

What's New at FlyBase

Gil dos Santos, FlyBase Consortium Presented at the 62nd Annual Drosophila Research Conference, 2021

62nd Annual *Drosophila*Research Conference
March 23 - April 1 2021 | Anywhere and Everywhere

Questions please



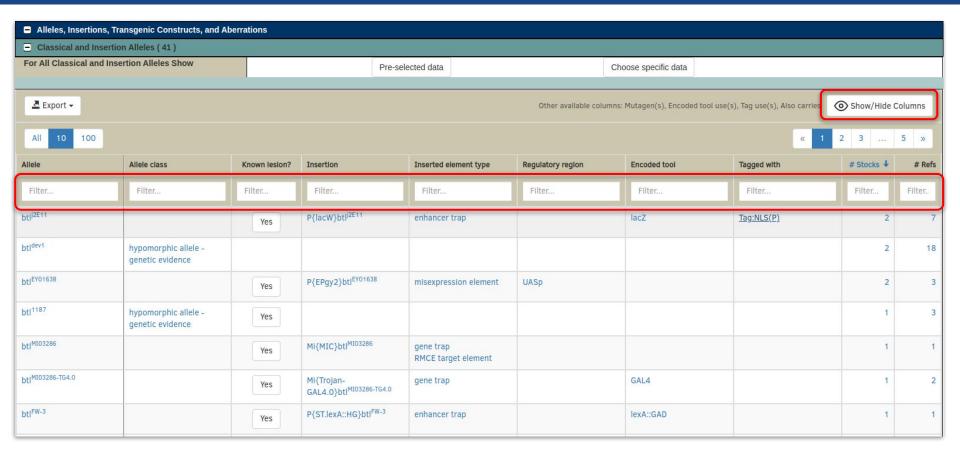
Overview

- 1. Reagents: responsive tables
- 2. Pathway reports
- 3. Disease models: potential models and summary "ribbons"
- 4. Sequence Ontology update
- 5. JBrowse
- 6. ID validator (for batch queries and downloads)
- 7. Fast-Track Your Paper (FTYP): tool updates

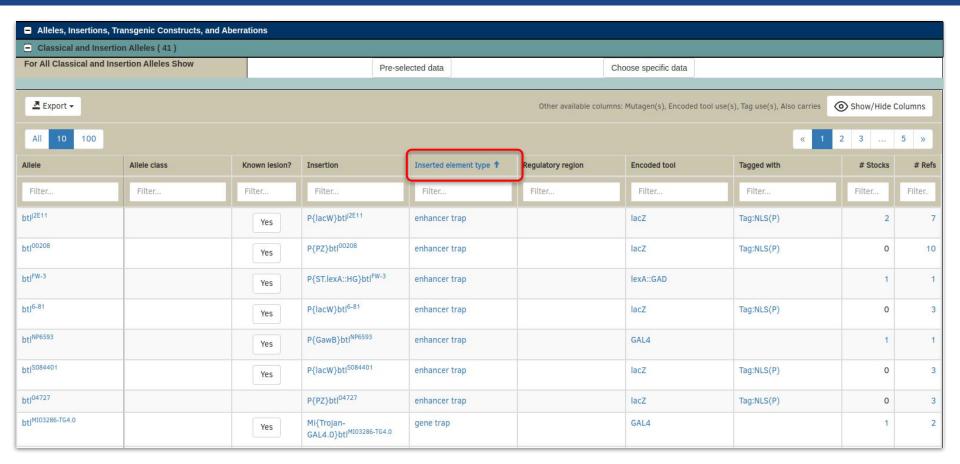
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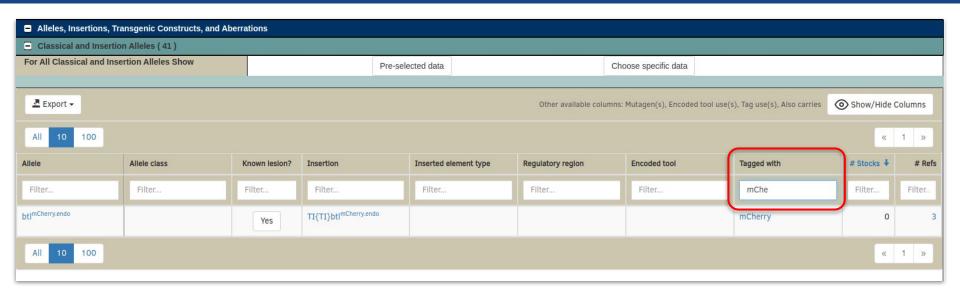
Reagents: responsive allele tables



