

TACACAATCAGT TAGTTCCACCGACAGTCCGAGAAACCATCGACGGC
 GTCGGCAATCCGTAAGATAGCCAAATATTATTGTTTCAGATACACTACT
 AGCCGCAACAGTGCAGATCCGTTGAGTGTTCACAAATCAGTGAATTC
 TAAACGTTCCATCGAATGATGATGATGATGATGATGATGATGATGAT
 ATTCGCGGCAAGCGGACTTTTTCGGAATGAATGAAATAAAAAAA
 AATAATAAAAACAACACAGTGCACACACAGCCGGGGCATCTTCATAGAT
 AACTTCTGCCTGCACCTGGTATATGACTTATACATAGACATATATA

FlyBase

Finding the right tool for the job: new ways to find particular types of transgenic construct in FlyBase

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Introduction

The long history of fly research plus the sophisticated range of applicable genetic engineering techniques mean that a large number of increasingly complex transgenic fly lines have been generated and described in the literature. While this rich genetic tool-kit helps to make *Drosophila melanogaster* an ideal model organism to answer a wide range of biological questions, it also creates a potential problem - how to find the most appropriate fly line for a particular experiment from the large set that is available. To help overcome this issue, FlyBase will start to capture and display information about **Experimental Tools**, which will allow you to easily identify transgenic constructs and their insertions with particular characteristics. We are defining an experimental tool as "any sequence whose own biological function isn't really being studied in an experiment, but is instead being **exploited** to study the biological function of some other gene product or a biological process". This broad definition will allow you to browse and search for tools used for a wide range of different purposes, such as enabling a gene product to be detected (e.g. FLAG tag, GFP, other reporters), targeting a gene product somewhere specific within a cell (e.g. nuclear localisation signal, signal sequence), driving expression (e.g. GAL4, lexA), enabling clonal/conditional expression (e.g. FLP, FRT), being used as a sensor for changes in Ca²⁺, pH, voltage etc., etc.

Experimental Tool Report

Uses term(s) describe what the tool is used for.

- Click on the term to go the **Uses Term Report**

Related experimental tools section will make it easy to jump to reports for related tools at a finer level of detail than the "Uses" section.

- Click on the **Tool** name to go to its **Tool Report**
- Click on the **Uses** to go to the corresponding **Term Report**

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Experimental tool EGFP			
General Information			
Symbol	EGFP	FlyBase ID	FBto000000
Name	Enhanced green fluorescent protein		
Description			
EGFP is a green fluorescent protein with an excitation peak of 488nm and an emission peak of 507-509nm in vitro. It is an artificial derivative of the naturally occurring fluorescent protein encoded by the <i>Aequorea victoria</i> GFP gene (UniProtKB:P42212), containing the mutations F64L and S65T (PMID:9759496)			
Notes on Tool			
Uses	green fluorescent protein		
External Cross-references and Linkouts			
Related experimental tools			
Tool	Uses		
C-Venus	split fluorescent protein		
CFP	cyan fluorescent protein		
GFP	green fluorescent protein		
N-Venus	split fluorescent protein		
PA-GFP	photoactivatable fluorescent protein		
pHluorinE	green fluorescent protein		
pHensor	green fluorescent protein		
S65T-GFP	green fluorescent protein		
Venus	yellow fluorescent protein		
Compatible tools			
Tool	Uses		
Other related tools			
Tool	Uses		
[+/-] Transgenic Constructs			
[+/-] Insertion Alleles			
[+/-] Recent Updates			
[+/-] Synonyms and Secondary IDs			
[+/-] References			

Columns list the components that make up the transgenic construct

- Link to relevant **Gene** (e.g. *Rh4*) or **Tool** (e.g. *UAS*) report
- Where the main gene product is a tool, columns list **Tool** (*EGFP*) and its **Uses** (*green fluorescent protein*)
- Additional **Tool(s)** (e.g. *FRT*) in the construct that do not form part of the encoded product

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[+/-] Transgenic Constructs									
Encoding the tool									
Transgenic construct	Component allele	Regulatory region(s)	Encoded product/tool	Encoded product class/Encoded tool use(s)	Tagged with	Tag use(s)	Also carries	Stocks	
PI(Ub-p63E(FRT STOP)Stinger)	Avic1GFP ¹⁰⁰ FRT STOP ¹⁰⁰ UAS ¹⁰⁰ Tris-tra	Ubi-p63E	EGFP	green fluorescent protein	Tris-tra	nuclear localization tag	FRT	7	
PI(Ub-EGFP-wt)	Avic1GFP ¹⁰⁰ FRT STOP ¹⁰⁰ UAS ¹⁰⁰ Tris-tra	Ubi-p63E	EGFP	green fluorescent protein	Tris-tra	nuclear localization tag	FRT	7	
PI(GAP-Myo-GFP)	Avic1GFP ¹⁰⁰ FRT STOP ¹⁰⁰ UAS ¹⁰⁰ GAP43	my	EGFP	green fluorescent protein	T.Pest-Mmus{Odc}	gene product degradation tag			
PI(Rh4-EGFP)	Avic1GFP ¹⁰⁰ FRT STOP ¹⁰⁰ UAS ¹⁰⁰ Rh4	Rh4	EGFP	green fluorescent protein	Tris-tra	nuclear localization tag		2	
PI(rho-GFP)	Avic1GFP ¹⁰⁰ FRT STOP ¹⁰⁰ UAS ¹⁰⁰ rho	rho	EGFP	green fluorescent protein	Tris-tra	nuclear localization tag		8	
PI(UAS-EGFP)	Avic1GFP ¹⁰⁰ FRT STOP ¹⁰⁰ UAS ¹⁰⁰ EGFP	UAS	EGFP	green fluorescent protein					

