

Jan 29

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Discovery of new molecular entities able to strongly interfere with Hsp90 C-terminal domain.
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Context-Dependent and Disease-Specific Diversity in Protein Interactions within Stress Granules.
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Nitric oxide suppresses aluminum-induced programmed cell death in peanut (*Arachis hypoganea* L.) root tips by improving mitochondrial physiological properties.
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Wolhuter K, Whitwell HJ, Switzer CH, Burgoyne JR, Timms JF, Eaton P.
Evidence against Stable Protein S-Nitrosylation as a Widespread Mechanism of Post-translational Regulation.
Mol Cell. 2018 Jan 12;. PMID: 29358077

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Evidence against Stable Protein S-Nitrosylation as a Widespread Mechanism of Post-translational Regulation.

[Wolhuter K](#)¹, [Whitwell HJ](#)², [Switzer CH](#)¹, [Burgoyne JR](#)¹, [Timms JF](#)², [Eaton P](#)³.

King's College London, School of Cardiovascular Medicine & Sciences, British Heart Foundation Centre of Research Excellence the Rayne Institute, St. Thomas' Hospital, London SE1 7EH, UK.

Institute for Women's Health, University College London, Gower Street, London WC1E 6BT, UK.

King's College London, School of Cardiovascular Medicine & Sciences, British Heart Foundation Centre of Research Excellence the Rayne Institute, St. Thomas' Hospital, London SE1 7EH, UK. Electronic address: philip.eaton@kcl.ac.uk.

S-nitrosation, commonly referred to as S-nitrosylation, is widely regarded as a ubiquitous, stable post-translational modification that directly regulates many proteins. Such a widespread role would appear to be incompatible with the inherent lability of the S-nitroso bond, especially its propensity to rapidly react with thiols to generate disulfide bonds. As anticipated, we observed robust and widespread protein S-nitrosation after exposing cells to nitrosocysteine or lipopolysaccharide. Proteins detected using the ascorbate-dependent biotin switch method are typically interpreted to be directly regulated by S-nitrosation. However, these S-nitrosated proteins are shown to predominantly comprise transient intermediates leading to disulfide bond formation. These disulfides are likely to be the dominant end effectors resulting from elevations in nitrosating cellular nitric oxide species. We propose that S-nitrosation primarily serves as a transient intermediate leading to disulfide formation. Overall, we conclude that the current widely held perception that stable S-nitrosation directly regulates the function of many proteins is significantly incorrect.

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Bioprotocol

[Determining Ribosome Translational Status by Ribo-ELISA](#)

Authors: [Amandine Bastide](#), [Jonathan W. Yewdell](#) and [Alexandre David](#)

[Abstract] The Ribo-ELISA was originally developed to elucidate the basis for the ribopuromycylation method (RPM)-based detection of ribosome bound nascent chains. The Ribo-ELISA enables characterization of the ...

Article identifier: bio-protocol.org/e2670

[Easy and Efficient Permeabilization of Cyanobacteria for *in vivo* Enzyme Assays Using B-PER](#)

Authors: [Simon Matthé Erstad](#) and [Yumiko Sakuragi](#)

[Abstract] Cyanobacteria are photosynthetic bacteria that thrive in diverse ecosystems and play major roles in the global carbon cycle. The abilities of cyanobacteria to fix atmospheric CO₂ and to allocate the fixed ...

Article identifier: bio-protocol.org/e2667

Cell: Alert 22 January-29 January

[Context-Dependent and Disease-Specific Diversity in Protein Interactions within Stress Granules](#) Pages 590-604.e13

Sebastian Markmiller, Sahar Soltanieh, Kari L. Server, Raymond Mak, Wenhao Jin, Mark Y. Fang, En-Ching Luo, Florian Krach, Dejun Yang, Anindya Sen, Amit Fulzele, Jacob M. Wozniak, David J. Gonzalez, Mark W. Kankel, Fen-Biao Gao, Eric J. Bennett, Eric Lécuyer, Gene W. Yeo

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Nitric oxide acts downstream of abscisic acid in molybdenum-induced oxidative tolerance in wheat.

