

# Tutorial of Gramene

7.10.2013

# Genome Browser

gramene.org/Zea\_mays/Info/Index — EnsemblGenomes genome browser: Zea mays — Reader

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Search Gramene Genomes...

Zea mays

**Zea mays**  
Zea mays  
Taxonomy ID [4577](#)

GRMZM6G911538 Go  
e.g. [bt1](#) or [1:8001-18000](#) or [Carboxypeptidase](#)

Add your gene ID here, then 'GO'.

**About Zea mays**  
Of all grain crops, maize (corn) has the highest world-wide production, yielding 817 million tonnes in 2009. Although a food staple in many regions of the world, most grain is used for animal feed and ethanol fuel. Maize was domesticated from wild teosinte in Central America and its cultivation spread throughout the Americas by Pre-Columbian civilizations. In addition to its economic value, maize is an important model organism for studies in plant genetics, physiology, and development. It has a large genome, ~2.4 Gbp, with a haploid chromosome number of 10. Maize is distinguished from other grasses in that its genome arose from an ancient tetraploidy event unique to its lineage.

More information and statistics

**Genome assembly: AGPv3**

More information and statistics  
 Download DNA sequence (FASTA)

View karyotype  
 Example region

**Gene annotation**

What can I find? Protein-coding and non-coding genes, splice variants, cDNA and protein sequences, non-coding RNAs.

More about this genebuild  
 Download genes, cDNAs, ncRNA, proteins (FASTA)  
 Update your old Ensembl IDs

Carboxy\* CAB Rubisco ADH F-box PSII Example gene

Example transcript

**Comparative genomics**

What can I find? Homologues, gene trees, and whole genome alignments across multiple species.

More about comparative analysis  
 Download alignments (EMF)

Example gene tree

**Variation**

What can I find? Short sequence variants.

More about variation in Zea mays  
 More about variation in Ensembl Plants  
 Download all variants (GVF)  
 Variant Effect Predictor

ATCGAGCT  
ATCCAGCT  
ATCGAGAT  
Example variant

**Regulation**

What can I find? Microarray annotations.

More about regulation in Zea mays

gramene.org/Zea\_mays/Gene/Summary?db=core;g=GRMZM6G911538;r=5:5476778-5479435;t=GRMZM6G911538\_T01 — EnsemblGenomes genome browser: Zea mays – Gene summary – Gene: GRMZM6...

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[e! GRAMENE!](#) ▾ Location: 5:5,476,778-5,479,435 Gene: GRMZM6G911538 Trans: GRMZM6G911538\_T01

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**Gene-based displays**

- Gene summary
- Splice variants (1)
- Transcript comparison
- Supporting evidence
- Sequence
- External references
- Regulation
- Expression
- Literature
- Ontology
- Plant Compara
  - Genomic alignments (image)
  - Genomic alignments (text)
- Gene tree (image)
  - Gene tree (text)
  - Gene tree (alignment)
  - Gene gain/loss tree
- Orthologues
- Paralogues

Pan-taxonomic Compara

- Gene Tree (image)
  - Gene Tree (text)
  - Gene Tree (alignment)
  - Orthologues
  - Paralogues
- List of species

Phenotype

Genetic Variation

- Variation table
- Structural variation
- Variation image

External data

ID History

Gene history

Configure this page

Add your data

Export data

Bookmark this page

Share this page

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**Gene: GRMZM6G911538**

**Location** Chromosome 5: 5,476,778-5,479,435 forward strand.

**Transcripts** This gene has 1 transcript (splice variant) [Hide transcript table](#)

Name	Transcript ID	Length (bp)	Protein ID	Length (aa)	Biotype
Novel	GRMZM6G911538_T01	1501	GRMZM6G911538_P01	85	Protein coding

**Gene summary** ⓘ

Gene type Protein coding

Prediction Method Gene annotation by [Gramene](#) through an automated, evidence-based method

Go to [Region in Detail](#) for more tracks and navigation options (e.g. zooming)

