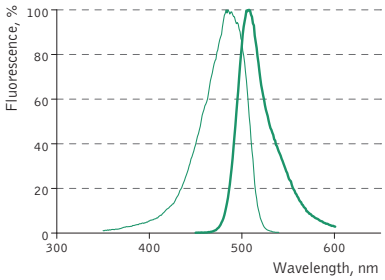
BrUSLEE

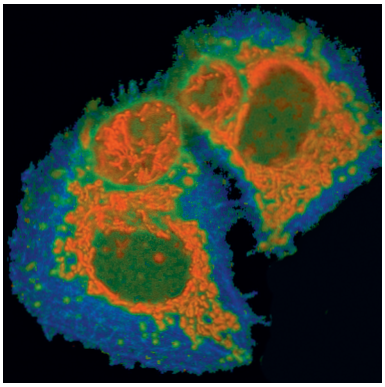
GFP with subnanosecond fluorescence lifetime

- Bright green fluorescence
- Fast maturation and enhanced photostability
- Short fluorescence lifetime (800 ps, *in vitro*)
- Recommended for fluorescence lifetime imaging microscopy (FLIM)

BrUSLEE (**Br**ight **U**ltimately **S**hort **L**ifetime **E**nhanced **E**mitter) possesses short fluorescence lifetime (800 ps) and high brightness (78 % of EGFP) [Mamontova et al. 2018].
Compared to other fluorescent proteins with the shortest fluorescence lifetimes reported to date mGarnet2 (760 ps) and TagRFP675 (900 ps), BrUSLEE has exceptional fluorescence brightness (QY = 0.3, EC = 86 000 $M^{-1}cm^{-1}$).
Because of this unique combination of brightness, photostability and subnanosecond fluorescence lifetime, BrUSLEE is mainly intended for fluorescence lifetime imaging microscopy. For multiparameter FLIM in green channel BrUSLEE can be used with fluorescent proteins with similar fluorescence spectra and different fluorescence lifetimes:
BrUSLEE (800 ps),
SLIM (1.3 ns),
TagGFP2 (3.2 ns).



BrUSLEE normalized excitation (thin line) and emission (thick line) spectra.
Complete BrUSLEE spectra in Excel format can be downloaded from the Evrogen Web site at http://www.evrogen.com



Color-coded fluorescence lifetime imaging microscopy (FLIM) image of live HeLa cells co-expressing BrUSLEE (mitochondria), SLIM (nuclei) and TagGFP2 (cytoplasm).
Color hue indicates mean lifetime at each pixel:
red-orange — 750–900 ps,
green — 1 100–1 400 ps,
cyan-blue — 2 700–3 100 ps.
Single-photon fluorescence excitation at 488 nm was used to acquire these images.

Main properties of BrUSLEE

Characteristic	
Molecular weight, kDa	27
Polypeptide length, aa	239
Fluorescence color	green
Excitation maximum, nm	487
Emission maximum, nm	509
Quantum yield	0.3
Extinction coefficient, $M^{-1}cm^{-1}$	86 000
Brightness*	26
Brightness, % of EGFP	78
Fluorescence lifetime, ps	800
Fluorescence intensity decay	nearly single-exponential
Aggregation	no
Maturation rate at 37 °C	fast
Photostability	high
Cell toxicity	not observed
Main advantages	bright green fluorescent protein with subnanosecond fluorescence lifetime

* Brightness is a product of extinction coefficient and quantum yield, divided by 1 000.

Performance and use

BrUSLEE can be easily expressed and detected in a wide range of organisms. Mammalian cells transiently transfected with BrUSLEE expression vectors produce bright fluorescence in 16-18 hrs after transfection. No cytotoxic effects or visible protein aggregation are observed.
It can be used in multiparameter FLIM in green channel.

Recommended filter sets and antibodies

The protein can be recognized using Anti-GFP antibody (Cat. # AB011) or Anti-Tag(CGY)FP antibody (Cat. # AB121) available from Evrogen.
BrUSLEE can be detected using common fluorescence filter sets for EGFP, FITC and other green dyes. Recommended Omega Optical filter sets are QMAX-Green, XF100-2, XF100-3, XF115-2 and XF116-2.

Available variants and fusions

If you need BrUSLEE codon variant or fusion construct that is not listed on our website, please contact us at product@evrogen.com

References

Mamontova, AV. et al. (2018). Sci. Rep. 8 (1): 13224 / pmid: 30185895

BrUSLEE-related products

Product	Cat.#	Description	Size
BrUSLEE expression vectors			
pBrUSLEE-N	FP214	Mammalian expression vector encoding humanized BrUSLEE and allowing its expression and generation of fusions to the BrUSLEE N-terminus	20 μg
Antibodies against BrUSLEE			
Anti-GFP	AB011	Rabbit polyclonal antibody against AceGFP1, TagCFP, TagGFP, TagGFP2, TagYFP, PS-CFP2, Case12, HyPer, EGFP, BrUSLEE and SLIM	100 μg
Anti-Tag(CGY)FP	AB121	Rabbit polyclonal antibody against TagCFP, TagGFP, TagGFP2, TagYFP, PS-CFP2, Case12, HyPer, EGFP, BrUSLEE and SLIM	100 μg

Please contact your local distributor for exact prices and delivery information.