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Transcriptome profile of NO-induced Arabidopsis transcription factor genes suggests their putative regulatory role in multiple biological processes.

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Detection of Reactive Oxygen and Nitrogen Species (ROS/RNS) During Hypersensitive Cell Death.

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Nature Cell Biology

[The MTM1–UBQLN2–HSP complex mediates degradation of misfolded intermediate filaments in skeletal muscle](#)
Gavriilidis et al. show that MTM1, which is mutated in X-linked centronuclear myopathy, and UBQLN2 recognize misfolded desmin and vimentin and trigger their degradation to clear misfolded intermediated filaments prior to aggregate formation. Christos Gavriilidis , Leila Laredj [...] & Karim Hnia

[EXD2 governs germ stem cell homeostasis and lifespan by promoting mitoribosome integrity and translation](#)
By analysing the exonuclease EXD2, Silva et al. find that it localizes to mitochondria, and that its loss alters metabolism by affecting mitochondrial translation and causes developmental delay and lifespan extension in flies. Joana Silva, , Suvi Aivio[...] & Travis H. Stracker

Physiologia Plantarum Content Alert: 162, 2 (February 2018)

[Stress response regulation by epigenetic mechanisms: changing of the guards \(pages 239–250\)](#)

Maria Luz Annacondia, Melissa H. Magerøy and German Martinez
Version of Record online: 30 NOV 2017 | DOI: 10.1111/ppl.12662

[Interaction points in plant stress signaling pathways \(pages 191–204\)](#)

Kirk Overmyer, Katariina Vuorinen and Mikael Brosché
Version of Record online: 24 OCT 2017 | DOI: 10.1111/ppl.12639

[Harnessing transcription for bioproduction in cyanobacteria \(pages 148–155\)](#)

Karin Stensjö, Konstantinos Vavitsas and Taina Tyystjärvi
Version of Record online: 11 SEP 2017 | DOI: 10.1111/ppl.12606

Science 19 Jan 2018:

[A global atlas of the dominant bacteria found in soil](#)

Manuel Delgado-Baquerizo¹, et al
Vol. 359, Issue 6373, pp. 320-325 DOI: 10.1126/science.aap9516

The immense diversity of soil bacterial communities has stymied efforts to characterize individual taxa and document their global distributions. We analyzed soils from 237 locations across six continents and found that only 2% of bacterial phylotypes (~500 phylotypes) consistently accounted for almost half of the soil bacterial communities worldwide. Despite the overwhelming diversity of bacterial communities, relatively few bacterial taxa are abundant in soils globally. We clustered these dominant taxa into ecological groups to build the first global atlas of soil bacterial taxa. Our study narrows down the immense number of bacterial taxa to a “most wanted” list that will be fruitful targets for genomic and cultivation-based efforts aimed at improving our understanding of soil microbes and their contributions to ecosystem functioning.

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Hsf1 and Hsp70 constitute a two-component feedback loop that regulates the yeast heat shock response.
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The small heat shock protein Hsp27 binds α -synuclein fibrils, preventing elongation and cytotoxicity.
J Biol Chem. 2018 Jan 30;. [Epub ahead of print]
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The EPR Method for Detecting Nitric Oxide in Plant Senescence.
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Plant temperature acclimation and growth rely on cytosolic ribosome biogenesis factor homologs.

