

# Latex-ed rendering of the HGT application Ontology

Version: 1.0 (developed in Protégé 4.0 alpha)

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Basic statistics:

31 classes

32 object properties of which 17 functional

61 data properties of which 57 functional

108 subclass axioms

URI: <http://obda.inf.unibz.it/obdahgtdb/HGTappOntoISWC09.owl>

## Classes

### AltCode

AltCode  $\sqsubseteq$  Thing

AltCode  $\sqsubseteq \geq 1$  NCBIID

AltCode  $\sqsubseteq \geq 1$  KEGGCode

AltCode  $\sqsubseteq \geq 1$  TaxID

### AminoAcid

AminoAcid  $\sqsubseteq \geq 1$  AACode

AminoAcid  $\sqsubseteq \geq 1$  AAName

AminoAcid  $\sqsubseteq$  Thing

### Codon

Codon  $\sqsubseteq \geq 1$  TripletCode

Codon  $\sqsubseteq$  Thing

### Coordinates

Coordinates  $\sqsubseteq \geq 1$  Begin

Coordinates  $\sqsubseteq$  Thing

Coordinates  $\sqsubseteq \geq 1$  Strand

Coordinates  $\sqsubseteq \geq 1$  End

Coordinates  $\sqsubseteq \geq 1$  Length

### EncodingCodon

EncodingCodon  $\sqsubseteq \exists$  EncodingCodonEncodesAminoAcid Thing

EncodingCodon  $\sqsubseteq$  Codon

### EndingCodon

EndingCodon  $\sqsubseteq$  Codon

### FlexibleHGTGeneCluster

FlexibleHGTGeneCluster  $\sqsubseteq$  HGTGeneCluster

FlexibleHGTGeneCluster  $\sqsubseteq \exists$  containsStrictHGTgenecluster Thing

