

Aberystwyth University

The Yin-Yang of the Green Fluorescent Protein

Ragon, Mélanie; Bertheau, Lucie; Dumont, Jennifer; Bellanger, Tiffany; Grosselin, Marie; Basu, Mohini; Pourcelot, Eléonore; Horrigue, Walid; Denimal, Emmanuel; Marin, Ambroise; Vaucher, Basile; Berland, Antoine; Lepoivre, Corentin; Dupont, Sébastien; Beney, Laurent; Davey, Hazel; Guyot, Stéphane

Published in:

Journal of Photochemistry and Photobiology B: Biology

DOI:

[10.1016/j.jphotobiol.2022.112603](https://doi.org/10.1016/j.jphotobiol.2022.112603)

Publication date:

2023

Citation for published version (APA):

Ragon, M., Bertheau, L., Dumont, J., Bellanger, T., Grosselin, M., Basu, M., Pourcelot, E., Horrigue, W., Denimal, E., Marin, A., Vaucher, B., Berland, A., Lepoivre, C., Dupont, S., Beney, L., Davey, H., & Guyot, S. (2023). The Yin-Yang of the Green Fluorescent Protein: Impact on *Saccharomyces cerevisiae* stress resistance. *Journal of Photochemistry and Photobiology B: Biology*, 238. <https://doi.org/10.1016/j.jphotobiol.2022.112603>

Document License

CC BY

General rights

Copyright and moral rights for the publications made accessible in the Aberystwyth Research Portal (the Institutional Repository) are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the Aberystwyth Research Portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the Aberystwyth Research Portal

Take down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

tel: +44 1970 62 2400
email: is@aber.ac.uk

Supplementary data

Table S1. Yeast strains used in this study.

Wild-type strain				
	BY4742	MAT α ; his3 Δ 1; leu2 Δ 0; lys2 Δ 0; ura3 Δ 0		EUROSCARF
Knockout mutants				
	<i>erg6</i> Δ	YML008C	BY4742; MAT α ; his3 Δ 1; leu2 Δ 0; met15 Δ 0; ura3 Δ 0; YML008C::KanMX4	converts zymosterol to fecosterol in the ergosterol biosynthetic pathway
Insertion mutants				
	<i>SUR7-GFP</i>	YML052W	BY4742; MAT α ; his3 Δ 1; leu2 Δ 0; met15 Δ 0; ura3 Δ 0; YML052W::GFP	plasma membrane protein in microdomains Dupont <i>et al.</i> (2010) ⁶¹
	<i>erg6</i> Δ / <i>SUR7-GFP</i>		BY4742; MAT α ; his3 Δ 1; leu2 Δ 0; met15 Δ 0; ura3 Δ 0; YML008C::KanMX4; YML052W::GFP	see above
	<i>PAB1-GFP</i>	YER165W	BY4742; MAT α ; his3 Δ 1; leu2 Δ 0; met15 Δ 0; ura3 Δ 0; YER165W::GFP	stress granules and P-bodies This study
	<i>PBP1</i> (+)	YGR178C	BY4742; MAT α ; his3 Δ 1; leu2 Δ 0; lys2 Δ 0; ura3 Δ 0 / PBP1(+)	This study, plasmid donated by Pr Tatsuya Maeda [Takahara and Maeda, 2012] ³¹
	<i>PBP1</i> (+)/ <i>PAB1-GFP</i>	YGR178C/YER165W	BY4742; MAT α ; his3 Δ 1; leu2 Δ 0; met15 Δ 0; ura3 Δ 0; YER165W::GFP/PBP1(+)	see above

Table S2. Primers used in this study.

