February/March

Analytical Biochemistry : Volume 592
A sensitive and reversible staining of proteins on blot membranes
Article Number 113579

Nature Plants

Jun-Ling Wang, Li Zhao, Mei-Qi Li, Wei-Guang Chen, Chao-Jin Xu
Integration of ovular signals and exocytosis of a Ca^{2+} channel by MLOs in pollen tube guidance
Jiang-Guo Meng, ….Wei-Cai Yang
Nature Plants **volume 6**, pages143–153(2020)
News & Views | 13 February 2020

Keeping pollen tubes on track
Yan Ju & Sharon A. Kessler
Nature Plants **6**, doi:10.1038/s41477-020-0601-y

Review Article | 10 February 2020

Synchronization of developmental, molecular and metabolic aspects of source–sink interactions
Alisdair R. Fernie, Christian W. B. Bachem, Yrjö Helariutta, H. Ekkehard Neuhaus, Salomé Prat *et al.*
Nature Plants **6**, doi:10.1038/s41477-020-0590-x

Brief Communication | 03 February 2020

Early developmental plasticity of lateral roots in response to asymmetric water availability
Daniel von Wangenheim, Jason Banda, Alexander Schmitz, Jens Boland, Anthony Bishopp *et al.*
Nature Plants **6**, doi:10.1038/s41477-019-0580-z

Tissue-Specific Regulation of Plastid Protein Import Is Implemented through Transit-Peptide Motifs
Chiung-Chih Chu, Krishna Swamy, Hsou-min Li

Published February 2020. DOI: https://doi.org/10.1105/tpc.19.00702

Plastids differentiate into various functional types (chloroplasts, leucoplasts, chromoplasts, etc.) that have distinct proteomes depending on the specific tissue. Most plastid proteins are encoded by the nuclear genome, synthesized as higher molecular mass preproteins with an N-terminal transit peptide, and then post-translationally imported from the cytosol. Evidence for tissue-specific regulation of import into plastids, and subsequent modulation of plastid proteomes, has been lacking. We quantified protein import into isolated pea leaf chloroplasts and root leucoplasts and identified two transit-peptide motifs that specifically enhance preprotein import into root leucoplasts. Using a plastid preprotein expressed in both leaves and roots of stable transgenic plants, we showed that losing one of the leucoplast motifs interfered with its function in root leucoplasts but had no effect on its function in leaf chloroplasts. We assembled a list of all Arabidopsis plastid preproteins encoded by recently duplicated genes and show that, within a duplicated preprotein pair, the isoform bearing the leucoplast motif usually has greater root protein abundance. Our findings represent a clear demonstration of tissue-specific regulation of organelle protein import and suggest that it operates by selective evolutionary retention of transit-peptide motifs, which enhances import into specific plastid types.

Light Activates the Translational Regulatory Kinase GCN2 via Reactive Oxygen Species Emanating from the Chloroplast
Ansul Lokdarshi, Ju Guan, Ricardo A Urquidi-Camacho, Sung Ki Cho, Philip W Morgan, Madison Leonard, Masaki Shimono, Brad Day, Albrecht G. von Arnim

Published February 2020. DOI: https://doi.org/10.1105/tpc.19.00751

Cytosolic mRNA translation is subject to global and mRNA-specific controls. Phosphorylation of translation initiation factor eIF2 anchors a reversible switch that represses translation globally. The stress-responsive GCN2 kinase is the only

known kinase for eIF2 in Arabidopsis. Here we show that conditions that generate reactive oxygen species (ROS) in the chloroplast, such as dark-light transitions, high light, and the herbicide methyl viologen all rapidly activated the GCN2 kinase, whereas mitochondrial and ER stress did not. In addition, GCN2 activation was light dependent and mitigated by photosynthesis inhibitors and ROS quenchers. Accordingly, seedling growth of multiple gcn2 mutant alleles was retarded under conditions of excess light, implicating the GCN2-eIF2 pathway in responses to light and associated ROS. Once activated, the GCN2 kinase preferentially suppressed the ribosome loading of mRNAs for functions such as mitochondrial ATP synthesis, the chloroplast thylakoids, vesicle trafficking, and translation. The transcriptome of gcn2 mutants was sensitized to abiotic stress, including oxidative stress, as well as innate immune responses. Accordingly, gcn2 displayed defects in immune priming by the fungal elicitor, chitin. In conclusion, we provide evidence that reactive oxygen species produced by the photosynthetic apparatus help to activate the highly conserved GCN2 kinase, leading to eIF2 phosphorylation and thus affecting the status of the cytosolic protein synthesis apparatus.

