18753286	NA 03/09/2009 00:00:00
	AT3G54140	tripeptide transmembrane transporter activity (GO:0042937)	func	IBA	transporter activity	Communication:501741973	NA 04/02/2021 00:00:00
	AT3G54140.1	plasma membrane (GO:0005886)	comp	HDA	plasma membrane	Publication:501722708IPMID:17644812	NA 04/07/2021 00:00:00
	AT3G54140	plasma membrane (GO:0005886)	comp	IDA	plasma membrane	Publication:501714211IPMID:15500465	TAIR 01/23/2009 00:00:00
	AT3G54140	dipeptide transport (GO:0042938)	proc	IBA	transport	Communication:501741973	NA 04/13/2023 00:00:00
	AT3G54140	dipeptide transmembrane transporter activity (GO:0071916)	func	IBA	transporter activity	Communication:501741973	NA 06/07/2023 00:00:00
	AT3G54140.1	nucleus (GO:0005634)	comp	ISM	nucleus	AnalysisReference:501780126	NA 08/31/2018 00:00:00
	AT3G54140	transmembrane transport (GO:0055085)	proc	IBA	other cellular processes transport	Communication:501741973	NA 06/07/2023 00:00:00
	AT3G54140	tripeptide transport (GO:0042939)	proc	IDA	transport	Publication:501714211IPMID:15500465	TAIR 01/23/2009 00:00:00
	AT3G54140	tripeptide transmembrane transporter activity (GO:0042937)	func	IDA	transporter activity	Publication:501714211IPMID:15500465	TAIR 01/23/2009 00:00:00
	AT3G54140.1	plasmodesma (GO:0009506)	comp	HDA	other cellular components	Publication:501742898IPMID:21533090	NA 04/07/2021 00:00:00
	AT3G54140	dipeptide transport (GO:0042938)	proc	IDA	transport	Publication:501714211IPMID:15500465	TAIR 01/23/2009 00:00:00
AT5G07440	AT5G07440	glutamate dehydrogenase (NAD+) activity (GO:0004352)	func	IBA	catalytic activity	Communication:501741973	NA 06/07/2023 00:00:00
	AT5G07440.3	mitochondrion (GO:0005739)	comp	HDA	mitochondrion	Publication:501724621IPMID:18385124	NA 04/07/2021 00:00:00
	AT5G07440.1	mitochondrion (GO:0005739)	comp	HDA	mitochondrion	Publication:501720283IPMID:17137349	NA 05/12/2021 00:00:00
	AT5G07440.3	ATP binding (GO:0005524)	func	HDA	nucleotide binding other binding	Publication:501720283IPMID:17137349	NA 05/12/2021 00:00:00
	AT5G07440.2	ATP binding (GO:0005524)	func	HDA	other binding nucleotide binding	Publication:501720283IPMID:17137349	NA 05/12/2021 00:00:00

AT5G07440	plasma membrane (GO:0005886)	comp	HDA	plasma membrane	Publication:501776792IPMID:28887381	NA 04/04/2019 00:00:00
AT5G07440.3	cytoplasm (GO:0005737)	comp	ISM	cytoplasm	AnalysisReference:501780126	NA 08/31/2018 00:00:00
AT5G07440.1	mitochondrion (GO:0005739)	comp	HDA	mitochondrion	Publication:501724621IPMID:18385124	NA 04/07/2021 00:00:00
AT5G07440	glutamate dehydrogenase [NAD(P)+] activity (GO:0004353)	func	IDA	catalytic activity	Publication:3329IPMID:9112779	TAIR 08/19/2008 00:00:00
AT5G07440.1	plant-type vacuole (GO:0000325)	comp	HDA	vacuole	Publication:501720626IPMID:17151019	NA 05/12/2021 00:00:00
AT5G07440.2	cytoplasm (GO:0005737)	comp	ISM	cytoplasm	AnalysisReference:501780126	NA 08/31/2018 00:00:00
AT5G07440	glutamate dehydrogenase (NAD+) activity (GO:0004352)	func	IDA	catalytic activity	Publication:501724786IPMID:18467460	NA 08/05/2008 00:00:00
AT5G07440.3	mitochondrion (GO:0005739)	comp	HDA	mitochondrion	Publication:501720283IPMID:17137349	NA 05/12/2021 00:00:00
AT5G07440.2	plant-type vacuole (GO:0000325)	comp	HDA	vacuole	Publication:501720626IPMID:17151019	NA 05/12/2021 00:00:00
AT5G07440	amino acid metabolic process (GO:0006520)	proc	IEA	other metabolic processes other cellular processes	AnalysisReference:501756966	NA 09/23/2023 00:00:00
AT5G07440	mitochondrion (GO:0005739)	comp	HDA	mitochondrion	Publication:501711651IPMID:14671022	NA 04/15/2021 00:00:00
AT5G07440	mitochondrion (GO:0005739)	comp	HDA	mitochondrion	Publication:501750648IPMID:22923678	NA 04/07/2021 00:00:00
AT5G07440	mitochondrion (GO:0005739)	comp	IBA	mitochondrion	Communication:501741973	NA 06/07/2023 00:00:00
AT5G07440.1	ATP binding (GO:0005524)	func	HDA	other binding nucleotide binding	Publication:501720283IPMID:17137349	NA 05/12/2021 00:00:00
AT5G07440	cobalt ion binding (GO:0050897)	func	HDA	other binding	Publication:501735675IPMID:20018591	TAIR 05/10/2021 00:00:00
AT5G07440	zinc ion binding (GO:0008270)	func	HDA	other binding	Publication:501735675IPMID:20018591	TAIR 05/10/2021 00:00:00
AT5G07440.2	mitochondrion (GO:0005739)	comp	HDA	mitochondrion	Publication:501720283IPMID:17137349	NA 05/12/2021 00:00:00
AT5G07440	glutamate catabolic process (GO:0006538)	proc	IBA	other cellular processes other metabolic processes catabolic process	Communication:501741973	NA 06/07/2023 00:00:00

