

## 46<sup>th</sup> New Phytologist Symposium: [Stomata](#)

21–24 October 2024 | Kaifeng, China

| Day 1 – Monday 21 October 2024 |                                                                                                                                                                                                                                                                 |
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| 15:00 – 15:25                  | <b>Opening ceremony</b><br><b>Welcome from</b> <ul style="list-style-type: none"> <li>• Henan University</li> <li>• Chun-Peng Song, Henan University</li> <li>• Alistair Hetherington, <i>New Phytologist</i> Editor-in-Chief, University of Bristol</li> </ul> |
| 15:25 – 15:30                  | <b>Session 1, An overview of stomatal biology</b><br><b>Chairs: Alistair Hetherington and Chun-Peng Song</b>                                                                                                                                                    |
| 15:30 – 16:15                  | Keynote: Dominique Bergmann, Stanford University, USA<br><b>Learning from the past and anticipating the future in stomatal development</b><br><br><a href="#">Available to view on demand</a>                                                                   |
| 17:00 – 17:30                  | James Clark, University of Bath, UK<br><b>The origin and evolution of stomata</b><br><br><a href="#">Available to view on demand</a>                                                                                                                            |
| 17:30 – 18:00                  | Belinda Medlyn, Western Sydney University, Australia<br><b>Stomata and global change</b><br><br><a href="#">Available to view on demand</a>                                                                                                                     |

| Day 2 – Tuesday 22 October 2024 |                                                                                                                                                                                          |
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|                                 | <b>Session 2</b><br><b>Stomatal development</b><br>Chairs: Hanna Hörak and Juan Dong                                                                                                     |
| 9:00 – 9:30                     | Hanna Hörak, University of Tartu, Estonia<br><b>Stomatal form and function in the light side of the leaf</b><br><br><a href="#">Available to view on demand</a>                          |
| 9:30 – 10:00                    | Charles Anderson, Pennsylvania State University, USA<br><b>The flexoskeleton: regulation of stomatal dynamics by guard cell walls</b><br><br><a href="#">Available to view on demand</a> |
| 10:00 – 10:15                   | Ido Nir, ARO, Volcani Institute, Israel<br><b>Tomato stomatal development: diverse mechanisms of adaptive flexibility revealed by multi-species analysis</b>                             |
| 10:15 – 10:30                   | Xinyu Zhang, John Innes Centre, UK<br><b>Cell size control during stomatal development in Arabidopsis</b>                                                                                |
| 11:15 – 11:45                   | Suiwen Hou, Lanzhou University, China<br><b>Clathrin-mediated endocytosis regulates stomatal development in Arabidopsis</b>                                                              |
| 11:45 – 12:15                   | Juan Dong, Texas A&M University, USA<br><b>Precisions in space and time: polarity proteins during asymmetric division</b>                                                                |

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| 12:15 – 12:30 | Lea Berg, University of Bern, Switzerland<br><b>Leveraging single-cell transcriptomics to discover new genes in grass stomatal development</b>                                                                                                                                                                                                                                                                                                                                                     |
| 12:30 – 13:00 | On Sun Lau, National University of Singapore, Singapore<br><b>Environmental Control of Stomatal Formation</b><br><br><a href="#">Available to view on demand</a>                                                                                                                                                                                                                                                                                                                                   |
| 13:00         | Flash talks <ul style="list-style-type: none"> <li>• Nathanael Tan: Living under pressure: how guard cells cope with high inflation</li> <li>• Linsan Liu: Understanding the coordination of epidermal features in barley and wheat</li> <li>• Xin Yang: Priming of stomatal precursors by SPEECHLESS enables modulation of stomatal development by long-distance</li> <li>• Rini Rahiman: Role of TCP transcription factors in regulating stomatal development in Arabidopsis thaliana</li> </ul> |
| 14:20         | <b>Session 2</b><br><b>Stomatal development (continued)</b><br>Chairs: Hanna Hörak and Juan Dong                                                                                                                                                                                                                                                                                                                                                                                                   |
| 14:30 – 15:00 | Michael Raissig, University of Bern, Switzerland<br><b>Making better pores - decoding the developmental blueprint of grass stomata</b>                                                                                                                                                                                                                                                                                                                                                             |
| 15:00 – 15:30 | Sarah McKim, University of Dundee, Scotland, UK<br><b>Waxing on about epidermal development: the interplay between adaptive epidermal features</b>                                                                                                                                                                                                                                                                                                                                                 |
| 15:30 – 16:00 | Stuart Casson, University of Sheffield, UK<br><b>Photoreceptor and photosynthetic regulation of stomatal development</b><br><br><a href="#">Available to view on demand</a>                                                                                                                                                                                                                                                                                                                        |
|               | <b>Session 3: Stomatal movement – mechanisms</b><br>Chairs: Yun-Kuan Liang and Andrea Polle                                                                                                                                                                                                                                                                                                                                                                                                        |
| 16:30 – 17:00 | Rob Roelfsema, University of Wuerzburg, Germany<br><b>ABA-induced stomatal closure through Ca<sup>2+</sup>-dependent and -independent signaling pathways.</b>                                                                                                                                                                                                                                                                                                                                      |
| 17:00 – 17:15 | Yuhang Chen, Institute of Genetics and Developmental Biology, CAS, China<br><b>Mechanistic insights into phosphoactivation of SLAC1 in guard cell signaling</b>                                                                                                                                                                                                                                                                                                                                    |
| 17:15 – 17:45 | Michael Blatt, University of Glasgow, UK<br><b>GROK - an intimate in a familiar landscape?</b><br><br><a href="#">Available to view on demand</a>                                                                                                                                                                                                                                                                                                                                                  |
| 17:45         | Flash talks <ul style="list-style-type: none"> <li>• Xue Zhang: <b>Structural insights into GORK channel gating</b></li> <li>• Yoshiharu Mimata: <b>Regulation of stomatal closure by TCA cycle metabolites in grapevine</b></li> <li>• Shogo Kuwayama: <b>Exploration of PM H<sup>+</sup>-ATPase phosphorylation mechanism using stomatal opening inhibitors and their derivatives.</b></li> </ul>                                                                                                |

