



Resources available to Nigerian fly researchers



BINGHAM UNIVERSITY KARU, NIGERIA

IN COLLABORATION WITH

DROSOPHILA RESEARCH AND TRAINING CENTRE



“droso4research”

<https://sites.manchester.ac.uk/fly-facility>

Outlook Web App

Manchester Fly Facility | The University of Manchester

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Supporting *Drosophila* research



droso4schools.wordpress.com

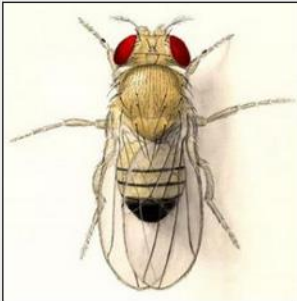


- **Sample lessons with teacher notes**
- **task sheets, homework sheets, risk assessments**
- **accompanying online resources to support**
 - introduction to fly research as a concept (students, teachers, the public)
 - lesson preparation
 - homework tasks
 - revision
 - special tab: comparing human and fly organs

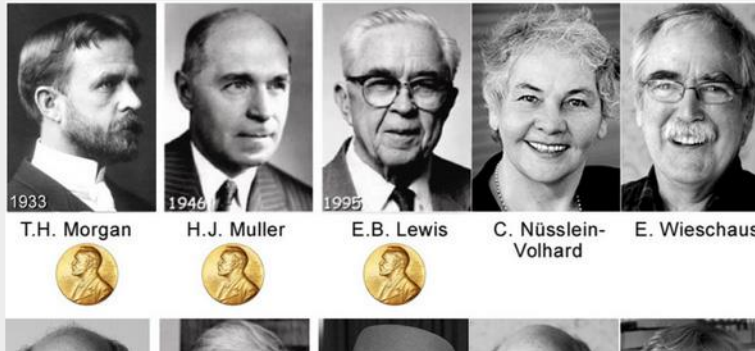


Key rationales for fly research

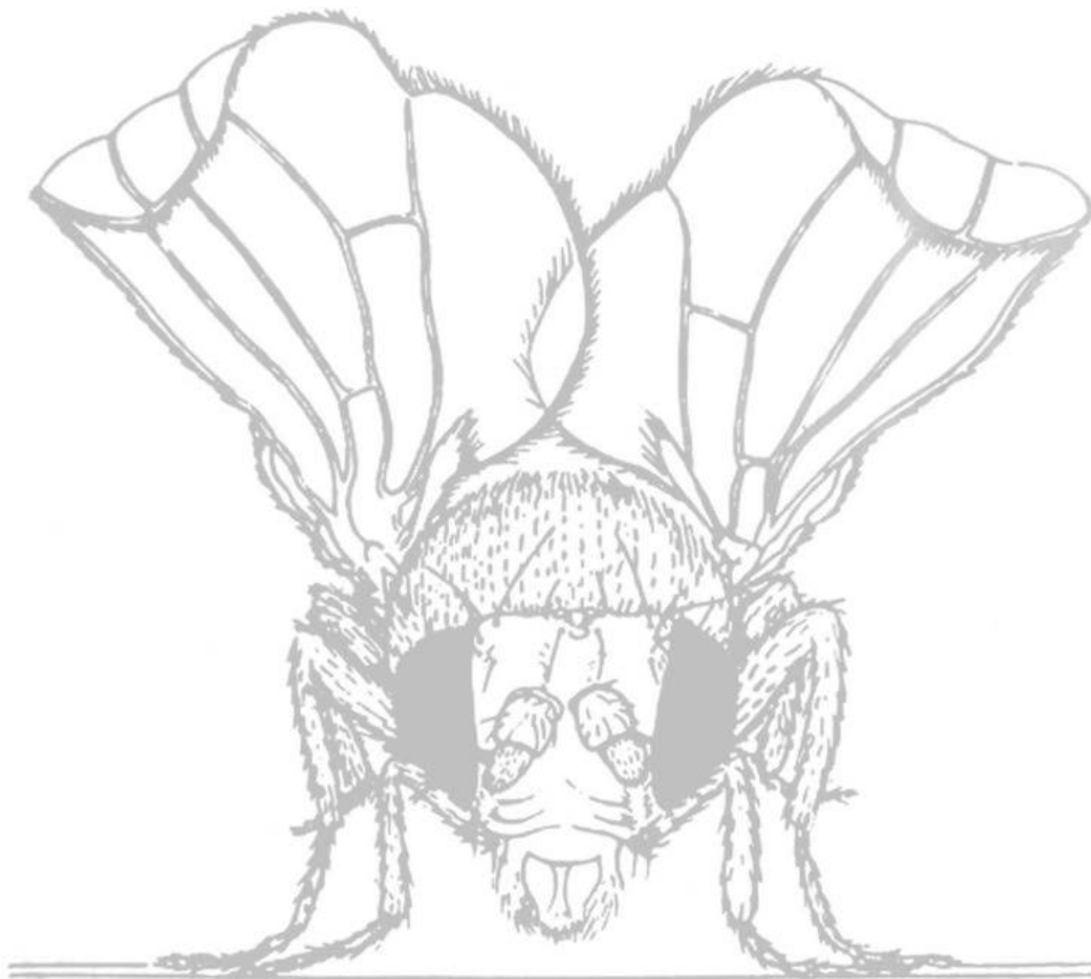
Why fly?



Drosophila melanogaster, more commonly known as the fruit fly or vinegar fly, has been used as a model for biological research for over 100 years (explained in our [first movie below](#)). To date, *Drosophila* is the conceptually best understood animal organism in the biomedical sciences, ideal also to be used as a teaching tool in schools to convey fundamental concepts of biology (explained in [this blog](#)). **Six Nobel Prizes** in “Physiology or Medicine” were given to 10 researchers who made their groundbreaking discoveries in *Drosophila* (see [box below](#)), and many aspects of modern medicine are based on foundations laid through fly research (explained in our [second movie below](#)). But how can such a small, invertebrate organism teach us anything about human biology?



- where they have impacted, what their experimental advantages are
- useful for
 - teachers (feeling comfortable to teach with fly)
 - students (revision, exploring further)
 - scientists (learning your elevator pitches)
 - public and journalists (as an info resource)



[LINK]



Small fly: **BIG** impact Pequeña mosca: **GRAN** impacto

PART ONE

Why the fly?

PARTE 1

¿Por qué la mosca?

Lalat Kecil : Manfaat **BESAR**

BAGIAN SATU

Mengapa Lalat?

صغيرة الحجم : **كثيرة** المنافع

الجزء الأول

تعالوا تتعلم عن ذبابة الفاكهة!