	AT5G07440.3	plant-type vacuole (GO:0000325)	comp	HDA	vacuole	Publication:501720626 PMID:17151019	NA 05/12/2021 00:00:00
	AT5G07440	copper ion binding (GO:0005507)	func	HDA	other binding	Publication:501735675 PMID:20018591	TAIR 05/10/2021 00:00:00
	AT5G07440	mitochondrion (GO:0005739)	comp	HDA	mitochondrion	Publication:1546214 PMID:11743115	NA 05/10/2021 00:00:00
	AT5G07440.2	mitochondrion (GO:0005739)	comp	HDA	mitochondrion	Publication:501724621 PMID:18385124	NA 04/07/2021 00:00:00
	AT5G07440	mitochondrion (GO:0005739)	comp	IDA	mitochondrion	Publication:3329 PMID:9112779	TAIR 08/19/2008 00:00:00
AT4G08300	AT5G07440.1	cytoplasm (GO:0005737)	comp	ISM	cytoplasm	AnalysisReference:501780126	NA 08/31/2018 00:00:00
	AT4G08300	inorganic anion transport (GO:0015698)	proc	IEA	transport	Publication:501796011 PMID:34562334	NA 11/14/2022 00:00:00
	AT4G08300	response to light stimulus (GO:0009416)	proc	IEA	response to light stimulus	Publication:501796011 PMID:34562334	NA 11/14/2022 00:00:00
	AT4G08300	intracellular monoatomic cation homeostasis (GO:0030003)	proc	IEA	cellular homeostasis	Publication:501796011 PMID:34562334	NA 12/24/2022 00:00:00
	AT4G08300	plasma membrane (GO:0005886)	comp	IBA	plasma membrane	Communication:501741973	NA 06/07/2023 00:00:00
	AT4G08300	transmembrane transporter activity (GO:0022857)	func	IEA	transporter activity	AnalysisReference:501756966	NA 09/23/2023 00:00:00
	AT4G08300	cellular response to extracellular stimulus (GO:0031668)	proc	IEA	response to external stimulus other cellular processes cell communication	Publication:501796011 PMID:34562334	NA 11/14/2022 00:00:00
AT3G04520	AT3G04520	cytosol (GO:0005829)	comp	IBA	cytosol	Communication:501741973	NA 06/07/2023 00:00:00
	AT3G04520	amino acid metabolic process (GO:0006520)	proc	IEA	other metabolic processes other cellular processes	AnalysisReference:501756966	NA 09/23/2023 00:00:00
	AT3G04520	threonine aldolase activity (GO:0004793)	func	IDA	catalytic activity	Publication:501720568 PMID:17172352	TAIR 01/29/2007 00:00:00
	AT3G04520	cytosol (GO:0005829)	comp	HDA	cytosol	Publication:501776792 PMID:28887381	NA 04/04/2019 00:00:00
	AT3G04520	lyase activity (GO:0016829)	func	IEA	catalytic activity	AnalysisReference:501756966	NA 09/23/2023 00:00:00
	AT3G04520	glycine biosynthetic process (GO:0006545)	proc	IBA	other metabolic processes other cellular processes	Communication:501741973	NA 04/13/2023 00:00:00

				biosynthetic process		
AT3G04520	threonine catabolic process (GO:0006567)	proc	IBA	other cellular processes other metabolic processes catabolic process	Communication:501741973	NA 06/07/2023 00:00:00
AT3G04520	threonine catabolic process (GO:0006567)	proc	IMP	catabolic process other cellular processes other metabolic processes	Publication:501720568 PMID:17172352	TAIR 01/29/2007 00:00:00
AT3G04520	cytosol (GO:0005829)	comp	HDA	cytosol	Publication:501761766 PMID:25293756	NA 04/04/2019 00:00:00
AT3G04520.1	nucleus (GO:0005634)	comp	ISM	nucleus	AnalysisReference:501780126	NA 08/31/2018 00:00:00
AT3G04520.2	nucleus (GO:0005634)	comp	ISM	nucleus	AnalysisReference:501780126	NA 08/31/2018 00:00:00
AT3G04520	L-allo-threonine aldolase activity (GO:0008732)	func	IBA	catalytic activity	Communication:501741973	NA 06/07/2023 00:00:00
AT3G04520.3	nucleus (GO:0005634)	comp	ISM	nucleus	AnalysisReference:501780126	NA 08/31/2018 00:00:00
AT5G10180	sulfate transmembrane transporter activity (GO:0015116)	func	IGI	transporter activity	Publication:176 PMID:10929111	TAIR 10/21/2016 00:00:00
AT5G10180	sulfate transmembrane transporter activity (GO:0015116)	func	ISS	transporter activity	Communication:1674994	TAIR 03/29/2003 00:00:00
AT5G10180.1	chloroplast (GO:0009507)	comp	ISM	chloroplast	AnalysisReference:501780126	NA 08/31/2018 00:00:00
AT5G10180	sulfate transmembrane transport (GO:1902358)	proc	IGI	transport other cellular processes	Publication:176 PMID:10929111	TAIR 10/21/2016 00:00:00
AT5G10180	secondary active sulfate transmembrane transporter activity (GO:0008271)	func	IEA	transporter activity	AnalysisReference:501756966	NA 09/23/2023 00:00:00
AT5G10180	sulfate transmembrane transporter activity (GO:0015116)	func	IGI	transporter activity	Publication:3057 PMID:9380766	TAIR 04/18/2003 00:00:00
AT5G10180	sulfate transport (GO:0008272)	proc	IGI	transport	Publication:3057 PMID:9380766	TAIR 04/18/2003 00:00:00
AT4G08870	cytosol (GO:0005829)	comp	HDA	cytosol	Publication:501776792 PMID:28887381	NA 04/04/2019 00:00:00
AT4G08870.1	mitochondrion (GO:0005739)	comp	ISM	mitochondrion	AnalysisReference:501780126	NA 08/31/2018 00:00:00
AT4G08870	agmatinase activity (GO:0008783)	func	IDA	hydrolase activity	Publication:501776290 PMID:28716421	NA 09/11/2017 00:00:00