| Day 3 – Wednesday 23 October                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                             |
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| <b>Session 3: Stomatal movement - mechanisms (Continued)</b><br><b>Chair: Yun-Kuan Liang and Andrea Polle</b>               |                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 9:00 – 9:30                                                                                                                 | Zhizhong Gong, China Agricultural University, China<br><b>ZmHT1a maintains the turgor of guard cells, and negatively regulates ZmSLAC1 during ABA-induced stomatal closure in maize</b>                                                                                                                                                                                                                                                     |
| 9:30 – 9:45                                                                                                                 | Danilo Daloso, Federal University of Ceara, Brazil<br><b>Disentangling the role of sucrose for stomatal movement regulation</b><br><br><a href="#">Available to view on demand</a>                                                                                                                                                                                                                                                          |
| 9:45 – 10:15                                                                                                                | Agepati Raghavendra, University of Hyderabad, India<br><b>The rise in pH of guard cells: An intriguing component of stomatal closure</b><br><br><a href="#">Available to view on demand</a>                                                                                                                                                                                                                                                 |
| 11:00 – 11:30                                                                                                               | Diana Santelia, ETH Zurich, Switzerland<br><b>Guard cell starch metabolism at the intersection of environmental stimuli and stomatal movements</b><br><br><a href="#">Available to view on demand</a>                                                                                                                                                                                                                                       |
| 11:30 – 12:00                                                                                                               | Yun-Kuan Liang, Wuhan University, China<br><b>Understanding the genetic basis of stomatal morphogenesis and function</b><br><br><a href="#">Available to view on demand</a>                                                                                                                                                                                                                                                                 |
| 12:00 – 12:15                                                                                                               | Ashley Pridgeon, University of Bristol<br><b>Stomata and seedling establishment: Sunlight and shade</b>                                                                                                                                                                                                                                                                                                                                     |
| 12:15 – 12:25                                                                                                               | Flash talks <ul style="list-style-type: none"> <li>• Hoang Trang Dang: <b>Unravelling the molecular mechanisms underlying the superior performance of grass stomata</b></li> <li>• Caroline Ivsic: <b>Guard cell electrophysiology underpinning the evolution of light-induced stomatal opening</b></li> <li>• Taku Sakakibara: <b>Functional analysis of the Raf-like kinase VIK involved in light-induced stomatal opening</b></li> </ul> |
| <b>Session 4: Stomatal responses to biotic and abiotic signals</b><br><b>Chairs: Alistair Hetherington and Pengwei Wang</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 13:55 – 14:00                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 14:00 – 14:30                                                                                                               | Toshinori Kinoshita, Nagoya University, Japan<br><b>Light-induced stomatal opening and its effect on plant growth</b>                                                                                                                                                                                                                                                                                                                       |
| 14:30 – 14:45                                                                                                               | Nattiwong Pankasem, University of California, San Diego, UK<br><b>Warming temperature triggers stomatal opening by enhancement of photosynthesis and ensuing guard cell CO<sub>2</sub> sensing, whereas further temperature elevation open stomata via a different pathway</b>                                                                                                                                                              |
| 14:45 – 15:00                                                                                                               | Tiancong Qi, Tsinghua University, China<br><b>The NLR immune receptor ADR1 and lipase-like proteins EDS1 and PAD4 mediate stomatal immunity</b>                                                                                                                                                                                                                                                                                             |
| 15:00 – 15:15                                                                                                               | Chao Han, Shandong University, China<br><b>Sugar Signaling Regulates Light Induced Stomatal Opening</b><br><br><a href="#">Available to view on demand</a>                                                                                                                                                                                                                                                                                  |
| 15:15 – 15:45                                                                                                               | Shouguang Huang, University of Wuerzburg, Germany<br><b>Guard cells count cytosolic Ca<sup>2+</sup> signals to regulate stomatal dynamics</b>                                                                                                                                                                                                                                                                                               |