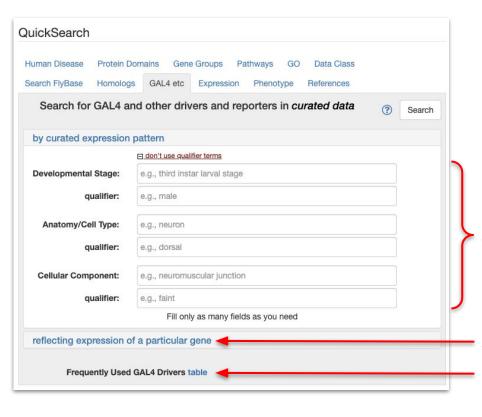
Reagents: responsive allele tables



Reagents: responsive allele tables



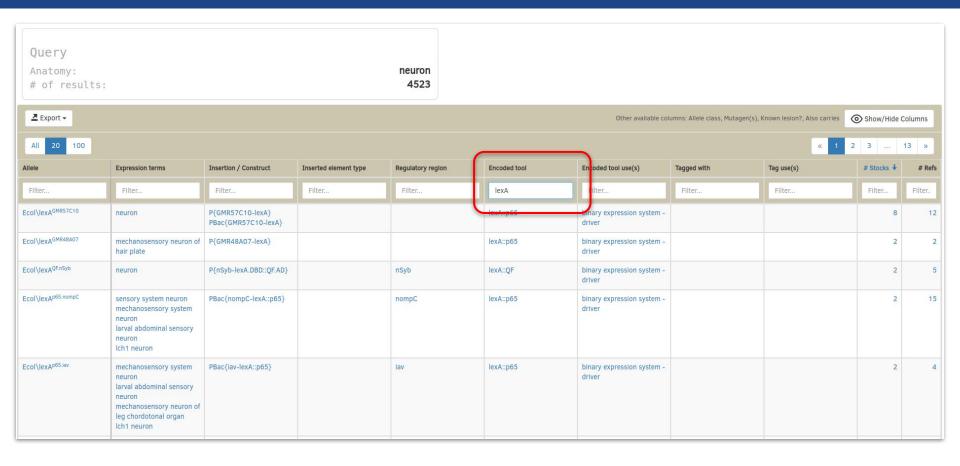
Reagents: responsive driver hitlist



Search for drivers by expression pattern

Search for drivers by gene (new) Browse frequently used GAL4s

Reagents: responsive driver hitlist



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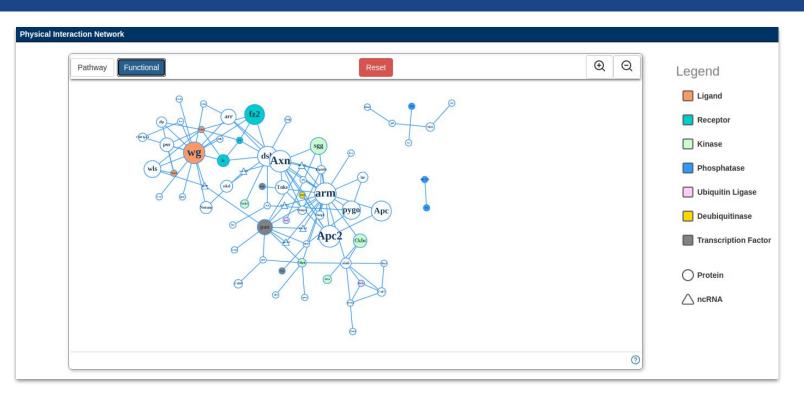
Pathway reports