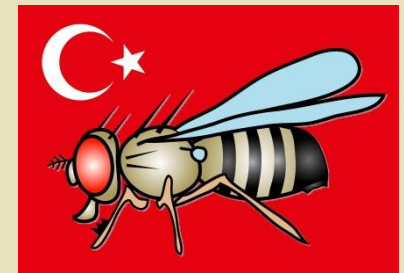
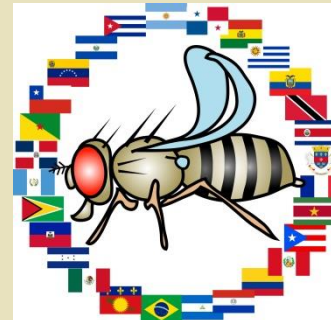
Small fly: **BIG** impact

PART TWO

Making research fly

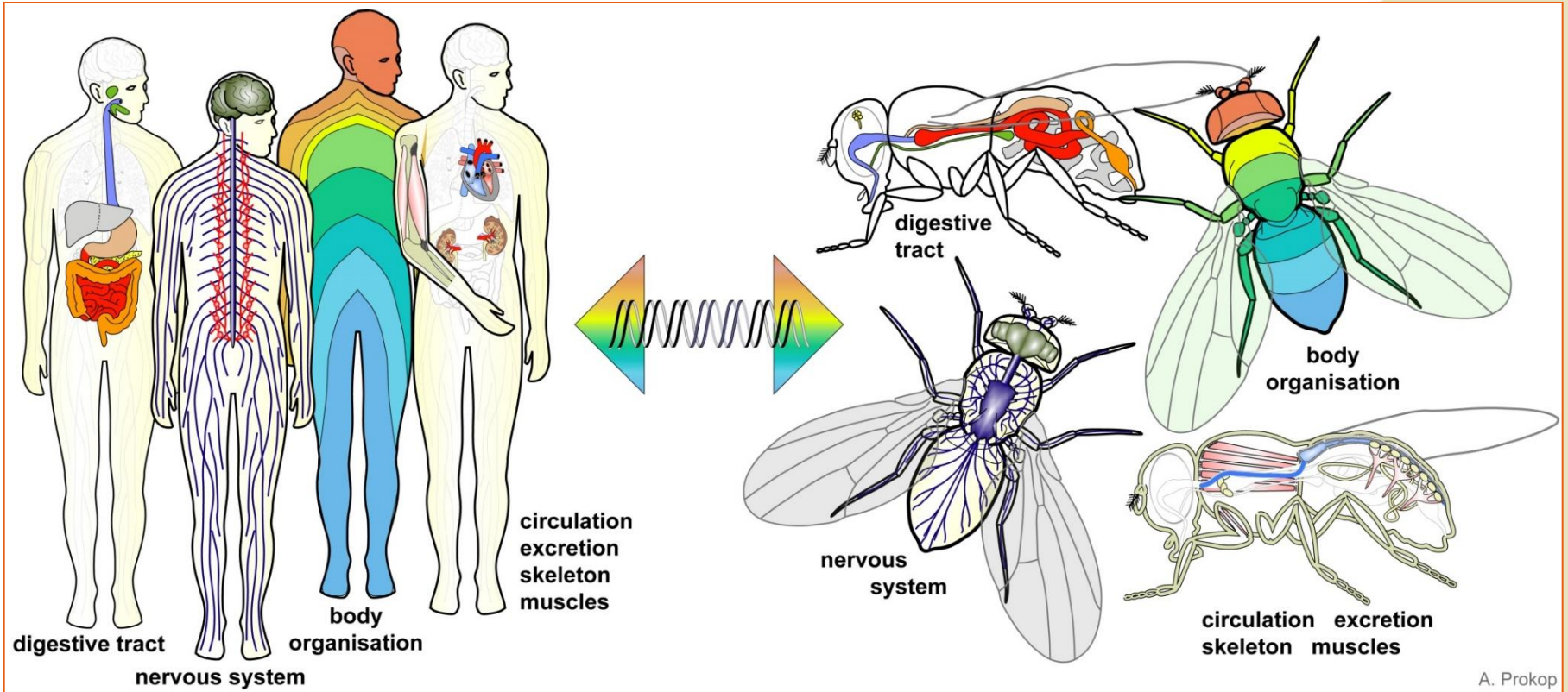
Manchester Fly Facility YouTube Channel

<https://www.youtube.com/channel/UCRUW0eMYSbFsdGtBpNVmPjg>





Comparing human and fly organs



- **active, comparative learning of organ physiology** (what functions are required for life, what organs contribute, what are their functional concepts?)
- **useful also for newcomers to your labs**



Learning Resources

[Lesson 1](#) – The climbing assay: learning data analysis through live experiments with fruit flies

[Lesson 2](#) – From gene to enzyme to evolution: using alcohol metabolism to illustrate fundamental concepts of biology

[Lesson 3](#) – Flying through the fundamental principles of the nervous system

[Lesson 4](#) – Metabolic pathways: investigating the biology & chemistry of pigmentation

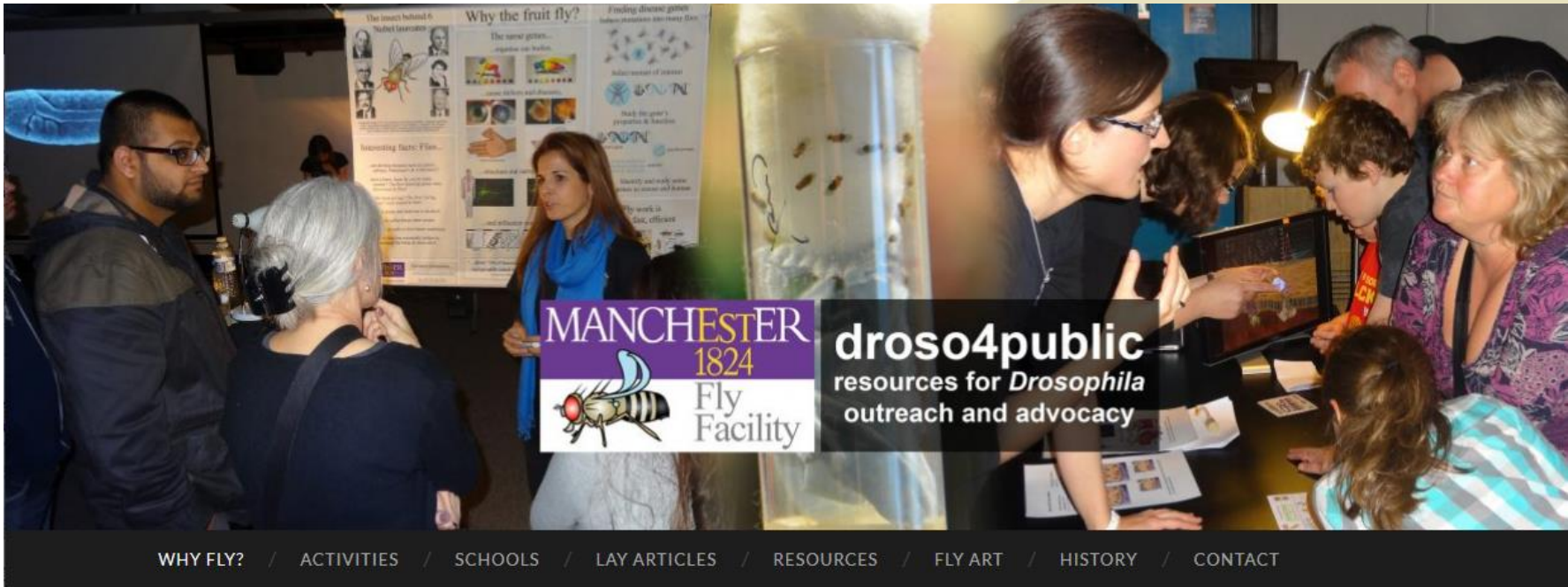
[Lesson 5](#) – Our vision: understanding light and light perception

[Lesson 6](#) – Life cycles

[Lesson 7](#) [*coming soon*] – Rules of inheritance: from chromosomes to genes to disease



<https://droso4public.wordpress.com>





D. melanogaster, D. virilis, A. mellifera
 GBrowse
 JBrowse
 Antibodies, Databases, Interactions, RNAi, CRISPR, Bioinformatics, Orthologs, cDNAs, Stocks
 ON, OFF
 GO, PHENOTYPE, ANATOMY, DISEASE, MORE
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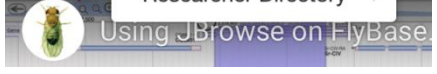
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- Tools Overview & Help
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- Genomics Tools
- Submit Data
- Researcher Directory

