

Hatem ROUACHED.

French National Institute for Agricultural Research (INRA)

Laboratory of Biochemistry and Plant Molecular Physiology

2 Place Viala, Montpellier- France

Phone: +33652865397

hatem.rouached@inra.fr / hatem.rouached@gmail.com

1- DEGREES RECEIVED

- 2011 Habilitation to do research and supervise students, University de Bourgogne -France
- 2002-05 PhD in plant molecular physiology, University of Montpellier –France (defended in July 1st, 2005)
- 2001-02 Master Degree Research in Plant Molecular Biology, SupAgro Montpellier
- 1997 -2001 Licence in Natural Sciences, University of Sfax (Tunisia)

2- PRESENT AND PAST POSITIONS

- °06/2012- present **Junior Researcher** at INRA, B&PMP (Biochemistry and Plant Molecular Physiology)
- °2016-2018. **Visiting Faculty** at Carnegie Institution for Science. Stanford, Californie (USA) in Rhee's Lab.
- °2016-2017. **Adjunct Professor** at Chiang Mai University, Agriculture faculty, Thailand
- °2010-06/12/2012. **Senior Scientist** at "**BASF Plant Science Company**" (Gand, Belgique): Improvement of crops (soybean et wheat) yield under abiotic stress (e.g. drought and nitrogen deficiency).
- ° 2005-2009. **Post-doctorat** as **First Assistant** (60%Reserach and 40%teaching) at University of Lausanne, Switzerland. « Investigation of Role of *PHO1* in the regulation of phosphate homéostasie in plants" in Yves Poirier's Lab.

3- FELLOWSHIPS/AWARDS

- 2016-2018 Marie Skłodowska-Curie and AgreeSkills Plus Fellowship.
- 2015-2018 Researcher for Future by La Région Languedoc-Roussillon, Montpellier, France.
- 2005-2010 Postdoctoral fellowship from Canton de Vaud Switzerland.
- 2002-2005 Tunisian Ministry of Education (MENRT competitive fellowship, Ph.D).
- 2001-2002 Tunisian Ministry of Education (Excellence fellowship, M.S.)

4- LANGUAGES

Fluent in English, French, Arabic.

5- PROFESSIONAL SERVICES

- ° **Editorial activities:** **Editors** for Scientific Reports, Frontiers in Plant Science, PLOS One, International Journal of Molecular Science.
- ° **Guest Editor for:** BioMed International Research Journal, entitled "Plants Coping Abiotic and Biotic Stresses: A Tale of Diligent Management; et 2 pour IJMS le dernier en date: http://www.mdpi.com/journal/ijms/special_issues/mineral_nutrients
- ° **Ad hoc Reviewer for** pour Nature Plants, The Plant Cell, New Phytologist, Journal of Experimental Botany, Plant and Cell Physiology, Plant and Cell Environment, Critical Reviews in Biotechnology, International Journal of Molecular Science, Frontiers in Plant Science, Trends in Plant Science...
- ° **Grant Reviewer for:**
 - * The National Science Foundation (USA)
 - * The ERA-NET Coordinating Action in Plant Sciences (ERA-CAPS)
 - * The National Research Foundation (NRF) (Afrique du sud)
 - * The COST research proposal (Suisse)
- ° **Co-organiser of international conferences** « International Symposium on Phosphorus in Soils and Plants », Montpellier, August, 26-29 2014 (President: Dr. Philippe Hinsinger, INRA).

6- Student Supervised and publications production

° Master 2

2014 **Samir Bouraine.** University of Montpellier. (J. Ex.Bot, IF=5.354).

° 4 PhD Student

2015-2018 **Mushtak Kisko**. SupAgro Montpellier (eLife 2018, IF= 7.725 ; Plant Physiol 2017, IF= 6.456 ; J. Exp. Biol 2015, IF=3.32).

2013-2016 **Nadia Bouain**. SupAgro Montpellier et Université de Tunis (co-direction avec Pr. Chedly Abdelly) (PLOS Genet 2018, IF= 6.1; Front. Plant. Sc. 2015, IF=3.678 ; J. Ex. Bot 2015, IF=5.354).

2013-2016 **Nibras Belgaroui**. SupAgro Montpellier et Université de Sfax (co-direction avec Pr. Moez Hanin) (Plant Biotechnol. J. 2016, IF= 7.44 ; PCP 2014, IF=4,05 ; Sci. Report 2018, IF=4.12).

