

The Drosophila neuroanatomy ontology

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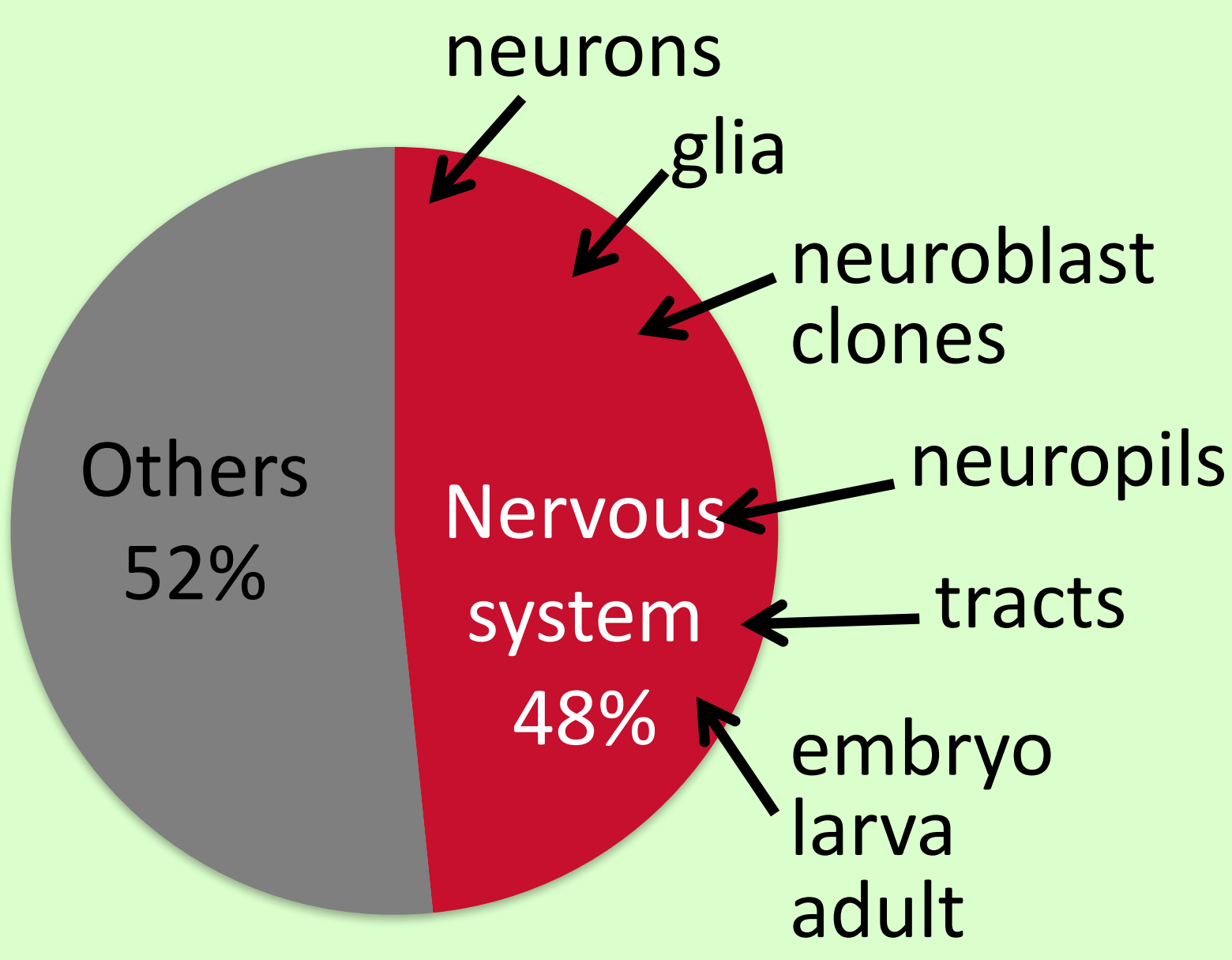
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1. What is it?