- External Resources
- Model Organisms (MODs)
- Stock Collections
- Funding
- BDGP
- DGRC
- DRSC/TRiP
- DIS by issue
- FlyBook
- FlyExpress
- Interactive Fly
- modENCODE
- Textpresso for Fly





D. melanogaster Stock Collections

Resource	Description	Author/Source
Bloomington Drosophila Stock Center (BDSC)	A diverse collection of stocks useful for a wide range of research applications.	Bloomington Drosophila Stock Center (BDSC) Indiana University Bloomington, IN, USA
Kyoto Stock Center	The Kyoto Stock Center collects, maintains and distributes <i>Drosophila melanogaster</i> strains for research.	Kyoto Stock Center Kyoto Institute of Technology Kyoto, Japan
Exelixis	The Exelixis Collection of transgenic insertion stocks at Harvard Medical School is no longer being maintained as of October 15, 2019.	Harvard Medical School Boston, MA, USA
FlyORF	Well characterized transgenic UAS-ORF lines. Approximately 2,400 fly stocks comprising about 1900 genes, generated using the phiC31 integrase method.	FlyORF University of Zurich Zurich, Switzerland
NIG-FLY	NIG-RNAi stocks and TRiP Stocks for RNA interference experiments.	NIG-FLY National Institute of Genetics Mishima, Japan
Tsinghua Fly Center (THFC)	Transgenic RNAi fly lines.	THFC Tsinghua University Beijing, China
VDRC, Vienna Drosophila Resource Center	Transgenic <i>Drosophila</i> RNAi libraries, a collection of enhancer-GAL4 driver lines, the Tagged FlyFos TransgeneOme (fTRG) library.	Vienna Drosophila Resource Center (VDRC) Vienna, Austria





D. melanogaster Stock Collections by Specific Category

Stock Category	Availability
Human Disease Models	BDSC , Kyoto
Deficiencies	BDSC , Kyoto
Insertions	BDSC , Kyoto , Harvard , GDP
Duplications	BDSC , GenetiVision
RNAi	BDSC , NIG-FLY , VDRC , THFC
GAL4	BDSC , Kyoto , VDRC
UAS	BDSC , Kyoto , FlyOrf
Fluors	BDSC , Kyoto
Tagged proteins under native control	Kyoto , VDRC
CRISPR	BDSC , NIG-FLY
phiC31	BDSC , Kyoto
FLP/FRT	BDSC , Kyoto
Balancers	BDSC , Kyoto
Reference Genome strain (iso-1)	BDSC
Sequenced strains	BDSC
Wildtype stocks	BDSC , Kyoto
Non- <i>melanogaster Drosophila</i> species	DSSC , EHIME-Fly , KYORIN-Fly



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FB2020_01, released Feb 12, 2020

FlyBase

A Database of *Drosophila* Genes & Genomes

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JBrowse

Resources

RNA-Seq

Vocabularies

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FlyBase

BLAST

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BLAST

Database: ?

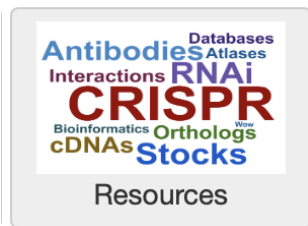
Program: ?

Sequence file: no file selected ?

Sequence:

Species (optional)

- All
- Diptera
 - Drosophila (genus)
 - Sophophora (subgenus)
 - Drosophila melanogaster^{1,2,3,4}
 - Drosophila simulans²²
 - Drosophila sechellia^{6,7}
 - Drosophila yakuba^{6,7}
 - Drosophila erecta^{6,7}
 - Drosophila ficusphila²¹
 - Drosophila eugracilis²¹
 - Drosophila biarmipes²¹
 - Drosophila takahashii²¹
 - Drosophila elegans²¹
 - Drosophila rhopaloa²¹
 - Drosophila kikkawai²¹
 - Drosophila ananassae^{6,7}
 - Drosophila bipectinata²¹
- Lepidoptera
 - Bombyx mori (silkworm)^{9,10}
 - Danaus plexippus (Monarch butterfly)¹⁶
- Coleoptera
 - Tribolium castaneum (Red flour beetle)¹⁴
- Hymenoptera
 - Nasonia giraulti (Parasitic wasp)¹⁶
 - Nasonia longicornis (Parasitic wasp)¹⁶
 - Nasonia vitripennis (Parasitic wasp)¹⁶
 - Apis mellifera (Western honey bee)⁸
 - Apis florea (Dwarf honey bee)¹⁶
 - Bombus impatiens (Common eastern bumblebee)¹⁶
 - Bombus terrestris (Buff-tailed bumblebee)¹⁶
 - Megachile rotundata (Alfalfa leafcutter bee)¹⁶
 - Acromyrmex echinatior (Panamanian leafcutter ant)¹⁶
 - Atta cephalotes (Leafcutter ant)¹⁶



Popular Resource Categories

All Resources	CRISPR	Stocks	RNAi	Model Organism Databases
Neuroscience	Antibodies	Images	Maps	Protocols

All Resources

An extensive list of useful databases and reagent resources can be found on the pages linked below:

Drosophila Network Resources

Includes:

- [Atlases, Images, and Videos](#)
- [CRISPRs and TALENs](#)
- [Data Repositories](#)
- [Data and Metadata for Drosophila Genomes](#)
- [Gene Expression Databases and Tools](#)
- [Gene Groups](#)
- [General Bioinformatics Tools](#)
- [Genome Sequencing Projects](#)
- [Human Disease: Drosophila Models and Orthologous Genes](#)
- [Interaction and Pathway Databases](#)
- [Laboratory Resources](#)
- [Non-coding \(ncRNA\) Databases and Tools](#)
- [Miscellaneous](#)
- [Ontology Resources](#)
- [Orthology Predictions](#)
- [Phylogenetic Comparison Tools](#)
- [Population Biology and Polymorphism Resources](#)
- [Protein Analysis](#)
- [Public Education](#)
- [RNAi](#)
- [Sequence Analysis](#)
- [Taxonomy](#)
- [Transcription Regulation Databases and Tools](#)

Drosophila Material Resources (Reagents)

Includes:

- [Genomic Clones](#)
- [cDNA \(EST Clones and Libraries\)](#)
- [Arrays and Primers](#)
- [Stocks](#)
- [CRISPR Vectors](#)
- [Expression Vectors](#)
- [Cell Lines and Hybridomas](#)
- [Antibodies](#)
- [Transgenic, Targeted Mutation, and Other Services](#)
- [RNA](#)
- [RNAi](#)



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1824
Fly Facility



Browse by Organ System

Adipose 	Circulatory 	Excretory 	Muscle 	Imaginal Precursor
Integumentary 	Tracheal 	Digestive 	Nervous 	Reproductive

Browse by Life-Cycle Stages

Embryo	Larva	Pupa
Gamete	Adult	

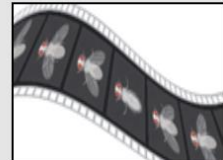
Browse by Major Tagma

Head	Thorax	Abdomen

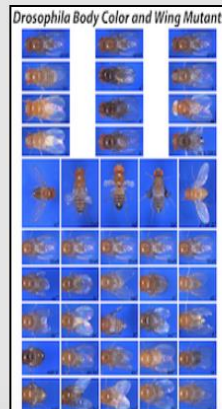
All Species Images



Movies



Posters



Browse by Germ Layer

Mesoderm	Mesoderm	Mesoderm	Ectoderm



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D. virilis
A. mellifera
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Search using a disease name/ID/synonym, or a human or fly gene symbol/ID:

Enter text:

Parkinson's, etc.