### GCstats

GCstats  $\sqsubseteq \geq 1$  GC1

GCstats  $\sqsubseteq \geq 1$  GC3

GCstats  $\sqsubseteq \geq 1$  GCValue

GCstats  $\sqsubseteq \geq 1$  GC2

GCstats  $\sqsubseteq$  Thing

### GCstatsGene

GCstatsGene  $\sqsubseteq$  GCstats

GCstatsGene  $\sqsubseteq \geq 1$  Sim

GCstatsGene  $\sqsubseteq \geq 1$  GCDif

GCstatsGene  $\sqsubseteq \geq 1$  GCDif1

GCstatsGene  $\sqsubseteq \geq 1$  GCDif3

GCstatsGene  $\sqsubseteq \geq 1$  GCDif2

### GCstatsOrg

GCstatsOrg  $\sqsubseteq$  GCstats

GCstatsOrg  $\sqsubseteq \geq 1$  StDevGC3

GCstatsOrg  $\sqsubseteq \geq 1$  StDevGC1

GCstatsOrg  $\sqsubseteq \geq 1$  StDevGC2

GCstatsOrg  $\sqsubseteq \geq 1$  StDevGC

### Gene

Gene  $\sqsubseteq \exists$  GeneHasGeneFunction Thing

Gene  $\sqsubseteq \exists$  GeneHasGeneIDInfo Thing

Gene  $\sqsubseteq \exists$  GeneHasGeneStats Thing

Gene  $\sqsubseteq \geq 1$  ID

Gene  $\sqsubseteq \exists$  GeneHasOrganism Thing

Gene  $\sqsubseteq$  Thing

### GeneCluster

GeneCluster  $\sqsubseteq$  Thing

GeneCluster  $\sqsubseteq \geq 1$  ClusterID

GeneCluster  $\sqsubseteq \exists$  GeneClusterContainsGene Thing

### GeneFunction

GeneFunction  $\sqsubseteq$  Thing

GeneFunction  $\sqsubseteq \geq 1$  Function

### **GeneHasAminoAcid**

GeneHasAminoAcid  $\sqsubseteq \exists$  GHAMHasGene Thing

GeneHasAminoAcid  $\sqsubseteq \exists$  GHAMHasAminoAcid Thing

GeneHasAminoAcid  $\sqsubseteq \geq 1$  AAvalueGene

GeneHasAminoAcid  $\sqsubseteq$  Thing

### **GeneHasCodon**

GeneHasCodon  $\sqsubseteq$  Thing

GeneHasCodon  $\sqsubseteq \geq 1$  RSCUgene

GeneHasCodon  $\sqsubseteq \exists$  GHCHasCodon Thing

GeneHasCodon  $\sqsubseteq \exists$  GHCHasGene Thing

GeneHasCodon  $\sqsubseteq \geq 1$  CodonValueGene

### **GeneIDInfo**

GeneIDInfo  $\sqsubseteq \geq 1$  PID

GeneIDInfo  $\sqsubseteq$  Thing

GeneIDInfo  $\sqsubseteq \geq 1$  Synonym

GeneIDInfo  $\sqsubseteq \geq 1$  GeneName

### **GeneNearbyGene**

GeneNearbyGene  $\sqsubseteq \exists$  GNGNearby Thing

GeneNearbyGene  $\sqsubseteq$  Thing

### **GeneStats**

GeneStats  $\sqsubseteq \geq 1$  SimGC

GeneStats  $\sqsubseteq \geq 1$  ICDI

GeneStats  $\sqsubseteq \geq 1$  Mah

GeneStats  $\sqsubseteq$  Thing

GeneStats  $\sqsubseteq \geq 1$  SimMah

GeneStats  $\sqsubseteq \geq 1$  DevAA

GeneStats  $\sqsubseteq \geq 1$  Chi2

GeneStats  $\sqsubseteq \geq 1$  P2

GeneStats  $\sqsubseteq \geq 1$  Nc

### **HGTGeneCluster**

HGTGeneCluster  $\sqsubseteq$  GeneCluster

### **HGTPredictionGene**

HGTPredictionGene  $\sqsubseteq$  Thing

HGTPredictionGene  $\sqsubseteq \geq 1$  Prediction  
HGTPredictionGene  $\sqsubseteq \geq 1$  GCregion

### **HGTPredictions**

HGTPredictions  $\sqsubseteq$  Thing  
HGTPredictions  $\sqsubseteq \geq 1$  Percentage  
HGTPredictions  $\sqsubseteq \geq 1$  NrPredHGTgenes

### **KEGG**

KEGG  $\sqsubseteq$  Thing  
KEGG  $\sqsubseteq \geq 1$  KEGG

### **Organism**

Organism  $\sqsubseteq \exists$  OrganismHasAltCode Thing  
Organism  $\sqsubseteq \exists$  OrganismHasTaxonomy Thing  
Organism  $\sqsubseteq \geq 1$  Abbrev  
Organism  $\sqsubseteq$  Thing  
Organism  $\sqsubseteq \exists$  OrganismHasOrganismInfo Thing

### **OrganismHasAminoAcid**

OrganismHasAminoAcid  $\sqsubseteq \exists$  OHAHasOrganism Thing  
OrganismHasAminoAcid  $\sqsubseteq \geq 1$  AASD  
OrganismHasAminoAcid  $\sqsubseteq \geq 1$  AAvalueOrg  
OrganismHasAminoAcid  $\sqsubseteq$  Thing  
OrganismHasAminoAcid  $\sqsubseteq \exists$  OHAHasAminoAcid Thing

### **OrganismHasCodon**

OrganismHasCodon  $\sqsubseteq \exists$  OHCHasCodon Thing  
OrganismHasCodon  $\sqsubseteq$  Thing  
OrganismHasCodon  $\sqsubseteq \geq 1$  CodonSD  
OrganismHasCodon  $\sqsubseteq \geq 1$  SDRSCU  
OrganismHasCodon  $\sqsubseteq \exists$  OHCHasOrganism Thing  
OrganismHasCodon  $\sqsubseteq \geq 1$  RSCUorg  
OrganismHasCodon  $\sqsubseteq \geq 1$  CodonValueOrg

### **OrganismInfo**

OrganismInfo  $\sqsubseteq$  Thing  
OrganismInfo  $\sqsubseteq \geq 1$  NrGenes  
OrganismInfo  $\sqsubseteq \geq 1$  PB  
OrganismInfo  $\sqsubseteq \geq 1$  GenCode  
OrganismInfo  $\sqsubseteq \geq 1$  OrganismName

