July/August 2020

**Molecular Cell : Volume 79, Issue 1**

[**The Nuclear SUMO-Targeted Ubiquitin Quality Control Network Regulates the Dynamics of Cytoplasmic Stress Granules**](https://click.notification.elsevier.com/CL0/https%3A//www.sciencedirect.com/science%3F_ob%3DGatewayURL%26_method%3DcitationSearch%26_version%3D1%26_piikey%3DS109727652030318X%26_origin%3DRV_SD_TOC_EMAIL%26dgcid%3Draven_sd_via_email/1/010001730ff65a51-29ebc13e-3f97-4898-b5b3-b0a913df9614-000000/0UPwfSs0zLT9oAZfb-68ZR-n0bpWopDXVt-HcnHrwYs%3D148)*Pages 54-67.e7*

Jan Keiten-Schmitz, Kristina Wagner, Tanja Piller, Manuel Kaulich, ... Stefan Müller

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| [**FOXM1 nuclear transcription factor translocates into mitochondria and inhibits oxidative phosphorylation**](http://snowplow.apps.clarivate.com/r/tp2?u=https%3A%2F%2Fgateway.webofknowledge.com%2Fgateway%2FGateway.cgi%3FGWVersion%3D2%26SrcAuth%3DAlerting%26AlertId%3Dfb1d5777-5240-413b-8e16-fc7e01d84f57%26KeyQueryID%3D2e9cd184-b3c0-46eb-9c3d-71fd78e259fc%26SrcApp%3Dcitation%26DestApp%3DWOS%26DestLinkType%3DFullRecord%26KeyUT%3DWOS%3A000541148100009&co=%7B%22schema%22%3A%22iglu%3Acom.snowplowanalytics.snowplow%2Fcontexts%2Fjsonschema%2F1-0-0%22%2C%22data%22%3A%5B%7B%22schema%22%3A%22http%3A%2F%2Fjson-schema.clarivate.io%2Figlu%2Femailengine%2F1-0-0%22%2C%22data%22%3A%7B%22emailInstId%22%3A%22882f2c2b-d0a8-42bc-a33c-ba32392d9e1c%22%7D%7D%5D%7D&e=se&aid=email-eng&se_ac=alert-wos-click-on-record-link) |
| Black, Markaisa; Arumugam, Paritha; Shukla, Samriddhi; Pradhan, Arun; Ustiyan, Vladimir; et al.  |
| Molecular Biology Of The Cell  |
|  Forkhead box M1 (FOXM1), a nuclear transcription factor that activates cell cycle regulatory genes, is highly expressed in a majority of human cancers. The function of FOXM1 independent of nuclear transcription is unknown. In the present |

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| --- |
| Plants (RNA) Editors: Testing for Conservation in RNA Editing in moss and angiospermsPatrice A SaloméPlant Cell 2020 tpc.20.00511; Advance Publication July 2, 2020; doi:10.1105/tpc.20.00511 **OPEN**[http://www.plantcell.org/content/early/2020/07/02/tpc.20.00511](http://www.plantcell.org/content/early/2020/07/02/tpc.20.00511?papetoc) |

One C-to-U RNA Editing Site and Two Independently Evolved Editing Factors: Testing Reciprocal Complementation with DYW-type PPR Proteins from the Moss Physcomitrium (Physcomitrella) Patens and the Flowering Plants Macadamia integrifolia and Arabidopsis thaliana

Bastian Oldenkott, Matthias Burger, Anke-Christiane Hein, Anja Jörg, Jennifer Senkler, Hans-Peter Braun, Volker Knoop, Mizuki Takenaka and Mareike Schallenberg-Rüdinger

Plant Cell 2020 tpc.20.00311; Advance Publication July 2, 2020; doi:10.1105/tpc.20.00311

[http://www.plantcell.org/content/early/2020/07/02/tpc.20.00311.abstract](http://www.plantcell.org/content/early/2020/07/02/tpc.20.00311.abstract?papetoc)

