DsRed

a.k.a. drFP583, discRFP, RFP, DsRed1

DsRed is a basic (constitutively fluorescent) red fluorescent protein published in 1999, derived from Discosoma sp..

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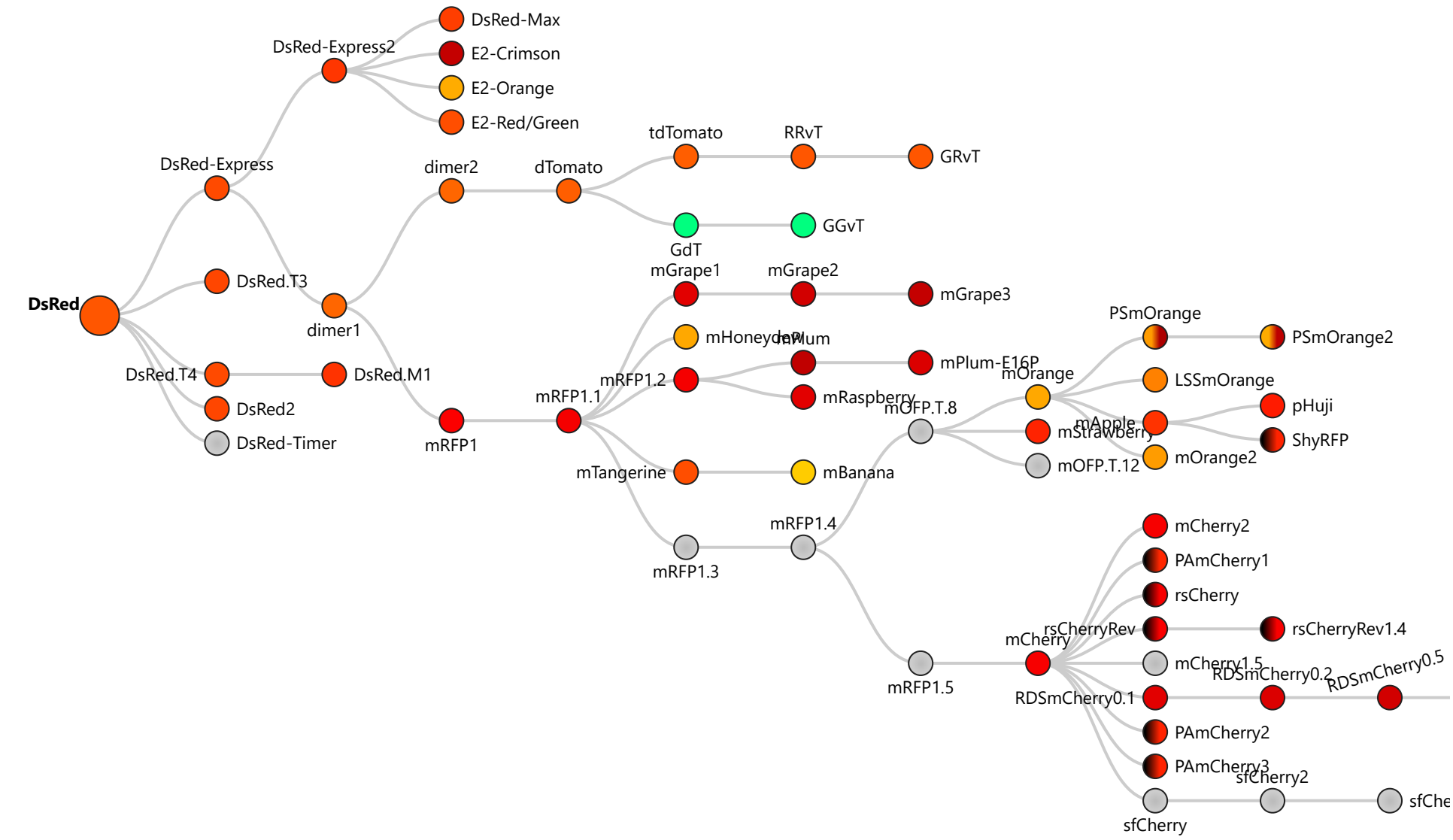
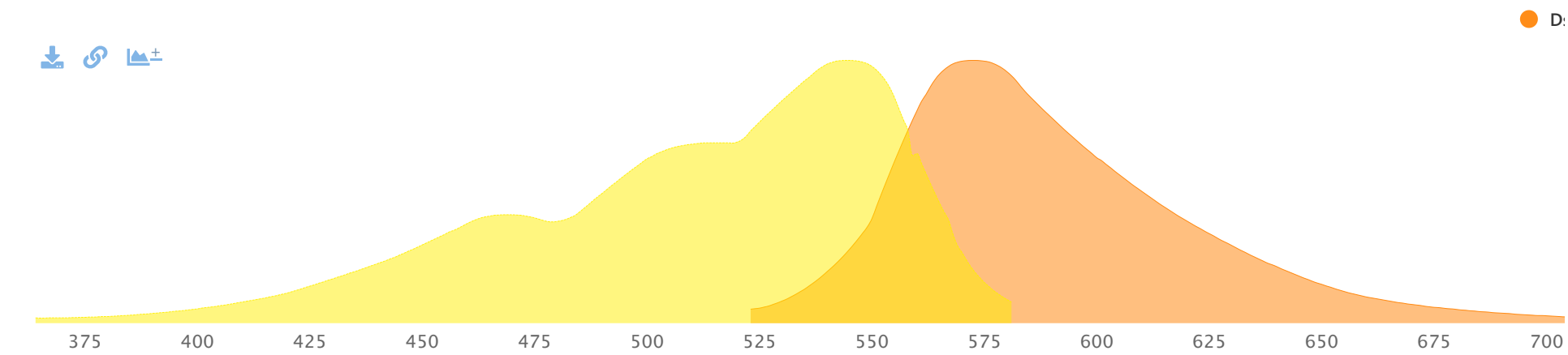




