

CURRICULUM VITAE

Professor Mark Alfred Tester

Born 6 March, 1963; Tasmania, Australia
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Education

1988 PhD Plant Sciences - University of Cambridge
1984 BSc (Hons) Plant Sciences 1st Class - University of Adelaide

Employment

2013 – Professor of Bioscience, King Abdullah University of Science & Technology, Saudi Arabia
2009 – 2013 Professor of Plant Physiology, University of Adelaide and the Australian Centre for Plant Functional Genomics
2004 – 2008 Research Professor, Australian Research Council Federation Fellow
2001 – 2003 BBSRC Research Development Fellow
2000 – 2003 Senior Lecturer, Department of Plant Sciences, University of Cambridge
1994 – 2003 Fellow, Churchill College Cambridge
1993 – 2000 Lecturer, Department of Plant Sciences, University of Cambridge
1990 – 1992 Lecturer, Department of Botany, University of Adelaide
1988 – 1990 Junior Research Fellow, Churchill College Cambridge

Industrial and commercial experience

2011 – 2012 Research Director, Australian Centre for Plant Functional Genomics Pty Ltd
Vice-President and Director, Galassia Flowers Pty Ltd (ACN 154 494 381) – fluorescent flower marketing company
2010 – Vice-President and Director, Bioconst Pty Ltd (ACN 137 728 637) – biotechnology for environmental benefit
2010 – 2012 Director, Australian Grains Technology – Australia's largest wheat breeding company
2008 Co-founder, Energrene Pty Ltd (ACN 131 067 340) – algal biodiesel research
2008 – 2010 Chair, Board of Management, Waite Analytical Services
2007 – 2012 CEO, Australian Plant Phenomics Facility
2007 – 2012 Member, Australian Institute of Company Directors
AICD programme, "Director's Essentials"
2004 – 2012 Executive Management Committee, Australian Centre for Plant Functional Genomics Pty Ltd
Funded collaborations with Pioneer-Du Pont, Arcadia and Monsanto
Experienced in identifying and exploiting intellectual property – four patents published;
commercial licenses negotiated
2000 – 2001 Sabbatical year based in Monsanto, Cambridge UK

Executive summary

Professor Mark Tester is a scientist with much energy who is passionate about research and discovery, with a commitment to lifelong learning. He is committed to education and assisting and supporting others in fulfilling their potential. He is focused on high quality science that contributes broadly to both increasing intellectual knowledge of plant function and to increasing the sustainability of the planet. He has a high level of professional integrity and intellectual rigour, and the quality of his science is reflected in both the quality of his publications and the recognition of these by others. He leads a research program on salinity tolerance in plants at KAUST, as well as in floriculture in his private company, Bioconst. Professor Tester operates in a broad, cross-disciplinary manner, his science spanning cell biology, whole plant physiology and genetics. He has the capacity to attract significant funding and to implement ideas, such as shown in his building of The Plant Accelerator, from inception to completion, co-ordinating a wide range of expertise from engineers and architects to plant scientists and financial managers. He has strong financial and administrative management skills, overseeing large projects with significant budgets and many staff. His commercial acumen is clear from his establishment of private companies and successful interactions with multinational companies such as Monsanto, Syngenta, Bayer and Pioneer-DuPont. He was, until recently, a Director of Australia's largest wheat breeding company, Australian Grains Technologies.

Present employment, including brief statement of research interests

Mark Tester is Professor of Bioscience in the Division of Biological and Environmental Science and Engineering at the King Abdullah University of Science & Technology, Saudi Arabia. He started there on 17 February 2013 and is based in the Center for Desert Agriculture. Professor Tester leads a large academic research group (>\$10m in the past 10 years). Until recently, he was a Director of Australian Grains Technology and served on editorial boards of 11 international journals. He referees for many more, including *Nature* and *Science*.

The immediate aim of Professor Tester's research programme is to elucidate the molecular mechanisms that enable certain plants to thrive in sub-optimal soil conditions, such as those of high salinity, low water or low nutrients. The ultimate applied aim is to modify crop plants in order to increase productivity on such soils, with consequent improvement of yield in both developed and developing countries. The ultimate intellectual aim is to understand the co-ordination of whole plant function through processes occurring at the level of single cells, particularly through processes of long-distance communication within plants. This aim is being addressed by combining genetic and genomic approaches with a broad-based understanding of plant physiology. Over his career, primary funding has been provided by governmental and charitable organisations, but substantial funding from private companies has also been obtained. Internationally, his group is one of the leading laboratories on salinity research. His work is cited highly (over 10,000 citations, H-index of over 50: Google Scholar).