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[High-Density Proximity Mapping Reveals the Subcellular Organization of mRNA-Associated Granules and Bodies](#)

Molecular Cell, Volume 69, Issue 3, 1 February 2018, Pages 517-532.e11 [PDF \(8100 K\)](#)

Sebastian Markmiller, Sahar Soltanieh, Kari L. Server, Raymond Mak, Wenhao Jin, Mark Y. Fang, En-Ching Luo, Florian Krach, Dejun Yang, Anindya Sen, Amit Fulzele, Jacob M. Wozniak, David J. Gonzalez, Mark W. Kankel, Fen-Biao Gao, Eric J. Bennett, Eric Lécuyer, Gene W. Yeo

[Context-Dependent and Disease-Specific Diversity in Protein Interactions within Stress Granules](#)

Cell, Volume 172, Issue 3, 25 January 2018, Pages 590-604.e13 [PDF \(8733 K\)](#)

Molecular Cell

[Advances in CLIP Technologies for Studies of Protein-RNA Interactions](#) Review Article

Pages 354-369

Flora C.Y. Lee, Jernej Ule

Nature Plants

[Dynamic thylakoid stacking regulates the balance between linear and cyclic photosynthetic electron transfer](#)

William H. J. Wood, Craig MacGregor-Chatwin, Samuel F. H. Barnett, Guy E. Mayneord, Xia Huang *et al.*

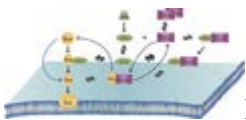
Nature Plants 4, doi:10.1038/s41477-017-0092-7

The FEBS Journal Content Alert: 285, 3 (February 2018)

[Bax, Bak and beyond — mitochondrial performance in apoptosis \(pages 416–431\)](#) Review

Aida Peña-Blanco and Ana J. García-Sáez

Version of Record online: 4 SEP 2017 | DOI: 10.1111/febs.14186

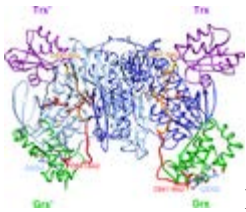


Bax and Bak are members of the Bcl-2 family and core regulators of the intrinsic pathway of apoptosis. Here, we review recent structural and biophysical evidence on how Bax and Bak mediate mitochondrial outer membrane permeabilization. We also discuss the regulation of Bax and Bak by the Bcl-2

[Kinetic characterization of wild-type and mutant human thioredoxin glutathione reductase defines its reaction and regulatory mechanisms \(pages 542–558\)](#)

Christina Brandstaedter, Karin Fritz-Wolf, Stine Weder, Marina Fischer, Beate Hecker, Stefan Rahlfs and Katja Becker

Version of Record online: 29 DEC 2017 | DOI: 10.1111/febs.14357



Human thioredoxin glutathione reductase is a multifunctional selenocysteine-containing enzyme composed of a thioredoxin reductase and a monothiol glutaredoxin domain. In our study, we kinetically characterized the full-length protein, the Sec→Cys mutant, and the isolated domains mechanistically by using Trx, DTNB, HED, or GSSG as substrates. Furthermore, glutathionylation was identified as a regulatory principle of the enzyme.

The FEBS Journal Content Alert (New Articles)

Structural mechanisms for the S-nitrosylation-derived protection of mouse galectin-2 from oxidation-induced inactivation revealed by NMR

Masayoshi Sakakura, Mayumi Tamura, Norihiko Fujii, Tomoharu Takeuchi, Tomomi Hatanaka, Seishi Kishimoto, Yoichiro Arata and Hideo Takahashi

Accepted manuscript online: 2 FEB 2018 03:52AM EST | DOI: 10.1111/febs.14397

Current Biology: Alert 30 January-06 February

TOM70 Sustains Cell Bioenergetics by Promoting IP3R3-Mediated ER to Mitochondria Ca²⁺ Transfer *Pages 369-382.e6*

Riccardo Filadi, Nuno Santos Leal, Bernadette Schreiner, Alice Rossi, Giacomo Dentoni, Catarina Moreira Pinho, Birgitta Wiehager, Domenico Cieri, Tito Calì, Paola Pizzo, Maria Ankarcrona

Nature volume 554, pages 128–132 (01 February 2018)

Mitochondrial translation requires folate-dependent tRNA methylation

Raphael J. Morscher, Gregory S. Ducker, Sophia Hsin-Jung Li, Johannes A. Mayer, Zemer Gitai+ *et al.*

Mammalian mitochondria use folate-bound one-carbon units generated by the enzyme SHMT2 to methylate tRNA, and this modification is required for mitochondrial translation and thus oxidative phosphorylation.