## **PATHway**

PATHway  $\sqsubseteq$  Thing

PATHway  $\sqsubseteq \exists$  hasParticipant Thing

PATHway  $\sqsubseteq \geq 1$  PATH

## **PathwayGenesCluster**

PathwayGenesCluster  $\sqsubseteq \exists$  PathwayClusterpathwayPATH Thing

PathwayGenesCluster  $\sqsubseteq$  GeneCluster

## **StrictHGTGeneCluster**

StrictHGTGeneCluster  $\sqsubseteq$  HGTGeneCluster

## **Taxonomy**

Taxonomy  $\sqsubseteq$  Thing

## **Thing**

# **Object properties**

## **EncodingCodonEncodesAminoAcid**

$\top \sqsubseteq \leq 1$  EncodingCodonEncodesAminoAcid Thing

$\exists$  EncodingCodonEncodesAminoAcid Thing  $\sqsubseteq$  EncodingCodon

$\top \sqsubseteq \forall$  EncodingCodonEncodesAminoAcid AminoAcid

## **GHAHasAminoAcid**

$\top \sqsubseteq \leq 1$  GHAHasAminoAcid Thing

$\exists$  GHAHasAminoAcid Thing  $\sqsubseteq$  GeneHasAminoAcid

$\top \sqsubseteq \forall$  GHAHasAminoAcid AminoAcid

## **GHAHasGene**

$\top \sqsubseteq \leq 1$  GHAHasGene Thing

$\exists$  GHAHasGene Thing  $\sqsubseteq$  GeneHasAminoAcid

$\top \sqsubseteq \forall$  GHAHasGene Gene

## **GHCHasCodon**

$\top \sqsubseteq \leq 1$  GHCHasCodon Thing

$\exists$  GHCHasCodon Thing  $\sqsubseteq$  GeneHasCodon

$\top \sqsubseteq \forall$  GHCHasCodon Codon

### **GHCHasGene**

$\top \sqsubseteq \leq 1 \text{ GHCHasGene Thing}$   
 $\exists \text{ GHCHasGene Thing} \sqsubseteq \text{GeneHasCodon}$   
 $\top \sqsubseteq \forall \text{ GHCHasGene Gene}$

### **GNGNearby**

$\exists \text{ GNGNearby Thing} \sqsubseteq \text{GeneNearbyGene}$   
 $\top \sqsubseteq \forall \text{ GNGNearby Gene}$

### **GeneClusterContainsGene**

$\exists \text{ GeneClusterContainsGene Thing} \sqsubseteq \text{GeneCluster}$   
 $\top \sqsubseteq \forall \text{ GeneClusterContainsGene Gene}$

### **GeneHasCoordinates**

$\top \sqsubseteq \leq 1 \text{ GeneHasCoordinates Thing}$   
 $\exists \text{ GeneHasCoordinates Thing} \sqsubseteq \text{Gene}$   
 $\top \sqsubseteq \forall \text{ GeneHasCoordinates Coordinates}$

### **GeneHasGCstatsGene**

$\top \sqsubseteq \leq 1 \text{ GeneHasGCstatsGene Thing}$   
 $\exists \text{ GeneHasGCstatsGene Thing} \sqsubseteq \text{Gene}$   
 $\top \sqsubseteq \forall \text{ GeneHasGCstatsGene GCstatsGene}$

### **GeneHasGeneFunction**

$\top \sqsubseteq \leq 1 \text{ GeneHasGeneFunction Thing}$   
 $\exists \text{ GeneHasGeneFunction Thing} \sqsubseteq \text{Gene}$   
 $\top \sqsubseteq \forall \text{ GeneHasGeneFunction GeneFunction}$

### **GeneHasGeneIDInfo**

$\top \sqsubseteq \leq 1 \text{ GeneHasGeneIDInfo Thing}$   
 $\exists \text{ GeneHasGeneIDInfo Thing} \sqsubseteq \text{Gene}$   
 $\top \sqsubseteq \forall \text{ GeneHasGeneIDInfo GeneIDInfo}$

### **GeneHasGeneStats**

$\top \sqsubseteq \leq 1 \text{ GeneHasGeneStats Thing}$   
 $\exists \text{ GeneHasGeneStats Thing} \sqsubseteq \text{Gene}$   
 $\top \sqsubseteq \forall \text{ GeneHasGeneStats GeneStats}$

### **GeneHasHGTPredictionGene**

$\top \sqsubseteq \leq 1$  GeneHasHGTPredictionGene Thing  
 $\exists$  GeneHasHGTPredictionGene Thing  $\sqsubseteq$  Gene  
 $\top \sqsubseteq \forall$  GeneHasHGTPredictionGene HGTPredictionGene

### **GeneHasOrganism**

$\top \sqsubseteq \leq 1$  GeneHasOrganism Thing  
 $\exists$  GeneHasOrganism Thing  $\sqsubseteq$  Gene  
 $\top \sqsubseteq \forall$  GeneHasOrganism Organism

### **HGTPredictionsIfOfOrganism**

$\exists$  HGTPredictionsIfOfOrganism Thing  $\sqsubseteq$  HGTPredictions  
 $\top \sqsubseteq \forall$  HGTPredictionsIfOfOrganism Organism