##### [The HSP110/HSP70 disaggregation system generates spreading‐competent toxic α‐synuclein species](http://el.wiley.com/ls/click?upn=3P-2FFNDAGSso-2BACQqCJSxZVvj6VMumVq8nc7Y-2BDitgjxYErsGfKyq325HsPMBDIgJyRag1LR-2BL4Q5c1F0LpQo9J2I-2FOLAmrEHRJnGlEfhbaKH-2FY4j8OUkmbXfqzibwdD9j30IiUU37pbTPASnf-2Fcxuhp66Rh9XTaErV-2B2mHvJsw6rMVWY2rFp3YOdjXdoVvg9jNYtCN8dSxzmwAyjUipstwh2kstHWbcrGCfbVJSm0u8PhSLoNiq4X5Xz8M5ZjRcNroY-2BaJeiRAXwIclHrroVKRQ64-2BY9mp-2BE2RHqsjA76V-2Bf-2BRne4oVzE00xauBJX5kXbPoft1Gy1V7CZ1J05423wE8qDVrAhFwpa-2BTtS1A2ysPlzM9A-2BRO9pu0gVUABFOyBeZPhRV-2FWgfx7DCe3n4P1jQ-3D-3DRYm2_HkAt-2FolY2N9G7SBtQolAIZGllYDvfaqSPk1wLioQsLbg-2BlZCeb9mKojEutUZwJJ-2FMQjTZe8cd8fW7RtQZnrh8Tzrso30-2FjUt-2BGwvwWQDQhxyDl8AJHJ-2F3WIXLnlG8ybVwSF-2FpyN-2BM5zublf7cejunvvfCMANthzLjZ-2FAvw5PUNzRDlwoMnrZ0-2B4EF98iKeIVfpwFQMDryr74kHdHyiuMnWZb5dtPOyaRPGORsvMbcDjVb9-2B1i6davx0VnFFcCtRDkNf-2FBfk7js8tAGyxxbOVHYLLz7zpjuqNKVetr0ApmFAjPvGu-2F-2F5IeNPFfGILcoHK)

Jessica Tittelmeier, Carl Alexander Sandhof, Heidrun Maja Ries, Silke Druffel‐Augustin, Axel Mogk, Bernd Bukau, Carmen Nussbaum‐Krammer

EMBO J (2020) 39: e103954 | First Published: 25 May 2020



Depletion of the HSP70 disaggregase cochaperone HSP110 impairs general cellular protein folding capacity, but at the same time reduces foci formation, cell‐to‐cell transmission, and toxicity of α‐synuclein in a *Caenorhabditis elegans* model.

##### [A novel approach to measure mitochondrial respiration in frozen biological samples](http://el.wiley.com/ls/click?upn=3P-2FFNDAGSso-2BACQqCJSxZVvj6VMumVq8nc7Y-2BDitgjxYErsGfKyq325HsPMBDIgJyRag1LR-2BL4Q5c1F0LpQo9J2I-2FOLAmrEHRJnGlEfhbaKH-2FY4j8OUkmbXfqzibwdD9j30IiUU37pbTPASnf-2Fcxuhp66Rh9XTaErV-2B2mHvJsw6rMVWY2rFp3YOdjXdoVvg9jNYtCN8dSxzmwAyjUipstwh2kstHWbcrGCfbVJSm0u8PhSLoNiq4X5Xz8M5ZjRcNroY-2BaJeiRAXwIclHrroVKRQ64-2BY9mp-2BE2RHqsjA76V-2Bf-2BRne4oVzE00xauBJX5kXXydbQ1hrpYGhZzbIrpJUMru6i2AzwNUqJTTMadDu3klWQ5kNlrDwOU-2FhaXmj5nlP85s9YrbrOg5GqwK-2BGDxFrA-3D-3DzOyN_HkAt-2FolY2N9G7SBtQolAIZGllYDvfaqSPk1wLioQsLbg-2BlZCeb9mKojEutUZwJJ-2FMQjTZe8cd8fW7RtQZnrh8Tzrso30-2FjUt-2BGwvwWQDQhxyDl8AJHJ-2F3WIXLnlG8ybVfobGvDnjZeYPLGu7DrDUhXd5bSfGjbzQXdu7b-2FlgbwxB6hIv9h4UGfLJGUiWedw5aQ-2BqHgrh3ZjLrwRnR3AY3Ajs-2BncIqG0JgCOYLWGL7oEjvddfv2-2FGWF9v1-2BzIHhYvHuGwy9KpXXNFqC2RPQvsAzjcMZdUKKewSOjtzx1H-2Fu0G3JTDGu32VxWGbkpAcuqm)