AT4G08870.2	mitochondrion (GO:0005739)	comp	ISM	mitochondrion	AnalysisReference:501780126	NA 08/31/2018 00:00:00
AT4G08870.2	mitochondrion (GO:0005739)	comp	HDA	mitochondrion	Publication:501724621PMID:18385124	NA 04/07/2021 00:00:00
AT4G08870	chloroplast stroma (GO:0009570)	comp	IDA	plastid chloroplast	Publication:501776290PMID:28716421	NA 09/11/2017 00:00:00
AT4G08870	ornithine metabolic process (GO:0006591)	proc	IMP	other cellular processes other metabolic processes	Publication:501746102PMID:22188168	TAIR 01/25/2012 00:00:00
AT4G08870	putrescine biosynthetic process from arginine, using agmatinase (GO:0033389)	proc	IBA	other cellular processes biosynthetic process other metabolic processes	Communication:501741973	NA 06/07/2023 00:00:00
AT4G08870	proline metabolic process (GO:0006560)	proc	IMP	other metabolic processes other cellular processes	Publication:501746102PMID:22188168	TAIR 01/25/2012 00:00:00
AT4G08870	putrescine biosynthetic process from arginine, using agmatinase (GO:0033389)	proc	IDA	other cellular processes other metabolic processes biosynthetic process	Publication:501776290PMID:28716421	NA 03/31/2021 00:00:00
AT4G08870	mitochondrion (GO:0005739)	comp	HDA	mitochondrion	Publication:501761766PMID:25293756	NA 04/04/2019 00:00:00
AT4G08870	defense response to fungus (GO:0050832)	proc	IMP	response to external stimulus response to stress response to biotic stimulus	Publication:501746102PMID:22188168	TAIR 01/25/2012 00:00:00
AT4G08870	cobalt ion binding (GO:0050897)	func	HDA	other binding	Publication:501735675PMID:20018591	TAIR 05/10/2021 00:00:00
AT4G08870	putrescine biosynthetic process (GO:0009446)	proc	IGI	biosynthetic process other metabolic processes other cellular processes	Publication:501776290PMID:28716421	NA 09/11/2017 00:00:00
AT4G08870	urea cycle (GO:0000050)	proc	IEA	other metabolic processes biosynthetic process other cellular processes	AnalysisReference:501757242	NA 09/23/2023 00:00:00
AT4G08870	arginase activity (GO:0004053)	func	IGI	hydrolase activity	Publication:501724506PMID:18425591	TAIR 11/21/2008 00:00:00
AT4G08870	putrescine biosynthetic process	proc	IDA	biosynthetic process other	Publication:501776290PMID:28716421	NA 09/11/2017

	(GO:0009446)			cellular processes other metabolic processes		00:00:00
AT4G08870.1	mitochondrion (GO:0005739)	comp	HDA	mitochondrion	Publication:501724621 PMID:18385124	NA 04/07/2021 00:00:00
AT4G08870	tyrosine metabolic process (GO:0006570)	proc	IMP	other metabolic processes other cellular processes	Publication:501746102 PMID:22188168	TAIR 01/25/2012 00:00:00
AT4G08870	metal ion binding (GO:0046872)	func	IEA	other binding	AnalysisReference:501756966	NA 09/23/2023 00:00:00
AT4G08870	arginase activity (GO:0004053)	func	IDA	hydrolase activity	Publication:501746102 PMID:22188168	TAIR 01/25/2012 00:00:00
AT4G08870	agmatinase activity (GO:0008783)	func	IBA	hydrolase activity	Communication:501741973	NA 06/07/2023 00:00:00
AT3G19710	methionine-oxo-acid transaminase activity (GO:0010326)	func	IDA	transferase activity	Publication:501720068 PMID:17056707	TAIR 02/02/2007 00:00:00
AT3G19710	glucosinolate biosynthetic process (GO:0019761)	proc	IMP	other cellular processes secondary metabolic process other metabolic processes biosynthetic process	Publication:501720068 PMID:17056707	TAIR 01/08/2007 00:00:00
AT3G19710	response to light stimulus (GO:0009416)	proc	IEP	response to light stimulus	Publication:501720068 PMID:17056707	NA 03/31/2021 00:00:00
AT3G19710	branched-chain-amino-acid transaminase activity (GO:0004084)	func	IBA	transferase activity	Communication:501741973	NA 06/07/2023 00:00:00
AT3G19710	branched-chain-amino-acid transaminase activity (GO:0004084)	func	IEA	transferase activity	AnalysisReference:501756966	NA 09/23/2023 00:00:00
AT3G19710	branched-chain amino acid metabolic process (GO:0009081)	proc	IEA	other cellular processes other metabolic processes	AnalysisReference:501756966	NA 09/23/2023 00:00:00
AT3G19710	response to wounding (GO:0009611)	proc	IEP	response to stress	Publication:501720068 PMID:17056707	NA 03/31/2021 00:00:00
AT3G19710.1	cytoplasm (GO:0005737)	comp	ISM	cytoplasm	AnalysisReference:501780126	NA 08/31/2018 00:00:00
AT3G19710	cytosol (GO:0005829)	comp	IDA	cytosol cytosol	Publication:501720068 PMID:17056707	TAIR 01/08/2007 00:00:00
AT1G11120	regionalization (GO:0003002)	proc	IEA	multicellular organism development	Publication:501796011 PMID:34562334	NA 11/14/2022 00:00:00
AT1G11120	meiotic cell cycle process (GO:1903046)	proc	IEA	cell cycle other cellular	Publication:501796011 PMID:34562334	NA 11/14/2022