Where the function of the encoded product is being studied, columns list the encoded **Gene** (*rhea*) and its **Product Class** (*wild-type gene product*)

List of **Tools** (*EGFP*) that are fused to the main gene product, plus their **Uses** (*green fluorescent protein*)

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[+/-] Insertion Alleles									
Insertion									
Insertion	Associated allele(s)	Inserted element type	Encoded product/tool	Encoded product class/Encoded tool use(s)	Tagged with	Tag use(s)	Also carries	Stocks	
P(PTT-CB)CB5698		protein trap			EGFP	green fluorescent protein			
PI(Rh4-P ₂)P ₂	UAS ¹⁰⁰ Rh4	protein trap			EGFP	green fluorescent protein	FRT	5	
PI(Rh4-P ₂)P ₂ UAS ¹⁰⁰ Rh4	UAS ¹⁰⁰ Rh4	protein trap			EGFP	green fluorescent protein	FRT	1	
P(Bac{hpa-GFP})hpa	UAS ¹⁰⁰ hpa	protein trap			EGFP	green fluorescent protein			
P(Bac{PBas}Vha100-2 ^{hpa})	Vha100-2 ^{hpa}	gene trap			THA	epitope tag			
TI(T)Wg ¹⁰⁰	UAS ¹⁰⁰ Wg	gene trap			EGFP	green fluorescent protein			

'Transgenic Product Class' Term Report

The **Transgenic Product Class** is intended to give an overview of the nature of the gene product encoded by a transgenic construct, similar to **Allele Class** used for classical and insertional alleles.

- It will be used for constructs where the function of the encoded gene product is being studied or where the construct encodes a sequence that affects an endogenous gene product (e.g. RNAi)
- It will allow constructs to be grouped into broad categories for browsing and searching, for example in the **Transgenic Constructs** tables on the **Tool Report** and in similar tables on the **Gene Report** (see below).

**** MOCKUP **** part of rho gene report

[+/-] Transgenic constructs									
rho constructs									
Transgenic construct	Component allele	Regulatory region(s)	Encoded product	Encoded product class	Tagged with	Tag use(s)	Also carries	Stocks	
PI(UAS-rho-EGFP)	UAS ¹⁰⁰ rho	UAS	rho	wild-type gene product	EGFP	green fluorescent protein			
PI(UAS-GFP-rho-KDEL)	UAS ¹⁰⁰ rho	UAS	rho	wild-type gene product	GFP	green fluorescent protein			
PI(UAS-rho-mRFP)	UAS ¹⁰⁰ rho	UAS	rho	wild-type gene product	TER-KDEL	endoplasmic reticulum localization tag			
PI(UAS-rho-HA)	UAS ¹⁰⁰ rho	UAS	rho	wild-type gene product	mRFP1	red fluorescent protein			
PI(UAS-rho-TAP)	UAS ¹⁰⁰ rho	UAS	rho	wild-type gene product	THA	epitope tag			
PI(UAS-ve-c)	UAS ¹⁰⁰ ve-c	UAS	rho	wild-type gene product	T.TAP	purification tag			
PI(GD243)	UAS ¹⁰⁰ GD243	UAS	rho	RNAi				2	
PI(TRIP-JF0106)	UAS ¹⁰⁰ JF0106	UAS	rho	RNAi				1	
PI(UAS-rho-AN)	UAS ¹⁰⁰ AN	UAS	rho	RNAi				1	
PI(CMS-rho-Exon)	UAS ¹⁰⁰ Exon	UAS	rho	wild-type gene product					
PI(rho-ai)	UAS ¹⁰⁰ ai	UAS	rho	antisense					

Current ideas for terms are a work-in-progress:

- Are the terms shown useful?
- Are there any terms missing that you'd like to see?

feedback wanted!

- transgenic product class
- wild-type gene product
- knockdown of gene product
- RNAi
- antisense
- dominant negative
- constitutively active
- phosphomimetic mutation
- non-phosphorylatable mutation
- catalytic site mutation

'Experimental Tool Uses' Term Report

FlyBase Term Report

Home Tools Downloads Links Community Species About Help Archives Jump to Gene Go

General Information

Term: green fluorescent protein ID (Ontology): FBcv:0005007 (FlyBase CV)

Definition: Protein having well characterized fluorescence excitation and emission spectra, with an emission peak within the wavelength range of 499-519nm.