Oligomerization	Organism	Molecular Weight	Cofactor
Tetramer	Discosoma sp.	25.9 kDa	-

Attributes

FPbase ID: EGE3L

Ex λ (Excitation Maximum)	Em λ (Emission Maximum)	EC (Extinction Coefficient) (M^{-1} cm^{-1})	QY (Quantum Yield)	Brightness	pKa	Maturation (min)	Lifetime (ns)
558	583	72,500	0.68	49.3		1600.0	

Edit States/Attributes

Photostability

No photostability measurements available ... add one!

DsRed Sequence ✔

```
  1 MRSSKNVIKE FMRFKVRMEG TVNGHEFEIE GEGEGRPYEG HNTVKLKVTK GGPLPFAWDI LSPQFQYGSK VYVKHPADIP
 91 DYKKLSFPEG FKWERVMNFE DGGVVTVTQD SSLQDGCFIY KVKFIGVNFP SDGPVMQKKT MGWEASTERL YPRDGVLKGE
181 IHKALKLKDG GHYLVEFKSI YMAKKPVQLP GYYYVDSKLD ITSHNEDYTI VEQYERTEGR HHLFL
```

GenBank: AAF03369 UniProtKB: Q9U6Y8 IPG: 836144

Structure

compare

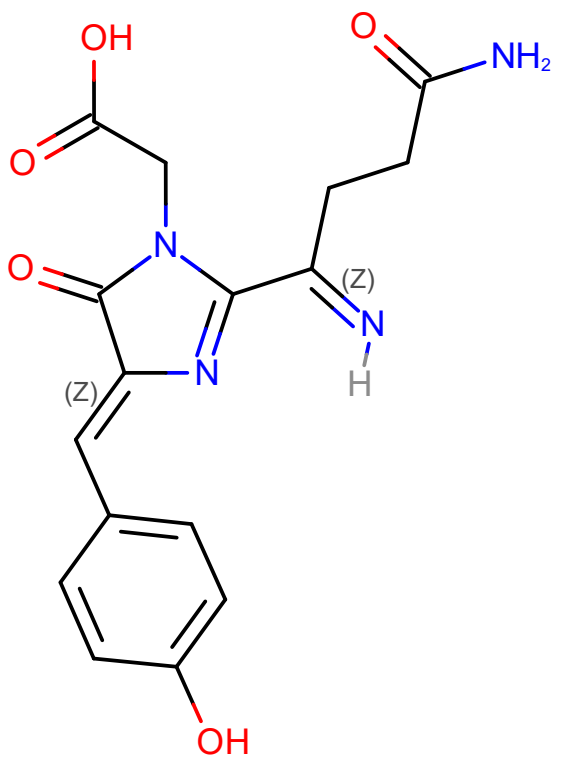
PDB ID 1ZGO (1.4 Å)

High Resolution Crystal Structure of the Discosoma Red Fluorescent Protein (DsRed)

Deposited: Apr 2005, Tubbs, J.L. et al.

Chromophore: CRQ

C16 H16 N4 O5



Excerpts

> DsRed surprisingly takes days at room temperature to reach full red fluorescence. At room temperature, a sample of purified protein initially shows a major component of green fluorescence (ex/em 475/499 nm), which peaks in intensity around 7 h and decreases to nearly zero over 2 days. Meanwhile the red fluorescence reaches half its maximal fluorescence after approximately 27 h and requires >48 h to reach >90% of maximal fluorescence.
>
> Baird et al. (2000)

> Fully matured **DsRed** in our hands has an extinction coefficient of 75,000 and a fluorescence quantum yield of 0.7, much higher than the values of 22,500 and 0.23 previously reported. We have no explanation for the difference except that the lower values might have been measured on incompletely matured protein.
>
> Baird et al. (2000)

> Screening of random mutants produced mutants that appeared green or yellow and were caused by substitutions K83E, K83R, S197T, and Y120H. K83R had the lowest percentage conversion to red and proved very useful as a stable version of the immature green-fluorescing form of **DsRed**
>
> Baird et al. (2000)

> The red chromophore of **DsRed** results from the autonomous multi-step post-translational modification of residues Gln66, Tyr67 and Gly68 into an imidazolidinone heterocycle with p-hydroxybenzylidene and acylimine substituents.
>
> Gross et al. (2000)

> With purified **DsRed1**, we measured an extinction coefficient of 52,000 and a quantum yield of ~0.7. Baird et al. (2000) reported a similar quantum yield but a higher extinction coefficient of 75,000; the reason for this discrepancy is unclear.
>
> Bevis & Glick (2002)

Add an excerpt

Primary Reference

Erratum: Fluorescent proteins from nonbioluminescent Anthozoa species

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External Resources

- Search Addgene for DsRed
- SnapGene link: DsRed1

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