

Genome Biology

CRISPR directed evolution of the spliceosome for resistance to splicing inhibitors

Genome Biology 2019 20:73

<https://doi.org/10.1186/s13059-019-1680-9>

Butt *et al.* develop an evolution platform in plants to evolve a spliceosomal protein in rice to be resistant to splicing inhibitors, which can be used to engineer crops for improved performance or adaptation.

CRISPR enables directed evolution in plants

Genome Biology 2019 20:83

Mitochondrial Morphofunction in Mammalian Cells

Elianne P. Bulthuis, Merel J.W. Adjobo-Hermans, Peter H.G.M. Willems, and Werner J.H. Koopman

Antioxidants & Redox Signaling, Vol. 30, No. 18, June 2019: 2066-2109.

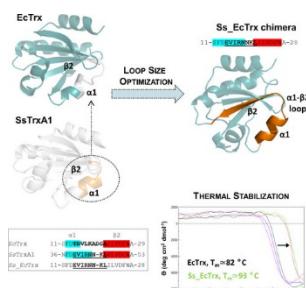
[Abstract](#) | [Full Text](#) | [PDF \(47983 KB\)](#) | [PDF Plus \(2361 KB\)](#) | [Supplementary Material](#)

Febs Lett

Loop size optimization induces a strong thermal stabilization of the thioredoxin fold

Alessia Ruggiero, Giovanni Smaldone, Luciana Esposito, Nicole Balasco, Luigi Vitagliano

Pages: 1752-1764 | First Published: 23 January 2019



Thioredoxin chimeric variants were prepared following the newly proposed protocol denoted as loop size optimization. Specifically, the $\alpha 1-\beta 2$ loop of *E. coli* Trx was replaced with the corresponding ones present in thermostable Trxs that show a better adherence to the protein topology rules. Notably, their insertion in *EcTrx* induced a remarkable thermal stabilization (≥ 10 °C). The crystallographic structure of one of these variants corroborates the hypothesis that loop size optimization represents the driving force of the observed stabilization.

Plant cell & Environment

Carbon assimilation in crops at high temperatures

Rebecca A. Slattery, Donald R. Ort

The Plant Journal, Vol. 98, No. 5, June 2019

Direct analysis of pollen fitness by flow cytometry: implications for pollen response to stress

Gilad Luria, Nicholas Rutley, Itay Lazar, Jeffery F. Harper, Gad Miller

Pages: 942-952 | First Published: 13 February 2019

Using H₂DCFDA-staining coupled with a flow cytometry approach, we demonstrate the ability to score pollen viability on the population scale. Applying this method to Arabidopsis and tomato pollen, we discovered that pollen distributes bimodally into a dormant/inactive ‘low-ROS’ and metabolically active ‘high-ROS’ subpopulations. In addition, we used this approach to measure dynamic changes in pollen ROS homeostasis in response to abiotic stresses. These examples only scratch the surface of the potential of using flow cytometry for studying pollen metabolism, pollen physiology and many other applications.

Journal of Plant Physiology : Volume 237

[Overexpression of S-nitrosoglutathione reductase alleviated iron-deficiency stress by regulating iron distribution and redox homeostasis](#)

Pages 1-11

Available Online 2019-04-01

Dan Wen, Shasha Sun, Wanying Yang, Lili Zhang, Shiqi Liu, Biao Gong, Qinghua Shi

The Plant Journal

[The Plant PTM Viewer, a central resource for exploring plant protein modifications](#)

Patrick Willems, Alison Horne, Thomas Van Parys, Sofie Goormachtig, Ive De Smet, Alexander Botzki, Frank Van Breusegem, Kris Gevaert

Present-day proteomics studies in plants outline extensive and diverse post-translational modification (PTM) protein landscapes that are often unnoticed due to the lack of a plant-specific protein database that allows a user-friendly exploration of the available PTM information. To equip the plant community with a central PTM resource, the Plant PTM Viewer integrates approximately 370 000 protein sites of 19 modification types in five plant species and offers innovative tools to hypothesize their interplay and impact on protein functions.