Science **28 Feb 2020:**
Vol. 367, Issue 6481, pp. 995

Wavy walls built by nanofilaments

In the model plant *Arabidopsis*, pavement cells fit together with the lobes and curves of jigsaw puzzle pieces. Such complex cell shapes, in plants, were generally thought to be driven by turgor pressure. Haas *et al.* now show that the extracellular cell wall can actively shape the cell it contains without relying on turgor pressure. Nanofilaments of pectin homogalacturonan in the cell wall shift between crystalline and anisotropic phases according to whether they are methylated. The shift in form drives changes in cell wall shape that stand independent of turgor pressure.
Science, this issue p. 1003

The process by which plant cells expand and gain shape has presented a challenge for researchers. Current models propose that these processes are driven by turgor pressure acting on the cell wall. Using nanoimaging, we show that the cell wall contains pectin nanofilaments that possess an intrinsic expansion capacity. Additionally, we use growth models containing such structures to show that a complex plant cell shape can derive from chemically induced local and polarized expansion of the pectin nanofilaments without turgor-driven growth. Thus, the plant cell wall, outside of the cell itself, is an active participant in shaping plant cells. Extracellular matrix function may similarly guide cell shape in other kingdoms, including Animalia.

Analytical Biochemistry : Volume 593
Review Article

A systematic approach to quantitative Western blot analysis
Article Number 113608
Lakshmi Pillai-Kastoori, Amy R. Schutz-Geschwender, Jeff A. Harford

Nature Microbiology - Table of Contents alert, Volume 5, March 2020

Selective sequestration of signalling proteins in a membraneless organelle reinforces the spatial regulation of asymmetry in Caulobacter crescentus
Keren Lasker, Lexy von Diezmann, Xiaofeng Zhou, Daniel G. Ahrens, Thomas H. Mann *et al.*
Nature Microbiology **5**, doi:10.1038/s41564-019-0647-7

CELL

Volume 180, Issue 4, 20 February 2020, Pages 717-728.e19

Article

A Metabolic Pathway for Activation of Dietary Glucosinolates by a Human Gut Symbiont

Consumption of glucosinolates, pro-drug-like metabolites abundant in *Brassica* vegetables, has been associated with decreased risk of certain cancers. Gut microbiota have the ability to metabolize glucosinolates, generating chemopreventive isothiocyanates. Here, we identify a genetic and biochemical basis for activation of glucosinolates to isothiocyanates by *Bacteroides thetaiotaomicron*, a prominent gut commensal species. Using a genome-wide transposon insertion screen, we identified an operon required for glucosinolate metabolism in *B. thetaiotaomicron*. Expression of *BT2159-BT2156* in a non-metabolizing relative, *Bacteroides fragilis*, resulted in gain of glucosinolate metabolism. We show that isothiocyanate formation requires the action of BT2158 and either BT2156 or BT2157 *in vitro*. Monocolonization of mice with mutant *BtΔ2157* showed reduced isothiocyanate production in the gastrointestinal tract. These data provide insight into the mechanisms by which a common gut bacterium processes an important dietary nutrient.

Nature

NEWS AND VIEWS
19 February 2020

How plant cells sense the outside world through hydrogen peroxide

The discovery of a sensor that detects hydrogen peroxide at the surface of a cell provides insights into the mechanisms by which plant cells perceive and respond to environmental stress.
Wu, F. *et al. Nature* **578**, 577–581 (2020).

Article | 19 February 2020

Hydrogen peroxide sensor HPCA1 is an LRR receptor kinase in *Arabidopsis*

HPCA1, a member of a previously uncharacterized subfamily of leucine-rich-repeat receptor-like kinases, is the hydrogen-peroxide sensor at the plasma membrane in *Arabidopsis*.

Feihua Wu , […] & Zhen-Ming Pei

eLIFE

Misfolded proteins bind and activate death receptor 5 to trigger apoptosis during unresolved endoplasmic reticulum stress

Mable Lam, Scot A Marsters ... Peter Walter

Death receptor 5 can directly sense misfolded proteins downstream of the endoplasmic reticulum to provide a quality control mechanism that executes apoptosis and prevents further production of misfolded proteins.

BIOCHEMISTRY AND CHEMICAL BIOLOGY

Mitochondrial ClpX activates an essential biosynthetic enzyme through partial unfolding

Julia R Kardon, Jamie A Moroco ... Tania A Baker

CELL

van Dop, M. et al. DIX domain polymerization drives assembly of plant cell polarity complexes. *Cell* **180**, 427–439 (2020)

Current Opinion in Plant Biology

Progress in understanding the role of auxin in lateral organ development in plants

Pages 73-79

Marcus G Heisler, Mary E Byrne

Twice the fun, double the trouble: gamete interactions in flowering plants

Pages 106-116

Stefanie Sprunck

Plant Cell

Twin-Positive Motifs Function as Specific Plastid Targeting Signals
Gregory Bertoni
Plant Cell 2020 tpc.20.00158; Advance Publication February 25, 2020; doi:10.1105/tpc.20.00158 **OPEN**
http://www.plantcell.org/content/early/2020/02/25/tpc.20.00158

