

BOUREAU Tristan

Born, november 6th 1974

Professor, University of Angers, CNU 65.

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Teaching:

- General Bacteriology, Bacterial Ecology.
- Bacterial Genetics, Taxonomy and Phylogeny.
- Plant Pathology, Phytobacteriology and Molecular Plant-Microbe Interactions.

Research:

Head of the platform PHENOTIC for high-throughput plant phenotyping, from seeds to mature plants.

PHENOTIC offers services for plant production and digital plant phenotyping. A wide range of sensors are available for plant imaging (RGB, NIR, hyperspectral, chlorophyll fluorescence imaging, LIDAR, ...), as well as for envirotyping (temperature, hygrométry, light intensity and spectrum).

Member of Team EmerSys: Emergence and Systematics of plant-associated bacteria.

Study of the genetic determinants of host specificity in bacteria from the genus *Xanthomonas*. Study of the emergence mechanisms of novel plant-pathogenic strains in the genus *Xanthomonas*. Study of the effectomes of type III effectors in strains of *Xanthomonas* pathogenic on bean.

Research projects:

- Leader of 14 projects (funding from U. Angers, Région Pays de Loire, Ministry of Agriculture).
- Animation of workpackages in 5 projects (funding from Région Pays de Loire, U. Angers, Ministry of Agriculture and EU- CPER-).
- Involvement in 7 projets (funding ANR, EU, U. Angers).
- Publication de 45 Research Articles de Recherche (for the complete list see ISI Web of Knowledge)
- 1 Patent
- H-index: 21

Networking:

- **BioGenOuest** : Network of technological platforms in Régions Pays de Loire and Bretagne.
- **PHENOME-EMPHASIS** : French Network for Plant Phenotyping.
- **PIB Network** : INRAE Network for the phenotyping of biotic stresses on plants.
- **FNX Network**: French Network on *Xanthomonas*

Skills :

Microbiology, Molecular Biology, Phylogeny, Comparative genomics, Digital Imaging of plants.

PhD supervisions :

- **Ahmed Hajri (2007- 2009)**: Determination of Type 3 effectors in *Xanthomonas* spp. and et analysis of their role in host specificity.
- **Céline Rousseau (2010- 2014)** : Consequences of host adaptation on the evolution of repertoires of type III effectors in bacteria for the genus *Xanthomonas*.
- **Arthur Chambon (Co-supervision 2014- 2017)** : Logical Characterization of data. Application to biological data.
- **Valérien Méline (2015- 2019)**: Phenotyping the impact of type 3 effectors on plant tissues using chlorophyll fluorescence par imaging.
- **Christopher Gihaut (Co-supervision with T. Roistch at University of Copenhagen. Since 2021)** : Assessment of the impact of Effectors of *Xanthomonas* on plant sugar metabolism and defense.

Carrier :

- 2023 :** Chair of Professor at University of Angers.
- 2017-présent:** Director of Plant Phenotyping platform PHENOTIC.
- 2016-2021 :** Member of the scientific board of Plant Health Department of INRAE.
- 2015 :** Habilitation à Diriger les Recherches : « Recherche Type 3, Hôte sensible, Emergence si affinités... »
- 2006:** Assistant Professor at University of Angers (CNU 65).
- 2004-2006 :** Teaching Assistant at University Pierre et Marie Curie Paris 6.
- Aout 2005 :** PhD defense: Type 3 encounters: Study of the pilus of *Pseudomonas syringae* pv. *tomato* DC3000 and of DspA/E, a type 3 effector de type III required for the pathogenicity of *Erwinia amylovora*.
- 2002-2005 :** PhD – (Part 2). Supervision M-A Barny, **Lab IPP**, UMR217 INRA-AgroParisTech-UPMC, Paris, France : Study of DspA/E, a type 3 effector necessary to the virulence of *E. amylovora*.
- 1999-2002 :** PhD (Part 1), Supervision S. TAIRA and Martin ROMANTSCHUK. **YMBO** University of Helsinki, Finland. Study of the type 3 secretion system of *Pseudomonas syringae*.
- 1997-1999 :** CIRAD : International volunteering, based at Sugar Crops Research Institute, Cairo, EGYPT: Study of the diversity of the Sugar Cane Mosaic Virus in Egypt.
- 1997 :** Education at Institut National Agronomique Paris Grignon, Paris, France.