### **OHAHasAminoAcid**

$\top \sqsubseteq \leq 1$  OHAHasAminoAcid Thing  
 $\exists$  OHAHasAminoAcid Thing  $\sqsubseteq$  OrganismHasAminoAcid  
 $\top \sqsubseteq \forall$  OHAHasAminoAcid AminoAcid

### **OHAHasOrganism**

$\top \sqsubseteq \leq 1$  OHAHasOrganism Thing  
 $\exists$  OHAHasOrganism Thing  $\sqsubseteq$  OrganismHasAminoAcid  
 $\top \sqsubseteq \forall$  OHAHasOrganism Organism

### **OHCHasCodon**

$\exists$  OHCHasCodon Thing  $\sqsubseteq$  OrganismHasCodon  
 $\top \sqsubseteq \forall$  OHCHasCodon Codon

### **OHCHasOrganism**

$\exists$  OHCHasOrganism Thing  $\sqsubseteq$  OrganismHasCodon  
 $\top \sqsubseteq \forall$  OHCHasOrganism Organism

### **OrganismHasAltCode**

$\exists$  OrganismHasAltCode Thing  $\sqsubseteq$  Organism  
 $\top \sqsubseteq \forall$  OrganismHasAltCode AltCode

### **OrganismHasGCstatsOrg**

$\top \sqsubseteq \leq 1$  OrganismHasGCstatsOrg Thing  
 $\exists$  OrganismHasGCstatsOrg Thing  $\sqsubseteq$  Organism  
 $\top \sqsubseteq \forall$  OrganismHasGCstatsOrg GCstatsOrg

### **OrganismHasHGTPredictions**

$\top \sqsubseteq \leq 1$  OrganismHasHGTPredictions Thing  
 $\exists$  OrganismHasHGTPredictions Thing  $\sqsubseteq$  Organism  
 $\top \sqsubseteq \forall$  OrganismHasHGTPredictions HGTPredictions

### **OrganismHasOrganismInfo**

$\exists$  OrganismHasOrganismInfo Thing  $\sqsubseteq$  Organism  
 $\top \sqsubseteq \forall$  OrganismHasOrganismInfo OrganismInfo

### **OrganismHasTaxonomy**

$\top \sqsubseteq \leq 1$  OrganismHasTaxonomy Thing  
 $\exists$  OrganismHasTaxonomy Thing  $\sqsubseteq$  Organism  
 $\top \sqsubseteq \forall$  OrganismHasTaxonomy Taxonomy

### **OrganismInfoIsOfOrganism**

$\exists$  OrganismInfoIsOfOrganism Thing  $\sqsubseteq$  OrganismInfo  
 $\top \sqsubseteq \forall$  OrganismInfoIsOfOrganism Organism

### **PathwayClusterpathwayPATH**

$\exists$  PathwayClusterpathwayPATH Thing  $\sqsubseteq$  PathwayGenesCluster  
 $\top \sqsubseteq \forall$  PathwayClusterpathwayPATH PATHway

### **TaxonomyIsOfOrganism**

$\exists$  TaxonomyIsOfOrganism Thing  $\sqsubseteq$  Taxonomy  
 $\top \sqsubseteq \forall$  TaxonomyIsOfOrganism Organism

### **adjacentTo**

$\exists$  adjacentTo Thing  $\sqsubseteq$  Gene  
 $\top \sqsubseteq \forall$  adjacentTo Gene

### **containsStrictHGTgenecluster**

$\exists$  containsStrictHGTgenecluster Thing  $\sqsubseteq$  FlexibleHGTGeneCluster  
 $\top \sqsubseteq \forall$  containsStrictHGTgenecluster StrictHGTGeneCluster

### **hasParticipant**

$\exists$  hasParticipant Thing  $\sqsubseteq$  PATHway  
 $\top \sqsubseteq \forall$  hasParticipant KEGG