High-Throughput CRISPR/Cas9 Mutagenesis Streamlines Trait Gene Identification in Maize

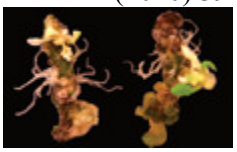
Haijun Liu, Liumei Jian, Jieting Xu, Qinghua Zhang, Maolin Zhang, Minliang Jin, Yong Peng, Jiali Yan, Baozhu Han, Jie Liu, Fan Gao, Xiangguo Liu, Lei Huang, Wenjie Wei, Yunxiu Ding, Xiaofeng Yang, Zhenxian Li, Mingliang Zhang, Jiamin Sun, Minji Bai, Wenhao Song, Hanmo Chen, Xi'ang Sun, Wenqiang Li, Yuming Lu, Ya Liu, Jiuran Zhao, Yangwen Qian, David Jackson, Alisdair R. Fernie and Jianbing Yan

Plant Cell 2020 tpc.19.00934; Advance Publication February 25, 2020; doi:10.1105/tpc.19.00934 **OPEN**

http://www.plantcell.org/content/early/2020/02/25/tpc.19.00934.abstract

EMBO J.

Autophagy mediates temporary reprogramming and dedifferentiation in plant somatic cells
Eleazar Rodriguez, Jonathan Chevalier, Jakob Olsen, Jeppe Ansbøl, Vaitsa Kapousidou, Zhangli Zuo, Steingrim Svenning, Christian Loefke, Stefanie Koemeda, Pedro Serrano Drozdowskyj, Jakub Jez, Gerhard Durnberger, Fabian Kuenzl, Michael Schutzbier, Karl Mechtler, Elise Nagel Ebstrup, Signe Lolle, Yasin Dagdas, Morten Petersen
EMBO J (2020) 39: e103315 | First Published: 13 January 2020



Autophagy facilitates cellular proteome adjustment to new stimuli and allows coord

ELIFE
CELL BIOLOGY
A protein quality control pathway at the mitochondrial outer membrane
Meredith B Metzger, Jessica L Scales ... Allan M Weissman

FEBS J.

Arabidopsis thaliana Hcc1 is a Sco-like metallochaperone for CuA assembly in Cytochrome *c* Oxidase
María-Eugenia Llases, María-Natalia Lisa, Marcos N. Morgada, Estefanía Giannini, Pedro M. Alzari, Alejandro J. Vila
Pages: 749-762 | First Published: 26 July 2019

Cu_A site is the electron entry port of Cytochrome c Oxidase (COX). The assembly of this site requires several assembly factors and differs among species. Here, we perform a structural and biochemical characterization of Hcc1 from *Arabidopsis thaliana* (Here renamed *At*Sco1). We show that this protein is a copper metallochaperone, able to specifically insert Cu^{+1} ions into the Cu_A site.

Journal of Plant Physiology : Volume 246

Intraorganellar calcium imaging in *Arabidopsis* seedling roots using the GCaMP variants GCaMP6m and R-CEPIA1*er*

Article Number 153127
Jin Luo, Lvli Chen, Feifei Huang, Ping Gao, ... Shengcheng Han
Empowering crop resilience to environmental multiple stress through the modulation of key response components
Article Number 153134

E. Cappetta, G. Andolfo, A. Di Matteo, M.R. Ercolano

Nature Protocols

Rapid online buffer exchange for screening of proteins, protein complexes and cell lysates by native mass spectrometry pp1132 - 1157
Zachary L. VanAernum, Florian Busch, Benjamin J. Jones, Mengxuan Jia, Zibo Chen *et al.*
doi:10.1038/s41596-019-0281-0
This Protocol describes how to perform online buffer exchange (OBE) coupled to native mass spectrometry (nMS) for rapid screening of structural features of pre-purified proteins, protein complexes or clarified cell lysates.

Trends in Plant Science

Malate Circulation: Linking Chloroplast Metabolism to Mitochondrial ROS
Open Access - Review Article
Available Online 03 March 2020
Yannan Zhao, Hong Yu, Jian-Min Zhou, Steven M. Smith, Jiayang Li

Plant Cell

Matrix Redox Physiology Governs the Regulation of Plant Mitochondrial Metabolism through Posttranslational Protein Modifications
Ian Max Møller, Abir U. Igamberdiev, Natalia V. Bykova, Iris Finkemeier, Allan G. Rasmusson and Markus Schwarzländer
Plant Cell 2020 32: 573-594. First Published on January 6, 2020; doi:10.1105/tpc.19.00535
http://www.plantcell.org/content/32/3/573.abstract

Posttranslational protein modifications form a multidimensional metabolic regulatory system that provides speed and flexibility far beyond that provided by changes in nuclear gene expression alone.