General Information					
Name	Wnt-TCF Signaling Pathway	Species	D. melanogaster		
Symbol	WNT-TCF	FlyBase ID	FBgg0000889		
Date last reviewed	2019-11-14	Number of members	94		
escription					
Description	The Wnt-TCF (canonical Wnt) signaling pathway is initiated by the binding of a Wnt ligand to a frizzled family receptor on the cell surface. In the absence of a Wnt ligand, cytoplasmic levels of β-catenin (arm), the transcriptional effector of the pathway, are kept low through its constitutive degradation. Activation of the pathway leads to the inhibition of cytoplasmic β-catenin (arm) degradation and its subsequent accumulation in the nucleus, where it regulates the transcription of target genes. (Adapted from FBrf0218499 and FBrf0223299).				
Notes and selected reviews	Selected publications for background information: Modulating and measuring Wingless signalling (FBrf0225263), Powerful Drosophila screens that paved the wingless pathway (FBrf0228944), Function of the Wingless Signaling Pathway in Drosophila (FBrf0206499), The wingless signalling pathway and the patterning of the wing margin in Drosophila (FBrf0072872), Wnt/Wingless Signaling in Drosophila (FBrf0218499) and Wingless/Wnt signaling in Drosophila: the pattern and the pathway (FBrf0223299). Note: Pathway Pages in FlyBase are under development. The pathway gene tables display genes that have been experimentally shown to act within the pathway or modify pathway activity. We welcome any feedback to help improve the usefulness and accuracy of these gene lists.				
Biological Process Gene Ontology (GO) term(s)					
Related Gene Groups	on the second of				
Component group(s)	Negative Regulators of Wnt-TCF Signaling Pathway Positive Regulators of Wnt-TCF Signaling Pathway Wnt Production Wnt-TCF Signaling Pathway Core Components				

16 curated Pathways:

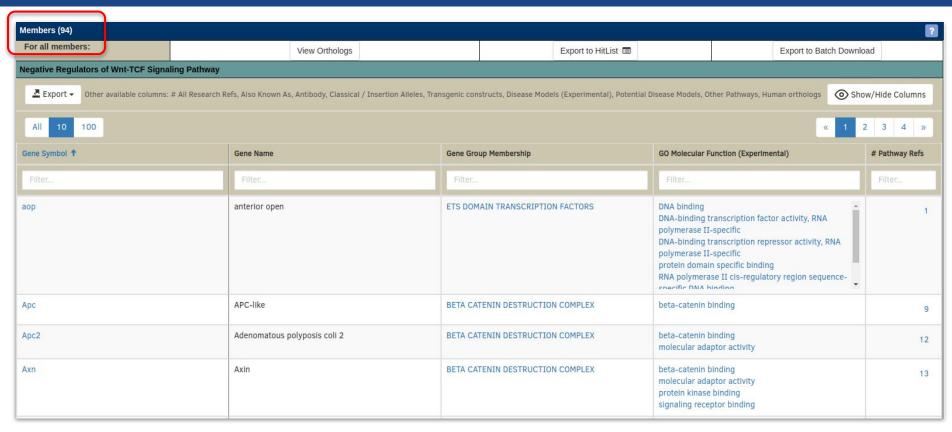
- 6 receptor tyrosine kinase pathways
- major developmental pathways such as Hedgehog, Notch and Wnt

Pathway reports: cytoscape view



Pathway components can be colored by **molecular function** (shown) or **pathway sub-groupings** (e.g., core components, negative regulators, etc).

Pathway reports: members table



Pathway members are presented in "responsive tables".

Pathway reports: how to find them



Search/browse pathways from the homepage.

Signaling Pathways (FlyBase) Wnt-TCF Signaling Pathway Core Components -			
	The canonical Wnt signaling pathway is initiated by the binding of a Wnt ligand to a frizzled family receptor on the cell surface. Activation of the pathway leads to the inhibition of cytoplasmic β-catenin (arm) degradation and its subsequent accumulation in the nucleus, where it regulates the transcription of target genes. (Adapted from FBrf0218499 and FBrf0223299).		
Metabolic Pathway	S		

Find links to pathways on gene reports.

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Disease models: potential models