Publications since 2015:

- 1- Gihaut C, Brin C, Briand M, Verdier J, Barret M, Roitsch T, Boureau T., 2024. Transcriptomic dataset of Phaseolus vulgaris leaves in response to the inoculation of pathogenic Xanthomonas citri pv. fuscans and its type III secretion system-defective mutant hrcV. Data Brief. doi: 10.1016/j.dib.2024.110938. eCollection 2024 Dec.
- 2- Sapoukhina N., Boureau T., Rousseau D., 2022 Plant disease symptom segmentation in chlorophyll fluorescence imaging with a synthetic dataset. Frontiers in Plant Science Vol 13. doi: 10.3389/fpls.2022.969205. eCollection 2022.
- 3- Foucher J, Ruh M, Briand M, Préveaux A, Barbazange F, Boureau T, Jacques M-A, Chen NWG., 2021 Improving common bacterial blight phenotyping by using rub-inoculation and machine learning: cheaper, better, faster, stronger Phytopathology. Vol 112 (3) , pp.691-699 . <https://doi.org/10.1094/PHYTO-04-21-0129-R>
- 4- Méline V, Brin C, Lebreton G, Ledroit L, Sochard D, Hunault G, Boureau T, Belin E., 2020. « A Computation Method Based on the Combination of Chlorophyll Fluorescence Parameters to Improve the Discrimination of Visually Similar Phenotypes Induced by Bacterial Virulence Factors. ». Frontiers in Plant Science. 2020 Vol 26;11:213. doi: 10.3389/fpls.2020.00213.
- 5- Méline V., Delage W., Brin C., Li-Marchetti C., Sochard D., Arlat M., Rousseau C., Darrasse A., Briand M., Lebreton G., Portier P., Fischer-Le Saux M., Durand K., Jacques M. - A., Belin E., Boureau T., 2019. « Role of the acquisition of a Type 3 Secretion System in the emergence of novel pathogenic strains of Xanthomonas ». Molecular Plant Pathology. Vol. 20 n°1 p. 33-50
- 6- Chambon A., Boureau T., Lardeux F., Saubion F., 2019. « Accelerated algorithm for computation of all prime patterns in logical analysis of data ». In : 8th International, Conference on Pattern Recognition Applications and Methods (ICPRAM). 19-21/02/2019, Prague. SciTePress, Proceedings of the 8th International Conference on Pattern Recognition Applications and Methods : ICPRAM, 2019, vol. 1, p. 210-220. ISBN : 978-989-758-351-3.
- 7- A Chambon, F Lardeux, F Saubion, T Boureau, 2019. Attributes for Understanding Groups of Binary Data. International Conference on Pattern Recognition Applications and Methods, 48-70
- 8- Courtial J., Hamama L., Helesbeux J. - J., Lecomte M., Renaux Y., Guichard E., Voisine L., Yovanopoulos C., Hamon B., Ogé L., Richomme P., Briard M., Boureau T., Gagné S., Poupard P., Berruyer R., 2018. « Aldaulactone – an original phytotoxic secondary metabolite involved in the aggressiveness of Alternaria dauci on carrot ». Frontiers in Plant Science. 2018. Vol. 9 p. 502.
- 9- Chambon A., Boureau T., Lardeux F., Saubion F., 2018. « Logical characterization of groups of data: a comparative study ». Applied Intelligence. Vol. 48 n°8 p. 2284-2303
- 10- Denancé N., Szurek B., Doyle E. L., Lauber E., Fontaine-Bodin L., Carrère S., Guy E., Hajri A., Cerutti A., Boureau T., Poussier S., Arlat M., Bogdanove A. J., Noël L. D., 2018. « Two ancestral genes shaped the *Xanthomonas campestris* TAL effector gene repertoire ». New Phytologist. 2018. Vol. 219 n°1 p. 391-407
- 11- Jacques M-A, Arlat M, Boulanger A, Boureau T, et al., 2016. Ecology, Physiology, and Genomics to Understand Host Specificity in Xanthomonas. Annual Review of Phytopathology
- 12- Merda D, Bonneau S, Guimbaud J-F, Durand K, Brin C, Darrasse A, Boureau T, Lemaire C, Jacques M-A and Fischer-Le Saux M. The role of nonpathogenic bacterial strains in shaping emergences of new epidemic clones in agroecosystems. Environmental Microbiology Reports .
- 13- Rousseau C, Hunault G, Gaillard S, Bourbeillon J, Montiel G, Simier P, Campion C, Jacques M-A, Belin E, Boureau T., 2015. Phenoplant: a web resource for the exploration of large chlorophyll fluorescence image datasets. Plant Methods.
- 14- Cesbron S, Briand M, Essakhi S, Gironde S, Boureau T, Manceau C, Fischer-Le Saux M and Jacques M-A, 2015. Comparative genomics of pathogenic and nonpathogenic strains of Xanthomonas arboricola unveil molecular and evolutionary events linked to pathoadaptation. Frontiers in Plant Science.
- 15- Degrave A, Siamer S, Boureau T, Barny M-A, 2015. The AvrE superfamily: Ancestral type III effectors involved in suppression of PAMP-triggered immunity. Molecular Plant Pathology.