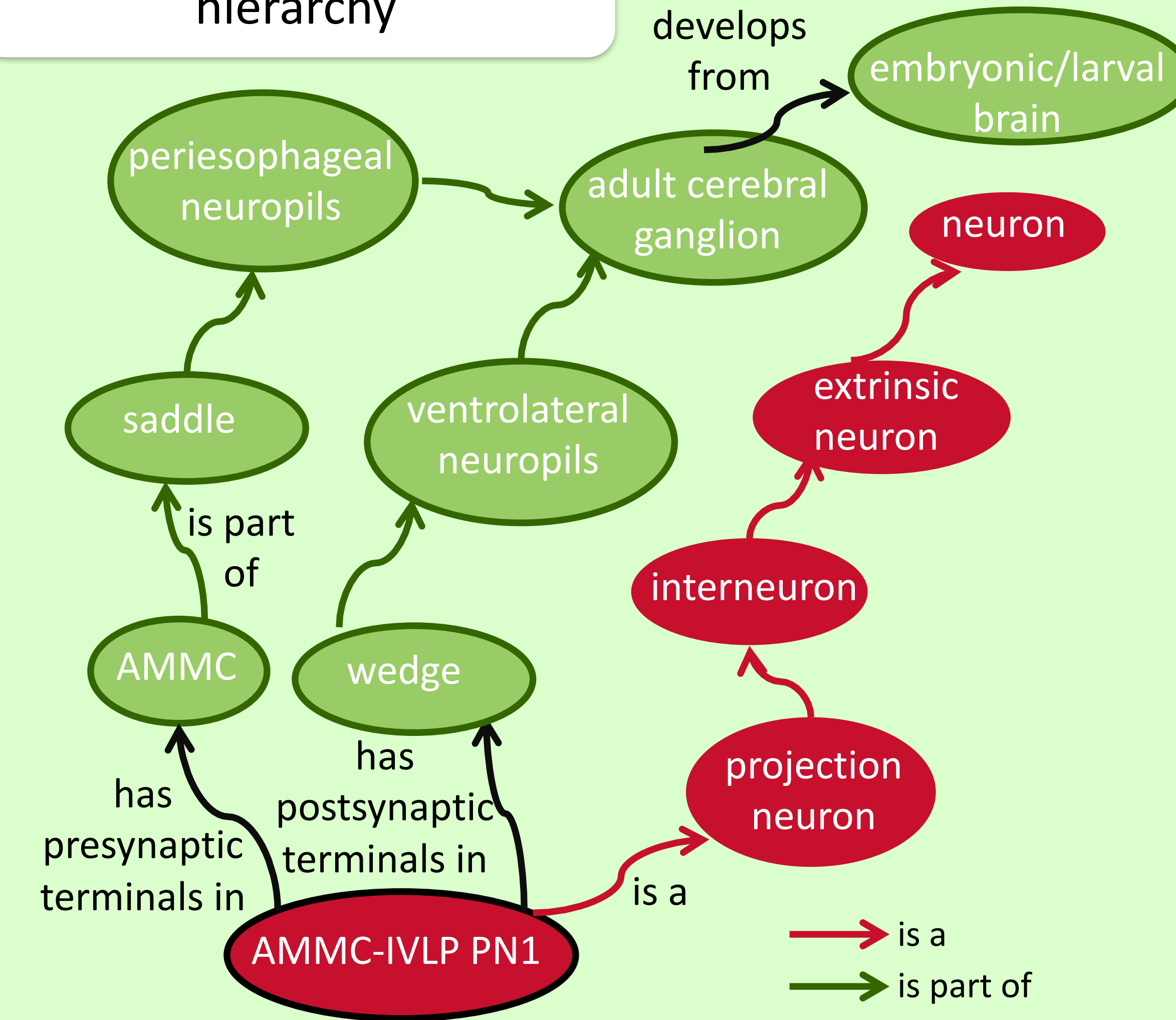
The Drosophila anatomy ontology (DAO) is an organised set of terms describing the wild-type anatomy of *Drosophila melanogaster*. Recent work has focused on the neuroanatomy.