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EMBO J (2020) 39: e104073 | First Published: 20 May 2020



Reconstitution of maximal mitochondrial respiration circumvents the limitations associated with current methods for assessing mitochondrial bioenergetics in frozen cli

PLOS Computational Biology Volume 16(6) June 2020

#### [Two-step mechanism of J-domain action in driving Hsp70 function](http://click.e.plos.org/?qs=fa40368865f64db1cd098ee15abfeb8328992810fd126e7c21a6ea898268f2d7542bc8e0f16ed43d7188f34270979923)

**Bartlomiej Tomiczek, Wojciech Delewski, Lukasz Nierzwicki, Milena Stolarska, Igor Grochowina, Brenda Schilke, Rafal Dutkiewicz, Marta A. Uzarska, Szymon J. Ciesielski, Jacek Czub, Elizabeth A. Craig, Jaroslaw Marszalek**

**PLOS Genetics Volume 16(6) June 2020**

#### [Reciprocal regulation between nicotinamide adenine dinucleotide metabolism and abscisic acid and stress response pathways in Arabidopsis](http://click.e.plos.org/?qs=f760aaf01987d6f66635b4bc8a5368cbbfcc142fe9e01b09ff9b843a062b044bc31e4f2ad6dc5c69bf6f54fe3235efa0)

**Yechun Hong, Zhen Wang, Huazhong Shi, Juanjuan Yao, Xue Liu, Fuxing Wang, Liang Zeng, Zhi Xie, Jian-Kang Zhu**

Nitrate in 2020: Thirty Years from Transport to Signaling Networks

Elena A. Vidal, José M. Alvarez, Viviana Araus, Eleodoro Riveras, Matthew D. Brooks, Gabriel Krouk, Sandrine Ruffel, Laurence Lejay, Nigel M. Crawford, Gloria M. Coruzzi and Rodrigo A. Gutiérrez

Plant Cell 2020 32: 2094-2119. First Published on March 13, 2020; doi:10.1105/tpc.19.00748

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Article| [Volume 39, ISSUE 1](https://www.cell.com/molecular-cell/issue?pii=S1097-2765(10)X0014-4), P121-132, July 09, 2010

# Imaging Interorganelle Contacts and Local Calcium Dynamics at the ER-Mitochondrial Interface

# [György Csordás](https://www.cell.com/molecular-cell/fulltext/S1097-2765%2810%2900496-X?_returnURL=https%3A%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS109727651000496X%3Fshowall%3Dtrue) ArchiveDOI:<https://doi.org/10.1016/j.molcel.2010.06.029>

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**Nature Plants**

Brief Communication | 29 June 2020

**[An inducible genome editing system for plants](https://s4cloudae36f1aac.hana.ondemand.com:443/data-buffer/sap/public/cuan/link/100/7619B7E735C171AA72681FCF7D5B99BC8EF79B7A?_V_=2&_K11_=363564CE680AF2212208264FA627255B7C4D2F81&_L54AD1F204_=c2NlbmFyaW89TUxDUEcmdGVuYW50PW15MzA0NDI0LnM0aGFuYS5vbmRlbWFuZC5jb20mdGFyZ2V0PWh0dHA6Ly93d3cubmF0dXJlLmNvbS9hcnRpY2xlcy9zNDE0NzctMDIwLTA2OTUtMj91dG1fc291cmNlPW5wbGFudHNfZXRvYyZ1dG1fbWVkaXVtPWVtYWlsJnV0bV9jYW1wYWlnbj10b2NfNDE0NzdfNl83JnV0bV9jb250ZW50PTIwMjAwNzE0JldULmVjX2lkPU5QTEFOVFMtMjAyMDA3JnNhcC1vdXRib3VuZC1pZD03NjE5QjdFNzM1QzE3MUFBNzI2ODFGQ0Y3RDVCOTlCQzhFRjc5QjdB&_K13_=78&_K14_=8d049f8e9d156593fc24755eab025d75a9364c6d36c470a985bc6d8e567cb740)**

