

Plant organellar RNA editing: what 30 years of research has revealed

Ian D. Small, Mareike Schallenberg-Rüdinger, Mizuki Takenaka, Hakim Mireau, Oren Ostersetzer-Biran
First Published: 20 October 2019

The mitochondrial NAD⁺ transporter (NDT1) plays important roles in cellular NAD⁺ homeostasis in *Arabidopsis thaliana*

Izabel de Souza Chaves, Elias Feitosa-Araújo, Alexandra Florian, David B. Medeiros, Paula da Fonseca-Pereira, Lennart Charton, Elmien Heyneke, Jorge A.C. Apfata, Marcel V. Pires, Tabea Mettler-Altmann, Wagner L. Araújo, H. Ekkehard Neuhaus, Ferdinando Palmieri, Toshihiro Obata, Andreas P.M. Weber, Nicole Linka, Alisdair R. Fernie, Adriano Nunes-Nesi

Pages: 487-504 | First Published: 06 July 2019

The mitochondrial NAD⁺ carrier (NDT1) plays an important role in cellular NAD⁺ homeostasis in leaves. Impaired NDT1 function results in reduced pollen grain viability, tube growth and seed filling, seed germination and seedling establishment.

Reactive oxygen species and reactive carbonyl species constitute a feed-forward loop in auxin signaling for lateral root formation

Md. Sanaullah Biswas, Hidehiro Fukaki, Izumi C. Mori, Kazuha Nakahara, Jun'ichi Mano

Pages: 536-548 | First Published: 15 July 2019

Auxin induces the formation of reactive oxygen species (ROS), which promote lateral root (LR) formation. We show that ROS and lipid peroxide-derived reactive carbonyl species (RCS), signal mediators downstream of ROS, facilitate the degradation of the auxin/indole-3-acetic acid repressor, and thereby enforce the auxin signal for LR formation. Specifically, ROS and RCS constitute a feed-forward pathway to modulate the auxin signaling for LR formation. The RCS provide a connection between the ROS signal and auxin signaling pathways.

Determination of protein-only RNase P interactome in *Arabidopsis* mitochondria and chloroplasts identifies a complex between PRORP1 and another NYN domain nuclease

Ayoub Bouchoucha, Florent Waltz, Géraldine Bonnard, Mathilde Arrivé, Philippe Hammann, Lauriane Kuhn, Cédric Schelcher, Hélène Zuber, Anthony Gobert, Philippe Giegé

Pages: 549-561 | First Published: 18 July 2019

RNase P is a key enzyme in tRNA maturation that removes the 5' leader sequences of tRNA precursors. In this study, the interaction network of the protein-only RNase P enzyme PRORP1 was identified in *Arabidopsis* mitochondria and chloroplasts. In particular, an RNA maturation complex was characterized. Results provided insights into the integration of PRORP1 functions with other gene expression processes and helped to understand the diversity of RNase P enzymes in evolution.

An 'eFP-Seq Browser' for visualizing and exploring RNA sequencing data

Alexander Sullivan, Priyank K. Purohit, Nowlan H. Freese, Asher Pasha, Eddi Esteban, Jamie Waese, Alison Wu, Michelle Chen, Chih Y. Chin, Richard Song, Sneha R. Watharkar, Agnes P. Chan, Vivek Krishnakumar, Matthew W. Vaughn, Chris Town, Ann E. Loraine, Nicholas J. Provart

Pages: 641-654 | First Published: 26 July 2019

We present a tool, the eFP-Seq Browser, for rapidly identifying RNA sequencing samples with strong expression levels of a given gene, or where the read maps for a given gene/sample best match a particular gene model. Details can be called up with convenient links to the Integrated Genome Browser.

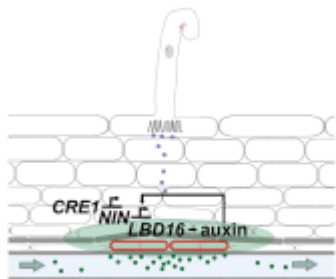
Current Biology : Volume 29, Issue 21

NODULE INCEPTION Recruits the Lateral Root Developmental Program for Symbiotic Nodule Organogenesis in *Medicago truncatula*

Pages 3657-3668.e5

Katharina Schiessl, Jodi L.S. Lilley, Tak Lee, Ioannis Tamvakis, Wouter Kohlen, Paul C. Bailey, Aaron Thomas, Jakub

Luptak, Karunakaran Ramakrishnan, Matthew D. Carpenter, Kirankumar S. Mysore, Jiangqi Wen, Sebastian Ahnert, Veronica A. Grieneisen, Giles E.D. Oldroyd



Brief Communication | 14 October 2019

Nature Methods

[Optogenetic activation of intracellular antibodies for direct modulation of endogenous proteins](#)

Optobodies combine split intracellular antibodies (intrabodies) with light-controlled dimerization tools for spatiotemporal control of intrabody activity. The developed tools demonstrate the versatility and power of this approach for probing protein function.