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[Search FlyBase](#) [Homologs](#) [GAL4 etc](#) [Expression](#) [Phenotype](#) [References](#)

Input

Species:

D. melanogaster ▾

Gene(s):

e.g. Cdk1, CG5363, FBgn0004106, 34411

Enter gene symbol(s) or ID(s), separated by spaces

Output

HUMAN AND MODEL ORGANISMS (via [DIOPT](#))

- | | |
|--|--|
| <input checked="" type="checkbox"/> <i>H. sapiens</i> (Human) | <input checked="" type="checkbox"/> <i>D. melanogaster</i> (Fruit fly) PARALOGS |
| <input checked="" type="checkbox"/> <i>R. norvegicus</i> (Norway rat) | <input checked="" type="checkbox"/> <i>C. elegans</i> (Nematode, roundworm) |
| <input checked="" type="checkbox"/> <i>M. musculus</i> (Laboratory mouse) | <input checked="" type="checkbox"/> <i>A. thaliana</i> (Thale cress) |
| <input checked="" type="checkbox"/> <i>X. tropicalis</i> (Western clawed frog) | <input checked="" type="checkbox"/> <i>S. cerevisiae</i> (Brewer's yeast) |
| <input checked="" type="checkbox"/> <i>D. rerio</i> (Zebrafish) | <input checked="" type="checkbox"/> <i>S. pombe</i> (Fission yeast) |



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GSK3beta

Convert ▾ Export ▾ Analyze ▾

View As

27 selected 1 Items 1-27 of 27

Filter by species

- D. melanogaster* (26)
- H. sapiens* (transgenes in flies) (1)
- other *Drosophila* species (0)
- Other species (3)

Filter by data class

- Experimental Tool (1)
- Gene (4)
- Human Disease Model (1)
- Reference (20)
- Transgenic Construct (1)

[show all](#)

Hsap\GSK3B glycogen synthase kinase 3 beta (FBgn0266463) *H. sapiens*

Feature type: engineered foreign gene **Gene model status:** Not Applicable

Sequence Location:

P{UAS-Xlae\Gsk3β.DN} (FBtp0016059) *synthetic construct*

Associated allele: *Xlae\Gsk3β^{DN.UAS}* **No expression data**

Uses: characterization; binary system (targeted)

Colosimo et al. (2010) (FBfr0215313)

Title: GSK3beta affects apical-basal polarity and cell-cell adhesion by regulating aPKC levels.

Citation: Dev. Dyn.. 2010;239:115--125 **Publication type:** paper

Abstract

sgg shaggy (CG2621, FBgn0003371) *D. melanogaster*

Feature type: protein coding gene **Gene model status:** Current

Sequence Location: X:2,633,952..2,679,553 [+] **Cytogenetic Map:** 3A8-3B1



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FlyBase Gene: Dmel\sgg

Request from Fly scRNAseq Cell Atlas

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General Information

Symbol	Dmel\sgg	Species	<i>D. melanogaster</i>
Name	shaggy	Annotation Symbol	CG2621
Feature Type	protein_coding_gene	FlyBase ID	FBgn0003371
Gene Model Status	Current	Stock Availability	65 publicly available

Gene Snapshot
shaggy (*sgg*) encodes a glycogen synthase kinase 3, and a key component of the β -catenin destruction complex. It functions in the canonical Wnt cascade. [Date last reviewed: 2019-03-14]

Other Summaries

[Alliance](#) [Auto summary](#) [Pathway](#) [Gene Group](#) [UniProtKB](#) [Red Book](#)

[Interactive Fly](#)

Also Known As
zw3, GSK3, GSK3 β , GSK-3 β , GSK-3

Key Links

[ALLIANCE of GENOME RESOURCES](#) [NCBI](#) [Ensembl](#) [UniProt](#)

Genomic Location

Cytogenetic map	3A8-3B1	Sequence location	X:2,633,952..2,679,553 [+]
Recombination map	1-1	RefSeq locus	NC_004354 REGION:2633952..2679553

Sequence

Gene region Get Decorated FASTA

Genomic Maps

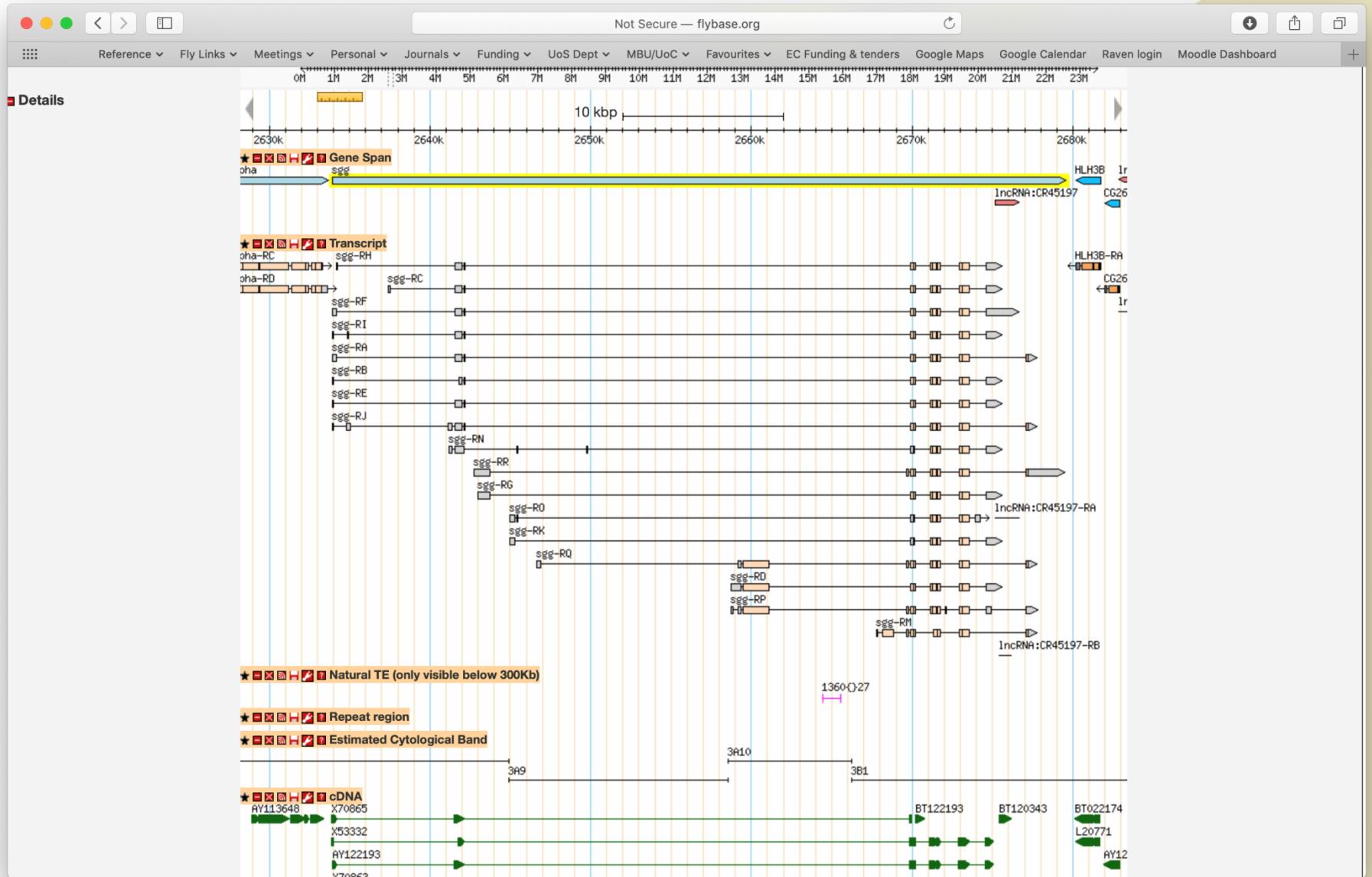
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[Help me choose](#)