Neuroanatomy terms now represent almost half of all DAO terms



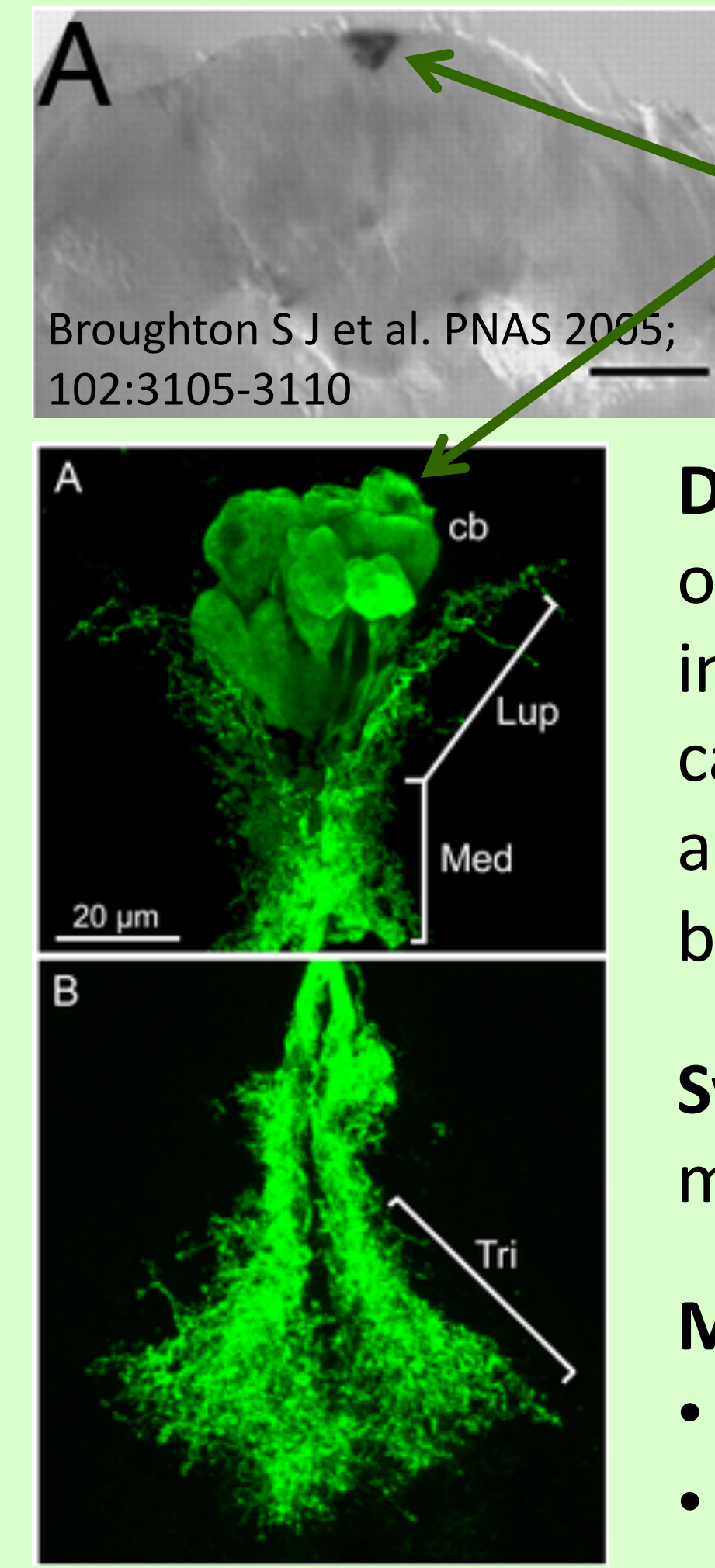
Total : 9255 terms
275 lineage clones
2686 neuron types
165 tracts

Each term is part of a rich hierarchy



Eg. the antennal mechanosensory and motor centre AMMC-IVLP projection neuron 1 (AMMC-IVLP PN1; Lai et al. (2012))

New anatomy terms are extracted from the literature



Term: adult dorsomedial neurosecretory cell

Definition: Neurosecretory cell of the pars intercerebralis that innervates the corpus cardiacum and corpus allatum, and branch before exiting the brain. It extends ...