Xin Wang, Lingling Ye, Munan Lyu, Robertas Ursache, Ari Löytynoja *et al.*

*Nature Plants* **6**, doi:10.1038/s41477-020-0695-2

[**Highly efficient DNA-free plant genome editing using virally delivered CRISPR–Cas9**](https://s4cloudae36f1aac.hana.ondemand.com:443/data-buffer/sap/public/cuan/link/100/7619B7E735C171AA72681FCF7D5B99BC8EF79B7A?_V_=2&_K11_=7F12EC35C5418C577DF03B3F2D191D5A8786CB13&_L54AD1F204_=c2NlbmFyaW89TUxDUEcmdGVuYW50PW15MzA0NDI0LnM0aGFuYS5vbmRlbWFuZC5jb20mdGFyZ2V0PWh0dHA6Ly93d3cubmF0dXJlLmNvbS9hcnRpY2xlcy9zNDE0NzctMDIwLTA3MDQtNT91dG1fc291cmNlPW5wbGFudHNfZXRvYyZ1dG1fbWVkaXVtPWVtYWlsJnV0bV9jYW1wYWlnbj10b2NfNDE0NzdfNl83JnV0bV9jb250ZW50PTIwMjAwNzE0JldULmVjX2lkPU5QTEFOVFMtMjAyMDA3JnNhcC1vdXRib3VuZC1pZD03NjE5QjdFNzM1QzE3MUFBNzI2ODFGQ0Y3RDVCOTlCQzhFRjc5QjdB&_K13_=78&_K14_=287ffe1d13b88a59cbcf9feca467c77b9cd4a44ad248762a977d12611f7ad318)

Xiaonan Ma, Xiaoyan Zhang, Huimin Liu & Zhenghe Li

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Article | 29 June 2020

[**Global profiling of plant nuclear membrane proteome in Arabidopsis**](https://s4cloudae36f1aac.hana.ondemand.com:443/data-buffer/sap/public/cuan/link/100/7619B7E735C171AA72681FCF7D5B99BC8EF79B7A?_V_=2&_K11_=B8045F14C047F75FE937411882723CE31E1FCE3F&_L54AD1F204_=c2NlbmFyaW89TUxDUEcmdGVuYW50PW15MzA0NDI0LnM0aGFuYS5vbmRlbWFuZC5jb20mdGFyZ2V0PWh0dHA6Ly93d3cubmF0dXJlLmNvbS9hcnRpY2xlcy9zNDE0NzctMDIwLTA3MDAtOT91dG1fc291cmNlPW5wbGFudHNfZXRvYyZ1dG1fbWVkaXVtPWVtYWlsJnV0bV9jYW1wYWlnbj10b2NfNDE0NzdfNl83JnV0bV9jb250ZW50PTIwMjAwNzE0JldULmVjX2lkPU5QTEFOVFMtMjAyMDA3JnNhcC1vdXRib3VuZC1pZD03NjE5QjdFNzM1QzE3MUFBNzI2ODFGQ0Y3RDVCOTlCQzhFRjc5QjdB&_K13_=78&_K14_=5829da8a4563793d4cff924800baff6b9045041b79657e655ea39c5e2a9c6042)

Yu Tang, Aobo Huang & Yangnan Gu

*Nature Plants* **6**, doi:10.1038/s41477-020-0700-9

# Getting to the root of a problem

Stella M. Hurtley

Science  10 Jul 2020:
Vol. 369, Issue 6500, pp. 155
DOI: 10.1126/science.369.6500.155-a

[PDF](https://science-sciencemag-org.silk.library.umass.edu/content/369/6500/155.1/tab-pdf)

The model plant Arabidopsis thaliana is used to show how plant roots respond to and repair wounding.

Plants are rooted to a spot; they cannot migrate away from sources of damage, except potentially by growth. If a plant's roots are damaged, then the plant has to restore them. Hoermayer et al. examined restorative root growth in the model plant Arabidopsis thaliana. They used single-cell tracing and live-cell imaging to visualize the processes by which roots perceive a wound and then coordinate their regrowth response. After laser wounding, collapsed damaged cells triggered the release of the plant growth hormone auxin next to the wound site. This in turn regulated cell expansion and restorative division as the root cells divided to fill in the wound in response to changes in turgor pressure. Interfering with auxin signaling leads to overproliferation and the formation of tumorous growths on the repaired roots.