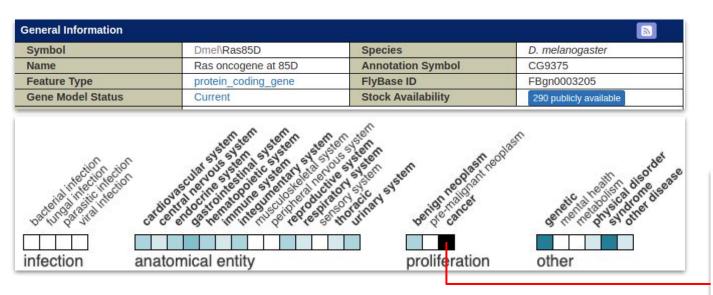
Automated pipeline:

fly gene => human ortholog => OMIM disease annotation => Disease Ontology term

Symbol	Dmel\JHDM2	Species	D. melanogaster		
Name	JmjC domain-containing histone demethylase 2	Annotation Symbol	CG8165		
Disease Ontology (DO)	Annotations				
☐ Models Based on Experimental Evidence (0)					
Allele	Disease	Evidence	References		
Potential Models E	Based on Orthology (3)				
Human Ortholog	Disease	Evidence	References		
HR; HR lysine demethylase and	model of atrichia with papular lesions	IEA	(FlyBase, 2019-)		
nuclear receptor corepressor	model of alopecia universalis	IEA	(FlyBase, 2019-)		
	model of hypotrichosis 4	IEA	(FlyBase, 2019-)		

~4,800 annotations generated, available on gene reports and as a downloadable file.

Disease models: summary ribbons



Ribbons reflect experimental and computed annotations.

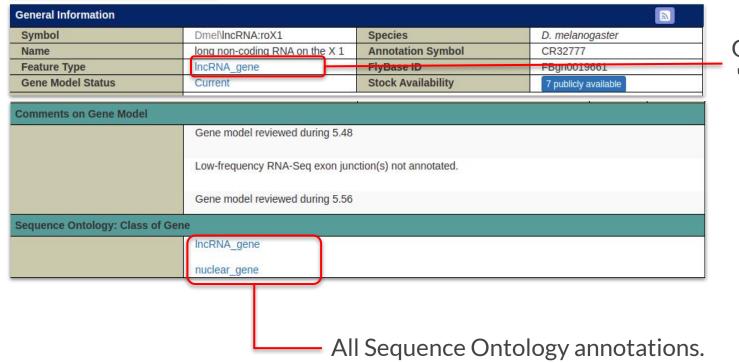
Mouse over a ribbon block to see specific annotations.

acute mveloid leukemia adenocarcinoma breast cancer cancer carcinoma cervical cancer colorectal cancer hereditary diffuse gastric cancer intestinal cancer kidney cancer leukemia lung cancer pancreatic carcinoma prostate cancer thyroid gland follicular carcinoma urinary bladder cancer

Overview

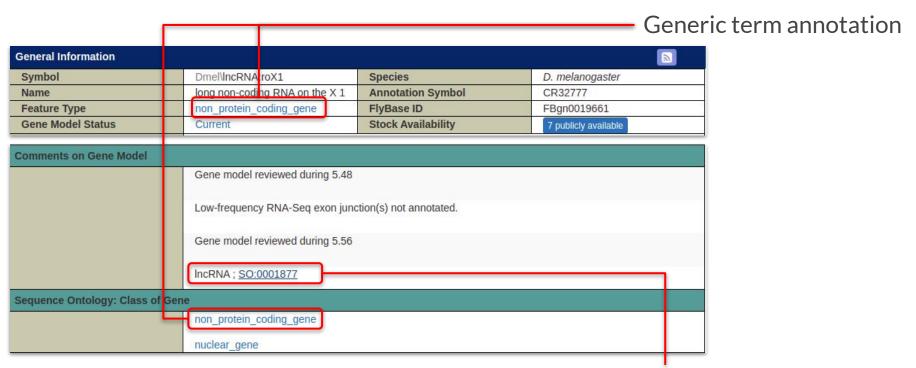
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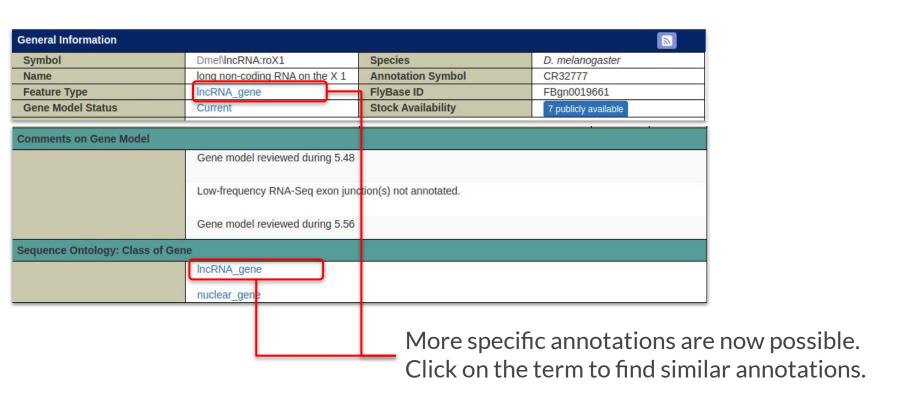
Gene
"Feature Type"