A particular strength of Prof Tester's research programme is the integration of genetics with a breadth of physiological approaches to enable novel gene discovery. The development and use of tools for the study and manipulation of specific cell types is unique in the field of salinity tolerance, and even in the broader areas of plant nutrition and ion transport. At the other end of the scale, Prof Tester also established the Australian Plant Phenomics Facility, a \$55m organisation established to develop and provide cutting-edge phenotyping facilities to support plant science. Prof Tester directed this project from its conception, to secure funding to establish the business and to manage the construction of the innovative 4,500 m² building. Until recently, he led the strategic operation of this national collaborative facility. For his research, this Facility enables the bringing together of physiology and genetics, by undertaking the automated, high-throughput non-destructive quantitative phenotyping of up to 2,500 plants throughout their life cycle. This allows for the first time the dynamic measurement of plant traits that contribute to a range of complex responses of whole plants to changes in their environment, and then identify the genetic basis underlying variation in responses within a species.

At KAUST, Prof Tester is establishing a "discovery and delivery pipeline", where a balance is being strived between fundamental research into molecular mechanisms of salinity tolerance and the delivery of those discoveries through the development of crops with improved salinity tolerance. In the Discovery Program, forward genetic and genomic approaches are being used to discover genes that affect traits that are likely to contribute to salinity tolerance. These genes, and others discovered previously by other researchers, are being characterised to elucidate mechanisms of action and natural variation within the target crops, to a level necessary to facilitate delivery. The Delivery Program focuses on the alteration of genes likely to alter salinity tolerance in crop plants, and the testing of the effects of these alterations on yield in the field. Work in all programs can occur in parallel, as knowledge of some genes has advanced to the stage of field trials, whereas discovery of fundamental processes is still required for other genes and traits.

Awards

- 2013 Dermot P Coyne Distinguished Lecturer, University of Nebraska
- 2010 American Society of Plant Biologists recognition for “publishing the most influential science” (one of 12 Australians and 45 internationally)
University of Adelaide Faculty of Science Award for Distinguished Contribution to Research over a sustained period
Australian Institute of Architects SA Chapter Keith Neighbour Prize for Best Commercial Building (The Plant Accelerator)
Australian Institute of Architects SA Chapter Commendation for Environmentally Sustainable Building (The Plant Accelerator)
Master Builders Association Commendation for excellence in commercial / industrial building \$10-20 million
Australian Steel Institute SA Awards: Steel Clad Structures – Steel Design Award
- 2004 ARC Federation Fellowship
- 2001 BBSRC Research Development Fellowship
- 1997 President’s Medal of the Society for Experimental Biology
- 1988 Glaxo Junior Research Fellowship, Churchill College, Cambridge

Current research grants

Since 1991, over **70 grants** have been received from agencies including the ARC, BBSRC, NIREX, EU, Royal Society and Leverhulme Foundation. In addition to the Federation Fellowship, grants obtained over the past 7 years include:

- 2012 Collaborative Research Infrastructure Scheme, for continued operation of the Australian Plant Phenomics facility **\$3.28m**
- 2011 ARC Linkage, Improving yield through image-based structural analysis of cereals (A van den Hengel, M Tester, A Dick, J Vandenhirtz) **\$475,000**
EU FP7, ‘European Plant Phenotyping Network’ (14 partners in the EU, led by U Schurr) **€5,500,000**
NHMRC Centre of Research Excellence, Food for Future Australians (partner investigator, led by M Makrides) **\$2,500,000**
- 2010 GRDC, ‘Development of high salinity tolerant winter cereals germplasm’ (M Tester, G McDonald, J Eglinton, D Mather, M Quinn, R Munns) **\$1,905,000**
ARC LIEF, ‘Non-invasive rapid plant phenotyping for root architecture in soil and acquisition of micro-nutrients’ (with A McNeill, G Fincher, J Stangoulis, K Soole) **\$150,000**
- 2009 ARC Linkage, ‘Role of alanine aminotransferase in improved nitrogen use efficiency in cereals’ (with B Kaiser, J Kridl, A Millar, O Atkin) **\$480,000**
ARC Discovery, ‘Characterisation of PQ loop proteins in plants: are they voltage insensitive nonselective cation channels?’ **\$330,000**
ARC LIEF, ‘A high resolution environmental scanning electron microscope (HRESEM) for South Australia’ (with H Ebdorff-Heidepriem, HJ Griesser, DA Lewis, A Pring) **\$640,000**
SA government Premier’s Science Research Fund, “Plant image analysis for the development of stress-tolerant crops” (with D Lun, A van den Hengel, I Hudson) **\$420,000**
- 2008 Australian Centre for Plant Functional Genomics II, funded by ARC, GRDC and SA Govt (P Langridge, GB Fincher, M Tester, A Bacic, K Basford, C McMillan) **approx \$35m**
ARC Linkage, ‘Cell type-specific transgene expression to increase Fe content in cereal grains’ (with A Johnson, J Stangoulis) **\$ 85,000**
- 2007 ARC Linkage, ‘Targeted approaches to improve nitrogen use efficiency in maize’ (BN Kaiser, M Tester, JA Rafalski, K Dhugga) **\$900,000**
Funding for the ‘Australian Plant Phenomics Facility’ (with G Fincher, J Burdon, R Furbank, M Badger)
- Total funding of \$55m**
- \$32.2m** for the Adelaide node, including from:
- | | |
|---|----------------|
| National Collaborative Research Infrastructure Scheme | \$10.0m |
| SA State Government | \$10.0m |
| University of Adelaide | \$ 5.9m |
| Second tranche of Federal Government funding for the APPF (in 2009) | \$ 5.0m |

Academic service

The following presents a brief overview of academic service activities.

Teaching across a wide range of biology and plant sciences courses at all levels at the Universities of Adelaide and Cambridge. Lectures, tutorials, practicals, summer schools have all been undertaken to teach molecular biology, biotechnology, cell biology, physiology and ecology. Also active in the Cambridge College system:

- 1996 – 2003 Tutor for Advanced Students, Churchill College
- 1994 – 2003 Director of Studies for Biological Sciences, Churchill College

Supervision of over 50 Honours and PhD students

Participated in **committees** for teaching, examining, research, promotions. Also, for example, over the past 7 years:

- 2013 Academic Council, KAUST
- Intellectual Property Advisory Committee, KAUST
- Chair, Graduate Admissions Committee, KAUST
- 2011 Academic Board of the University of Adelaide
- 2008 – 2011 Ramsay Fellowship Committee – founding member
- 2005 – 2007 Chair, School Research Committee, University of Adelaide (annual budget of >\$4m)

Examiner for numerous PhD and MSc theses at , for example, Universities of Cambridge, Oxford, Adelaide, Sussex, York, Bourgogne, Bharathidasan (India), Agriculture Faisalabad, West Sydney, Flinders, Monash, Western Australia and Australian National University

Referee for a range of journals including: *Nature*, *Science*, *Nature Biotech*, *Developmental Cell*, *EMBO J*, *PNAS USA*, *TREE*, *TiPS*, *Plant Cell*, *Plant J*, etc; and granting agencies, such as ARC, BBSRC, USDA, USDoE, NSF

Editorial roles international journals:

- Associate editor *Plant, Cell & Environment* (2000-2012), *Plant Signalling and Behaviour* (2005-2011), *Journal of Experimental Botany* (2009-2012)
- Editorial Board *Frontiers in Plant Biotechnology* (2011-), *Frontiers in Plant Physiology* (2010-), *Molecular Plant* (2007-2012), *Rice* (2007-2012), *The Open Plant Science Journal* (2008-2012), *Journal of Integrative Plant Biology* (2008-10), *Functional Plant Biology* (2006-2012)
- Board of Advisors *New Phytologist* (2009-2012)

Forward for book, “Crop improvement under adverse conditions” by Narendra Tuteja and Sarvajeet Singh Gill (Springer)

Editor-in-chief with R.A. Jorgensen of a ten volume wiki-encyclopedia, “*The Plant Sciences*”, published by Springer.