<i>Primers</i>	<i>Description</i>
RH-Pab1-GFP-F	GTCTTTCAAAAAGGAGCAAGAACAACAACTGAGCAAGCTGGTGACGGTGCTGGTTTA
RH-Pab1-GFP-R	TAAGTTTGTTGAGTAGGGAAGTAGGTGATTACATAGAGCATCGATGAATTCGAGCTCG

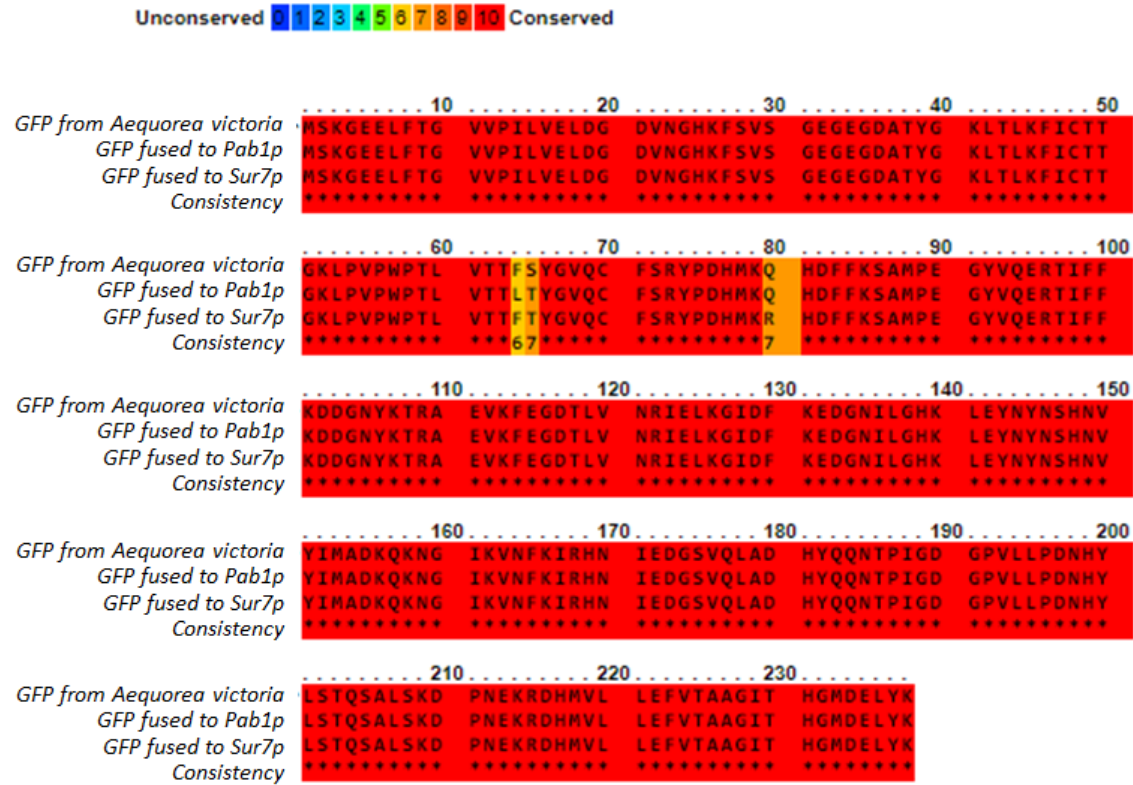


Figure S1. Multiple sequence alignment of the GFP used in this study and the GFP from the jellyfish *A. victoria*. Alignment was performed using PRALINE, a multiple sequence alignment toolkit ⁶⁹.