Synonyms: IPC cell, m-NSC, median neurosecretory cell

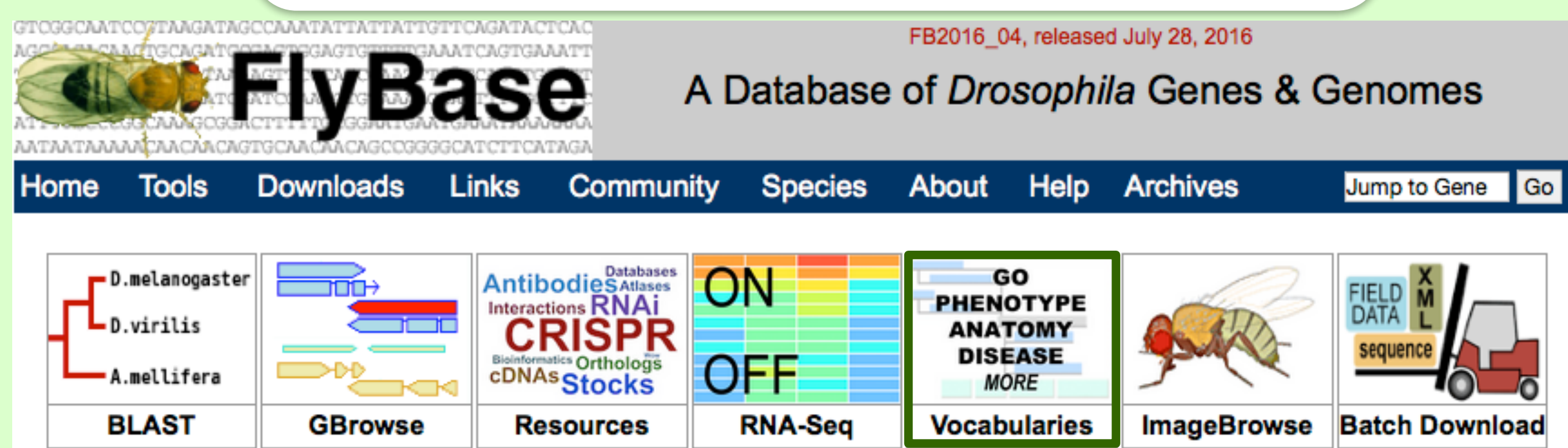
Morphology details:

- soma location
- innervation
- which neuropils it overlaps

2. Why is it useful?

Phenotype and expression data are annotated with neuroanatomy terms from the DAO, making searches easier.

Search FlyBase for a neuroanatomy term using the 'Vocabularies' tool



Or data attached to any of its children terms

Neurons that are part of the dopaminergic PPL1 cluster

neuron	number of records
dopaminergic PPL1 neuron	73 rec.
dFB neuron of the dopaminergic PPL1 cluster	2 rec.
dopaminergic PPL1 neuron 2	
DP neuron of the dopaminergic PPL1 cluster	5 rec.
MB-alpha neuron of the dopaminergic PPL1 cluster	10 rec.
MB-alpha' neuron of the dopaminergic PPL1 cluster	2 rec.
MB-AMP neuron of the dopaminergic PPL1 cluster	1 rec.
MB-SV neuron of the dopaminergic PPL1 cluster	
mushroom body medial-vertical lobe arborizing neuron 1	10 rec.
mushroom body pedunculus-medial lobe arborizing neuron 1	13 rec.
mushroom body vertical lobe arborizing neuron 1	18 rec.