Gene Span
brv3
P14KII1alpha
sgg
HLH3B
per
IncRNA:CR45197
CG2652
IncRNA:CR4447

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- General Information
- Genomic Location
- Function
- Summaries
- Gene Model and Products
- Gene Ontology
- Expression Data
- Alleles, Insertions, and Constructs
- Phenotypes
- Orthologs
- Paralogs
- Human Disease Associations
- Functional Complementation
- Interactions
- Pathways
- Genomic Location and Mapping
- Stocks and Reagents
- Other Information





Ensembl

← → ↻ <https://www.ensembl.org/index.html>

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BLAST/BLAT >

Search our genomes for your DNA or protein sequence

Variant Effect Predictor >

Analyse your own variants and predict the functional consequences of known and unknown variants

Ensembl is a genome browser for vertebrate genomes that supports research in comparative genomics, evolution, sequence variation and transcriptional regulation. Ensembl annotate genes, computes multiple alignments, predicts regulatory function and collects disease data. Ensembl tools include BLAST, BLAT, BioMart and the Variant Effect Predictor (VEP) for all supported species.

Ensembl Release 99 (January 2020)

- Update to GENCODE 33 for human
- Update to dbSNP153 for human
- Import of updated VISTA enhancers for human and mouse
- New genomes: 10 mammals (including 2 dog breeds), 11 birds, 15 fish and 4 reptiles
- Updated genome assemblies: zebra finch, fugu, Nile tilapia and Asian bonytongue

[More release news](#) on our blog

Other news from our blog

- 28 Feb 2020: [Cool stuff the Ensembl VEP can do: install using Docker](#)
- 26 Feb 2020: [What's coming in Ensembl 100 / Ensembl Genomes 47](#)
- 25 Feb 2020: [Bug report: GRCh37 BLAT queries between](#)

Search

All species for

e.g. [BRCA2](#) or [rat 5:62797383-63627669](#) or [rs699](#) or [coronary heart disease](#)

All genomes

-- Select a species --

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Favourite genomes



Human
GRCh38.p13

[Still using GRCh37?](#)



Ensembl

e.g. [FBgn0052693](#) or [2L:8430000-8440000](#) or [ENSVDM00048193](#) or [wingless](#)

Genome assembly: BDGP6.28 (GCA_000001215.4)

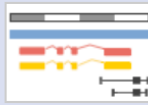
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[Display your data in Ensembl](#)



[View karyotype](#)



[Example region](#)

Other assemblies

Gene annotation

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

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[Update your old Ensembl IDs](#)



[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

This species currently has no variation database. However you can process your own variants using the Variant Effect Predictor:

[Variant Effect Predictor](#)



Regulation

What can I find? Microarray annotations.

[More about the Ensembl microarray annotation strategy](#)



NCBI

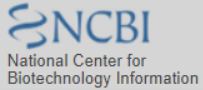
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Data & Software

DNA & RNA

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Genetics & Medicine

Genomes & Maps

Homology

Literature

Proteins

Sequence Analysis

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Training & Tutorials

Variation

Welcome to NCBI

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NCBI News & Blog

Webinar on current access to TOXNET resources

03 Mar 2020

NLM staff will participate in the next American Chemical Society webinar for

GenBank release 236 is available

27 Feb 2020

GenBank release 236.0 (2/20/2020) is now available on the NCBI FTP site. This release has over 7.72 trillion bases and

The entire corpus of the Sequence Read Archive (SRA) now live on two cloud platforms!

24 Feb 2020

The National Library of Medicine (NLM) is



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NCBI National Center for Biotechnology Information

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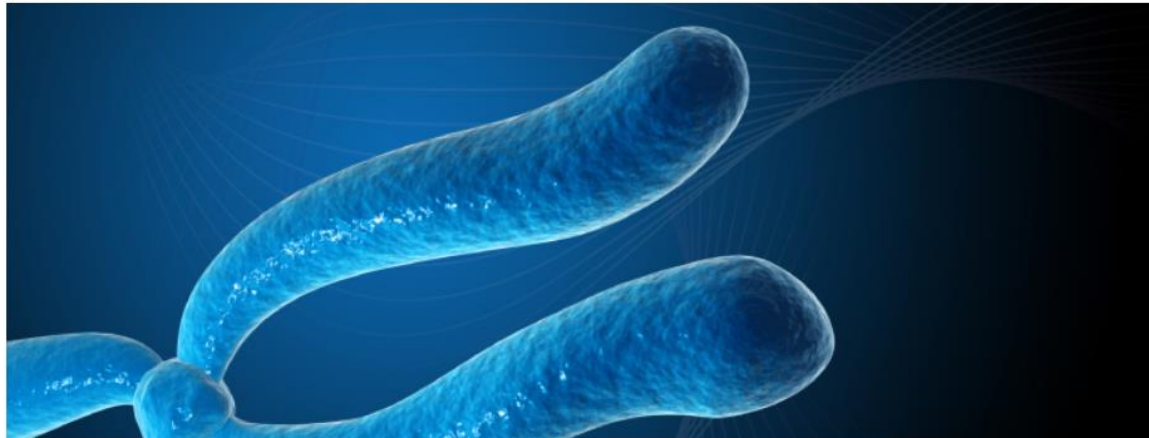
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HomoloGene ▼

Search NCBI

Search

Genomes



NCBI's Genome resources include information on large-scale genomics projects, genome sequences and assemblies, and mapped annotations, such as variations, markers and data from epigenomics studies.

How to

[Submit sequence data to NCBI](#)

[Download a complete genome](#)

[Convert feature coordinates between genomic assemblies](#)

[Find an interactive view of a genomic annotation](#)

[more...](#)

Genome Sequences

Genome

information about organisms' genomes

Assembly

genomic assembly statistics

Nucleotide

genome sequences in the Nucleotide repository

Functional Genomics

GEO DataSets

functional genomics study data

GEO2R

identifies differentially expressed genes in GEO datasets

Variation Resources

dbSNP

catalog of short genetic variations

dbVar

genome structural variation studies

Variation Viewer

displays variations in a genomic context

Additional Tools

Genome Data Viewer

displays data tracks in an interactive genome browser

Genome Decoration Page

generates genome annotation graphics

Genome Workbench

displays and analyzes sequence data




NCBI - HomoloGene

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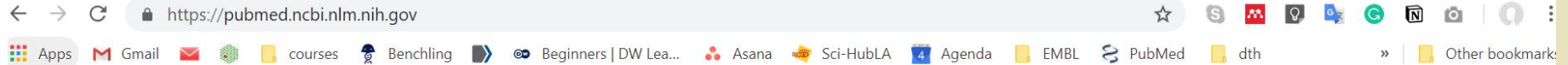
HomoloGene

An automated system for constructing putative homology groups from the complete gene sets of a wide range of eukaryotic species.