Organiser of international **conferences**, examples over the past 7 years:

- 2013 Steering Committee, InterDrought IV, Perth
- 2012 International Organising Committee, Plant Abiotic Stress Tolerance II, Vienna, Austria
- 2011 Program Committee, AusBiotech 2011, Adelaide
- 2010 International Advisory Committee, 21st International Conference on Arabidopsis Research, Yokohama, Japan
- 15th International Workshop for Plant Membrane Biology, Adelaide
- 2009 Steering Committee, InterDrought III, Shanghai, China
- 2008 Co-chair, Gordon Research Conference on drought and salinity, USA

Member of **external committees**, examples over the past 7 years:

- 2011 – 2012 Management Committee of EU COST Action, “Plant Abiotic Stress”
- 2010 – Board of Directors, Australian Grains Technology Pty Ltd

Active in **public communication** since 2000, particularly on GM issues, primarily in printed media and radio, but also talks in public fora (e.g. Café Scientifique, Friends of Botanic Gardens). Examples over the past 7 years include:

- 2012 Widespread press coverage of comments on a long-term rat feeding study by Seralini et al.
Media training video for Australian Science Media Centre, at <http://sciencemediasavvy.org/forewarned-is-forearmed/>

- 2011 Tester, M. (2011) GM food tarnished by urban myths. *Sydney Morning Herald* and *The Age* 17 February 2011
Panellist, *Australia Talks*, ABC Radio National, on GM food, 2 March 2011; ABC TV, Landline special on food security, 26 June 2011; Channel 10 children's TV, on global food security, 9 July 2011; debate with Greenpeace, ABC Country Hour, 18 October 2011
- 2010 Tester, M. (2010) Food security in the 21st century. ***Australian Literary Review***, December issue (commissioned article)
Speaker at Seniors Education Association; **TEDx** Adelaide, Royal Institution (Australia); Agriculture Outlook 2010, Sydney; Outlook 2010 (Australian Bureau of Agricultural and Resource Economics); Licensing Executives Society of Australia and New Zealand Annual Conference; Australian Pavilion, Shanghai Expo
Tester, M. and Morris, C. (2010) GM crops – meeting the growing need. In: Emmett, P and Kanellos, T., eds. *The Museum of Economic Botany at the Adelaide Botanic Garden – a souvenir*, pp. 70-73.
Numerous articles in printed and broadcast media, particularly on The Plant Accelerator
Article on ABC Catalyst, "Shock Salt: Designing salt tolerant crops", at <http://www.abc.net.au/catalyst/stories/2974774.htm>
- 2009 Named in *The Weekend Australian Magazine* '100 emerging leaders' series, for work on salinity
Approx 100 articles in printed and online media on Møller *et al* (2009) article, incl in ***The Times*** (UK), *The Age* (Australia) and ***Der Spiegel*** (Germany)
Over 20 radio appearances, including ABC Radio National and BBC 5 Live
Tester, M. (2009) GM crops are another tool in the struggle against poverty, at [guardian.co.uk](http://users.guardian.co.uk/signin/0,-1377,00.html)
<http://users.guardian.co.uk/signin/0,-1377,00.html>,
<http://www.guardian.co.uk/environment/cif-green/2009/jul/08/gm-crops-poverty>
Committee for the Economic Development of Australia conference on the Future of Farming
Talk at a GRDC Farmers' Updates session at Loxton, SA
- 2008 ABC news in January and February, numerous accompanying newspaper articles
Plenary speaker, South Australian Science Teachers Association
Evidence to Tasmanian Parliament Joint Select Committee on gene technology in agriculture
Publications in this genre in 2008 include:
Tester, M., Langridge, P. (2008) Crops aren't invasive. *New Scientist* 197, 24 – letter to editor
Tester, M. (2008) Organic and GM – why not? ***Science* 322**: 1190-1 – commissioned book review
Tester, M. (2008) Algal biofuels. ***The Australian***, 9 December, 2008 – commissioned Opinion piece
- 2007 Cover feature of the Stock Journal, 20 July 2007
ABC Science Show, 18 August (<http://www.abc.net.au/rn/scienceshow/stories/2007/2007871.htm>)

Academic **seminars** presented every year since 1989. Recent examples include:

- 2013 NIBGE, Pakistan; King Saud University, Saudi Arabia; International Center for Biosaline Agriculture, UAE; UAE University; University of Edinburgh, UK; University of Halle, Germany; Freie Universität Berlin, Germany; University of Nebraska; University of Minnesota; Cornell University; Penn State University; University of Maryland; University of Missouri
- 2012 University of Birmingham, UK; IPK Gatersleben, Germany; Hutton Institute, Scotland; KAUST, Saudi Arabia; University of Copenhagen, Denmark; Bayer, Monheim, Germany; Bayer, Ghent, Belgium; Beijing Genomics Institute, Shenzhen, China; University of Amsterdam; University of Dundee, Australian National University, University of Adelaide
- 2011 Limagrain, Clermont-Ferrand; Monsanto, North Carolina; GrassRoots, North Carolina; Noble Foundation, Oklahoma; University of Arizona, Tucson; University of California Berkeley; MPI Plant Breeding, Cologne;
- 2010 Three Chinese Academy of Sciences Institutes: Beijing Genomics Institute, the Institute for Genetics and Developmental Biology; and the Institute of Botany; KeyGene, Wageningen
- 2009 Purdue University, also Universities of Melbourne, La Trobe, Tasmania, Adelaide, and DAFWA Australian Education International Taipei Eminent Speaker Program
- 2008 University of Oxford, University of Adelaide
- 2007 POSTECH (Korea); Rothamsted Research, Harpenden; Universities of Oxford and Cambridge

Conference chair and invited presenter on frequent occasions since 1985. Recent examples include:

- 2013 Plant & Animal Genomics (PAG), San Diego, USA
Keystone Symposium on Plant Abiotic Stress and Sustainable Agriculture, New Mexico, USA
16th International Workshop on Plant Membrane Biology, Kurashiki, Japan
Wilton Park conference on Global Agriculture, Food and Land Use, Wiston House, Sussex, UK
Society of Experimental Biology, Valencia, Spain

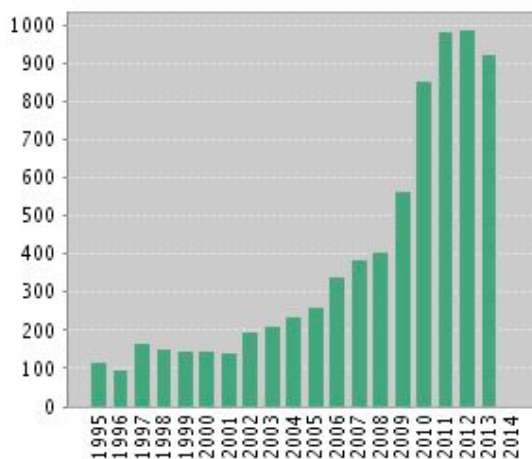
- 2012 International Conference on Plant Abiotic Stress Tolerance II, Vienna, Austria
11th International Barley Genetics Symposium, Hangzhou, China
Gordon Conference on Salinity and Drought, Hong Kong
ComBio, Adelaide, Australia
- 2011 Plants and People Conference, MPI Golm, Germany
Danforth Center Symposium, St Louis, Missouri, USA
International Network of Plant Abiotic Stress, Cyprus, Greece
- 2010 Gordon Conference on Salinity and Drought, Switzerland
OzBio, Melbourne, Australia
14th Australian Wine Industry Technical Conference
- 2009 1st International Plant Phenomics Symposium
- 2008 Gordon Conference on Salinity and Drought, Montana, USA
18th Annual Combined Biological Sciences Meeting, Perth, Australia
- 2007 Australian Winter Cereals Molecular Marker Programme Meeting, Adelaide
14th International Workshop on Plant Membrane Biology, Valencia
International Congress on Plant Genomics, Tenerife

PUBLICATIONS

Over 150 refereed papers have been published in international journals. In addition, numerous short papers, notes, abstracts and NCBI database submissions have been published, but a record of these is not maintained.

Web of Science indices (updated 4 Nov 2013)
H index = 43, m index = 1.6; Total citations = 7822;
Average citations/paper = 39 (compared to average citation rates from 2002-2012 for agricultural sciences of 7.5 and for plant & animal sciences of 8.1)

Google Scholar indices (updated 4 Nov 2013)
H index = 53; Total citations = 10,601; i10-index = 103