Nature Structural and Molecular Biology 22 January 2018

Structural basis of AAUAAA polyadenylation signal recognition by the human CPSF complex

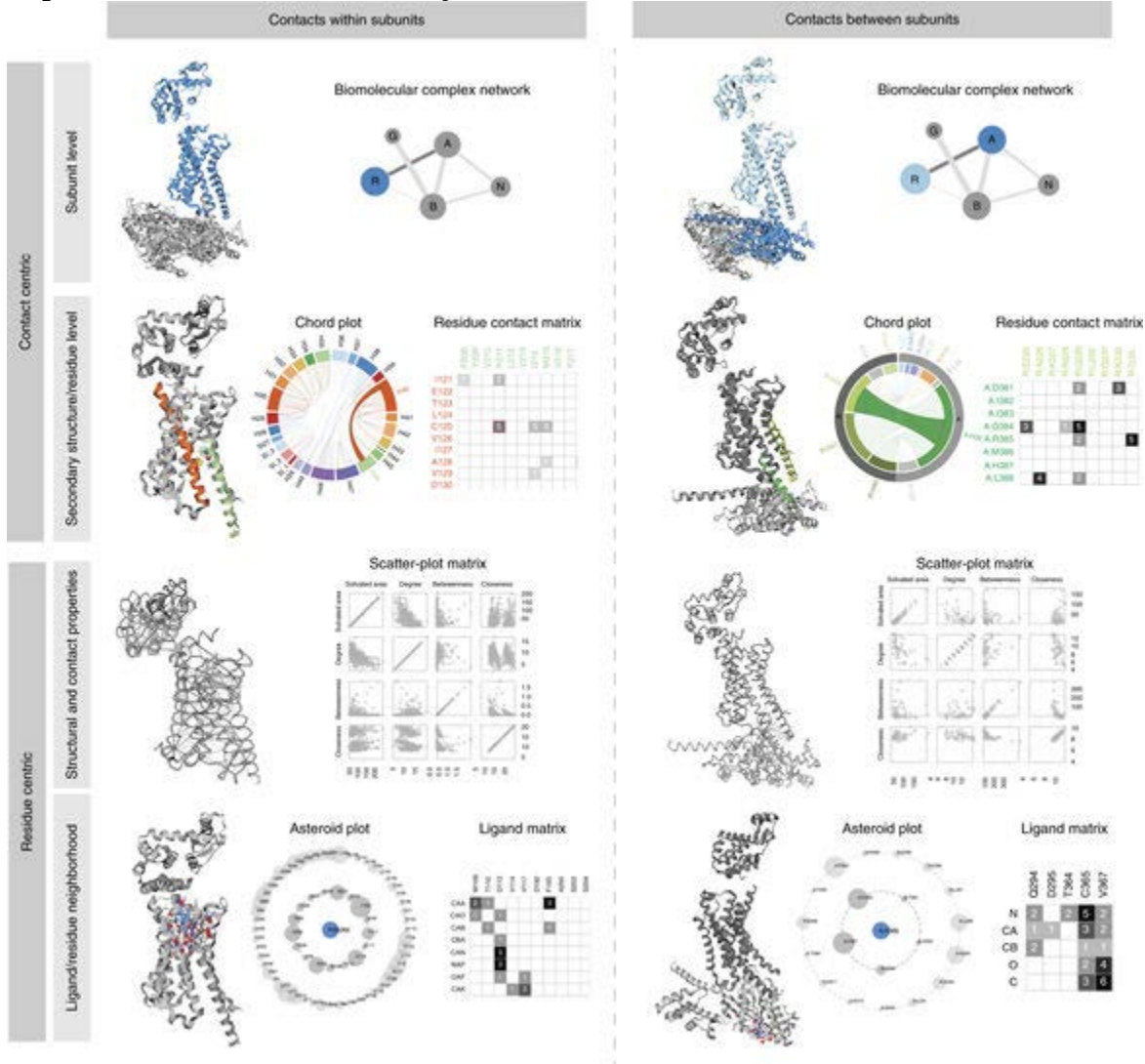
The cryo-EM structure of the human core CPSF complex, containing CPSF160, WDR33, CPSF30 and Fip1 subunits, bound to its RNA target reveals the mechanism of PAS recognition.