2016-- **Nanthana Chaiwong** Uni. Chiang Mai, (co-dir. avec Pr. C.Prom-u-thai) (IJMS 2018, IF=3.226).

° **4 Postdocs**

2014-2016 **Dr. Sikander Pal**. Projet AgreeSkills; (Plant Physiol. 2017, IF= 6.456).

2015 **Dr. Chorpet Saenchai**. Bourse Franco-thaïlandais. (Front Plant Sci. 2015, IF=3.678).

2016 **Dr. Jenjira Mongon**. Bourse Franco-thaïlandais ; (IJMS 2017, IF=3.226).

2015-2016 **Dr. David Secco**. Projet Retour France; (COPS 2017, IF 7.349; Crit. Rev. Biotec. 2017, IF=6.542).

10- PUBLICATIONS (SUPERVISED LAB MEMBER UNDERLINED)

- 1 **2019. Rouached H***. Getting to the root of plant mineral nutrition. [Trends in Plants Science](#) (Invited review, submitted) (IF=11.91)
- 2 **2018. Rouached H***. Red light regulates phosphorus uptake. [Nature Plants](#). (IF=11.47)
- 3 **2018. Bouain N.**, Korte A., Satbhai S.B., Saenchai C., Busch W., Rhee SY., **Rouached H***. Genetic Architecture Underlying Root Growth Rate in Plants. [BioRxiv](#)
- 4 **2018. Bouain N.**, Satbhai S.B., Korte A., Saenchai C., Desbrosses G., Berthomieu P., Busch W*, **Rouached H***. Natural allelic variation of the AZI1 gene controls root growth under zinc-limiting condition. [PLOS Genetics](#) 14(4), e1007304. (IF=6.1)
- 5 **2018. Kisko M**, Bouain N, Safi A, Medici A, Akkers RC, Secco D, Fouret G, Krouk G, Aarts MGM, Busch W, **Rouached H***. LPCAT controls phosphate homeostasis in a zinc-dependent manner. [eLIFE](#) 7, e32077. (IF=7.725)
[Research Highlights in Nature Plants rdcu.be/KvcQ](#)
- 6 **2018. Chaiwong N**, Prom-u-thai C*, Lacombe B, **Rouached H***. Individual versus Combinatorial Effects of Silicon, Phosphate, and Iron Deficiency on the Growth of Lowland and Upland Rice Varieties. [IJMS](#) 19(3), 899. (IF=3.226)
- 7 **2018. Belgaroui N.**, Lacombe B., **Rouached H***, Hanin M*. Phytase overexpression in Arabidopsis improves plant growth under osmotic stress and in combination with phosphate deficiency. [Scientific Reports](#). 8(1), 1137. (IF=4.12)
- 8 **2018b. Kisko M**, Shukla V, Kaur M, Bouain N, Chaiwong N, Lacombe B, Pandey AK, **Rouached H***. Phosphorus transport in Arabidopsis and wheat: emerging strategies to improve P pool in seeds. [Agriculture](#). 8(2), 27.
- 9 **2017. Pal S.**, Kisko M., Dubos C., Lacombe B., Berthomieu P., Krouk G*, **Rouached H***. TransDetect identifies a new regulatory module controlling phosphate accumulation in Arabidopsis. [Plant Physiol](#). pp-00568. (IF=6.456)
- 10 **2017. Rouached., H*** and Rhee Seung Y*. System-level understanding of plant mineral nutrition in the big data era. [Current Opinion in System Biology](#). 4, 71-77.
- 11 **2017. Secco D.**, Whelan J., **Rouached H.**, Lister R. Nutrient stress-induced chromatin changes in plants. [Current Opinion in Plant Biology](#). 39, 1-7. (IF=7.349)
- 12 **2017. Mongon J.**, Jantasorn A., Oupkaew P., Prom-u-Thai C., **Rouached H***. The Time of Flooding Occurrence is Critical for Yield Production in Rice and Vary in a Genotype-Dependent Manner. [OJBS](#).
- 13 **2017. Mongon J.**, Chaiwong N., Bouain N., Prom-u-thai C., Secco D., **Rouached H***. Phosphorus and iron deficiencies influences rice shoot growth in an oxygen dependent manner: insight from upland and lowland rice. [IJMS](#) 18(3), 607. (IF=3.226)