- Berger, B., de Regt, B. and **Tester**, M. (2013) Applications of high-throughput plant phenotyping to study nutrient use efficiency. *Methods in Molecular Biology* **953**: 277-290. DOI: 10.1007/978-1-62703-152-3_18
- Roy, S.J., Huang, W., Wang, X., Evrard, A., Schmöckel, S., Zafar, Z.U. and **Tester**, M. (2013) A novel protein kinase involved in Na⁺ exclusion revealed from positional cloning. *Plant Cell & Environment* **35**: 553-568. doi: 10.1111/j.1365-3040.2012.02595.x.
- Shavrukov, Y., Bovill, J., Afzal, I., Hayes, J., Roy, S., **Tester**, M. & Collins, N. (2013) HVP10 encoding V-PPase is a prime candidate for the barley HvNax3 sodium exclusion gene: evidence from fine mapping and expression analysis *Planta* **237**: 1111-1122
- Garnett, T., Conn, V., Plett, D., Conn, S., Zanghellini, J., Mackenzie, N., Enju, A., Francis, K., Holtham, L., Roessner, U., Boughton, B., Bacic, A., Shirley, N., Rafalski, A., Dhugga, K., **Tester**, M & Kaiser, B. (2013) The response of the maize nitrate transport system to nitrogen demand and supply across the lifecycle. *New Phytologist* **198**: 82-94
- Hill, C.B., Jha, D., Bacic, A., **Tester**, M. & Roessner, U. (2013) Characterization of ion contents and metabolic responses to salt stress of different *Arabidopsis* AtHKT1;1 genotypes and their parental strains. *Molecular Plant* **6**: 350-368
- Shelden, M.C., Roessner, U., Sharp, R.E., **Tester**, M. & Bacic, A. (2013) Genetic variation in the root growth response of barley genotypes to salinity stress. *Functional Plant Biology*, <http://dx.doi.org/10.1071/FP12290>