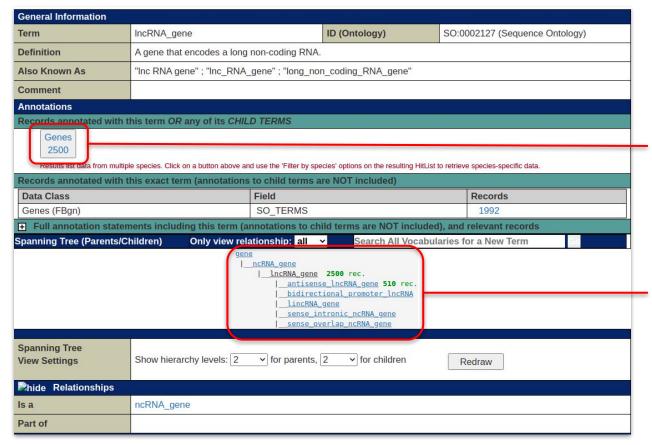
Before the Sequence Ontology update ...



More information in a free text comment.

After the Sequence Ontology update ...

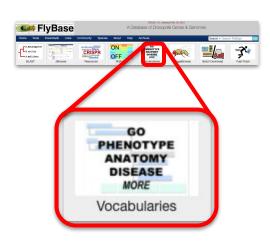




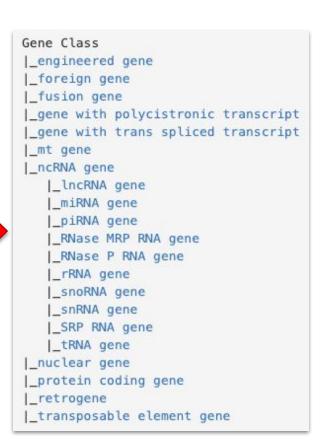
Easily find other FlyBase genes annotated to a specific term.

Browse the ontology





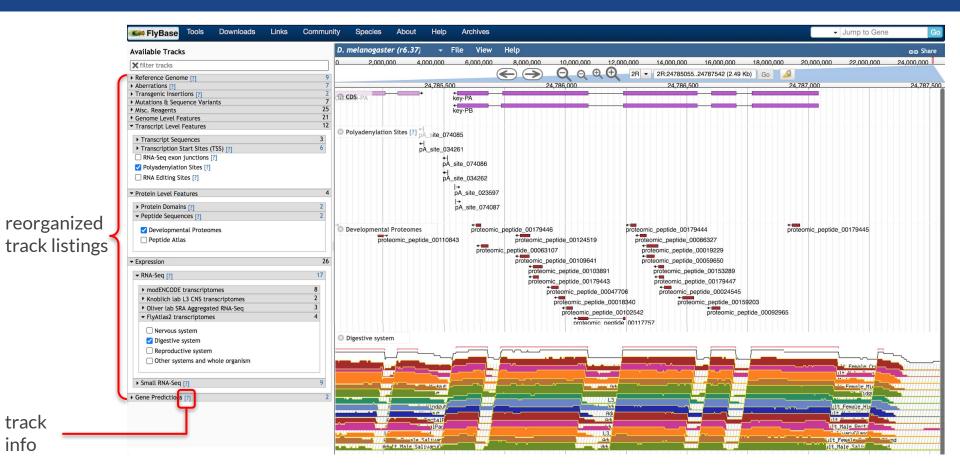
```
Gene Class
_engineered gene
| fusion gene
non protein coding gene
   _cryptogene
   _miRNA gene
   _rRNA gene
   _scRNA gene
   snoRNA gene
   snRNA gene
   SRP RNA gene
   stRNA gene
   tmRNA gene
   _tRNA gene
_protein coding gene
pseudogene attribute
retron
transgene
_transposable element gene
```



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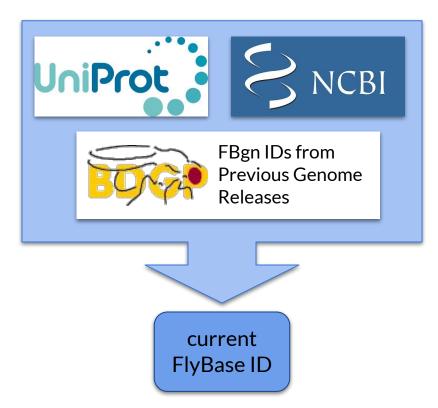
JBrowse



ID validator

A helpful first step for batch queries and downloads.