- 14 **2017.** [Secco D.](#), Bouain N., Rouached A, Promuthai C., Hanin M., Pandey AK., **Rouached H***. Phosphate, phytate and phytases in plants: from fundamental knowledge gained in Arabidopsis to potential biotechnological applications in wheat. [Critical Reviews in Biotechnology](#). 37(7), 898-910. (IF=6.542)
- 15 **2016.** Heuer S., Gaxiola R., Schilling R., Herrera-Estrella L., López-Arredondo D., Wissuwa M., Delhaize E., **Rouached H.** Improving phosphorus use efficiency -a complex trait with emerging opportunities. [The Plant Journal](#). 90(5), 868-885.
- 16 **2016.** **Rouached H***. Phosphorus in Agriculture: Need for Efficient Use and Re-Use. [Journal of Crop Research and Fertilizers](#). 1, 1-2.
- 17 **2016.** [Saenchai C.](#), Prom-u-thai C., Lordkaew S., **Rouached H.**, and Rerkasem B. Distribution of iron and zinc in plant and grain of different rice genotypes grown under aerobic and wetland conditions. [Journal of Cereal Science](#). 71, 108-15.
- 18 **2016.** Prom-u-thai C., Jamrus S., Jaksomsak P., **Rouached H.**, and Rerkasem B. Iron, Zinc and Total Antioxidant Capacity in Different Layers of Rice Grain among Different Varieties. [IJAB](#). 18(6).
- 19 **2016.** Damiani I, ... **Rouached H.**,...et al., Nod factor effects on root hair-specific transcriptome of *Medicago truncatula*: focus on plasma membrane transport systems and reactive oxygen species networks. [Frontiers in Plant Science](#). 7, 794. (IF=3.678)
- 20 **2016.** [Saenchai C.](#), Bouain N., Kisko M., Prom-u-thai C., Doumas P., **Rouached H***. The involvement of OsPHO1;1 in the regulation of iron transport through integration of phosphate and zinc deficiency signalling. [Front. Plant. Sci](#). 7, 396. (IF=3.678)
- 21 **2016.** [Belgaroui N.](#), Berthomieu P., **Rouached H***, Hanin M*. The secretion of the bacterial phytase PHY -US417 by Arabidopsis roots reveals its potential for increasing phosphate acquisition and biomass production during cogrowth. [Plant Biotechnology Journal](#). (IF= 7.44)
- 22 **2016.** [Bouain N.](#), Doumas P., **Rouached H***. Recent advances in understanding the molecular mechanisms regulating the root system response to phosphate deficiency in Arabidopsis. [Current Genomics](#). 17(4), 308-314.
- 23 **2015** **Rouached H*** and Tran LSP. Regulation of Plant Mineral Nutrition: Transport, Sensing and Signaling. Editorial. [IJMS](#) (IF=3.226)
- 24 **2015.** Briat JF., **Rouached H.**, Tissot N., Gaymard F and Dubos C. Integration of P, S, Fe and Zn nutrition signals in Arabidopsis thaliana : potential involvement of PHOSPHATE STARVATION RESPONSE 1 (PHR1). [Front. Plant Sci](#). 6, 290. (IF=3.678)
- 25 **2015** **Rouached H***, Pal S., Rachmilevitch S., Libault M., Tran LS P. Plants Coping Abiotic and Biotic Stresses: A Tale of Diligent Management. [BioMed Res Int](#). (IF=2,583)
- 26 **2015.** [Kisko M.](#), Bouain N., Rouached A., Choudray PS. and **Rouached H***. Molecular mechanisms of phosphate and zinc signaling crosstalk in plants: phosphate and zinc loading into root xylem in Arabidopsis. [Environ Exp Bot. Volume 114, 57-64](#)
- 27 **2014.** [Belgaroui N.](#), Zaidi I., Farhat A., Chouayekh H., Bouain N., Chay S., Curie C., Mari S., Masmoudi K., Davidian JC., Berthomieu P., **Rouached H***. and Hanin M*. Overexpression of the bacterial phytase US417 in Arabidopsis reduces the concentration of phytic acid and reveals its involvement in the regulation of sulfate and phosphate homeostasis and signaling. [Plant and Cell Physiology](#). 55(11), 1912-1924. (IF=4,05)
- 28 **2014.** [Bouain N.](#), Shahzad Z., Rouached A., Khan GA., Berthomieu P., Abdelly C., Poirier Y. and **Rouached H***. Phosphate and zinc transport and signalling in plants: toward a better understanding of their homeostasis interaction. [J Exp Bot](#). 65(20), 5725-5741. (IF=5.354)
- 29 **2014.** [Bouain N.](#), Kisko M., Rouached A., Dautat M., Lacombe B., Belgaroui N., Ghnaya T., Davidian JC., Berthomieu P., Abdelly C. and **Rouached H***. Phosphate/zinc Interaction Analysis in Two Lettuce Varieties Reveals Contrasting Effects on Biomass, Photosynthesis and Dynamics of Pi Transport. [BioMed Res Int](#). (IF=1.579)
- 30 **2014.** Shahzad Z., **Rouached H.**, and Rakha A. Combating Mineral Malnutrition through Iron and Zinc Biofortification of Cereals. [Compr Rev Food Sci F](#). 13(3), 329-346. (IF= 7.028)
- 31 **2014.** Khan GA., [Bouraine S.](#), Wege S., Li Y., de Carbonnel M., Berthomieu P., Poirier Y. and **Rouached H***. Coordination between zinc and phosphate homeostasis involves the transcription factor PHR1, the phosphate exporter PHO1, and its homologue PHO1;H3 in Arabidopsis. [J Exp Bot](#). 65(3), 871-884. (IF=5.354) [Issue Cover 65, 3/3/2014](#)
- 32 **2013.** **Rouached H***. and Poirier Y. Uncoupling Phosphate Deficiency from its Effects on Growth and Gene Expression in Plants. XVII. [International Plant Nutrition Colloquium](#) • pp 74-75 Istanbul / Turkey-
- 33 **2013.** **Rouached H***. Recent developments in plant zinc homeostasis and the path toward improved biofortification and phytoremediation programs. [Plant Signal & Behav](#). 8(1), e22681.

