

A simple software error corrected: bittersweet chloroplast genome becomes the model

Bittersweet chloroplast genome will become the model for annotations and nightshade comparative genomics.

https://www.eurekalert.org/pub_releases/2018-05/uoh-ass051618.php

Metabolome Integrated Analysis of High-Temperature Response in *Pinus radiata*

Cytokinins, fatty acid metabolism and flavonoid and terpenoid biosynthesis were revealed as the most important pathways involved in heat-stress response in *Pinus radiata*, with zeatin riboside and isopentenyl adenosine as the key hormones coordinating these multiple and complex interactions. So, the integrative approach allowed elucidation of crucial metabolic mechanisms involved in heat response in *P. radiata*, as well as the identification of thermotolerance metabolic biomarkers (L-phenylalanine, hexadecanoic acid, and dihydromyricetin), crucial metabolites which can reschedule the metabolic strategy to adapt to high temperature.

<https://www.frontiersin.org/articles/10.3389/fpls.2018.00485/full>

Stomata - the plant pores that give us life - arise thanks to a gene called MUTE

The scientists discovered that a gene in plants known as MUTE orchestrates stomatal development. MUTE directs the activity of other genes that tell cells when to divide and not to divide.

https://www.eurekalert.org/pub_releases/2018-05/uow-s-t050718.php

Understanding how DNA is selectively tagged with 'do not use' marks

Salk scientists studying plants discovered a small family of proteins that control where in the genome DNA methylation marks are added.

https://www.eurekalert.org/pub_releases/2018-05/si-uhd050718.php

Серотонин мешает рису бороться с вредителями

Чтобы защитить рис от двух самых опасных вредителей, нужно отключить в нем серотониновый ген.

<https://www.nkj.ru/news/33786/>

Octulose, about to get bigger?

What is octulose? And why is it about to be bigger? Well, according to Qingwei Zhang and Dorothea Bartels, it's a "forgotten metabolite".

<https://www.botany.one/2018/05/octulose-about-to-get-bigger/>

The number of known plants species in the world and its annual increase

Scientists have counted the known, described and accepted number of plant species at the present time, about 374000, of which approximately 308312 are vascular plants, with 295383 flowering plants (angiosperms, monocots: 74273, eudicots: 210008).

<https://biotaxa.org/Phytotaxa/article/view/phytotaxa.261.3.1>

Molecular mechanisms controlling plant growth during abiotic stress

Here, we focus on a selection of recent advances made in our understanding of the molecular mechanisms that control plant growth during abiotic stress.

<https://academic.oup.com/jxb/article/69/11/2753/4999765>

CLERK is a novel receptor kinase required for sensing of root-active CLE peptides in *Arabidopsis*

Here, we have identified the CLE-RESISTANT RECEPTOR KINASE (CLERK) gene, which is required for full sensing of root-active CLE peptides in early developing protophloem.

<http://dev.biologists.org/content/145/10/dev162354>

CRootBox: A functional-structural root model

The root architecture model CRootBox presented here is a flexible framework to model root architecture and its interactions with static and dynamic soil environments.

<https://www.botany.one/2018/05/crootbox-a-functional-structural-root-model/>

DigR: a generic model and simulator of 3D root-system architecture

Barczi et al. propose a generic, open-source, user friendly, 3D model (DigR) which simulates the architecture and dynamics of a wide range of root systems based on root-system architectural analysis and typology.

<https://www.botany.one/2018/05/digr-a-generic-model-and-simulator-of-3d-root-system-architecture/>

How a cell knows when to divide

Research links cell size with commitment to cell division.

<https://www.sciencedaily.com/releases/2018/05/180523133347.htm>

A photosynthetic engine for artificial cells

Researchers engineered a cell-like structure that harnesses photosynthesis to perform designer reactions.

<https://www.sciencedaily.com/releases/2018/05/180529132017.htm>

Plant peptide spells relief from salty stress

Researchers at the RIKEN Center for Sustainable Resource Science (CSRS) have discovered a hormone-like peptide in plants that helps increase their tolerance to excessive salt.

https://www.eurekalert.org/pub_releases/2018-05/r-pps051118.php

A new model for communication in plant cells

UMD-led study details how plant cells use glutamate receptor-like proteins to build single-cell communication networks.

https://www.eurekalert.org/pub_releases/2018-05/uom-anm050118.php

Auxin decreases chromatin accessibility through the TIR1/AFBs auxin signaling pathway in proliferative cells

It has been shown that the positive regulation of chromatin-related genes mediated by the TIR1/AFBs auxin signaling pathway enhances nucleosome assembly, resulting in decreased chromatin accessibility in proliferative cells.

<https://www.nature.com/articles/s41598-018-25963-y>

The Root Transition Zone: A Hot Spot for Signal Crosstalk

We propose that the root transition zone is a hot spot for the integration of diverse inputs from endogenous (hormonal) and exogenous (sensorial) stimuli to control root growth.

[https://www.cell.com/trends/plant-science/fulltext/S1360-1385\(18\)30023-2](https://www.cell.com/trends/plant-science/fulltext/S1360-1385(18)30023-2)

Gibberellin Localization and Transport in Plants

In paper we summarize recent findings from studies of GA movement and localization, and discuss the importance of GA intermediates in long- and short-distance movement.

[https://www.cell.com/trends/plant-science/fulltext/S1360-1385\(18\)30024-4](https://www.cell.com/trends/plant-science/fulltext/S1360-1385(18)30024-4)

Dynamics and function of DNA methylation in plants

In this Review, we discuss DNA methylation in plants, including methylating and demethylating enzymes and regulatory factors, and the coordination of methylation and demethylation activities by a so-called methylstat mechanism; the functions of DNA methylation in regulating transposon silencing, gene expression and chromosome interactions; the roles of DNA methylation in plant development; and the involvement of DNA methylation in plant responses to biotic and abiotic stress conditions.

<https://www.nature.com/articles/s41580-018-0016-z#article-info>

Gibberellins play an essential role in late embryogenesis of *Arabidopsis*

Scientists uncover a space / time-specific role of gibberellin in regulating late embryogenesis through the gibberellin-DELLA-LEC1 signalling cascade, providing a novel mechanistic understanding of how phytohormones regulate.

<https://www.nature.com/articles/s41477-018-0143-8>

Adaptation to Phosphate Scarcity: Tips from *Arabidopsis* Roots

Here, we review recent findings in the root response of *A. thaliana* to low Pi availability and discuss the cellular and genetic basis of the inhibition of root growth in Pi-deprived seedlings.

[https://www.cell.com/trends/plant-science/fulltext/S1360-1385\(18\)30092-X](https://www.cell.com/trends/plant-science/fulltext/S1360-1385(18)30092-X)

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