Comment:

Annotations

Records which annotation includes this term

Records which annotation includes this term OR any of its CHILDREN TERMS

Tools Alleles Constructs Insertions

Exact full annotation statements including this term, and relevant records

Spanning Tree (Parents/Children) Only view relationship: is_a Search All Vocabularies for a New Term Go

Spanning Tree View Settings Show hierarchy levels: 4 for parents, 3 for children Redraw

Relationships

is_a fluorescent protein

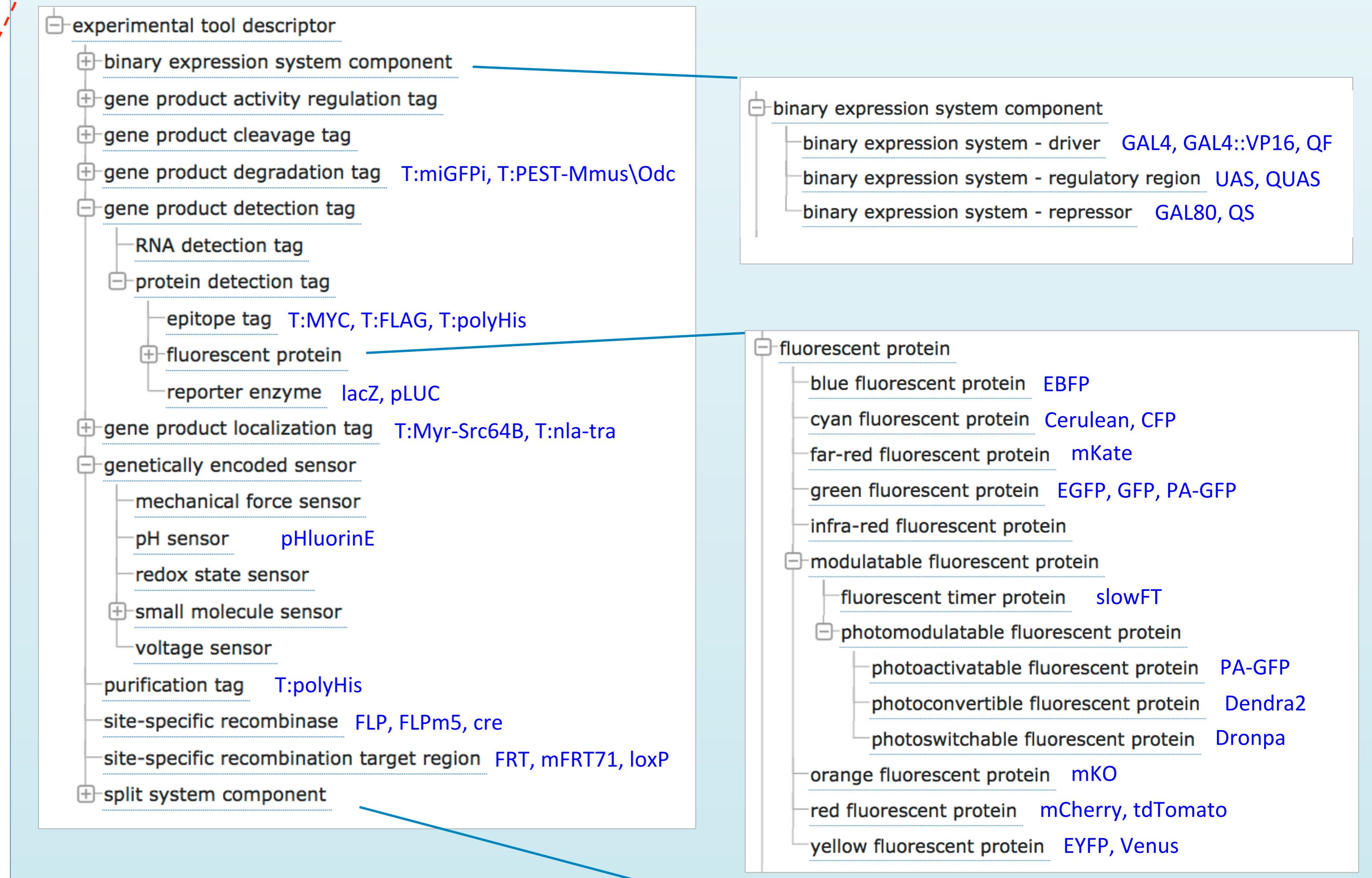
Part of

Synonyms & Secondary IDs

External Cross-references & Linkouts

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Main branches of Uses tree and examples of Tools



New terms can be added to describe other kinds of tool as new techniques and tools are developed.

Current ideas to expand the list of terms include:

- 'genome engineering' tools e.g. Cas9
- neuron activation/inhibition tools e.g. channel rhodopsins
- Anything else?

feedback wanted!

Searching

We have recently introduced a 'GAL4 etc.' search, but it is currently limited to searching for a small number of common drivers (GAL4, QF, lexA) and reporters (lacZ, GFP).

Once we have introduced the **Tool Reports** and **Tool Uses** terms we will be able to expand this search as illustrated below.