Proc. Natl. Acad. Sci. U.S.A. **117**, 15322 (2020).

A Once-Hidden ER Matrix Reveals the Totally Tubular Function of LUNAPARKs in Plants

Anne C. Rea

Plant Cell 2020 tpc.20.00509; Advance Publication July 8, 2020; doi:10.1105/tpc.20.00509 **OPEN**

[http://www.plantcell.org/content/early/2020/07/08/tpc.20.00509](http://www.plantcell.org/content/early/2020/07/08/tpc.20.00509?papetoc)

## Trends in plant sci

## [Prime Editing: Game Changer for Modifying Plant Genomes](https://click.notification.elsevier.com/CL0/https%3A//www.sciencedirect.com/science%3F_ob%3DGatewayURL%26_method%3DcitationSearch%26_version%3D1%26_piikey%3DS1360138520301904%26_origin%3DRV_SD_TOC_EMAIL%26dgcid%3Draven_sd_via_email/1/0100017352e34654-7a2e1a62-ebd9-4837-8939-cb77886442fa-000000/CPuP_WxQ_tYFmF2I-2fjaFCcB73Awx6d3ziJHnstXMQ%3D149)

*Pages 722-724*

Marek Marzec, Goetz Hensel

eLIFE

[Cell Biology](https://elifesciences.org/subjects/cell-biology?utm_source=content_alert&utm_medium=email&utm_content=fulltext&utm_campaign=15-July-20-elife-alert)

### [**Assigning mitochondrial localization of dual localized proteins using a yeast Bi-Genomic Mitochondrial-Split-GFP**](https://elifesciences.org/articles/56649?utm_source=content_alert&utm_medium=email&utm_content=fulltext&utm_campaign=15-July-20-elife-alert)

**Gaétan Bader, Ludovic Enkler ... Hubert Dominique Becker**

The Bi-Genomic Mitochondrial-Split-GFP, where both fragments of the Split-GFP are expressed by separated translation machineries, shuts off cytosolic fluorescence of dual-localized proteins, allowing visualization of their mitochondrial echoforms.

Yu Z, Cao J, Zhu S, Zhang L, Peng Y, Shi J.

Exogenous Nitric Oxide Enhances Disease Resistance by Nitrosylation and Inhibition of &lt;i&gt;S&lt;/i&gt;-Nitrosoglutathione Reductase in Peach Fruit.

Front Plant Sci. 2020;11:543. PMID: 32670301 [PubMed]

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Systematic Review of Plant Ribosome Heterogeneity and Specialization.

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# Trends in Plant Science

# Drug Discovery for Thirsty Crops

[https://doi.org/10.1016/j.tplants.2020.07.001](https://doi-org.silk.library.umass.edu/10.1016/j.tplants.2020.07.001)

Following virtual screening and structure-based ligand optimization, researchers have developed opabactin (OP), an abscisic acid (ABA)-receptor agonist with tenfold greater in vivo activity than ABA. This new ligand surpasses previous agonists for its potency and bioactivity on staple crops. OP leads a new class of agrochemicals designed to protect crops from drought.

## Trends in Plant Sciences

## [Alternative Routes to Improving Photosynthesis in Field Crops](https://click.notification.elsevier.com/CL0/https%3A//www.sciencedirect.com/science%3F_ob%3DGatewayURL%26_method%3DcitationSearch%26_version%3D1%26_piikey%3DS1360138520302144%26_origin%3DRV_SD_AIP_EMAIL%26dgcid%3Draven_sd_aip_email/1/0100017379e870c7-318d4f33-ec49-4c8a-a9c9-2478ba8c42f1-000000/TENryWi2Y_Eop8fio1e0oJdl_NCr-IX5ItxG4Lr8vWE%3D151)

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Cell Stress Chaperones. 2020 Jul 21;. [Epub ahead of print] PMID: 32696179 [PubMed - as supplied by publisher]

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Enhanced Nitric Oxide Synthesis Through Nitrate Supply Improves Drought Tolerance of Sugarcane Plants.