				processes reproduction		00:00:00
AT1G11120	molecular function unknown (GO:0003674)	func	ND	unknown molecular functions	Communication:1345790	TAIR 10/20/2006 00:00:00
AT1G11120.1	nucleus (GO:0005634)	comp	ISM	nucleus	AnalysisReference:501780126	NA 08/31/2018 00:00:00
AT1G11120	cytokinesis (GO:0000910)	proc	IEA	cell cycle other cellular processes	Publication:501796011PMID:34562334	NA 11/14/2022 00:00:00
AT1G11120	phyllome development (GO:0048827)	proc	IEA	multicellular organism development anatomical structure development	Publication:501796011PMID:34562334	NA 11/14/2022 00:00:00
AT1G11120.2	nucleus (GO:0005634)	comp	ISM	nucleus	AnalysisReference:501780126	NA 08/31/2018 00:00:00
AT2G17630						
AT2G17630.1	chloroplast thylakoid (GO:0009534)	comp	HDA	other intracellular components thylakoid plastid chloroplast	Publication:501735990PMID:20061580	NA 04/07/2021 00:00:00
AT2G17630	L-serine biosynthetic process (GO:0006564)	proc	IBA	biosynthetic process other metabolic processes other cellular processes	Communication:501741973	NA 06/07/2023 00:00:00
AT2G17630	O-phospho-L-serine:2-oxoglutarate aminotransferase activity (GO:0004648)	func	IBA	transferase activity	Communication:501741973	NA 01/14/2023 00:00:00
AT2G17630.1	chloroplast stroma (GO:0009570)	comp	HDA	plastid chloroplast	Publication:501735990PMID:20061580	NA 04/07/2021 00:00:00
AT2G17630	pyridoxal phosphate binding (GO:0030170)	func	IBA	other binding	Communication:501741973	NA 06/07/2023 00:00:00
AT2G17630	cytoplasm (GO:0005737)	comp	IBA	cytoplasm	Communication:501741973	NA 06/07/2023 00:00:00
AT2G17630.1	chloroplast (GO:0009507)	comp	HDA	chloroplast	Publication:501724486PMID:18431481	NA 04/07/2021 00:00:00
AT2G17630.1	chloroplast (GO:0009507)	comp	ISM	chloroplast	AnalysisReference:501780126	NA 08/31/2018 00:00:00
AT2G17630	O-phospho-L-serine:2-oxoglutarate aminotransferase activity (GO:0004648)	func	IEA	transferase activity	AnalysisReference:501756967	NA 09/23/2023 00:00:00
AT2G17630	chloroplast (GO:0009507)	comp	HDA	chloroplast	Publication:501761766PMID:25293756	NA 04/04/2019 00:00:00
AT3G45650						
AT3G45650	nitrate efflux transmembrane transporter activity (GO:0010542)	func	IMP	transporter activity	Publication:501723592PMID:17993627	TAIR 08/22/2008 00:00:00

AT3G45650.1	nucleus (GO:0005634)	comp	ISM	nucleus	AnalysisReference:501780126	NA 08/31/2018 00:00:00
AT3G45650	nitrate transmembrane transport (GO:0015706)	proc	IMP	transport	Publication:501723592IPMID:17993627	TAIR 01/16/2008 00:00:00
AT3G45650	transmembrane transport (GO:0055085)	proc	IEA	transport other cellular processes	AnalysisReference:501756966	NA 09/23/2023 00:00:00
AT3G45650.2	nucleus (GO:0005634)	comp	ISM	nucleus	AnalysisReference:501780126	NA 08/31/2018 00:00:00
AT3G45650	response to acidic pH (GO:0010447)	proc	IMP	response to abiotic stimulus	Publication:501723592IPMID:17993627	TAIR 01/16/2008 00:00:00
AT3G45650	transmembrane transporter activity (GO:0022857)	func	IEA	transporter activity	AnalysisReference:501756966	NA 09/23/2023 00:00:00
AT3G45650	plasma membrane (GO:0005886)	comp	IDA	plasma membrane	Publication:501723592IPMID:17993627	TAIR 01/16/2008 00:00:00
AT3G45650	plasma membrane (GO:0005886)	comp	IBA	plasma membrane	Communication:501741973	NA 06/07/2023 00:00:00
AT3G45650	transmembrane transporter activity (GO:0022857)	func	IBA	transporter activity	Communication:501741973	NA 06/07/2023 00:00:00
AT3G45650	transmembrane transport (GO:0055085)	proc	IBA	transport other cellular processes	Communication:501741973	NA 06/07/2023 00:00:00
AT1G12940	nitrate transmembrane transporter activity (GO:0015112)	func	IEA	transporter activity	AnalysisReference:501756966	NA 09/23/2023 00:00:00
AT1G12940	biological process unknown (GO:0008150)	proc	ND	unknown biological processes	Communication:1345790	TAIR 08/08/2023 00:00:00
AT1G12940	nitrate transmembrane transporter activity (GO:0015112)	func	ISS	transporter activity	Communication:1674994	TAIR 03/29/2003 00:00:00
AT1G12940.1	cytoplasm (GO:0005737)	comp	ISM	cytoplasm	AnalysisReference:501780126	NA 08/31/2018 00:00:00
AT3G22740	S-methylmethionine cycle (GO:0033528)	proc	IBA	other cellular processes other metabolic processes	Communication:501741973	NA 03/31/2021 00:00:00
AT3G22740	S-adenosylmethionine-homocysteine S-methyltransferase activity (GO:0008898)	func	IBA	transferase activity	Communication:501741973	NA 06/07/2023 00:00:00
AT3G22740	methionine biosynthetic process (GO:0009086)	proc	IBA	other metabolic processes biosynthetic process other cellular processes	Communication:501741973	NA 06/07/2023 00:00:00
AT3G22740	zinc ion binding (GO:0008270)	func	IEA	other binding	AnalysisReference:501756966	NA 09/23/2023 00:00:00