[Diurnal changes in concerted plant protein phosphorylation and acetylation in *Arabidopsis* organs and seedlings](#)

R. Glen Uhrig, Pascal Schläpfer, Bernd Roschitzki, Matthias Hirsch-Hoffmann, Wilhelm Gruissem

We present a quantitative, sequential dual-PTM proteomics analysis of *Arabidopsis* proteins modified by phosphorylation and/or acetylation in multiple organs and seedlings at the end of day versus the end of night, revealing PTM intersections occurring at the protein-, pathway- and cellular-process level. Analysis of this comprehensive resource demonstrates its usefulness in building hypotheses for further research of plant cell regulation.

Current Biology

[Organelle Contact Sites: Lipid Droplets Hooked by Metabolically Controlled Tethers](#)

Pages R375-R377

Available Online 2019-05-20

Maria Bohnert

H. Hariri, N. Speer, J. Bowerman, S. Rogers, G. Fu, E. Reetz, S. Datta, J.R. Feathers, R. Urankar, D. Nicastro, *et al.* **Mdm1 maintains endoplasmic reticulum homeostasis by spatially regulating lipid droplet biogenesis**

J. Cell Biol., 218 (2019), pp. 1319-1334

[Plant Biology: Proteolytic Release of Damage Signals](#)

Pages R378-R380

Available Online 2019-05-20

Kyoko Morimoto, Renier A.L. van der Hoorn

T. Hander, A.D. Fernández-Fernández, R.P. Kumpf, P. Willems, H. Schatowitz, D. Rombaut, A. Gonçalves, B. Pavie, T. Boller, Gevaert, *et al.* **Damage on plants activates Ca²⁺-dependent metacaspases for release of immunomodulatory peptides**

Science, 363 (2019), p. 1303

Methods in Enzymology : Volume 622

[Utilizing split-NanoLuc luciferase fragments as luminescent probes for protein solubility in living cells](#)

Pages 55-66

Available Online 2019-03-09

Travis J. Nelson, Jia Zhao, Cliff I. Stains

Plant Cell Advance Publication

Fear Not the Unknown: OPENER as a Study in Shedding Light on Genes with Unknown Function

Jennifer Mach

Plant Cell 2019 tpc.19.00420; Advance Publication May 29, 2019; doi:10.1105/tpc.19.00420 **OPEN**

<http://www.plantcell.org/content/early/2019/05/29/tpc.19.00420>

Unearthing Root Growth Dynamics Through 3-D Time-lapse Imaging

Jennifer A Lockhart

Danger-Associated Peptides Interact with PIN-Dependent Local Auxin Distribution to Inhibit Root Growth in Arabidopsis
Yanping Jing, Xiaojiang Zheng, Danlei Zhang, Nuo Shen, Yuan Wang, Lei Yang, Aigen Fu, Jisen Shi, Fugeng Zhao,
Wenzhi Lan and Sheng Luan

Plant Cell 2019 tpc.18.00757; Advance Publication May 23, 2019; doi:10.1105/tpc.18.00757
<http://www.plantcell.org/content/early/2019/05/22/tpc.18.00757.abstract>

Ribonucleoprotein capture by in vivo expression of a designer pentatricopeptide repeat protein in Arabidopsis
James J McDermott, Kenneth P Watkins, Rosalind Williams-Carrier and Alice Barkan
Plant Cell 2019 tpc.19.00177; Advance Publication May 23, 2019; doi:10.1105/tpc.19.00177 **OPEN**
<http://www.plantcell.org/content/early/2019/05/22/tpc.19.00177.abstract>

Journal of Agronomy and Crop Science

Heat, wheat and CO₂: The relevance of timing and the mode of temperature stress on biomass and yield
Petra Högy, Lorenz Kottmann, Iris Schmid, Andreas Fangmeier