Front Plant Sci. 2020;11:970. PMID: 32695132 [PubMed]

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Structural insights into mammalian mitochondrial translation elongation catalyzed by mtEFG1.

EMBO J. 2020 Jun 30;:e104820. [Epub ahead of print] PMID: 32602580 [PubMed - as supplied by publisher]

##### [Heat stress response in the closest algal relatives of land plants reveals conserved stress signaling circuits](http://el.wiley.com/ls/click?upn=3P-2FFNDAGSso-2BACQqCJSxZQYXuyDFuSyQWVXTOVuATZfE2ZYhBvN14MKB0KVXOLGO8obGng7vSyli3t-2BN6pmypmfSBPRgOjz1-2BoMhV9vTSGbwxwDJE4QhKGEBwQEh4JM-2F6dPjqrOc5t-2FygXnXv6xEFTExNVbdq-2F2sGngEKHKWA9FbTqkD6Swgh8NGAa9gnk7eziQgFp-2BM6T6n7jcyb4W7keBEXJjQ4QSre4pZ3XcD5Z9WDaxc3kqdyCsO18F-2F0n1zrIN-2BalrBhWQpwZghbNy546il8ANrYHzV71QypquOokogJNU3jRZtwf388AJqSvw-2BuFAxJb-2FKgYKMgXtSzNBDTNsj9Lcsv1pab1ivkh98YvNpI-2Ffedp41nR6xAt0dsezp-2B21IamZT-2FEN67fVjxD-2FurA-3D-3DNwG1_HkAt-2FolY2N9G7SBtQolAIebGHMIcepevkbRzg2lvJN13USR46qpOU2nwZmhFKiAOszLta2Rs1v99WW6OlIfMJkM26WJVmoVYcfBcq8uoWip90zpjDpb8BWTrNVgPUrz9bszHCxT268ia1Cy0wCbeOEuCz3p2dRxVCoRNnysv-2FSlAQh1sJGJV-2F18E3ED6HEQRw0wKVWK3w208Nyu-2Fl6HGCAs5VoOnfAnSq2MTbHiu90G-2Fc0t9LESMpDVnwlzEoWYSr7gnrIXbx2WYCL5lspwJslfrE0pof6YWGaDohvgY7C18raDNDQBgmqGUQbnPVrYp)

Jan de Vries, Sophie de Vries, Bruce A. Curtis, Hong Zhou, Susanne Penny, Kirstin Feussner, Devanand M. Pinto, Michael Steinert, Alejandro M. Cohen, Klaus von Schwartzenberg, John M. Archibald

Pages: 1025-1048 | First Published: 24 April 2020


**Significance Statement**

We have used comparative transcriptomics and metabolomics to investigate the response to heat in the Zygnematophyceae, the closest algal relatives of land plants. Our manuscript offers fresh insight into the molecular physiological chassis that the earliest land plants might have used to overcome the temperature stress associated with terrestrial life.

## Current Biology

## [Identification of Conserved Gene-Regulatory Networks that Integrate Environmental Sensing and Growth in the Root Cambium](https://click.notification.elsevier.com/CL0/https%3A//www.sciencedirect.com/science%3F_ob%3DGatewayURL%26_method%3DcitationSearch%26_version%3D1%26_piikey%3DS0960982220307338%26_origin%3DRV_SD_TOC_EMAIL%26dgcid%3Draven_sd_via_email/1/01000173b4be9363-80d773e0-d821-4618-b2b0-73cae212a9d3-000000/I_5FmVVgWVrShDFtGhAtEGV0Ee0V5cENuProZUoxmms%3D152)

*Pages 2887-2900.e7*

Nam V. Hoang, Goh Choe, Yi Zheng, Ana Cecilia Aliaga Fandino, Inyoung Sung, Jaeryung Hur, Muhammad Kamran, Chulmin Park, Hyoujin Kim, Hongryul Ahn, Sun Kim, Zhangjun Fei, Ji-Young Lee