**Gramene\_gene.** Contigs Gene Legend protein coding transposable element

5,468,000 5,470,000 5,472,000 5,474,000 5,476,000 5,478,000 5,480,000 5,482,000 5,484,000 5,486,000 5,488,000

22.66 kb Forward strand

5,468,000 5,470,000 5,472,000 5,474,000 5,476,000 5,478,000 5,480,000 5,482,000 5,484,000 5,486,000 5,488,000

< AC195340.3-Contig15 > k96\_14935456-Contig1 > AC183932.3-Contig80 >

5,468,000 5,470,000 5,472,000 5,474,000 5,476,000 5,478,000 5,480,000 5,482,000 5,484,000 5,486,000 5,488,000

22.66 kb Reverse strand

**Configuring the display**

Tip: use the "Configure this page" link on the left to show additional data in this region.

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Search Gramene Genomes...

Zea mays ▾

Location: 5:5,476,778-5,479,435

Gene: GRMZM6G911538

Trans: GRMZM6G911538\_T01

#### Location-based displays

- Whole genome
- Chromosome summary
- Region overview
- **Region in detail**
- Comparative Genomics
  - Alignments (image) (4)
  - Alignments (text) (4)
  - Region Comparison (4)
- Synteny
- Genetic Variation
  - Resequencing
  - Linkage Data
- Markers
- Other genome browsers
  - Phytozome