	AT3G22740.1	cytoplasm (GO:0005737)	comp	ISM	cytoplasm	AnalysisReference:501780126	NA 08/31/2018 00:00:00
AT5G28020	AT5G28020	plastid (GO:0009536)	comp	HDA	plastid	Publication:501776792IPMID:28887381	NA 04/04/2019 00:00:00
	AT5G28020.4	chloroplast (GO:0009507)	comp	ISM	chloroplast	AnalysisReference:501780126	NA 08/31/2018 00:00:00
	AT5G28020	cysteine synthase activity (GO:0004124)	func	IMP	transferase activity	Publication:339IPMID:10845460	TAIR 05/14/2009 00:00:00
	AT5G28020	cytoplasm (GO:0005737)	comp	IBA	cytoplasm	Communication:501741973	NA 06/07/2023 00:00:00
	AT5G28020.5	chloroplast (GO:0009507)	comp	ISM	chloroplast	AnalysisReference:501780126	NA 08/31/2018 00:00:00
	AT5G28020	cysteine biosynthetic process from serine (GO:0006535)	proc	IBA	biosynthetic process other cellular processes other metabolic processes	Communication:501741973	NA 06/07/2023 00:00:00
	AT5G28020.2	chloroplast (GO:0009507)	comp	ISM	chloroplast	AnalysisReference:501780126	NA 08/31/2018 00:00:00
	AT5G28020	cysteine biosynthetic process (GO:0019344)	proc	IMP	other cellular processes biosynthetic process other metabolic processes	Publication:339IPMID:10845460	NA 04/01/2021 00:00:00
	AT5G28020	L-3-cyanoalanine synthase activity (GO:0050017)	func	IEA	catalytic activity	AnalysisReference:501756967	NA 09/23/2023 00:00:00
	AT5G28020.3	chloroplast (GO:0009507)	comp	ISM	chloroplast	AnalysisReference:501780126	NA 08/31/2018 00:00:00
	AT5G28020	cysteine biosynthetic process from serine (GO:0006535)	proc	IEA	biosynthetic process other metabolic processes other cellular processes	AnalysisReference:501756966	NA 09/23/2023 00:00:00
	AT5G28020.1	chloroplast (GO:0009507)	comp	ISM	chloroplast	AnalysisReference:501780126	NA 08/31/2018 00:00:00
	AT5G28020	cysteine synthase activity (GO:0004124)	func	IBA	transferase activity	Communication:501741973	NA 06/07/2023 00:00:00
	AT5G28020	cytosol (GO:0005829)	comp	HDA	cytosol	Publication:501761766IPMID:25293756	NA 04/04/2019 00:00:00
	AT5G28020.6	chloroplast (GO:0009507)	comp	ISM	chloroplast	AnalysisReference:501780126	NA 08/31/2018 00:00:00
AT1G43650	AT1G43650	response to water deprivation (GO:0009414)	proc	IEA	response to abiotic stimulus response to	Publication:501796011IPMID:34562334	NA 11/14/2022 00:00:00

				stress response to chemical		
AT1G43650	regulation of cell wall organization or biogenesis (GO:1903338)	proc	IEA	other cellular processes	Publication:501796011 PMID:34562334	NA 11/14/2022 00:00:00
AT1G43650	transmembrane transporter activity (GO:0022857)	func	IEA	transporter activity	AnalysisReference:501756966	NA 09/23/2023 00:00:00
AT1G43650	response to lipid (GO:0033993)	proc	IEA	response to chemical	Publication:501796011 PMID:34562334	NA 11/14/2022 00:00:00
AT1G43650.1	chloroplast (GO:0009507)	comp	ISM	chloroplast	AnalysisReference:501780126	NA 08/31/2018 00:00:00
AT1G43650	indole-containing compound biosynthetic process (GO:0042435)	proc	IEA	other cellular processes other metabolic processes biosynthetic process	Publication:501796011 PMID:34562334	NA 11/14/2022 00:00:00
AT1G43650	plant-type cell wall biogenesis (GO:0009832)	proc	IEA	other cellular processes	Publication:501796011 PMID:34562334	NA 11/14/2022 00:00:00
AT1G43650	plasma membrane (GO:0005886)	comp	IBA	plasma membrane	Communication:501741973	NA 06/07/2023 00:00:00
AT1G43650	response to wounding (GO:0009611)	proc	IEA	response to stress	Publication:501796011 PMID:34562334	NA 11/14/2022 00:00:00
AT1G43650	oxoacid metabolic process (GO:0043436)	proc	IEA	other cellular processes other metabolic processes	Publication:501796011 PMID:34562334	NA 11/14/2022 00:00:00
AT1G33440	membrane (GO:0016020)	comp	IBA	other membranes	Communication:501741973	NA 06/07/2023 00:00:00
AT1G33440	transmembrane transporter activity (GO:0022857)	func	IBA	transporter activity	Communication:501741973	NA 06/07/2023 00:00:00
AT1G33440	transmembrane transporter activity (GO:0022857)	func	IEA	transporter activity	AnalysisReference:501756966	NA 09/23/2023 00:00:00
AT1G33440	transmembrane transport (GO:0055085)	proc	IBA	transport other cellular processes	Communication:501741973	NA 06/07/2023 00:00:00
AT1G33440	transmembrane transport (GO:0055085)	proc	IEA	other cellular processes transport	AnalysisReference:501756966	NA 09/23/2023 00:00:00
AT5G05730	regulation of auxin biosynthetic process (GO:0010600)	proc	IMP	other cellular processes other metabolic processes biosynthetic process	Publication:501716366 PMID:15980261	NA 03/31/2021 00:00:00
AT5G05730.1	chloroplast (GO:0009507)	comp	HDA	chloroplast	Publication:501724486 PMID:18431481	NA 04/07/2021 00:00:00