### **nearby**

$\exists \text{ nearby Thing} \sqsubseteq \text{Gene}$

$\top \sqsubseteq \forall \text{ nearby Gene}$

### **overlaps**

$\exists \text{ overlaps Thing} \sqsubseteq \text{Gene}$

$\top \sqsubseteq \forall \text{ overlaps Gene}$

## **Data properties**

### **AACode**

$\top \sqsubseteq \leq 1 \text{ AACode}$

### **AAName**

$\top \sqsubseteq \leq 1 \text{ AAName}$

### **AASD**

$\top \sqsubseteq \leq 1 \text{ AASD}$

### **AAvalueGene**

$\top \sqsubseteq \leq 1 \text{ AAvalueGene}$

### **AAvalueOrg**

$\top \sqsubseteq \leq 1 \text{ AAvalueOrg}$

### **Abbrev**

$\top \sqsubseteq \leq 1 \text{ Abbrev}$

### **Begin**

$\top \sqsubseteq \leq 1 \text{ Begin}$

### **COG**

$\top \sqsubseteq \leq 1 \text{ COG}$

### **Chi2**

$\top \sqsubseteq \leq 1 \text{ Chi2}$

**ClusterID**

**CodonSD**

$\top \sqsubseteq \leq 1$  CodonSD

**CodonValueGene**

$\top \sqsubseteq \leq 1$  CodonValueGene

**CodonValueOrg**

$\top \sqsubseteq \leq 1$  CodonValueOrg

**DevAA**

$\top \sqsubseteq \leq 1$  DevAA

**End**

$\top \sqsubseteq \leq 1$  End

**Function**

$\top \sqsubseteq \leq 1$  Function

**GC1**

$\top \sqsubseteq \leq 1$  GC1

**GC2**

$\top \sqsubseteq \leq 1$  GC2

**GC3**

$\top \sqsubseteq \leq 1$  GC3

**GCDif**

$\top \sqsubseteq \leq 1$  GCDif

**GCDif1**

$\top \sqsubseteq \leq 1$  GCDif1

**GCDif2**

$\top \sqsubseteq \leq 1$  GCDif2

**GCDif3**

$\top \sqsubseteq \leq 1$  GCDif3

**GCValue**

$\top \sqsubseteq \leq 1$  GCValue

**GCregion**

$\top \sqsubseteq \leq 1$  GCregion

**GenCode**

$\top \sqsubseteq \leq 1$  GenCode

**GeneName**

$\top \sqsubseteq \leq 1$  GeneName

**ICDI**

$\top \sqsubseteq \leq 1$  ICDI

**ID**

$\top \sqsubseteq \leq 1$  ID

**KEGG**

$\top \sqsubseteq \leq 1$  KEGG

**KEGGCode**

$\top \sqsubseteq \leq 1$  KEGGCode

**Length**

$\top \sqsubseteq \leq 1$  Length

**Mah**

$\top \sqsubseteq \leq 1$  Mah

**NCBIID**

$\top \sqsubseteq \leq 1$  NCBIID

**Nc**

$\top \sqsubseteq \leq 1 \text{ Nc}$

**NrGenes**

$\top \sqsubseteq \leq 1 \text{ NrGenes}$

**NrPredHGTgenes**

$\top \sqsubseteq \leq 1 \text{ NrPredHGTgenes}$

**OrganismName**

$\top \sqsubseteq \leq 1 \text{ OrganismName}$

**P2**

$\top \sqsubseteq \leq 1 \text{ P2}$

**PATH**

$\top \sqsubseteq \leq 1 \text{ PATH}$

**PB**

$\top \sqsubseteq \leq 1 \text{ PB}$

**PID**

$\top \sqsubseteq \leq 1 \text{ PID}$

**Percentage**

$\top \sqsubseteq \leq 1 \text{ Percentage}$

**Prediction**

$\top \sqsubseteq \leq 1 \text{ Prediction}$

**RSCUgene**

$\top \sqsubseteq \leq 1 \text{ RSCUgene}$

**RSCUorg**

$\top \sqsubseteq \leq 1 \text{ RSCUorg}$

**SDRSCU**

$\top \sqsubseteq \leq 1$  SDRSCU

**Sim**

$\top \sqsubseteq \leq 1$  Sim

**SimGC**

$\top \sqsubseteq \leq 1$  SimGC

**SimMah**

$\top \sqsubseteq \leq 1$  SimMah

**StDevGC**

$\top \sqsubseteq \leq 1$  StDevGC

**StDevGC1**

$\top \sqsubseteq \leq 1$  StDevGC1

**StDevGC2**

$\top \sqsubseteq \leq 1$  StDevGC2

**StDevGC3**

$\top \sqsubseteq \leq 1$  StDevGC3

**Strand**

$\top \sqsubseteq \leq 1$  Strand

**Synonym**

$\top \sqsubseteq \leq 1$  Synonym

**TaxID**

$\top \sqsubseteq \leq 1$  TaxID

**TripletCode**

$\top \sqsubseteq \leq 1$  TripletCode

**hasAmountOfStrictClusters**

**hasMinstrictclustersize**

**hasThreshold**

## **Individuals**

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