- 34 **2012.** Arpat AB., Magliano P., Wege S., **Rouached H.**, Stefanovic A, and Poirier Y. Functional expression of PHO1 to the Golgi and trans-Golgi network and its role in export of inorganic phosphate. *Plant J.* 71(3), 479-491.(IF= 5.9)
- 35 **2011. Rouached H*.** Multilevel Coordination of Phosphate and Sulfate Homeostasis in Plants. *Plant Signal Behav.*
- 36 **2011. Rouached H,** Stefanovic A, Secco D, Vidoudez C, Gout E, Bligny R, and Poirier Y. Uncoupling phosphate deficiency from its effects on growth and gene expression via PHO1 signaling in Arabidopsis. *P Journal.* 65(4):557-70 [F1000Prime Recommendations, F1000Prime.com/9174956](https://www.F1000Prime.com/9174956)). (IF= 5.901)
- 37 **2011. Rouached H*,** Secco D, Arpat B, Poirier Y. The transcription factor PHR1 plays a key role in regulation of sulfate inter-organ flux upon phosphate starvation in Arabidopsis. *BMC Plant Biology.* 11(1), 19. (IF=3,930)
- 38 **2010. Rouached H*.** Efficient procedure for site-directed mutagenesis mediated by PCR insertion of a novel restriction site. *Plant Signal & Behav.* 5(12), 1547-1548.
- 39 **2010. Rouached H.,** Arpat A.B, Poirier Y. Regulation of phosphate starvation response in plants: signaling players and crosstalks. *Mol Plant.* 3(2), 288-299. (IF= 8.827)
- 40 **2010. Rouached H*.,** Secco D, and Arpat A.B. Regulation of ion homeostasis in plants: Current approaches and future challenges. *Plant Signal & behavior.* 5(5), 501-502.
- 41 **2009. Rouached H*,** Secco D, Arpat A.B Getting the most of sulfate from soil: Regulation of sulfate uptake transporters in Arabidopsis. *Journal of Plant Physiology.* 166(9), 893-902. (IF=3.121)
- 42 **2008. Rouached H*,** Wirtz M, Alary R, Hell R, A.B Arpat, Davidian JC, Fourcroy P, Berthomieu P. Differential regulation of the expression of two high affinity sulfate transporters, SULTR1.1 and SULTR1.2, in Arabidopsis. *Plant Physiol.* 147(2), 897-911. (IF=6.456)
- 41 **2007.** El Kassis E, Cathala N, Rouached H, Fourcroy P, Berthomieu P, Terry N, Davidian JC. Characterization of a selenate-resistant Arabidopsis thaliana mutant: root growth as a potential target for selenate toxicity. *Plant Physiol.* 143(3), 1231-1241. (IF=6.456)
- 42 **2007.** Stefanovic A, Ribot C, **Rouached H,** Wang Y, Chong J, Belbahri L, Delessert S, Poirier Y. Members of the PHO1 gene family show limited functional redundancy in phosphate transfer to the shoot and are regulated by phosphate deficiency via distinct pathways. *P Journal.* 50(6), 982-994. (IF= 5.901)
- 43 **2005.** Fourcroy P, **Rouached H,** Berthomieu P, El Kassis E, Cathala N, Catherinot V, Labesse G, Davidian J. Involvement of the STAS domain in the regulation of the Arabidopsis thaliana sulfate transporter SULTR1.2. Sulfur transport and assimilation in plants in post-genomic area. [Backhuys publishers](https://www.Backhuyspublishers.com), Leiden, The Netherlands,
- 44 **2005. Rouached H,** Berthomieu P., El Kassis E., Cathala N., Catherinot V., Labesse G., Davidian JC. and Fourcroy P. Structural and functional analysis of the C-terminal STAS domain of the Arabidopsis thaliana sulfate transporter SULTR 1.2. *JBC.* 2005 280(16), 15976-15983. (IF=4,125)