Metabolite Regulatory Interactions Control Plant Respiratory Metabolism via Target of Rapamycin (TOR) Kinase Activation
Brendan M. O'Leary, Glenda Guek Khim Oh, Chun Pong Lee and A. Harvey Millar
Plant Cell 2020 32: 666-682. First Published on December 30, 2019; doi:10.1105/tpc.19.00157 **OPEN**
http://www.plantcell.org/content/32/3/666.abstract

The TOR signaling pathway in plants responds to amino acid levels by eliciting regulatory effects on respiratory energy metabolism at night, uniting a hallmark mechanism of TOR regulation across eukaryotes.

Table of Contents Alert: Physiologia Plantarum, Vol. 168, No. 2, February 2020

Hydrogen sulfide and nitric oxide signal integration and plant development under stressed/non-stressed conditions
Vijay Pratap Singh, Durgesh Kumar Tripathi, Vasileios Fotopoulos
Pages: 239-240 | First Published: 12 February 2020

Salicylic acid and nitric oxide signaling in plant heat stress
Krishna K. Rai, Neha Pandey, Shashi P. Rai
Pages: 241-255 | First Published: 07 March 2019

Revealing on hydrogen sulfide and nitric oxide signals co-ordination for plant growth under stress conditions
Simranjeet Singh, Vijay Kumar, Dhriti Kapoor, Sanjay Kumar, Satyender Singh, Daljeet Singh Dhanjal, Shivika Datta, Jastin Samuel, Pinaki Dey, Shanquan Wang, Ram Prasad, Joginder Singh
Pages: 301-317 | First Published: 02 July 2019

NO and ROS implications in the organization of root system architecture
Ved Prakash, Kanchan Vishwakarma, Vijay Pratap Singh, Padmaja Rai, Naleeni Ramawat, Durgesh Kumar Tripathi, Shivesh Sharma
Pages: 473-489 | First Published: 20 November 2019

Plant Cell & Environment

Molecular and physiological responses during thermal acclimation of leaf photosynthesis and respiration in rice
Fatimah Azzahra Ahmad Rashid, Peter A. Crisp, You Zhang, Oliver Berkowitz, Barry J. Pogson, David A. Day, Josette Masle, Roderick C. Dewar, James Whelan, Owen K. Atkin, Andrew P. Scafaro
Pages: 594-610 | First Published: 20 December 2019
Leaf respiration and photosynthesis in rice (Oryza sativa L.) shows asynchronous acclimation capacity in favour of photosynthesis. Heat acclimation reduced the protein abundance of the respiratory protein cytochrome c oxidase (COX), despite respiration and growth being stimulated.

ELIFE
CELL BIOLOGY, PLANT BIOLOGY
Reticulon proteins modulate autophagy of the endoplasmic reticulum in maize endosperm
Xiaoguo Zhang, Xinxin Ding ... Marisa S Otegui

Plant reticulons bind Atg8 under ER stress to promote reticulophagy and ameliorate ER stress in the maize endosperm.

DEVELOPMENTAL BIOLOGY, PLANT BIOLOGY
Genetic analysis of the Arabidopsis TIR1/AFB auxin receptors reveals both overlapping and specialized functions
Michael J Prigge, Matthieu Platre ... Mark Estelle
Genetic analyses reveal that the TIR1/AFB auxin receptors have broadly overlapping functions throughout plant development, but that the AFB1 receptor has a specialized role in a rapid auxin response.

BIOCHEMISTRY AND CHEMICAL BIOLOGY, EVOLUTIONARY BIOLOGY
Homologue replacement in the import motor of the mitochondrial inner membrane of trypanosomes
Corinne von Känel, Sergio A Muñoz-Gómez ... Andre Schneider

STRUCTURAL BIOLOGY AND MOLECULAR BIOPHYSICS
Structures of the ATP-fueled ClpXP proteolytic machine bound to protein substrate
Xue Fei, Tristan A Bell ... Robert T Sauer

The Plant Journal

Endoplasmic reticulum-mediated unfolded protein response is an integral part of singlet oxygen signalling in plants
Inès Beaugelin, Anne Chevalier, Stefano D'Alessandro, Brigitte Ksas, Michel Havaux
Version of Record online: 22 February 2020
Significance Statement
Singlet oxygen, produced from photosystem II under conditions of excess light energy, triggers the endoplasmic reticulum-mediated unfolded protein response (UPR), with different UPR levels inducing different physiological responses to light stress. Moderate activation of UPR participates in the acclimation to singlet oxygen, while strong activation leads to cell death.

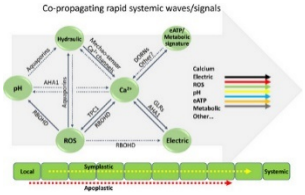
SUMOylation of MYB30 enhances salt tolerance by elevating alternative respiration via transcriptionally upregulating AOX1a in Arabidopsis
Qianyuan Gong, Sha Li, Yuan Zheng, Hongqin Duan, Fei Xiao, Yufen Zhuang, Jiaxian He, Guochun Wu, Shuangshuang Zhao, Huapeng Zhou, Honghui Lin
Version of Record online: 18 February 2020

Significance Statement

Our results revealed that the SIZ1-MYB30-AOX1a module is implicated in plant salt tolerance regulation. Our findings also provide important candidate genes such as SIZ1, MYB30 and AOX1a for salt-tolerant crops generation through genetic modification or gene editing approaches.