Getting Started	In Depth	Other Databases
Query Tips	Build Procedure	Gene
FAQ	Release Statistics	Genome
	Download from FTP site	Taxonomy



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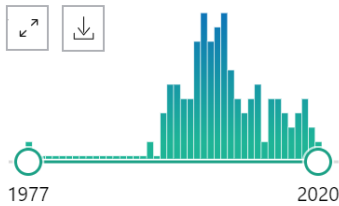
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- Associated data

- 1 [The **Drosophila** Accessory Gland as a Model for **Prostate Cancer** and Other Pathologies.](#)

Wilson C, et al. *Curr Top Dev Biol* 2017 - *Review*. PMID 28057306 [Free PMC article](#).

It is a common site of **cancer**, and unlike other glands, it typically enlarges in aging men. In flies, the male accessory glands make many major seminal fluid components. ...Remarkably, the human **prostate** epithelium also secretes exosomes, which fuse to sperm in vitro to modulate their activity. Exosomes from **prostate** and other **cancer** cells are increasingly proposed to play fundamental roles in modulating the tumor microenvironment and in metastasis. ...

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- 2 [The polycomb group protein EZH2 is involved in progression of **prostate cancer**.](#)

Varambally S, et al. *Nature* 2002 - *Clinical Trial*. PMID 12374981 [Free article](#).

Prostate cancer is a leading cause of **cancer**-related death in males and is second only to lung **cancer**. Although effective surgical and radiation treatments exist for clinically localized **prostate cancer**, metastatic **prostate cancer** remains essentially incurable. ...Thus, dysregulated expression of EZH2 may be involved in the progression of **prostate cancer**, as well as being a marker that distinguishes indolent **prostate cancer** from those at risk of lethal progression....



Literature Alerts

Keeping Current with the Literature

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[Keeping Current: Other Sources](#)

Creating Alerts: PubMed

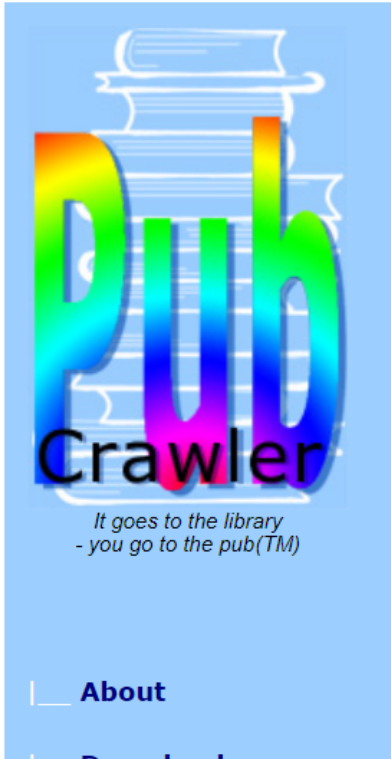
Setting up alerts with PubMed is an easy process of just a few steps:

1. Navigate to the "Sign in to MyNCBI" link at the top right of the PubMed homepage to [sign in](#), or to [register for a new account](#).
2. Perform a search of interest for which you would like to set up an alert.
3. Click the "Create Alert" link located below the search box.
4. Save the search and set the frequency and day for email results.

Here is a useful video explaining the process.



Literature Alerts



PubCrawler - an Update Alerting Service for PubMed and GenBank

If you have signed up more than a year ago and haven't logged in since then, we need you to explicitly confirm your PubCrawler registration due to new European regulations (**GDPR**).

To do so, please click on the link that was sent to you by e-mail.

Without confirmation your PubCrawler account will be suspended and eventually deleted.

Please contact pubcrawlerhelp@gmail.com for more information.

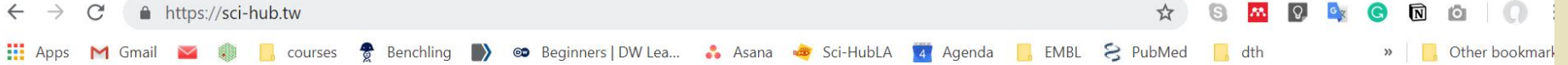
PubCrawler is a free "alerting" service that scans **daily updates** to the **NCBI** Medline (PubMed) and GenBank databases. PubCrawler helps keeping scientists informed of the **current contents** of Medline and GenBank, by listing new database entries that match their research interests.

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It's free! Choose a username (**case-sensitive!**) and click the 'join' button.



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CHROMOSOMES AND GENE EXPRESSION, DEVELOPMENTAL BIOLOGY



Multi-enhancer transcriptional hubs confer phenotypic robustness



Albert Tsai , Mariana RP Alves, Justin Crocker 

European Molecular Biology Laboratory, Germany; Collaboration for joint PhD degree between EMBL and Heidelberg University, Faculty of Biosciences, Germany

RESEARCH ADVANCE Jul 11, 2019

July 2019


New Results

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Multi-enhancer transcriptional hubs confer phenotypic robustness

Posted March 13, 2019

 Albert Tsai,  Mariana RP Alves,  Justin Crocker

doi: <https://doi.org/10.1101/575175>

Now published in *eLife* doi: [10.7554/elife.45325](https://doi.org/10.7554/elife.45325)

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Articles suggested for you related to The function and regulation of Ultrabithorax in the legs of *Drosophila melanogaster*

Nov 22, 2019

Regulation of Ubx expression by epigenetic enhancer silencing in response to Ubx levels and genetic variation

Crickmore M, Ranade V, Mann R

PLoS Genetics (2009)

[+ Add to library](#) [View PDF](#)

Compartmental modulation of abdominal Hox expression by engrailed and sloppy-paired patterns the fly ectoderm

Gebelein B, Mann R

Developmental Biology (2007)



Tips for Literature Reviews

<https://ndownloader.figshare.com/files/13364696>

Before you use Drosophila you should become an expert in the field you want to explore, understand its key gaps and how fly could be used to address them

Why not write a review and publish it in a Nigerian or even international journal?



How do you collate the necessary information?

- data base searches
- develop a search strategy
 - are there good reviews covering what I will write about?
 - what search terms would find them for me?
 - do I search in title, abstract, key words, all?

Example: first literature search for an essay on „Finding treatments for Alzheimer’s disease“

SEARCH TERM 1		SEARCH TERM 2		SEARCH TERM 3	# HITS
"Alzheimer*" (All Fields)	AND	"review" (All Fields)	AND	-	~30K
"Alzheimer*" (Title)		"review" (All Fields)		-	~12K
"Alzheimer*" (Title)		"review" (All Fields)		"treatment" (Title)	~900
"Alzheimer*" (Title)		"review" (All Fields)		"drug treatment" (Title)	~45

* wild card to cover for different spellings: „Alzheimer’s“ or „Alzheimers“

How do I deal with these 45 papers?

51 with wild card (plural „s“)



Does the title sound promising?