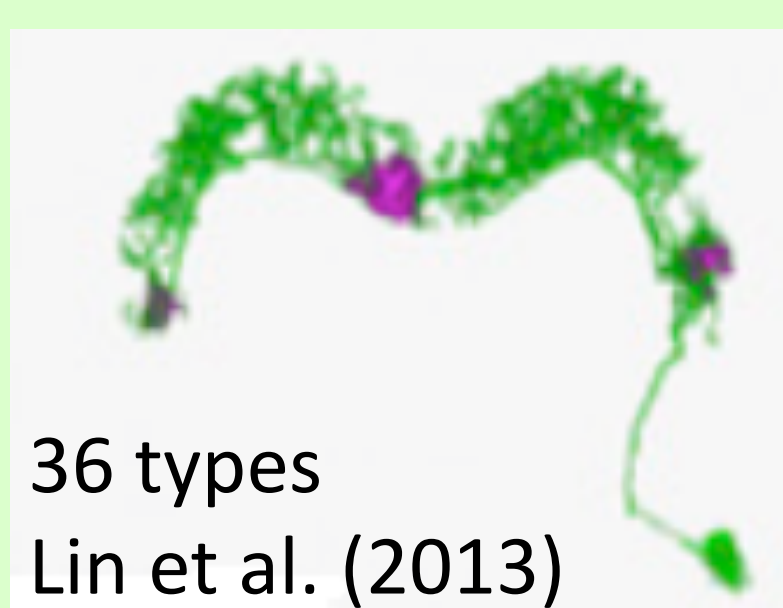
Find alleles that cause a phenotype or insertions that are expressed in a specific set of neurons

General Information			
Term	dopaminergic PPL1 neuron	ID (Ontology)	FBbt:00100219 (Fly Anatomy)
Definition	"A dopaminergic neuron whose cell body is located in a cluster of approximately 12 cell bodies in the cortex of the posterior inferior lateral protocerebrum of the adult brain, immediately lateral to the mushroom body calyx. Members of this group project to various parts of the mushroom body: the tip of the alpha lobe; the tip of the alpha' lobe; the upper portion of the alpha lobe segment 2; alpha lobe segment 1 and the lower part of segment 2; and the pedunculus and spur (Mao and Davis, 2009). Long-range fibers project bilaterally to and arborize in the tips and stalks of the alpha and alpha' lobes, the heel and the peduncle (Claridge-Chang et al., 2009). Other members of this group arborize in areas other than the mushroom body: the edge of the medial portions of the medial lobes; broad areas surrounding the ipsilateral vertical lobes; areas posterior to the ipsilateral vertical lobes; the entire span of the superior arch (Mao and Davis, 2009) and the central complex (Claridge-Chang et al., 2009). [FlyBase:FBf0048550 FlyBase:FBf0208427 FlyBase:FBf0208958]		
Also Known As	"DL1 cell cluster neuron"; "PPL1"; "PPL1 cluster neuron" (for all, see Synonyms field below)		
Records which annotation includes this term			
Data Class	Field	Records	
Alleles (FBal)	PHENOTYPE_MANIFEST_IN	25	
Genes (FBgn)	POLYPEPTIDE_EXPRESSION	1	
Insertions (FBti)	EXPRESSION_STAGE_TISSUE_POSITION	9	
Constructs (FBtp)	PHENOTYPE_MANIFEST_IN	20	