[Multiplexed and single cell tracing of lipid metabolism](#)

Cellular lipids, labeled with a charged reporter, yield characteristic MS1 and MS2 patterns during mass spectrometry. These reporters allow sample multiplexing and sensitive detection of lipid metabolism at single cell resolution.

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Thioredoxin interacting protein (Txnip) forms redox sensitive high molecular weight nucleoprotein complexes.

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Nature Biotech

Resource | 28 October 2019 | Open Access

[Diagnostic kit for rice blight resistance](#)

Strategic deployment of blight-resistant rice lines is enabled by a molecular diagnostic kit.

Article | 28 October 2019 | Open Access

[Broad-spectrum resistance to bacterial blight in rice using genome editing](#)

Genome editing of three SWEET gene promoters endows rice with resistance to all Xanthomonas bacterial blight strains tested.

News & Views | 28 October 2019

[A SWEET solution to rice blight](#)

Two studies offer a powerful strategy for combating bacterial blight in rice.

PLoS Genetics

[Nitrate-responsive OBP4-XTH9 regulatory module controls lateral root development in Arabidopsis thaliana](#)

Peipei Xu, Weiming Cai

[Duplicate divergence of two bacterial small heat shock proteins reduces the demand for Hsp70 in refolding of substrates](#)

Igor Obuchowski, Artur Piróg, Milena Stolarska, Bartłomiej Tomiczek, Krzysztof Liberek

Nature Structural and Molecular Biology

[UPR proteins IRE1 and PERK switch BiP from chaperone to ER stress sensor](#)

Reconstitution experiments show that ER Hsp70 BiP can switch its activity from chaperone to ER stress sensor via interaction with UPR proteins IRE1 and PERK.

[A spiral path to unfolding](#)

[Yihong Ye & Di Xia](#)

[Nature Structural & Molecular Biology](#) volume 26, pages763–765(2019)

AAA ATPases constitute a large family of molecular chaperones, many of which unfold substrate proteins. Two recent cryo-EM studies of the AAA ATPase Cdc48 capture this enzyme in the midst of protein unfolding and reveal a universal substrate-threading mechanism for ring-shaped ATPases.

[Trends in Plant Science](#)

[CRISPR/Cas System: Recent Advances and Future Prospects for Genome Editing](#)

Open Access - Review Article

Available Online 11 November 2019

Hakim Manghwar, Keith Lindsey, Xianlong Zhang, Shuangxia Jin

eLIFE

[Dynamic ubiquitination determines transcriptional activity of the plant immune coactivator NPR1](#)

Michael J Skelly, James J Furniss ... Steven H Spoel

Expression of plant immune genes is controlled by the opposing actions of ubiquitin ligases and deubiquitinases that modify the master coactivator NPR1, thereby regulating its intrinsic transcriptional activity.

Nature Communications

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A Look Back from the Helm of The Plant Cell

Sabeeha S Merchant

Plant Cell 2019 tpc.19.00880; Advance Publication November 12, 2019; doi:10.1105/tpc.19.00880 **OPEN**

<http://www.plantcell.org/content/early/2019/11/12/tpc.19.00880>

Nature Plants Volume 5 Issue 11: November 2019

[Disentangling the sites of non-photochemical quenching in vascular plants](#)

Lauren Nicol, Wojciech J. Nawrocki & Roberta Croce

Nature Plants 5, doi:10.1038/s41477-019-0526-5

ELIFE

BIOCHEMISTRY AND CHEMICAL BIOLOGY

[Wedging open a catalytic site](#)

Annie Beuve

The activation mechanism of the nitric oxide receptor has been revealed by cryo-electron microscopy.

[Allosteric activation of the nitric oxide receptor soluble guanylate cyclase mapped by cryo-electron microscopy](#)

Benjamin G Horst, Adam L Yokom ... Michael A Marletta

The full-length structures of the mammalian nitric oxide receptor reveal the molecular activation steps and a binding site for the prototype of FDA-approved stimulators.