Example from „EndNote“ - similar for other reference data base programs

EndNote X4 - [Online Mode]

File Edit References Groups Tools Window Help

Default URL Quick Search

My Library	Author	Year	R...	Title	Label
Onlin... (45)	Storck	2017	1	Endothelial LRP1 - A Potential Target for the Treatment of Alzheimer's Disease : Theme: Drug Discovery, Development and Delivery in Alzh...	
Online ... (0)	Owen	2016	2	Memantine and donepezil: a fixed drug combination for the treatment of moderate to severe Alzheimer's dementia	
	Hernandez-A...	2016	3	[Risk/benefit assessment in the treatment of Alzheimer's disease. Drug interactions]	
	Strohle	2015	4	Drug and Exercise Treatment of Alzheimer Disease and Mild Cognitive Impairment: A Systematic Review and Meta-Analysis of Effects on ...	
Ac... (0)	Fonseca-San	2015	5	Nanotechnology-based drug delivery systems for the treatment of Alzheimer's disease	
LIS... (0)	Guzior	2015	6	Recent development of multifunctional agents as potential drug candidates for the treatment of Alzheimer's disease	
W... (0)	Allgaier	2014	7	An update on drug treatment options of Alzheimer's disease	
	Ansari	2013	8	Natural products as promising drug candidates for the treatment of Alzheimer's disease: molecular mechanism aspect	
	Cummings	2013	9	High-dose donepezil (23 mg/day) for the treatment of moderate and severe Alzheimer's disease: drug profile and clinical guidelines	
	Russo	2013	10	From traditional European medicine to discovery of new drug candidates for the treatment of dementia and Alzheimer's disease: acetylchol...	
	Arendash	2012	11	Transcranial electromagnetic treatment against Alzheimer's disease: why it has the potential to trump Alzheimer's disease drug development	
	Weinreb	2012	12	Ladostigil: a novel multimodal neuroprotective drug with cholinesterase and brain-selective monoamine oxidase inhibitory activities for Alzh...	
	Herrmann	2011	13	Current and emerging drug treatment options for Alzheimer's disease: a systematic review	
	Di Stefano	2011	14	Drug delivery strategies for Alzheimer's disease treatment	
	da Rocha	2011	15	The role of natural products in the discovery of new drug candidates for the treatment of neurodegenerative disorders II: Alzheimer's disease	
	Emre	2010	16	Drug profile: transdermal rivastigmine patch in the treatment of Alzheimer disease	
	Ghosh	2009	17	Harnessing nature's insight: design of aspartyl protease inhibitors from treatment of drug-resistant HIV to Alzheimer's disease	
	Pritchard	2008	18	Risk in CNS drug discovery: focus on treatment of Alzheimer's disease	
	Bandyopadhy	2007	19	Role of the APP non-amyloidogenic signaling pathway and targeting alpha-secretase as an alternative drug target for treatment of Alzheimer...	
	Hansen	2007	20	Functional outcomes of drug treatment in Alzheimer's disease: A systematic review and meta-analysis	
	Geerts	2007	21	Drug evaluation: (R)-flurbiprofen--an enantiomer of flurbiprofen for the treatment of Alzheimer's disease	
	Blennow	2005	22	CSF biomarkers for Alzheimer's disease: use in early diagnosis and evaluation of drug treatment	
	Lipton	2004	23	Paradigm shift in NMDA receptor antagonist drug development: molecular mechanism of uncompetitive inhibition by memantine in the treat...	
	Jiang	2003	24	Progress in clinical, pharmacological, chemical and structural biological studies of huperzine A: a drug of traditional chinese medicine origi...	
	Greenblatt	2003	25	Acetylcholinesterase: a multifaceted target for structure-based drug design of anticholinesterase agents for the treatment of Alzheimer's dis...	
	Lau	2002	26	Cdk5 as a drug target for the treatment of Alzheimer's disease	
	Lilienfeld	2002	27	Galantamine--a novel cholinergic drug with a unique dual mode of action for the treatment of patients with Alzheimer's disease	
	Allain	2001	28	[Perspectives for drug treatment in Alzheimer's disease]	
	Sugimoto	2001	29	Donepezil hydrochloride: a treatment drug for Alzheimer's disease	
	Gonzalez Go...	2001	30	[Drug treatment of Alzheimer's disease]	
	Allison	2001	31	Celastrol, a potent antioxidant and anti-inflammatory drug, as a possible treatment for Alzheimer's disease	
	Windisch	2000	32	Approach towards an integrative drug treatment of Alzheimer's disease	

Preview Online Search - PubMed MEDLINE at PubMed (NLM) Quick Edit

Search Options Search Remote Library Match Case Match Words

All Fields Contains review

And Title Contains Alzheimer*

And Title Contains drug treatment

Showing 45 of 45 references in Group. (All References: 45)

Ready

Hide Tab Pane



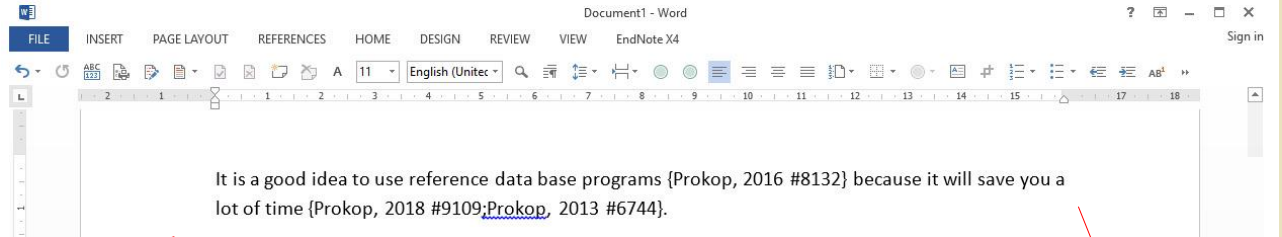
Tips

- **read selectively**
 - if the **title** sounds promising: read the abstract
 - if the **abstract** sounds promising, read the review
 - identify **key areas** of interest and **potential primary literature** you may want to read into (*immediately add it to your data base!*)
- use the „keyword“ rubric in the data base to **assign keywords** to each paper (*make sure you will find it later on*)
- develop a „**think-tank**“ document
 - write short **bullet point** statements of everything that may be helpful and copy the **reference behind** it (*this info will not be forgotten whilst having **peace of mind** when focussing on further information*)
 - browse through that document from time to time and **rearrange bullet points** to **gradually develop a structure**

One more reason why you should use a reference data base program



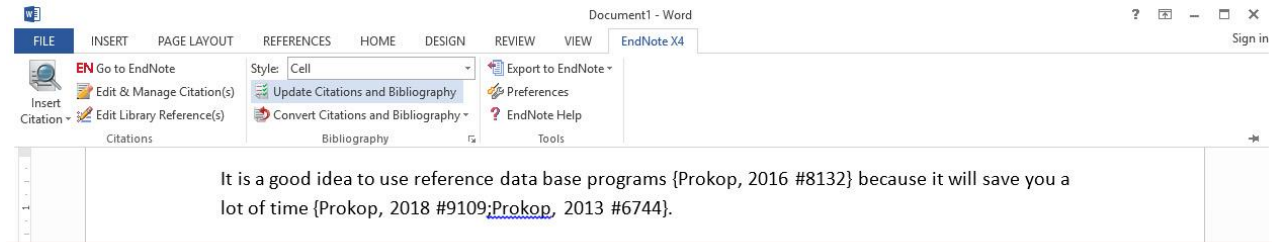
- references copied in from EndNote*



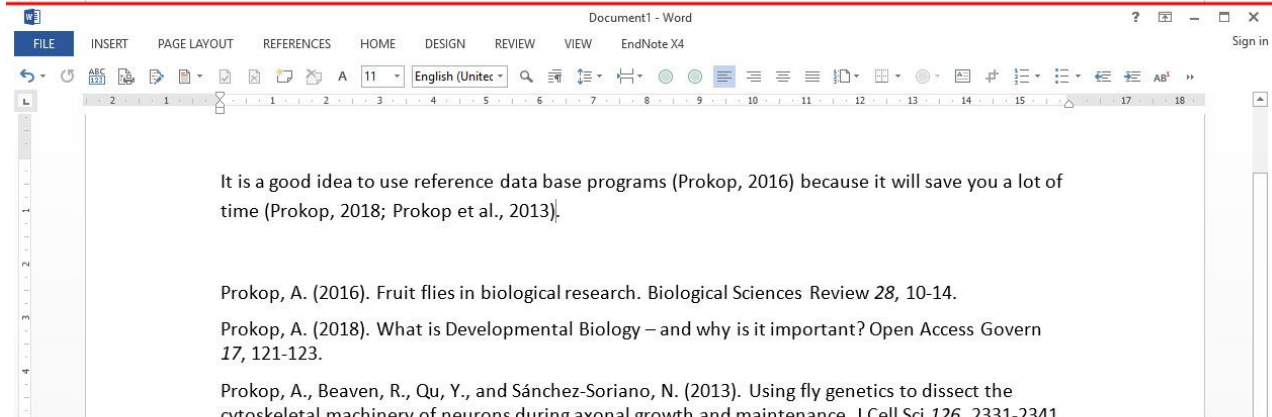
It is a good idea to use reference data base programs {Prokop, 2016 #8132} because it will save you a lot of time {Prokop, 2018 #9109;Prokop, 2013 #6744}.