AT5G05730	response to wounding (GO:0009611)	proc	IEP	response to stress	Publication:5393 PMID:1392592	TAIR 10/09/2002 00:00:00
AT5G05730	protein binding (GO:0005515)	func	IPI	protein binding	Publication:501790246 PMID:32612234	NA 09/23/2023 00:00:00
AT5G05730	tryptophan biosynthetic process (GO:0000162)	proc	IMP	other metabolic processes other cellular processes biosynthetic process	Publication:4108 PMID:8587994	NA 03/31/2021 00:00:00
AT5G05730.1	chloroplast stroma (GO:0009570)	comp	HDA	plastid chloroplast	Publication:501735990 PMID:20061580	NA 04/07/2021 00:00:00
AT5G05730.2	chloroplast (GO:0009507)	comp	ISM	chloroplast	AnalysisReference:501780126	NA 08/31/2018 00:00:00
AT5G05730	auxin biosynthetic process (GO:0009851)	proc	IGI	other metabolic processes other cellular processes biosynthetic process	Publication:501716366 PMID:15980261	NA 08/22/2008 00:00:00
AT5G05730	response to wounding (GO:0009611)	proc	IEP	response to stress	Publication:5393 PMID:1392592	TIGR 04/17/2003 00:00:00
AT5G05730	response to bacterium (GO:0009617)	proc	IEP	response to external stimulus response to biotic stimulus	Publication:5393 PMID:1392592	TIGR 04/17/2003 00:00:00
AT5G05730	anthranilate synthase complex (GO:0005950)	comp	NAS	cytoplasm	Publication:5393 PMID:1392592	TAIR 04/16/2003 00:00:00
AT5G05730	chloroplast (GO:0009507)	comp	TAS	chloroplast	Publication:5393 PMID:1392592	TIGR 04/17/2003 00:00:00
AT5G05730	tryptophan biosynthetic process (GO:0000162)	proc	TAS	other cellular processes biosynthetic process other metabolic processes	Publication:5393 PMID:1392592	TAIR 02/26/2003 00:00:00
AT5G05730	anthranilate synthase activity (GO:0004049)	func	IDA	catalytic activity	Publication:4754 PMID:7972519	NA 04/01/2021 00:00:00
AT5G05730	response to bacterium (GO:0009617)	proc	IEP	response to external stimulus response to biotic stimulus	Publication:501678374	TAIR 09/20/2006 00:00:00
AT5G05730.1	chloroplast (GO:0009507)	comp	ISM	chloroplast	AnalysisReference:501780126	NA 08/31/2018 00:00:00
AT5G05730	tryptophan biosynthetic process (GO:0000162)	proc	IMP	other cellular processes other metabolic processes	Publication:3942 PMID:8934623	NA 03/31/2021 00:00:00

				biosynthetic process		
AT5G05730	response to ethylene (GO:0009723)	proc	IGI	response to chemical response to endogenous stimulus	Publication:501716366 PMID:15980261	NA 08/22/2008 00:00:00
AT5G05730	anthranilate synthase activity (GO:0004049)	func	IGI	catalytic activity	Publication:5393 PMID:1392592	TIGR 04/17/2003 00:00:00
AT5G05730	lateral root formation (GO:0010311)	proc	IMP	anatomical structure development multicellular organism development post-embryonic development	Publication:501724458 PMID:18435826	TAIR 11/12/2012 00:00:00
AT5G05730	tryptophan biosynthetic process (GO:0000162)	proc	TAS	biosynthetic process other metabolic processes other cellular processes	Publication:5393 PMID:1392592	TIGR 04/17/2003 00:00:00
AT5G05730	regulation of auxin biosynthetic process (GO:0010600)	proc	IMP	other cellular processes biosynthetic process other metabolic processes	Publication:501730408 PMID:19435934	NA 03/31/2021 00:00:00
AT5G05730	tryptophan biosynthetic process (GO:0000162)	proc	IBA	other cellular processes other metabolic processes biosynthetic process	Communication:501741973	NA 06/07/2023 00:00:00
AT5G05730	tryptophan biosynthetic process (GO:0000162)	proc	IEA	other metabolic processes biosynthetic process other cellular processes	AnalysisReference:501757242	NA 09/23/2023 00:00:00
AT5G05730	anthranilate synthase activity (GO:0004049)	func	IMP	catalytic activity	Publication:5393 PMID:1392592	TAIR 10/02/2006 00:00:00
AT3G22460	cytoplasm (GO:0005737)	comp	ISM	cytoplasm	AnalysisReference:501780126	NA 08/31/2018 00:00:00
AT3G22460	response to zinc ion (GO:0010043)	proc	IEP	response to chemical	Publication:501711554 PMID:14690510	TAIR 03/14/2009 00:00:00
AT3G22460	cytosol (GO:0005829)	comp	HDA	cytosol	Publication:501776792 PMID:28887381	NA 04/04/2019 00:00:00
AT3G22460	cytoplasm (GO:0005737)	comp	IBA	cytoplasm	Communication:501741973	NA 06/07/2023 00:00:00
AT3G22460	cysteine biosynthetic process from serine (GO:0006535)	proc	IEA	biosynthetic process other cellular	AnalysisReference:501756966	NA 09/23/2023 00:00:00