° Invited speaker in international conferences

2018. **Rouached H.** Systems biology to help solve the mystery of mineral nutrient signaling crosstalks. Presented at First international plant systems biology meeting. Roscoff (Brittany), France, 10-14/09/2018
2018. **Rouached H.** Interactions Between Plant Mineral Nutrients — Zinc And Phosphate, A Dynamic Duo, Presented at International Plant Molecular Biology, Montpellier, France, 4-10/08/2018
2015. **Rouached H.** Regulation of ion homeostasis in plants: Current approaches and future challenges Presented at International Conference On Plant Growth, Nutrition & Environment Interactions. Vienna 25-26/06/2015
2013. **Rouached H.** Can we maintain plant growth capacity while decreasing nutrient accumulation? Case of phosphorus. Presented at SEB Annual Main Meeting 3-6 /07/ 2013 at the Valencia Conference Centre.
2013. **Rouached, H.** Uncoupling phosphate deficiency from its effects on growth and gene expression in plants. Presented at 17th International Plant Nutrition Colloquium (IPNC) , Istanbul, TUR (19 – 22/ 08 2013).
2012. **Rouached H.** Regulation of phosphate starvation responses in plants: The emergence of a new signaling player. Presented at Journées de l'Association Tunisienne de Biotechnologie, Mehdia, Tunisie.

° **Invited speaker in Universities/research Institutes (since 2011)**

2018. **Rouached H.** Interactions Between Plant Mineral Nutrients — Zinc And Phosphate, A Dynamic Duo, Washington State University, Invited by Dr. Karen Sanguinet, June 28, 2018
2016. **Rouached H.** Computational approaches to identify networks that integrate the response to multiple stresses in plant. Invited by Dr. Siobhan Brady (University California- Davis USA) (November 04, 2016).
2016. **Rouached H.** Identification of genetic determinants controlling root growth plasticity in response to nutritional stresses using GWA mapping. Invitation par Dr. Wolfgang Busch (Gregor Mendel Institute-Austria) (February 05, 2016).
2016. **Rouached H.** Computational approaches to identify networks that integrate the response to multiple stresses in plant. Invitation par Dr. Sue Rgee (Carnegie Institution for Sciences-Stanford USA) (Nov 04, 2016).
2015. **Rouached H.** Toward the identification of regulatory networks that integrate the response of plants to phosphorus, zinc, and iron nutritional stresses. Invitation par Dr. Chanakan Prom-uthai (University of Chiang Mai; Thailand) (December 07, 2015).
2012. **Rouached H.** Key players in phosphate signalling pathways in plants: insights into the role of PHO1 Institut de Biologie des Plantes Université Paris-Sud- Orsay, France Invitation par Dr Cécile Raynaud.
2011. **Rouached H.** Can we maintain plant growth capacity while decreasing nutrient accumulation? Role of PHO1 à l'Institut de Biologie Moléculaire des Plantes - Strasbourg France, Invitation par Dr Danièle Werck
- 2017, IF=6.542). 8.