Focused Review

Rapid systemic signaling during abiotic and biotic stresses: is the ROS wave master of all trades?
Yosef Fichman, Ron Mittler
Version of Record online: 18 February 2020



Significance Statement

Systemic signaling pathways play a key role in the successful acclimation and defense of plants against different abiotic and biotic stresses.In this focused review we summarize recent studies addressing the different signals that mediate systemic signaling, as well as propose a model for their integration.

Mitochondrial signalling is critical for acclimation and adaptation to flooding in *Arabidopsis thaliana*
Xiangxiang Meng, Lu Li, Reena Narsai, Inge De Clercq, James Whelan, Oliver Berkowitz

First Published: 16 February 2020

Communications Biology
Biotin proximity tagging favours unfolded proteins and enables the study of intrinsically disordered regions
David-Paul Minde, Manasa Ramakrishna & Kathryn S. Lilley

Intrinsically Disordered Regions (IDRs) are enriched in disease-linked proteins known to have multiple post-translational modifications, but there is limited in vivo information about how locally unfolded protein regions contribute to biological functions. We reasoned that IDRs should be more accessible to targeted in vivo biotinylation than ordered protein regions, if they retain their flexibility in human cells. Indeed, we observed increased biotinylation density in predicted IDRs in several cellular compartments >20,000 biotin sites from four proximity proteomics studies. We show that in a biotin 'painting' time course experiment, biotinylation events in *Escherichia coli* ribosomes progress from unfolded and exposed regions at 10 s, to structured and less accessible regions after five minutes. We conclude that biotin proximity tagging favours sites of local disorder in proteins and suggest the possibility of using biotin painting as a method to gain unique insights into in vivo condition-dependent subcellular plasticity of proteins.

Communications Biology **volume 3**, Article number: 38 (2020)

Discussed in: Singh, A. Biotin 'painting' measures disorder. *Nat Methods* **17,** 251 (2020). https://doi.org/10.1038/s41592-020-0784-1

The ERMES (Endoplasmic Reticulum and Mitochondria Encounter Structures) mediated functions in fungi.
Kundu D, Pasrija R. Mitochondrion. 2020 Feb 24; | PMID: 32105794

Molecular Cell

Dynamic Regulation of Mitochondrial Import by the Ubiquitin System
Pages 1107-1123.e10

Lilian Phu, Christopher M. Rose, Joy S. Tea, Christopher E. Wall, ... Baris Bingol

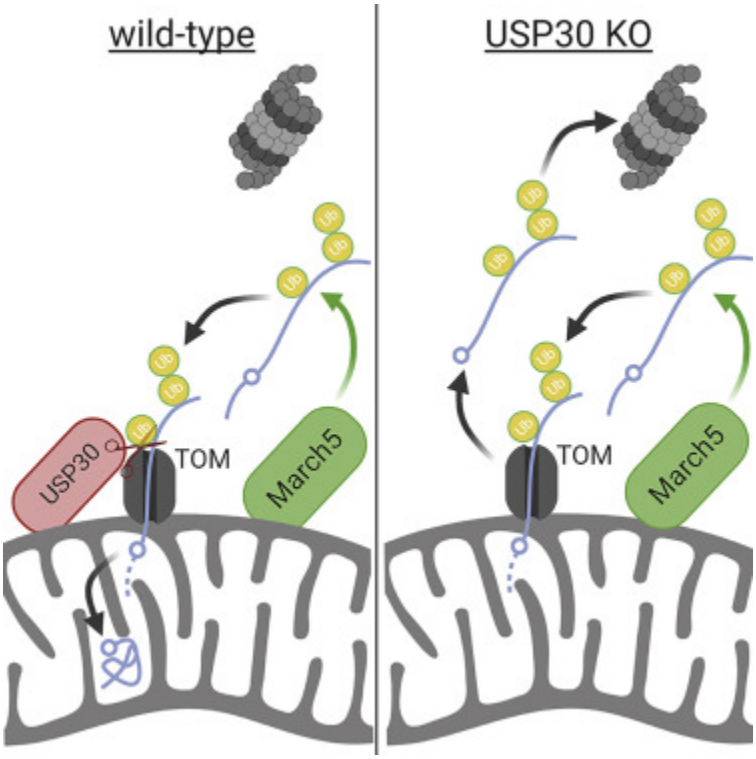


Table of Contents Alert: Journal of Agronomy and Crop Science, Vol. 206, No. 2, April 2020

A strategy of ideotype development for heat-tolerant wheat
Smi Ullah, Helen Bramley, Tariq Mahmood, Richard Trethowan

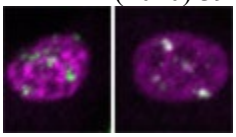
Pages: 229-241 | First Published: 29 November 2019

EMBO J

The heat's on: nuclear stress bodies signal intron retention
Sylvia Erhardt, Georg Stoecklin
EMBO J (2020) 39: e104154 | First Published: 09 January 2020

A new study reveals that nuclear stress bodies serve as a platform for SR protein phosphorylation, thereby altering splicing of sequestered mRNAs during the recovery from heat shock.