PLANT Cell

Arabidopsis DGD1 SUPPRESSOR 1 is a Subunit of the Mitochondrial Contact Site and Cristae Organizing System and Affects Mitochondrial Biogenesis

Lu Li, Anastasiya Lavell, Xiangxiang Meng, Oliver Berkowitz, Jennifer Selinski, Allison van de Meene, Christopher Carrie, Christoph Benning, James Whelan, Inge De Clercq and Yan Wang

Plant Cell 2019 tpc.18.00885; Advance Publication May 22, 2019; doi:10.1105/tpc.18.00885 **OPEN**
<http://www.plantcell.org/content/early/2019/05/22/tpc.18.00885.abstract>

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PMID: 31124783 [PubMed - as supplied by publisher]

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Role of ethylene biosynthesis and signaling in elevated CO₂-induced heat stress response in tomato.
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Phytoglobins in the nuclei, cytoplasm, and chloroplasts modulate nitric oxide signaling and interact with abscisic acid.
Plant J. 2019 May 31;. [Epub ahead of print]
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Current approaches to measure nitric oxide in plants.
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The polyadenylation factor FIP1 is important for plant development and root responses to abiotic stresses.

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Proteome-wide detection of S-nitrosylation targets and motifs using bioorthogonal cleavable-linker-based enrichment and switch technique.

Nat Commun. 2019 May 16;10(1):2195. PMID: 31097712 [PubMed - in process]

Nature Reviews Molecular Cell Biology contents June 2019 Volume 20 issue 6

Mechanisms and functions of ribosome-associated protein quality control

Claudio A. P. Joazeiro

pp368 - 383 | doi:10.1038/s41580-019-0118-2

Components of the ribosome-associated protein quality control (RQC) pathway recognize truncated proteins resulting from the stalling of ribosomes on mRNAs during translation and target them for degradation. Defects in RQC can lead to disease, and recent insights have revealed RQC mechanisms in the cytosol and on mitochondria and the endoplasmic reticulum that involve the E3 ligase Listerin and/or the formation of carboxy-terminal alanine and threonine tails.

[Full Text](#) | [PDF](#)

Current Biology : Volume 29, Issue 11

[Selfish Mitonuclear Conflict](#)

Pages R496-R511

Available Online 2019-06-03

Justin C. Havird, Evan S. Forsythe, Alissa M. Williams, John H. Werren, Damian K. Dowling, Daniel B. Sloan

PLoS Genetics

[TDP-43 induces mitochondrial damage and activates the mitochondrial unfolded protein response](#)

Peng Wang, Jianwen Deng, Jie Dong, Jianghong Liu, Eileen H. Bigio, Marsel Mesulam, Tao Wang, Lei Sun, Li Wang, Alan Yueh-Luen Lee, Warren A. McGee, Xiaoping Chen, Kazuo Fushimi, Li Zhu, Jane Y. Wu

EMBO J.

Mitochondria and pathogen immunity: from killer to firestarter

Joel S Riley and Stephen WG Tait

Published online 17.05.2019

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New work reveals an unexpected, non-lethal immune defence role of the mitochondrial apoptotic machinery, via mtDNA release and STING activation.

A non-death function of the mitochondrial apoptosis apparatus in immunity

Dominik Brokatzky, Benedikt Dörflinger, Aladin Haimovici, Armin Weber,

Susanne Kirschnek, Julianne Vier, Arlena Metz, Julia Henschel, Tobias

Steinfeldt, Ian E Gentle and Georg Häcker

<http://EMBOJ.embopress.org/content/38/11/e100907?etoc>

Different pathogens can trigger sub-lethal engagement of the mitochondrial

apoptosis machinery in epithelial cells, resulting however not in cell death but rather promoting cytokine production and reducing pathogen growth.

The Plant Journal

Keep calm and carry on: miRNA biogenesis under stress

Pablo A. Manavella, Seong W. Yang, Javier Palatnik

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Evolution of chloroplast retrograde signaling facilitates green plant adaptation to land.

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