				processes other metabolic processes		
AT3G22460	cysteine biosynthetic process from serine (GO:0006535)	proc	IBA	other metabolic processes other cellular processes biosynthetic process	Communication:501741973	NA 06/07/2023 00:00:00
AT3G22460	cysteine synthase activity (GO:0004124)	func	IBA	transferase activity	Communication:501741973	NA 06/07/2023 00:00:00
AT3G22460.1	chloroplast (GO:0009507)	comp	ISM	chloroplast	AnalysisReference:501780126	NA 08/31/2018 00:00:00
AT3G22460	cytosol (GO:0005829)	comp	HDA	cytosol	Publication:501761766PMID:25293756	NA 04/04/2019 00:00:00
AT3G58990						
AT3G58990	glucosinolate biosynthetic process (GO:0019761)	proc	IMP	other cellular processes biosynthetic process other metabolic processes secondary metabolic process	Publication:501738361PMID:20663849	NA 03/31/2021 00:00:00
AT3G58990	plastid (GO:0009536)	comp	IDA	plastid	Publication:501730495PMID:19542295	TAIR 09/08/2009 00:00:00
AT3G58990	plastid (GO:0009536)	comp	IDA	plastid	Publication:501790244PMID:32612621	TAIR 07/18/2020 00:00:00
AT3G58990	chloroplast stroma (GO:0009570)	comp	IDA	chloroplast plastid	Publication:501738361PMID:20663849	NA 08/01/2016 00:00:00
AT3G58990	chloroplast (GO:0009507)	comp	HDA	chloroplast	Publication:501761766PMID:25293756	NA 04/04/2019 00:00:00
AT3G58990	leucine biosynthetic process (GO:0009098)	proc	IEA	other cellular processes other metabolic processes biosynthetic process	AnalysisReference:501757242	NA 09/23/2023 00:00:00
AT3G58990	3-isopropylmalate dehydratase activity (GO:0003861)	func	IDA	catalytic activity	Publication:501738361PMID:20663849	NA 04/01/2021 00:00:00
AT3G58990.1	chloroplast (GO:0009507)	comp	ISM	chloroplast	AnalysisReference:501780126	NA 08/31/2018 00:00:00
AT5G23010						
AT5G23010.1	chloroplast (GO:0009507)	comp	HDA	chloroplast	Publication:501724486PMID:18431481	NA 04/07/2021 00:00:00
AT5G23010	glucosinolate biosynthetic process (GO:0019761)	proc	IDA	biosynthetic process other metabolic processes secondary metabolic	Publication:1546017PMID:11706188	TAIR 02/26/2003 00:00:00

				process other cellular processes		
AT5G23010	chloroplast (GO:0009507)	comp	IBA	chloroplast	Communication:501741973	NA 09/10/2021 00:00:00
AT5G23010	glucosinolate biosynthetic process (GO:0019761)	proc	IMP	secondary metabolic process biosynthetic process other metabolic processes other cellular processes	Publication:501675982	TAIR 12/20/2017 00:00:00
AT5G23010	2-(2'-methylthio)ethylmalate synthase activity (GO:0010177)	func	IDA	transferase activity	Publication:501711739 PMID:14740211	TAIR 10/02/2006 00:00:00
AT5G23010.3	chloroplast (GO:0009507)	comp	ISM	chloroplast	AnalysisReference:501780126	NA 08/31/2018 00:00:00
AT5G23010	carboxylic acid metabolic process (GO:0019752)	proc	IEA	other cellular processes other metabolic processes	AnalysisReference:501756966	NA 09/23/2023 00:00:00
AT5G23010	response to water deprivation (GO:0009414)	proc	IEP	response to stress response to chemical response to abiotic stimulus	Publication:501752730 PMID:23144921	TAIR 02/07/2013 00:00:00
AT5G23010	glucosinolate biosynthetic process (GO:0019761)	proc	IMP	other cellular processes biosynthetic process other metabolic processes secondary metabolic process	Publication:1546017 PMID:11706188	TAIR 10/13/2003 00:00:00
AT5G23010.1	chloroplast (GO:0009507)	comp	ISM	chloroplast	AnalysisReference:501780126	NA 08/31/2018 00:00:00
AT5G23010.2	chloroplast (GO:0009507)	comp	ISM	chloroplast	AnalysisReference:501780126	NA 08/31/2018 00:00:00
AT5G23010	glucosinolate biosynthetic process (GO:0019761)	proc	IGI	biosynthetic process other metabolic processes other cellular processes secondary metabolic process	Publication:501712434 PMID:15155874	NA 03/07/2006 00:00:00
AT5G23010	leucine biosynthetic process (GO:0009098)	proc	IBA	other cellular processes biosynthetic process other metabolic processes	Communication:501741973	NA 06/07/2023 00:00:00