LncRNA-dependent nuclear stress bodies promote intron retention through SR protein phosphorylation
Kensuke Ninomiya, Shungo Adachi, Tohru Natsume, Junichi Iwakiri, Goro Terai, Kiyoshi Asai, Tetsuro Hirose
EMBO J (2020) 39: e102729 | First Published: 29 November 2019



Nuclear stress bodies assembled on highly repetitive satellite III lncRNAs function as a platform for phosphorylation of Ser/Arg-rich splicing factors to promote rapid recovery of gene expression after thermal stress exposure.

Respiratory supercomplexes act as a platform for complex III-mediated maturation of human mitochondrial complexes I and IV

Margherita Protasoni, Rafael Pérez-Pérez, Teresa Lobo-Jarne, Michael E Harbour, Shujing Ding, Ana Peñas, Francisca Diaz, Carlos T Moraes, Ian M Fearnley, Massimo Zeviani, Cristina Ugalde, Erika Fernández-Vizarra

EMBO J (2020) 39: e102817 | First Published: 08 January 2020

Biogenesis of the human mitochondrial respiratory chain requires the cooperative
The cell biology of mitochondrial membrane dynamics
Marta Giacomello, …Luca Scorrano

Nature Reviews Molecular Cell Biology (2020)

Redox Systems Biology: Harnessing the Sentinels of the Cysteine Redoxome

Jason M. Held

Antioxidants & Redox Signaling, Vol. 32, No. 10, April 2020: 659-676.

Abstract | Full Text | PDF (967 KB) | PDF Plus (665 KB)

Intracellular Signaling (Ed. Jason M. Held)

Redox Regulation *via* Glutaredoxin-1 and Protein *S*-Glutathionylation

Reiko Matsui, Beatriz Ferran, Albin Oh, Dominique Croteau, Di Shao, Jingyan Han, David Richard Pimentel, and Markus Michael Bachschmid

Antioxidants & Redox Signaling, Vol. 32, No. 10, April 2020: 677-700.

Abstract | Full Text | PDF (1594 KB) | PDF Plus (918 KB)

Mitochondrial Superoxide Dismutase: What the Established, the Intriguing, and the Novel Reveal About a Key Cellular Redox Switch

Flavio R. Palma, Chenxia He, Jeanne M. Danes, Veronica Paviani, Diego R. Coelho, Benjamin N. Gantner, and Marcelo G. Bonini

Antioxidants & Redox Signaling, Vol. 32, No. 10, April 2020: 701-714.
Abstract | Full Text | PDF (693 KB) | PDF Plus (478 KB)

The Redox Theory of Development

Jason M. Hansen, Dean P. Jones, and Craig Harris

Antioxidants & Redox Signaling, Vol. 32, No. 10, April 2020: 715-740.
Abstract | Full Text | PDF (1967 KB) | PDF Plus (1116 KB)

Kuechler ER, BudzyÅ„ska PM, Bernardini JP, Gsponer J, Mayor T.
Distinct features of stress granule proteins predict localization in membraneless organelle.
J Mol Biol. 2020 Feb 24;. [Epub ahead of print] PMID: 32105731 [PubMed - as supplied by publisher]
Kotamarthi HC, Sauer RT, Baker TA.

The Non-dominant AAA+ Ring in the ClpAP Protease Functions as an Anti-stalling Motor to Accelerate Protein Unfolding and Translocation.
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Dynamics of the Transcriptome Response to Heat in the Moss, Physcomitrella patens.
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Mitochondrial ClpX activates an essential biosynthetic enzyme through partial unfolding.
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Int J Mol Sci. 2020 Feb 19;21(4). PMID: 32093037 [PubMed - in process]

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HSPMdb: a computational repository of heat shock protein modulators.
Database (Oxford). 2020 Jan 1;2020. PMID: 32090260 [PubMed - in process]

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Effects of Salicylic Acid on the Metabolism of Mitochondrial Reactive Oxygen Species in Plants.
Biomolecules. 2020 Feb 21;10(2). PMID: 32098073 [PubMed - in process]