* the principle is similar for other reference data bases and text processing programs including Latex

- references copied in from EndNote
- set „EndNote / Style“ to „Cell“
- „Update“

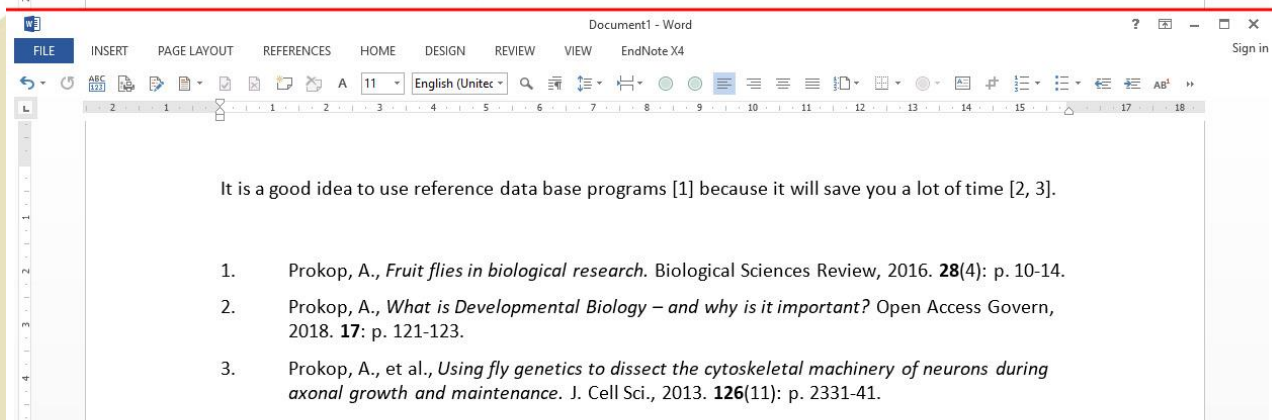
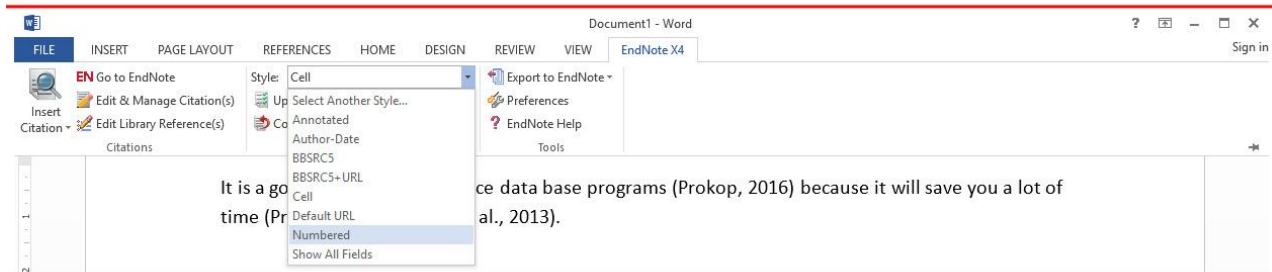


- Text formatted in „Cell“ style



Tip for MS Word users: don't format whilst you write and always keep a non-formatted version. „Damaging“ a formatted reference and its underlying macro when editing your text may cause you problems.

- Style changed to „Numbered“



- Text formatted in „Numbered“ style



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promoting *Drosophila* in
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**Any further arguments?
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MISSION AND RATIONALE

Droso4Nigeria is a collaborative science communication initiative between a team of Nigerian researchers, [Manchester Fly Facility](#), [DrosAfrica](#), [African Society of Drosophilists](#) and [SciComNigeria](#).

Our Mission is to help in societal and economic growth through developing the nation's science. Our goals are to promote the use of the fruit fly *Drosophila melanogaster* in order to (1) advance biomedical research in our country and (2) improve the teaching of Nigerian curriculum-relevant biology. Some of these



Resources

There is no need to re-invent the wheel, since many resources are freely available to you. Please, find below a moderated link list guiding you to the right sites where to find all these materials including (1) simple explanations as to why to use *Drosophila*, (2) a very accessible training package to learn fly genetics, (3) resources for teaching with fruit flies, (4) ready-to-use school lessons with adjunct materials, (5) information about related organisations, (6) articles about African science and science support, etc. **If you have any suggestions for further links, please let us know!**

Quick access: [Fly Resources](#) | [Events](#) | [Organisations](#) | [Literature](#)



Resources

1. A *Drosophila* genetics training package
2. Other *Drosophila* resources
3. Training opportunities & events
4. Literature relating to African science
5. Related organisations



<http://www.drosafrika.org>

<https://trendinafrica.org>





***DROSOPHILA* RESEARCH AND TRAINING CENTRE**

The aims and objectives of the DRTC are:

- To maintain and keep different *Drosophila melanogaster* (Fruit Fly) strains and stocks in facilities known as stock centres, to ensure availability to scientists in different institutions in Nigeria and Sub Saharan Africa;
- To initiate, and drive the initiative for the use of *Drosophila melanogaster* in the teaching of the basic concepts of Biology to primary and secondary school students;
- To assist research centres and institutions in setting up *Drosophila* laboratories;
- To offer advisory, consultancy and other services to existing fly laboratories in Nigeria and Africa;



DROSOPHILA RESEARCH AND TRAINING CENTRE

- To offer services to individuals and institutions who may require the use *Drosophila* as a model to assess safety assessment of their products in Nigeria and Africa;
- To make available conducive laboratory spaces for postgraduate students and researchers to carry out their projects;
- To organise workshops, seminars and conferences from time to time to train scientists on the use of *Drosophila melanogaster* in experimental medicine;
- To sponsor selected postgraduate students to attend/make presentations at international *Drosophila* meetings annually.



DROSOPHILA RESEARCH AND TRAINING CENTRE

Core Values (CADITH)

Capacity Building

Accessibility

Discipline

Integrity

Transparency

Honesty



Funding Opportunities

- TWAS: <https://twas.org>
- ICGEB: <http://icgeb.org>
- ISN: <https://www.neurochemistry.org>
- Wellcome: <https://wellcome.ac.uk/funding/schemes/international-training-fellowships>
- CoB: <https://www.biologists.com>
- Crick: <https://www.crick.ac.uk/partnerships/crick-african-network>
- Seeding Labs: <https://seedinglabs.org/get-involved/apply-for-instrumental-access/>
- TReND: <https://trendinafrica.org>
- DrosAfrica: <http://drosafrika.org>