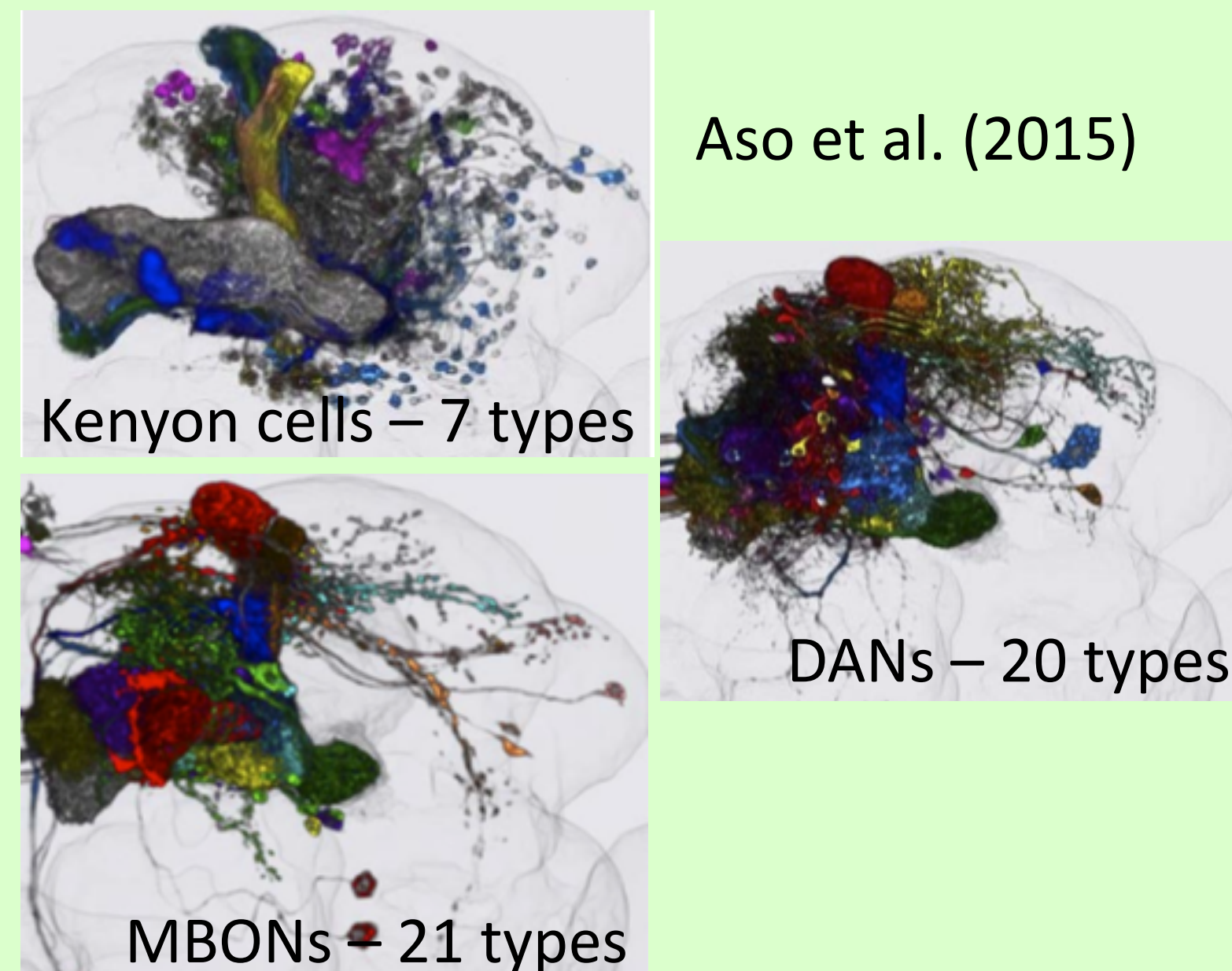
Phenotypic Data		
Phenotypic Class		
Phenotype Manifest In		
Allele Scer{GAL4 ^{Ddc.PL} }	dopaminergic neuron supernumerary, with BacAlp35 ^{Scer/UAS.chla}	(Sykes et al., 2004)
	dopaminergic PAL neuron adult stage chemical conditional, with HsapLRRK2 ^{G2385R.Scer/UAS.T.Hsap/MYC}	(Ng et al., 2009)
	dopaminergic PAM neuron adult stage, with HsapIPARK2 ^{R275W.Scer/UAS}	(Wang et al., 2007)
	dopaminergic PPL1 neuron, with HsapLRRK2 ^{G2019S.Scer/UAS.T.Hsap/MYC}	(Ng et al., 2012)
Expression Data		
Stage	Tissue/Position (including subcellular localization)	Reference
adult stage	mushroom body pedunculus-medial lobe arborizing neuron 1	(Tanaka et al., 2008)
	mushroom body gamma lobe slice 1	(Tanaka et al., 2008)
Insertion P{GawB} IP3K2 ^{NP2758}	pedunculus of adult mushroom body	(Tanaka et al., 2008)
	dopaminergic PPL1 neuron subset	(Aso et al., 2012)
	mushroom body pedunculus-medial lobe arborizing neuron 1 subset	(Aso et al., 2012)