R M SK, Wang Y, Zhang X, Cheng H, Sun L, He S, Hao F.
Redox Components: Key Regulators of Epigenetic Modifications in Plants.
Int J Mol Sci. 2020 Feb 19;21(4). PMID: 32093110 [PubMed - in process]

Fei X, Bell TA, Jenni S, Stinson BM, Baker TA, Harrison SC, Sauer RT.
Structures of the ATP-fueled ClpXP proteolytic machine bound to protein substrate.
Elife. 2020 Feb 28;9. [Epub ahead of print] PMID: 32108573 [PubMed - as supplied by publisher]

The Plant Journal

Technical Advance

Tissue-Specific Isolation of Arabidopsis/plant Mitochondria- IMTACT (Isolation of Mitochondria TAgged in specific Cell Types)
Clément Boussardon, Jonathan Przybyla-Toscano, Chris Carrie, Olivier Keech

First Published: 14 February 2020

Wang K, Liu JQ, Zhong T, Liu XL, Zeng Y, Qiao X, Xie T, Chen Y, Gao YY, Tang B, Li J, Zhou J, Pang DW, Chen J, Chen C, Liang Y.
Phase Separation and Cytotoxicity of Tau Are Modulated by Protein Disulfide Isomerase and S-nitrosylation of this Molecular Chaperone.
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Improvement of Thermotolerance of <i>Zymomonas mobilis</i> by Genes for Reactive Oxygen Species-Scavenging Enzymes and Heat Shock Proteins.
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Conditional disorder in small heat-shock proteins.
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Cabrera M, Boronat S, Marte L, Vega M, PÃ©rez P, AytÃ© J, Hidalgo E.
Chaperone-Facilitated Aggregation of Thermo-Sensitive Proteins Shields Them from Degradation during Heat Stress.
Cell Rep. 2020 Feb 18;30(7):2430-2443.e4. PMID: 32075773 [PubMed - in process]

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Fission yeast Puf2, a Pumilio and FBF family of RNA-binding protein, links stress granules to processing bodies.
Mol Cell Biol. 2020 Feb 18;. [Epub ahead of print] PMID: 32071154 [PubMed - as supplied by publisher]

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Differential roles of two DDX17 isoforms in the formation of membraneless organelles.
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Hydrogen sulfide: A multi-tasking signal molecule in the regulation of oxidative stress responses.
J Exp Bot. 2020 Feb 19;. [Epub ahead of print] PMID: 32076713 [PubMed - as supplied by publisher]

Plant cell & Environment

Glutathione-dependent denitrosation of GSNOR1 promotes oxidative signalling downstream of H2O2
Tianru Zhang, Mingyue Ma, Tao Chen, Linlin Zhang, Lingling Fan, Wei Zhang, Bo Wei, Shengchun Li, Wei Xuan, Graham Noctor, Yi Han

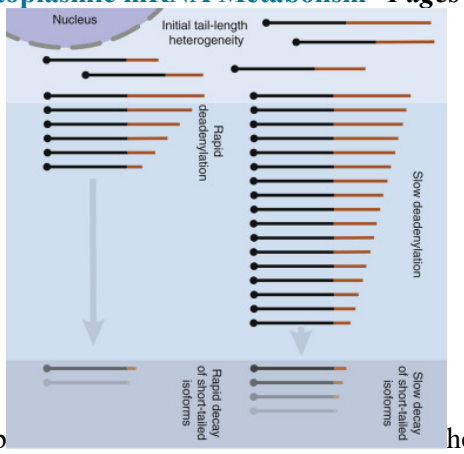
The present study investigates the roles of GSNOR and glutathione in regulating the SA pathway triggered by photorespiratory H_2O_2 in Arabidopsis. Up-regulation of GSNOR is required for the activation of SA pathway downstream of H_2O_2. Glutathione-dependent denitrosation is necessary to maintain the up-regulation of GSNOR activities and may coordinate GSNOR activities with protein SNO levels to ensure appropriate signalling strength through the SA pathway in response to H_2O_2.

Cell : Volume 180, Issue 4

Click Chemistry in Proteomic Investigations
Pages 605-632
Christopher G. Parker, Matthew R. Pratt