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| 15:45 – 15:55 | Flash talks <ul style="list-style-type: none"> <li>Kishwar Shethi: <b>How does elevated CO<sub>2</sub> regulate the stomatal aperture? Is it a balancing act?</b></li> <li>Yanzhi Yang: <b>The MicroRNA408-plantacyanin module regulates ROS homeostasis in the guard cells to balance plant growth and drought resistance</b></li> <li>Shanshuo Zhu: <b>Cell-type specific autophagy regulates the dynamics of pseudomonas syringae infection in Arabidopsis</b></li> </ul> |
| 16:30 – 17:00 | Hannes Kollist, University of Tartu & Universite Paris-Saclay/INRAE, Estonia/France<br><b>Ozone and CO<sub>2</sub> signalling in stomatal guard cells – a personal tribute to Jaakko Kangasjärvi</b><br><br><a href="#">Available to view on demand</a>                                                                                                                                                                                                                      |
| 17:00 – 17:15 | Christoph-Martin Geilfus, Geisenheim University, Germany<br><b>Unveiling the guard cell response: How a transient pH shift in the stomatal cavity orchestrates guard cell stress adaptation through proteomic and transcriptomic reprogramming</b>                                                                                                                                                                                                                           |
| 17:15 – 17:30 | Yuh-Shuh Wang, University of Tartu, Estonia<br><b>Regulation of CO<sub>2</sub>-induced stomatal movements via HT1 communication between plasma membrane and chloroplasts</b>                                                                                                                                                                                                                                                                                                 |
| 17:30 – 18:00 | Li Zhang, Soochow University, China<br><b>Role of stomata in plant-microbiota interaction</b>                                                                                                                                                                                                                                                                                                                                                                                |

| Day 4 – Thursday 24 October                                                                     |                                                                                                                                                                       |
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| Session 5: Manipulating stomata to improve crop traits<br>Chairs: Julie E. Gray and Shuhua Yang |                                                                                                                                                                       |
| 9:00 – 9:45                                                                                     | Keynote: Chun-Peng Song, Henan University, China<br><b>Identification and mechanism analysis of a heat sensor governing guard cell movement in Arabidopsis</b>        |
| 9:45 – 10:15                                                                                    | Julie E. Gray, University of Sheffield, UK<br><b>Manipulating stomata to enhance stress tolerance</b>                                                                 |
| 10:15 – 10:45                                                                                   | Tracy Lawson, University of Essex, UK<br><b>Red and blue light impacts on stomatal dynamics, photosynthesis and water use efficiency</b>                              |
| 11:15 – 11:45                                                                                   | Lizhong Xiong, Huazhong Agricultural University, China<br><b>High throughput phenotyping promotes drought resistance gene discovery in rice</b>                       |
| 11:45 – 12:00                                                                                   | Jodie Armand, University of Sheffield, UK<br><b>Live 3D imaging sheds new light on the cellular mechanics of stomatal movement in Arabidopsis thaliana</b>            |
| 12:00 – 12:30                                                                                   | Shuhua Yang, China Agricultural University, China<br><b>Molecular and genetic basis of cold tolerance in maize</b><br><br><a href="#">Available to view on demand</a> |

**Post Event webinar – [Available to view on demand](#)**

Sally Assmann, Pennsylvania State University  
Heterotrimeric G protein regulation of guard cell signaling

Keiko Torii, The University of Texas at Austin  
Harnessing synthetic chemistry to probe and design plant stomatal development