Fast-Track Your Paper



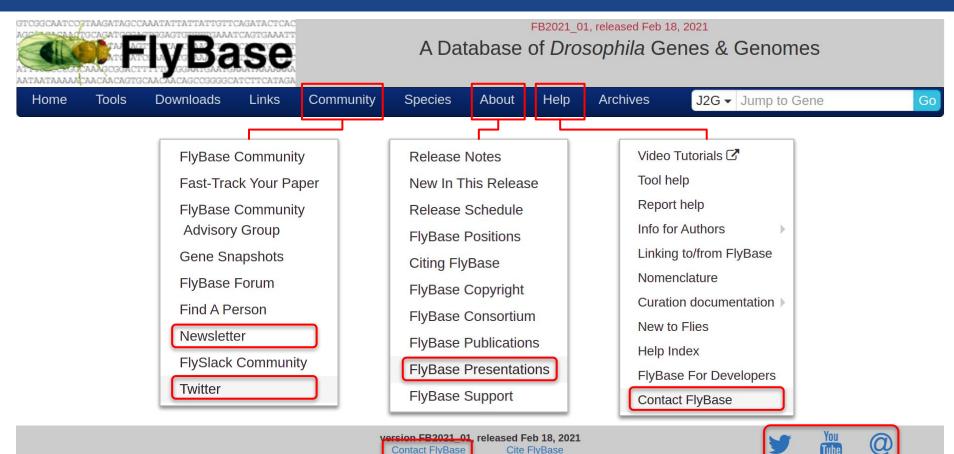


Preview the new Fast-Track Your Paper steps at:

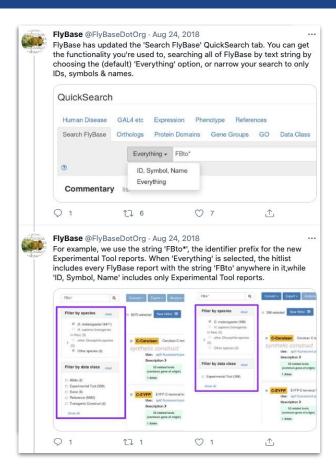
https://wiki.flybase.org/wiki/FlyBas e:Fast-Track Your Paper Links to papers where authors marked the "contains technical advance" box can be found at:

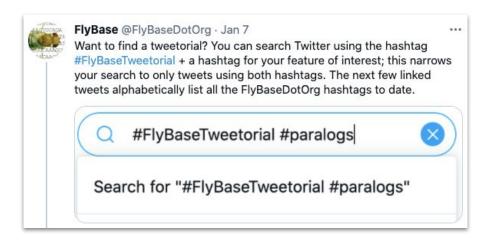
https://wiki.flybase.org/wiki/FlyBase:Papers with tech nical_advances

Staying in touch with FlyBase



Tweetorials from @FlyBaseDotOrg







Acknowledgements

FlyBase @ University of Cambridge:

Nick Brown (Co-PI) Giulia Antonazzo Helen Attrill Phani Garapati Aoife Larkin Steven Marygold Alex McLachlan Gillian Millburn Arzu Ozturk-Colak Clare Pilgrim Vitor Trovisco FlyBase @ Harvard University:

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FlyBase @ University of New Mexico:

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NSF: DBI-2035515, 2039324

DROS21: even more FlyBase

DROS21 FlyBase posters

211A: Progress towards functional understanding of the gene repertoire of Drosophila. (Helen Attrill)

Tues 30th March: 10:00AM-12:00PM (Eastern) Weds 31st March: 12:30PM-2:30PM (Eastern)

531C: An enzyme catalog for Drosophila melanogaster (Steven Marygold)

Weds 31st March: 10:00AM-12:00PM (Eastern)

Thurs 1st April: 12:30PM-2:30PM (Eastern)