Configure this page

Add your data

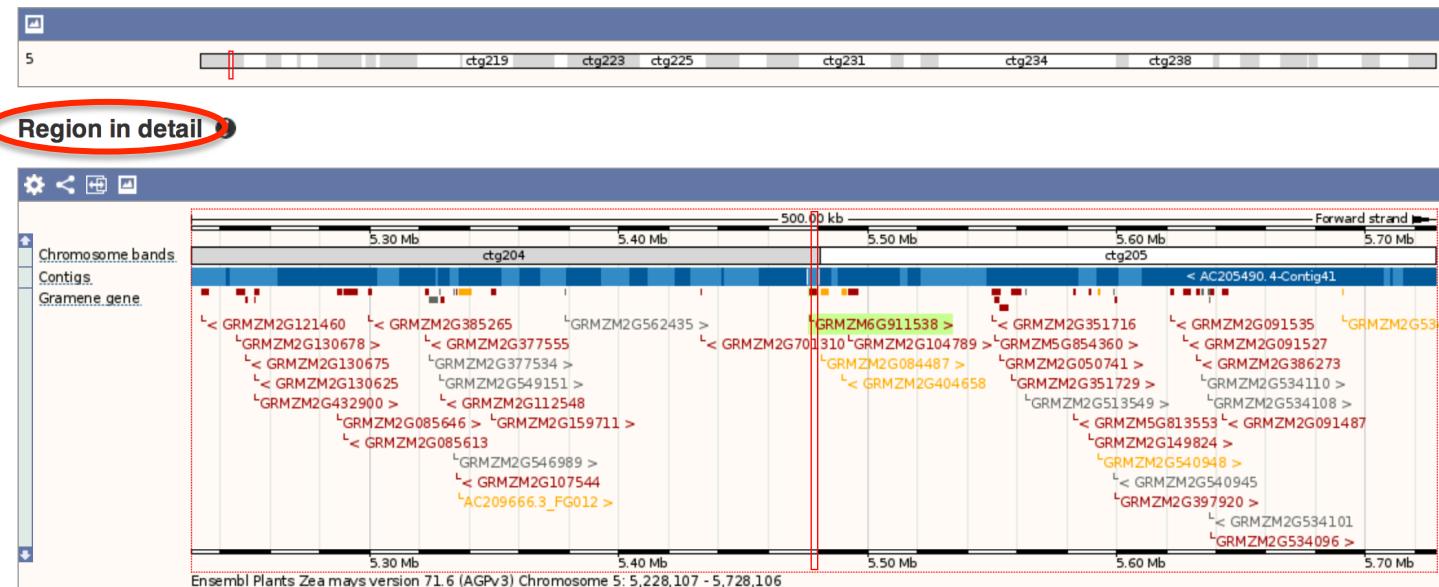
Export data

Bookmark this page

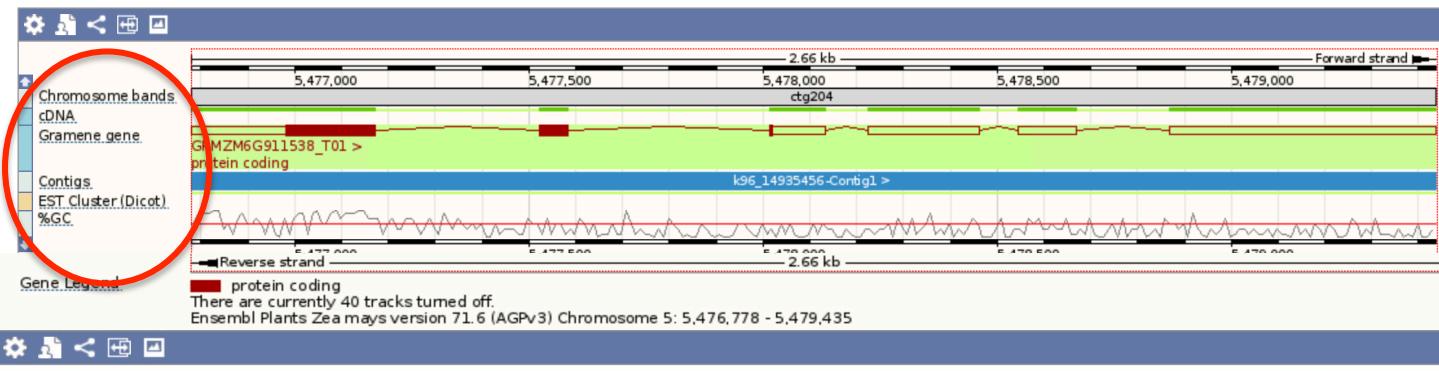
Share this page

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## Chromosome 5: 5,476,778-5,479,435



Location: 5:5476778-5479435  Gene:



# Biomart (Gene)

www.gramene.org/biomart/martview/0fc418b439674a9d61a69e674578a20f

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New Count Results URL XML Perl Help

**Dataset**  
[None selected]

Plant Genes 37

- CHOOSE DATASET -

- Arabidopsis lyrata genes (v.1.0 (2008-12-Araly1.0))
- Arabidopsis thaliana genes (TAIR10 (2010-09-TAIR10))
- Brachypodium distachyon genes (v1.0 (2010-02-Brachy1.2))
- Brassica rapa genes (IVFCAASv1 (bra\_v1.01\_SP2010\_01))
- Chlamydomonas reinhardtii genes (v3.0 (2007-11-ENA))
- Cyanidioschyzon merolae genes (ASM9120v1 (2008-11-ENA))
- Glycine max genes (V1.0 (JGI-Glyma-1.1))
- Hordeum vulgare genes (IBSC\_1.0 (IBSC\_1.0))
- Medicago truncatula genes (MedtrA17\_3.5 (2011-11-EnsemblPlants))
- Musa acuminata genes (MA1 (2012-08-Cirad))
- Oryza brachyantha genes (Oryza\_brachyantha.v1.4b (OGEv1.4))
- Oryza glaberrima genes (AGI1.1 (2011-05-AGI))
- Oryza sativa Indica Group genes (ASM465v1 (2010-07-BGI))
- Oryza sativa genes (MSU6 (2009-01-MSU6))
- Physcomitrella patens genes (ASM242v1 (2011-03-Phypa1.6))
- Populus trichocarpa genes (JGI2.0 (2010-01-JGI))
- Selaginella moellendorffii genes (v1.0 (2011-05-ENA))
- Setaria italica genes (JGIv2.0 (JGIv2.1))
- Solanum lycopersicum genes (SL2.40 (iTAG2.3))
- Solanum tuberosum genes (SolTub\_3.0 (SolTub\_3.0))
- Sorghum bicolor genes (Sorbi1 (2007-12-JGI))
- Vitis vinifera genes (IGGP\_12x (2012-07-CRIBI))
- Zea mays genes (AGPv3 (5b))**



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Search Gramene Genomes...