- Brien, C.J., Berger, B., Rabie, H. & **Tester**, M. (2013) Accounting for variation in designing greenhouse experiments with special reference to greenhouses containing plants on conveyor systems. *Plant Methods* **9**: DOI: 10.1186/1746-4811-9-5 <http://www.plantmethods.com/content/9/1/5>
- Schilling R.K., Marschner, P., Shavrukov, Y., Berger, B., **Tester**, M., Roy, S.J. & Plett, D.C. (2013) Expression of the Arabidopsis vacuolar H⁺-pyrophosphatase gene (*AVP1*) improves the shoot biomass of transgenic barley and increases grain yield in a saline field. *Plant Biotechnology Journal*, in press
- Honsdorf, N., March, T.J., Berger, B., **Tester**, M., Pillen, K. (2013) High-throughput phenotyping to detect drought tolerance QTLs in wild barley introgression lines. *Theoretical & Applied Genetics*, resubmitted after revision
- Roy, S., Negrao, S. & **Tester** M. (2013) Salt resistant crop plants. *Current Opinion in Biotechnology*, resubmitted after revision
- Kyriacou B., Moore K. L., Paterson D., de Jonge M.D., Howard D.L., Stangoulis J., **Tester** M., Lombi E., Johnson A.A.T. (2013) Localization of iron in rice grain using synchrotron x-ray fluorescence spectroscopy and high resolution secondary ion mass spectrometry. *Journal of Cereal Science*, resubmitted after revision
- Tester**, M. (2013) Genetics of abiotic stress tolerance and resistance. In: Henry, R., ed. Agricultural Genetics, resubmitted after revision (Henry Stewart Talks, London)
- Hairmansis, A., Berger, B., **Tester**, M., Roy, S.J. (2013) Image-based phenotyping for non-destructive screening of salinity tolerance in rice. *Rice*, submitted
- Li, B., Gilliham, M., Jha, D., Johnson, A., **Tester**, M. and Roy, S. (2013) NAXT5 facilitates chloride loading of the xylem in Arabidopsis. *EMBO Journal*, submitted
- Garnett, T., Plett, D., Conn, V., Conn, S., Rabie, H., Rafalski, A., Dhugga, K., **Tester**, M., Kaiser, B.N. (2013) Variability in nitrogen uptake characteristics of maize genotypes in response to nitrogen supply. *Journal of Experimental Botany*, submitted
- Evrard A., Bargmann, B.O.R., Birnbaum, K.D., **Tester**, M., Johnson, A.A.T. & Baumann, U. (2013) Fluorescence-activated cell sorting to identify adaptive genetic responses to salinity in two root cell types of *Arabidopsis thaliana*. *BMC Genomics*
- Takahashi, F., Tilbrook, J., Trittermann, C., Berger, B., Roy, S., Seki, M., Shinozaki, K., **Tester**, M. (2013) Mutual correlation of transcriptome profiles toward physiological traits among bread wheat cultivars under salinity stress. *Journal of Experimental Botany*
- Wang, W.-H., Köhler, B., Cao, F.-Q., Liu, G.-W., Gong, Y.-Y., Sheng, S., Song, Q.-C, Cheng, X.-Y., Garnett, T., Okamoto, M., Qin, R., Mueller-Roeber, B., **Tester**, M. & Liu, L.-H. (2012) Rice DUR3 mediates high-affinity urea transport and plays an effective role in improvement of urea acquisition and utilization when expressed in Arabidopsis. *New Phytologist* **193**: 432-444
- Bennett, D., Izanloo, A., Edwards, J., Kuchel, H., Chalmers K., **Tester** M., Reynolds M., Schnurbusch T. & Langridge, P. (2012) Identification of novel quantitative trait loci for days to ear emergence and flag leaf glaucousness in a bread wheat (*Triticum aestivum* L) population adapted to southern Australian conditions. *Theoretical and Applied Genetics* **124**: 697–711
- Tracy, S.R., Black, C.R., Roberts, J.A., McNeill, A., Davidson, R., **Tester**, M., Samec, M., Korošak, D. & Mooney, S.J. (2012) Quantifying the effect of soil compaction on three varieties of wheat (*Triticum aestivum* L.) using x-ray micro computed tomography (CT). *Plant & Soil* **353**: 195–208
- Munns, R., James, R.A., Xu B., Athman, A., Jordans, C., Conn, S.J., Byrt, C.S., Hare, R.A., Tyerman, S.D., **Tester**, M., Plett, D. & Gilliham, M. (2012) Grain yield of modern wheat on saline soils is improved by ancestral *HKT* gene. *Nature Biotechnology* **30**: 360–364
- Cotsaftis, O., Plett, D., Shirley, N., **Tester**, M & Hrmova, M. (2012) A two-staged model of Na⁺ exclusion in rice explained by 3D modeling of HKT transporters. *PLoS ONE* **7**: e39865
- Evrard, A., Bargmann, B., Bastiaan O.R., Birnbaum, K., **Tester**, M., Baumann, U. & Johnson, A.A.T. (2012) Fluorescence-activated cell sorting for analysis of cell type-specific responses to salinity stress in Arabidopsis and rice. *Methods in Molecular Biology* **913**: 265-276
- Berger, B., de Regt, B. and **Tester**, M. (2012) Trait dissection of salinity tolerance with plant phenomics. *Methods in Molecular Biology* **913**: 399-413