*Graphical abstract
*

## [Reprogramming of Stem Cell Activity to Convert Thorns into Branches](https://click.notification.elsevier.com/CL0/https%3A//www.sciencedirect.com/science%3F_ob%3DGatewayURL%26_method%3DcitationSearch%26_version%3D1%26_piikey%3DS0960982220307557%26_origin%3DRV_SD_TOC_EMAIL%26dgcid%3Draven_sd_via_email/1/01000173b4be9363-80d773e0-d821-4618-b2b0-73cae212a9d3-000000/oSkNhuqOyFBq5E-HWic0qhUqnROd1pPh_GUaM-MM7-s%3D152)

*Pages 2951-2961.e5*

Fei Zhang, Pascale Rossignol, Tengbo Huang, Yewei Wang, Alan May, Christopher Dupont, Vladimir Orbovic, Vivian F. Irish

*Graphical abstract
*

Dual-Reporting Transcriptionally Linked Genetically Encoded Fluorescent Indicators Resolve the Spatiotemporal Coordination of Cytosolic Abscisic Acid and Second Messenger Dynamics in Arabidopsis

Rainer Waadt, Philipp Köster, Zaida Andrés, Christian Waadt, Gabriele Bradamante, Konstantinos Lampou, Jörg Kudla and Karin Schumacher

Plant Cell 2020 32: 2582-2601. First Published on May 29, 2020; doi:10.1105/tpc.19.00892

[http://www.plantcell.org/content/32/8/2582.abstract](http://www.plantcell.org/content/32/8/2582.abstract?etoc)

Multiparametric in vivo analyses using dual-reporting genetically encoded fluorescent indicators reveal the spatiotemporal coordination of signaling compound dynamics in Arabidopsis roots.

eLIFE

[Biochemistry and Chemical Biology](https://elifesciences.org/subjects/biochemistry-chemical-biology?utm_source=content_alert&utm_medium=email&utm_content=fulltext&utm_campaign=3-August-20-elife-alert), [Cell Biology](https://elifesciences.org/subjects/cell-biology?utm_source=content_alert&utm_medium=email&utm_content=fulltext&utm_campaign=3-August-20-elife-alert)

### [**Peroxiredoxin promotes longevity and H2O2-resistance in yeast through redox-modulation of protein kinase A**](https://elifesciences.org/articles/60346?utm_source=content_alert&utm_medium=email&utm_content=fulltext&utm_campaign=3-August-20-elife-alert)

**Friederike Roger, Cecilia Picazo ... Mikael Molin**

The major cytosolic yeast peroxiredoxin Tsa1 controls aging and H2O2-resistance by inhibiting protein kinase A through a conserved cysteine in the catalytic subunit activation loop and not by scavenging H2O2.

[Plant Biology](https://elifesciences.org/subjects/plant-biology?utm_source=content_alert&utm_medium=email&utm_content=fulltext&utm_campaign=3-August-20-elife-alert)

### [**Accurate and versatile 3D segmentation of plant tissues at cellular resolution**](https://elifesciences.org/articles/57613?utm_source=content_alert&utm_medium=email&utm_content=fulltext&utm_campaign=3-August-20-elife-alert)

**Adrian Wolny, Lorenzo Cerrone ... Anna Kreshuk**

Nature Cell Biology

PROTEIN QUALITY CONTROL

# Protein homeostasis from the outside in

Brant M. Webster, Holly K. Gildea & Andrew Dillin

[*Nature Cell Biology*](https://www-nature-com.silk.library.umass.edu/ncb) **volume 22**, pages911–912(2020)

## Extracellular proteostasis prevents aggregation during pathogenic attack

[Published: 08 July 2020](https://www-nature-com.silk.library.umass.edu/articles/s41586-020-2461-z#article-info)

# Extracellular proteostasis prevents aggregation during pathogenic attack

Ivan Gallotta, ..Della C. David

[*Nature*](https://www-nature-com.silk.library.umass.edu/nature) (2020) Gallotta, I., Sandhu, A., Peters, M. *et al.* Extracellular proteostasis prevents aggregation during pathogenic attack. *Nature* (2020). https://doi-org.silk.library.umass.edu/10.1038/s41586-020-2461-z