New Count Results

URL XML Perl Help

Click here

Dataset

Zea mays genes (AGPv3 (5b))

Filters

Ensembl Gene ID(s): [ID-list specified]

Attributes

Ensembl Gene ID

Ensembl Transcript ID

Dataset

[None Selected]

Please restrict your query using criteria below

REGION:

GENE:

Limit to genes ...

with WikiGene ID(s)

Only

Excluded

ID list limit

Ensembl Gene ID(s)

GRMZM6G91158

Choose File no file selected

Transcript count >=

Gene type

miRNA  
protein\_coding  
pseudogene  
transposable\_element

Status (gene)

KNOWN

Status (transcript)

KNOWN

GENE ONTOLOGY:

PLANT ONTOLOGY:

MULTI SPECIES COMPARISONS:

PROTEIN DOMAINS:

VARIATION:



Zea mays ▾ Location: 5:5,476,778-5,479,435

Gene: GRMZM6G911538

Trans: GRMZM6G911538\_T01

## Gene-based displays

- [Gene summary](#)
- [Splice variants \(1\)](#)
- [Transcript comparison](#)
- [Supporting evidence](#)
- [Sequence](#)
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- [Expression](#)
- [Literature](#)
- [Ontology](#)
- [Plant Compara](#)
  - [Genomic alignments \(image\)](#)
  - [Genomic alignments \(text\)](#)
- [Gene tree \(image\)](#)
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  - [Gene Tree \(image\)](#)
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- [Phenotype](#)
- [Genetic Variation](#)
  - [Variation table](#)
  - [Structural variation](#)
  - [Variation image](#)
- [External data](#)
- [ID History](#)
- [Gene history](#)

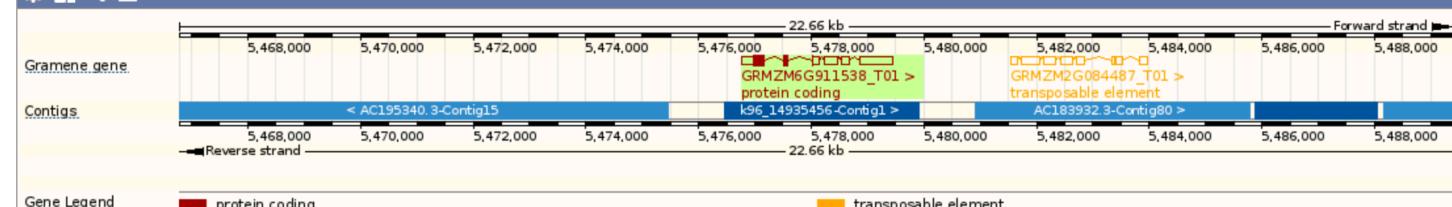
[Configure this page](#)[Add your data](#)[Export data](#)[Bookmark this page](#)[Share this page](#)[Gramene is produced in collaboration with Ensembl Plants](#)

## Gene: GRMZM6G911538

**Location** Chromosome 5: 5,476,778-5,479,435 forward strand.**Transcripts** This gene has 1 transcript (splice variant) [Hide transcript table](#)[Show/hide columns](#)[Filter](#)

Name	Transcript ID	Length (bp)	Protein ID	Length (aa)	Biotype
Novel	GRMZM6G911538_T01	1501	GRMZM6G911538_P01	85	Protein coding

### Gene summary

**Gene type** Protein coding**Prediction Method** Gene annotation by [Gramene](#) through an automated, evidence-based method[Go to Region in Detail for more tracks and navigation options \(e.g. zooming\)](#)

### Configuring the display

Tip: use the "Configure this page" link on the left to show additional data in this region.