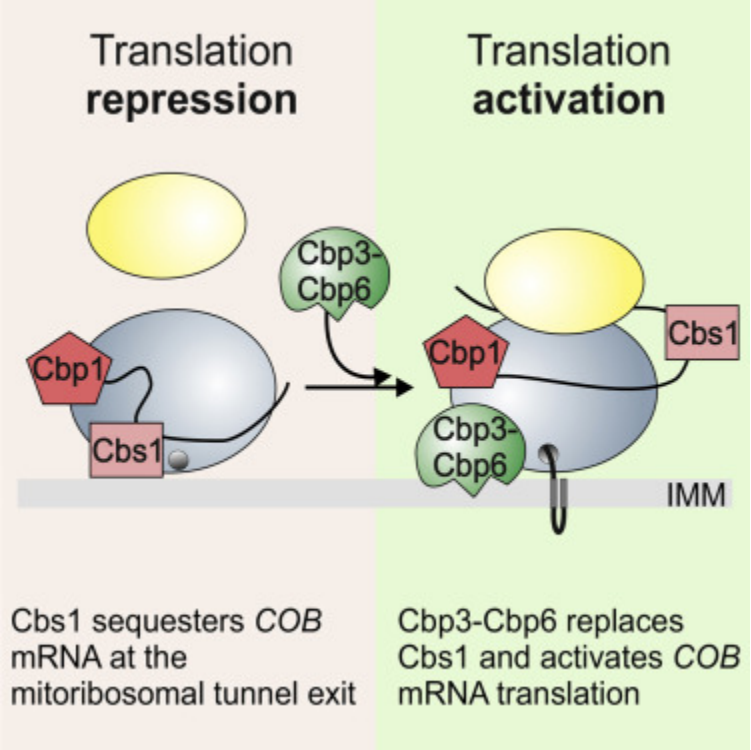
Molecular Cell : Volume 77, Issue 4

The Dynamics of Cytoplasmic mRNA Metabolism ***Pages 786-799.e10***



Timothy J. Eisen, Step hen W. Eichhorn, Alexander O. Subtelny, Kathy S. Lin, ... David P. Bartel

Molecular Wiring of a Mitochondrial Translational Feedback Loop ***Pages 887-900.e5***
Roger Salvatori, Kirsten Kehrein, Abeer Prakash Singh, Wasim Aftab, ... Martin Ott



Plant Cell

Light Activates the Translational Regulatory Kinase GCN2 via Reactive Oxygen Species Emanating from the Chloroplast
Ansul Lokdarshi, Ju Guan, Ricardo A Urquidi-Camacho, Sung Ki Cho, Philip W Morgan, Madison Leonard, Masaki Shimono, Brad Day and Albrecht G. von Arnim
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http://www.plantcell.org/content/early/2020/02/20/tpc.19.00751.abstract

eLIFE

DEVELOPMENTAL BIOLOGY, PLANT BIOLOGY
Genetic analysis of the Arabidopsis TIR1/AFB auxin receptors reveals both overlapping and specialized functions
Michael J Prigge, Matthieu Platre ... Mark Estelle

Regulation of the 20S Proteasome by a Novel Family of Inhibitory Proteins
Maya A. Olshina, Galina Arkind, Fanindra Kumar Deshmukh, Irit Fainer, Mark Taranavsky, Daniel Hayat, Shifra Ben-Dor, Gili Ben-Nissan, and Michal Sharon
Antioxidants & Redox Signaling, Vol. 32, No. 9, March 2020: 636-655.

ELIFE
STRUCTURAL BIOLOGY AND MOLECULAR BIOPHYSICS
Structure of the AAA protein Msp1 reveals mechanism of mislocalized membrane protein extraction
Lan Wang, Alexander Myasnikov ... Peter Walter

Msp1 recruits substrates at the open seam of the spiral oligomer and extracts them with functionally adapted elements.

Nature Reviews - Microbiology

Genome Watch | 27 January 2020
A bacterial toolkit for plants
This month's Genome Watch highlights efforts to engineer microorganisms and their plant hosts to address the challenges of sustainable agriculture.

Liu G, Zha Z, Cai H, Qin D, Jia H, Liu C, Qiu D, Zhang Z, Wan Z, Yang Y, Wan B, You A, Jiao C.
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Plant J.

Impact of oxidative stress on the function, abundance and turnover of the Arabidopsis 80S cytosolic ribosome
Karzan Jalal Salih, Owen Duncan, Lei Li, Brendan O'Leary, Ricarda Fenske, Josua Troesch, A. Harvey Millar

Chloroplast nucleoids are highly dynamic in ploidy, number, and structure during angiosperm leaf development
Stephan Greiner, Hieronim Golczyk, Irina Malinova, Tommaso Pellizzer, Ralph Bock, Thomas Börner, Reinhold G. Herrmann

Significance Statement
Plastid DNA is organized in nucleoids that are highly dynamic in organization, structure, number, and DNA amount during leaf development. The present investigation now fully resolves this dynamic and is a precise cytogenetic and quantitative characterization of nucleoid DNA in the mesophyll spanning the entire life cycle of the leaf.

Dormancy cycling: translation-related transcripts are the main difference between dormant and non-dormant seeds in the field
Gonda Buijs, Afke Vogelzang, Harm Nijveen, Leónie Bentsink

Significance Statement

Little is known about seed dormancy under natural conditions. This field study provides an in-depth insight, at the physiological and transcriptional level, of how Arabidopsis seeds cycle through dormancy. We show that dormancy is strongly regulated by the environment, both by seasonal changes as well as by sudden changes. We identified large transcriptional changes and show that in particular the translational machinery is upregulated when seeds are non-dormant.

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