- Berger, B., de Regt, B. and **Tester**, M. (2012) High-throughput phenotyping of plant shoots. *Methods in Molecular Biology* **918**: 9-20
- Mullen J, **Tester** M, Goddard, M, Goss K, Carberry, P, Keating, B, and Bellotti W, (2012) Assessing the opportunities for achieving future productivity growth in Australian agriculture. Australian Farm Institute, Sydney, ISBN 978-1-921808-23-4. 82 pp.
- Roy, S.J, **Tester**, M., Gaxiola, R. A. and Flowers, T. J. (2012) Plants of saline environments. McGraw Hill Encyclopedia of Science & Technology
- Roy, S.J. and **Tester**, M. (2012) Increasing salinity tolerance of crops. In: Meyers, R.A., ed. Encyclopedia of Sustainability Science and Technology (Springer)
<http://www.springer.com/environment/sustainable+development/book/978-0-387-89469-0>
- Rivandi J, Miyazaki J, Hrmova M, Pallotta M, **Tester** M, Collins NC (2011) A SOS3 homologue maps to *HvNax4*, a barley locus controlling an environmentally-sensitive Na⁺ exclusion trait. *Journal of Experimental Botany* **62**: 201–216 [with cover image]
- Cotsaftis, O., Plett, D., Johnson, A.A.T., Walia, H., Wilson, C., Ismail, A.M., Close, T.J., **Tester**, M. & Baumann, U. (2011) Root-specific transcript profiling of contrasting rice genotypes in response to salinity stress. *Molecular Plant* **4**: 25–41
- Golzarian, M.R., Frick, R.A., Rajendran, K., Berger, B., Roy, S., **Tester**, M & Lun, D.S. (2011) Accurate inference of shoot biomass from high-throughput images of cereal plants. *Plant Methods* **7**: 2 (11 pp)
- Shavrukov, Y., Shamaya, N., Baho, M., Edwards, J., Ramsey, C., Nevo, E., Langridge, P. & **Tester**, M. (2011) Salinity tolerance and Na⁺ exclusion in wheat: variability, genetics, mapping populations and QTL analysis. *Czech Journal of Genetics and Plant Breeding* **47**: S85-S93
- Gong, H., Blackmore, D., Clingeleffer, P., Sykes, S., Jha, D., **Tester**, M. & Walker, R (2011) Contrast in chloride exclusion between two grapevine rootstocks and its variation in their progeny. *Journal of Experimental Botany* **62**: 989-999
- Roy, S.J., Tucker, E. & **Tester**, M. (2011) Genetic analysis of abiotic stress tolerance in crops. *Current Opinion in Plant Biology* **14**: 232-239
- Piñeros, M. & **Tester**, M. (2011) Calcium inhibits dihydropyridine-stimulated increases in opening and unitary conductance of a plant Ca²⁺ channel. *Journal of Membrane Biology* **240**: 13–20
- Drew, D.P., Hrmova, M., Lunde, C., Jacobs, A., **Tester**, M. & Fincher, G.B. (2011) Structural and functional analyses of PpENA1 provide insights into cation binding by type IID ATPases in lower plants and fungi. *Biochimica et Biophysica Acta - Biomembranes* **1808**: 1483-1492
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Patents

Illumination device for illuminating an object with light of excitation wavelength, comprises projecting element containing flexible portion, where projecting elements is connected to light emitters which emit light at excitation wavelength

Patent Number(s): WO2012075523-A1

Inventor(s): [KABACINSKI S](#), [LELE A](#), [MOTTROM B](#), [ROSENTHALL P](#), [TESTER M](#), [TISSEN K](#), [VERWEY D](#)

Patent Assignee Name(s) and Code(s): BIOCONST PTY LTD

New genetically modified poppy plant of the species *Papaver bracteatum* or its hybrid, useful for producing alkaloid comprising codeine, oripavine/morphine relative to a wild type *P.bracteatum* and reproductive material comprising seed

Patent Number(s): WO2012058714-A1

Inventor(s): [COOMBS J T](#), [RITCHIE J D](#), [TESTER M A](#), [LIGHTFOOT D](#), [JHA D](#)

Patent Assignee Name(s) and Code(s): TPI ENTERPRISES PTY LTD

Modulating the rate, level or pattern of cation (e.g. sodium ion) flux across a cell membrane e.g. plasma membrane, comprises modulating expression of a proline-glutamine (PQ)-loop repeat polypeptide in a cell comprising cell membrane

Patent Number(s): WO2011035386-A1 ; AU2010300093-A1 ; CN102656269-A ; US2013042373-A1

Inventor(s): [TESTER M A](#), [KAISER B](#), [CARTER S A W](#), [SHEARER M](#), [PLETT D C](#), [ROY S J](#), [COTSAFTIS O](#), [TYERMAN S](#), [OKAMOTO M](#)

Patent Assignee Name(s) and Code(s): AUSTRALIAN CENT PLANT FUNCTIONAL GENOMIC

Modulating the salinity tolerance of a plant cell e.g. rice cell, comprises modulating the expression of a calcineurin B-like protein-interacting protein kinase 16 polypeptide in the plant cell

Patent Number(s): WO2010025513-A1 ; AU2009290140-A1 ; US2011209243-A1 ; CN102202493-A ; ZA201101587-A

Inventor(s): [ROY S J](#), [TESTER M A](#)

Patent Assignee Name(s) and Code(s): AUSTRALIAN CENT PLANT FUNCTIONAL GENOMIC

New vascular plant expressing Na ion pumping ATPase, useful for developing further vascular plant lines with increased Na ion secretion or improved tolerance to Na ion

Patent Number(s): WO2006037189-A1 ; EP1809095-A1 ; AU2005291772-A1 ; IN200701934-P4 ; US2008020464-A1 ; CN101087519-A ; BR200516269-A ; AU2005291772-B2 ; IN247307-B

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