3. Recent additions for newly identified neuron types

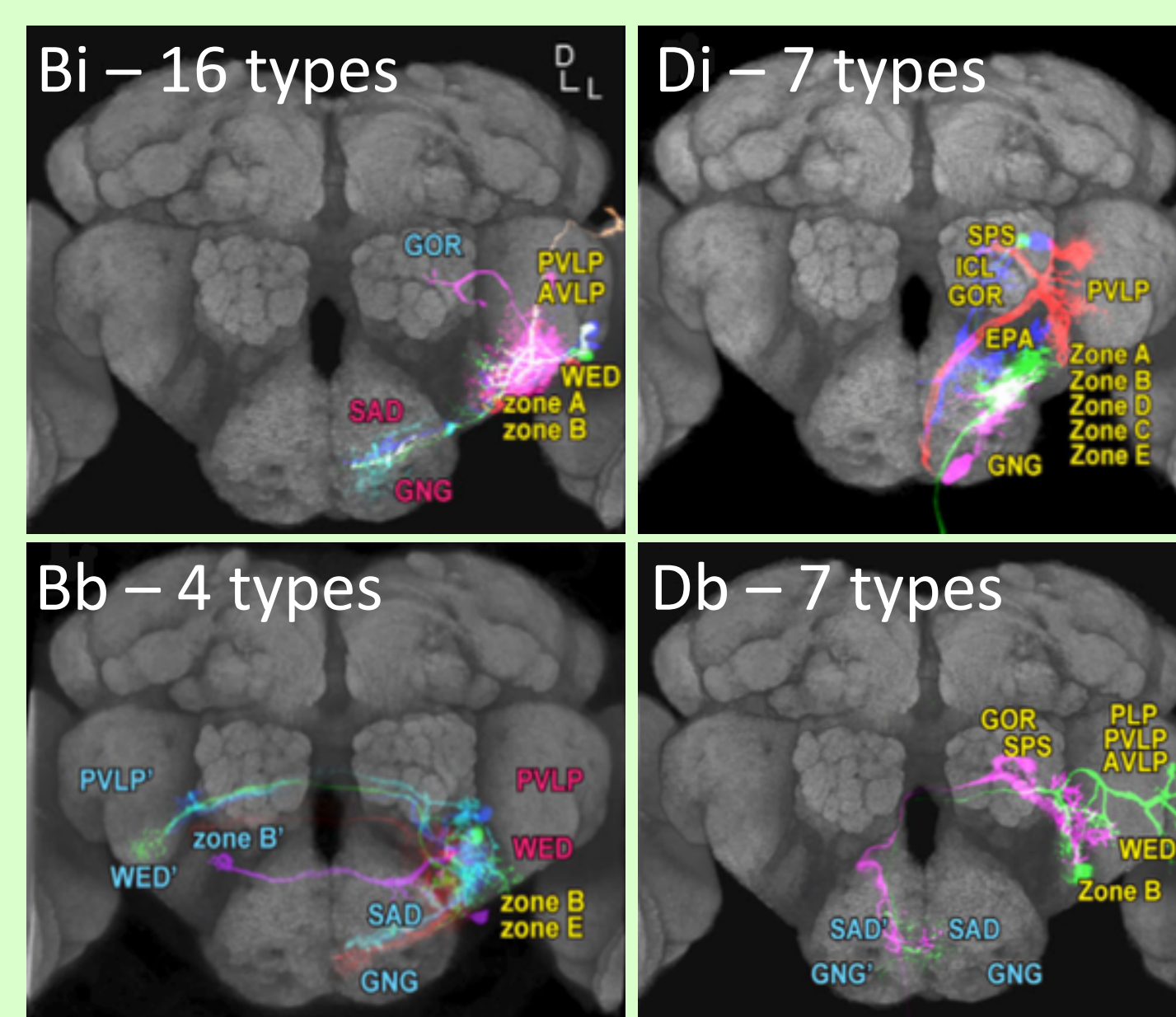
- Adult central complex



- Mushroom body neurons



- Auditory neurons Matsuo et al. (2016)



- Locomotor circuit Ohyama et al. (2015)