## Abstract

In metazoans, the secreted proteome participates in intercellular signalling and innate immunity, and builds the extracellular matrix scaffold around cells. Compared with the relatively constant intracellular environment, conditions for proteins in the extracellular space are harsher, and low concentrations of ATP prevent the activity of intracellular components of the protein quality-control machinery. Until now, only a few bona fide extracellular chaperones and proteases have been shown to limit the aggregation of extracellular proteins[1](https://www-nature-com.silk.library.umass.edu/articles/s41586-020-2461-z#ref-CR1),[2](https://www-nature-com.silk.library.umass.edu/articles/s41586-020-2461-z#ref-CR2),[3](https://www-nature-com.silk.library.umass.edu/articles/s41586-020-2461-z#ref-CR3),[4](https://www-nature-com.silk.library.umass.edu/articles/s41586-020-2461-z#ref-CR4),[5](https://www-nature-com.silk.library.umass.edu/articles/s41586-020-2461-z#ref-CR5). Here we performed a systematic analysis of the extracellular proteostasis network in *Caenorhabditis elegans* with an RNA interference screen that targets genes that encode the secreted proteome. We discovered 57 regulators of extracellular protein aggregation, including several proteins related to innate immunity. Because intracellular proteostasis is upregulated in response to pathogens[6](https://www-nature-com.silk.library.umass.edu/articles/s41586-020-2461-z#ref-CR6),[7](https://www-nature-com.silk.library.umass.edu/articles/s41586-020-2461-z#ref-CR7),[8](https://www-nature-com.silk.library.umass.edu/articles/s41586-020-2461-z#ref-CR8),[9](https://www-nature-com.silk.library.umass.edu/articles/s41586-020-2461-z#ref-CR9), we investigated whether pathogens also stimulate extracellular proteostasis. Using a pore-forming toxin to mimic a pathogenic attack, we found that *C. elegans* responded by increasing the expression of components of extracellular proteostasis and by limiting aggregation of extracellular proteins. The activation of extracellular proteostasis was dependent on stress-activated MAP kinase signalling. Notably, the overexpression of components of extracellular proteostasis delayed ageing and rendered worms resistant to intoxication. We propose that enhanced extracellular proteostasis contributes to systemic host defence by maintaining a functional secreted proteome and avoiding proteotoxicity.

##### [Structural insights into mammalian mitochondrial translation elongation catalyzed by mtEFG 1](http://el.wiley.com/ls/click?upn=3P-2FFNDAGSso-2BACQqCJSxZVvj6VMumVq8nc7Y-2BDitgjxYErsGfKyq325HsPMBDIgJyRag1LR-2BL4Q5c1F0LpQo9J2I-2FOLAmrEHRJnGlEfhbaKH-2FY4j8OUkmbXfqzibwdD9j30IiUU37pbTPASnf-2FcxuvQ0boZyoZ8hsAchOo1RPaWNz3MXjNBc-2B2Xzp13-2BjjxXc9i6rSUhjnDPGG66ZtoDbDHgcZoTfjvs5NpEokuYH1W3ynONhoWUyMOxAcdcR7SSBbJxxZN5qfCnSboIZxfgPEnG6c5GqeN6yroV2ObPqu4VVF0WKuNkTqopRAOE4oRCbN9BlJt0D6e4CqCHED85ZvLo6y6PppaedBT1xY8ggaOyxlSRHf3JCr2nyqIy2MAFW1NtXAldXjxecc0s59FOQw-3D-3DBys3_HkAt-2FolY2N9G7SBtQolAIZGllYDvfaqSPk1wLioQsLbg-2BlZCeb9mKojEutUZwJJ-2F-2FxdIzvF7irrpDCXv4KK6jCZB7FI4PW1blxOZGsJI8JJ4Wdmoqa4TTLLrq3HVYLcgqG1lcw5ql7ILYEEHjjEFXxJQwr6sa6WTwdYYJsOtdqFEQYEcyxJXf7fLPg8ZpdGoTMfGHuBVaACmDaIt-2Fm2pxladP2UAlPf67PTlmZCn7CgE8l-2FSPJzYU8gsW8j1utOImkJweqxGB4bFdk35KTiVfDmadviDvTgNX5m2RcMdnZPijCcyi8X7Pkx1MNKz5bRp)

Eva Kummer, Nenad Ban

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