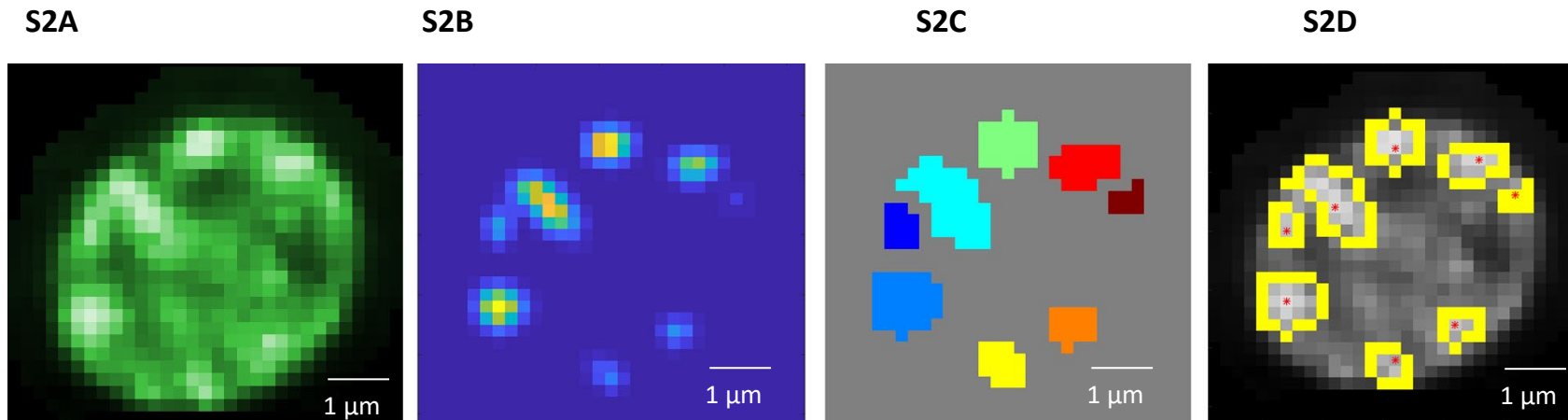


Figure S2. Image processing steps to isolate and characterize RNP granules at the level of the single cell. **(A)** Cell isolated and denoised, **(B)** Region of interest with RNP granules **(C)** RNP granules segmented, **(D)** Granules centroids (red stars) and perimeter (yellow lines) calculated and overlay on cell image.

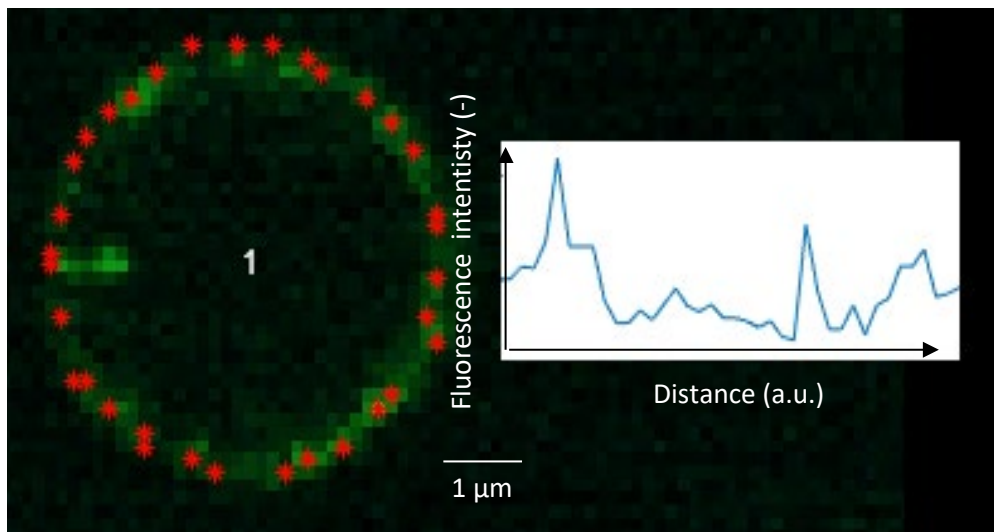


Figure S3. Image processing steps to isolate and characterize Sur7p-GFP at the level of the single cell. Each red star is a retained profile point. Yeast fluorescence profile is showed on the right insert.

References

[31] T. Takahara, T. Maeda, Transient sequestration of TORC1 into stress granules during heat stress, *Mol. Cell* 47 (2012) 242–252.

[61] S. Dupont, L. Beney, J.F. Ritt, J. Lherminier, P. Gervais, Lateral reorganization of plasma membrane is involved in the yeast resistance to severe dehydration, *Biochim. Biophys. Acta* 1798 (2010) 975–985.

[69] V. A. Simossis, J. Heringa, PRALINE: a multiple sequence alignment toolbox that integrates homology-extended and secondary structure information, *Nucleic Acids Res.* 33 (2005) W289–W294.