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# Biomart (Variant)

www.gramene.org/biomart/martview/0fc418b439674a9d61a69e674578a20f/0fc418b439674a9d61a69e674578a20f/0fc418b439674a9d61a69e674578a20f

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Click here

**Dataset**  
Zea mays variations (AGPv3 (5b))

**Filters**  
Ensembl Gene ID(s) : [ID-list specified]

**Attributes**  
Variation ID  
Chromosome name  
Position on Chromosome (bp)

**Dataset**  
[None Selected]

**REGION:**

**GENERAL VARIATION FILTERS:**

Variation source  Only  Excluded

Filter by Variation ID (e.g. rs123, CM000001)  no file selected

Validation status

Variations that have been validated  Only  Excluded

Limit to variations from strain(s)

**GENE ASSOCIATED VARIATION FILTERS:**

Ensembl Gene ID(s)   
 no file selected

Consequence type   
splice\_acceptor\_variant  
splice\_donor\_variant  
stop\_lost  
coding\_sequence\_variant  
missense\_variant

Datasets -> Filters (filtering and inputs) -> Attributes (desired output) -> Results



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Zea mays	▼
Location: 5:205,595,568-205,596,568	
Variation: PZE05204504414	
Variation displays	
Explore this variation	
<b>Genomic context</b>	
Genes and regulation (4)	
Flanking sequence	
Population genetics	
Individual genotypes (96)	
Linkage disequilibrium	
Phenotype Data	
Phylogenetic Context	
External Data	

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## PZE05204504414 SNP

Original source | HapMap2

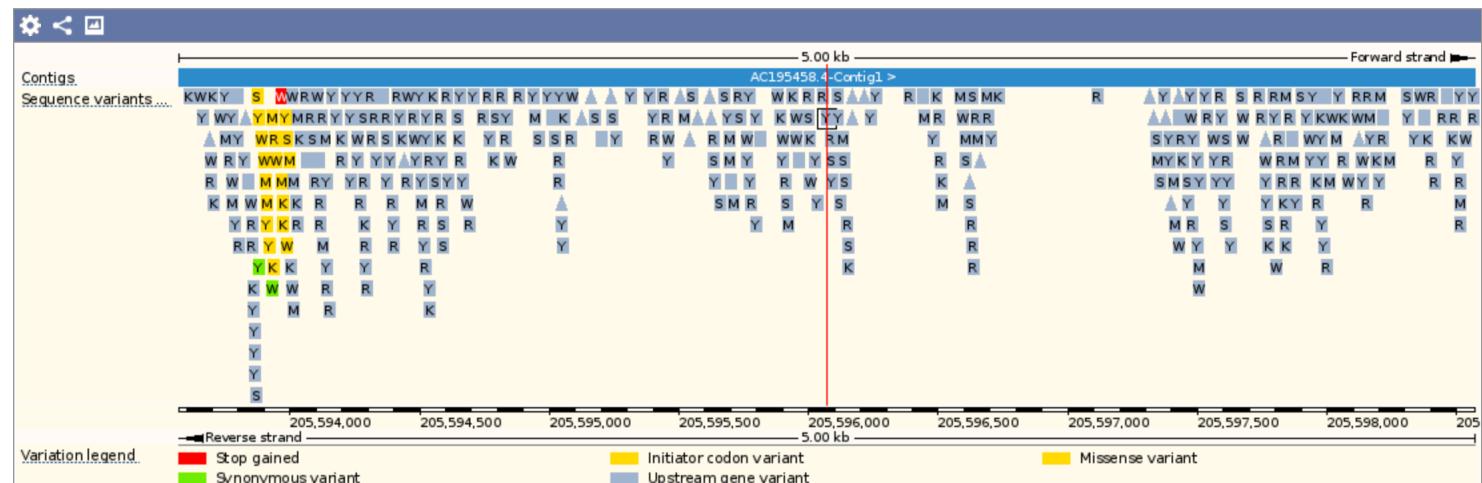
Alleles | Reference/Alternative: T/C | Ambiguity code: Y

Location | Chromosome 5:205596068 (forward strand) | [View in location tab](#)

Synonyms | None currently in the database

HGVS name | 5:g.205539173T>C

## Context



## Features overlapping PZE05204504414:

### Structural variants

Show/hide columns

Filter

Name	Chr:bp	Genomic size (bp)	Class	Source Study	Study description
No data available in table					