	AT5G23010	response to insect (GO:0009625)	proc	IEP	response to biotic stimulus response to external stimulus	Publication:501752730 PMID:23144921	TAIR 02/07/2013 00:00:00
	AT5G23010	acyltransferase activity, acyl groups converted into alkyl on transfer (GO:0046912)	func	IEA	transferase activity	AnalysisReference:501756966	NA 09/23/2023 00:00:00
	AT5G23010	chloroplast (GO:0009507)	comp	ISS	chloroplast	Publication:1546017 PMID:11706188	TAIR 10/13/2003 00:00:00
AT4G25760	AT4G25760.1	nucleus (GO:0005634)	comp	ISM	nucleus	AnalysisReference:501780126	NA 08/31/2018 00:00:00
	AT4G25760	regulation of amino acid export (GO:0080143)	proc	IMP	other cellular processes transport	Publication:501735673 PMID:20018597	NA 01/25/2010 00:00:00
	AT4G25760	molecular function unknown (GO:0003674)	func	ND	unknown molecular functions	Communication:1345790	TIGR 10/04/2003 00:00:00
AT5G49630	AT5G49630	aspartate transmembrane transport (GO:0015810)	proc	IDA	transport other cellular processes	Publication:501681878 PMID:12148530	TAIR 06/12/2006 00:00:00
	AT5G49630	amino acid transmembrane transport (GO:0003333)	proc	IBA	transport other cellular processes	Communication:501741973	NA 06/07/2023 00:00:00
	AT5G49630	amino acid transmembrane transporter activity (GO:0015171)	func	ISS	transporter activity	Communication:1674994	TAIR 07/04/2007 00:00:00
	AT5G49630	neutral L-amino acid transmembrane transporter activity (GO:0015175)	func	IDA	transporter activity	Publication:501681878 PMID:12148530	TAIR 06/12/2006 00:00:00
	AT5G49630	tryptophan transport (GO:0015827)	proc	IDA	transport	Publication:501681878 PMID:12148530	TAIR 06/12/2006 00:00:00
	AT5G49630	acidic amino acid transmembrane transporter activity (GO:0015172)	func	IDA	transporter activity	Publication:501681878 PMID:12148530	TAIR 06/12/2006 00:00:00
	AT5G49630	neutral L-amino acid transmembrane transporter activity (GO:0015175)	func	IBA	transporter activity	Communication:501741973	NA 11/23/2022 00:00:00
	AT5G49630	membrane (GO:0016020)	comp	IBA	other membranes	Communication:501741973	NA 06/07/2023 00:00:00
	AT5G49630	acidic amino acid transmembrane transporter activity (GO:0015172)	func	IBA	transporter activity	Communication:501741973	NA 06/07/2023 00:00:00
	AT5G49630	acidic amino acid transport (GO:0015800)	proc	IBA	transport	Communication:501741973	NA 01/14/2023 00:00:00
	AT5G49630	neutral amino acid transport (GO:0015804)	proc	IBA	transport	Communication:501741973	NA 04/20/2022 00:00:00
AT3G15990	AT3G15990	phosphate ion transport (GO:0006817)	proc	IDA	transport	Publication:501786963 PMID:31610248	TAIR 10/27/2019 00:00:00

	AT3G15990.1	plasmodesma (GO:0009506)	comp	HDA	other cellular components	Publication:501742898 IPMID:21533090	NA 04/07/2021 00:00:00
	AT3G15990	plasma membrane (GO:0005886)	comp	IDA	plasma membrane	Publication:501786963 IPMID:31610248	TAIR 10/27/2019 00:00:00
	AT3G15990	sulfate transmembrane transporter activity (GO:0015116)	func	ISS	transporter activity	Communication:1674994	TAIR 03/29/2003 00:00:00
	AT3G15990	transporter activity (GO:0005215)	func	IDA	transporter activity	Publication:501786963 IPMID:31610248	TAIR 10/27/2019 00:00:00
	AT3G15990	secondary active sulfate transmembrane transporter activity (GO:0008271)	func	IEA	transporter activity	AnalysisReference:501756966	NA 09/23/2023 00:00:00
AT2G41220	AT2G41220	glutamate biosynthetic process (GO:0006537)	proc	IBA	other metabolic processes biosynthetic process other cellular processes	Communication:501741973	NA 06/07/2023 00:00:00
	AT2G41220	plastid (GO:0009536)	comp	HDA	plastid	Publication:501750648 IPMID:22923678	NA 04/07/2021 00:00:00
	AT2G41220	glutamate synthase (NADH) activity (GO:0016040)	func	IBA	catalytic activity	Communication:501741973	NA 06/07/2023 00:00:00
	AT2G41220.1	chloroplast (GO:0009507)	comp	HDA	chloroplast	Publication:501724486 IPMID:18431481	NA 04/07/2021 00:00:00
	AT2G41220	glutamate synthase (ferredoxin) activity (GO:0016041)	func	ISS	catalytic activity	Publication:2574 IPMID:9596633	TAIR 02/10/2004 00:00:00
	AT2G41220.1	chloroplast envelope (GO:0009941)	comp	HDA	other intracellular components plastid chloroplast	Publication:501710686 IPMID:12938931	NA 04/07/2021 00:00:00
	AT2G41220	ammonia assimilation cycle (GO:0019676)	proc	IBA	other metabolic processes other cellular processes	Communication:501741973	NA 06/07/2023 00:00:00
	AT2G41220	L-glutamate biosynthetic process (GO:0097054)	proc	IEA	other cellular processes other metabolic processes biosynthetic process	AnalysisReference:501757242	NA 09/23/2023 00:00:00
	AT2G41220.1	chloroplast (GO:0009507)	comp	ISM	chloroplast	AnalysisReference:501780126	NA 08/31/2018 00:00:00
	AT2G41220	chloroplast (GO:0009507)	comp	HDA	chloroplast	Publication:501761766 IPMID:25293756	NA 04/04/2019 00:00:00