Marcello Clerici, Marco Faini [...] & Martin Jinek

Visualization and analysis of non-covalent contacts using the Protein Contacts Atlas

The Protein Contacts Atlas is an interactive resource of non-covalent contacts that can generate multiple representations of non-covalent contacts from PDB structures at different scales, from atoms to subunits and entire complexes.

Melis Kayikci, A. J. Venkatakrisnan[...] & M. Madan Babu



Nature contents: 18 January 2018

[An extracellular network of *Arabidopsis* leucine-rich repeat receptor kinases](#)

Elwira Smakowska-Luzan, G. Adam Mott, Katarzyna Parys, Martin Stegmann, Timothy C Howton+ [et al.](#)

A high-throughput assay is used to analyse 40,000 potential extracellular domain interactions of a large family of plant cell surface receptors (LRR-RKs) and provide a cell surface interaction network for these receptors.

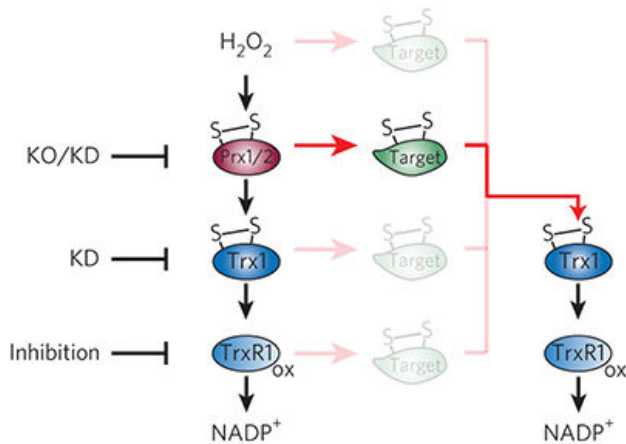
EMBO J.

<http://EMBOJ.embopress.org/content/37/2/282?etoc>

Complete suppression of Htt fibrilization and disaggregation of Htt fibrils by a trimeric chaperone complex

Annika Scior, Alexander Buntru, Kristin Arnsburg, Anne Ast, Manuel Iburg, Katrin Juenemann, Maria Lucia Pigazzini, Barbara Mlody, Dmytro Puchkov, Josef Priller, Erich E Wanker, Alessandro Prigione and Janine Kirstein

A dynamic chaperone complex of Hsc70, Hsp110 and J-protein dissolves pathological Huntingtin fibrils in vitro and prevents aggregate formation in Huntington's disease patient-derived neurons.



Cytosolic 2-Cys peroxiredoxins can enable, rather than compete with, rapid thiol oxidation by relaying H₂O₂-derived oxidizing equivalents to other proteins, suggesting a broadened role for peroxiredoxins as sensors and transmitters of H₂O₂ signals.

Plant, Cell & Environment Content Alert (New Articles)

Plasticity of photosynthetic heat tolerance in plants adapted to thermally contrasting biomes

Lingling Zhu, Keith J. Bloomfield, Charles H. Hocart, John J.G. Egerton, Odhran S. O'Sullivan, Aurore Penillard, Lasantha K. Weerasinghe and Owen K. Atkin

Accepted manuscript online: 5 JAN 2018 01:35AM EST | DOI: 10.1111/pce.13133