



Productions scientifiques de BIBS en 2019

INRA Unité BIA
Plate-forme BIBS
Centre Angers-Nantes
Rue de la Géraudière
44316 NANTES CEDEX 03

Liste des productions scientifiques annuelles de la plate-forme BIBS

1- Articles dans des journaux à comité de lecture

- [MODELE : Ropartz, D., Giuliani, A., Herve, C., Geairon, A., Jam, M., Czjzek, M. and Rogniaux, H. (2015) High-energy photon activation tandem mass spectrometry provides unprecedented insights into the structure of highly sulfated oligosaccharides extracted from macroalgal cell walls. *Analytical chemistry*, 87, 1042-1049].
1. Gayral, M., Fanuel, M., Rogniaux, H., Dalgalarrodo, M., Elmorjani, K., Bakan, B., and Marion, D. (2019) The Spatiotemporal Deposition of Lysophosphatidylcholine Within Starch Granules of Maize Endosperm and its Relationships to the Expression of Genes Involved in Endoplasmic Reticulum-Amyloplast Lipid Trafficking and Galactolipid Synthesis, *Plant and Cell Physiology* 60, 139-151.
 2. Imen Bouchnak, Sabine Brugière, Lucas Moyet, Sophie Le Gall, Daniel Salvi, Marcel Kuntz, Marianne Tardif and Norbert Rolland. (2019) Unravelling hidden components of the chloroplast envelope proteome: opportunities and limits of better MS sensitivity. *Molecular & Cellular Proteomics* April 8, 2019, mcp.RA118.000988; <https://doi.org/10.1074/mcp.RA118.000988>
 3. Montanier, C. Y., Fanuel, M., Rogniaux, H., Ropartz, D., Di Guilmi, A. M., and Bouchoux, A. (2019) Changing surface grafting density has an effect on the activity of immobilized xylanase towards natural polysaccharides, *Scientific reports* 9.
 4. Naretto, A., Fanuel, M., Ropartz, D., Rogniaux, H., Larocque, R., Czjzek, M., Tellier, C., and Michel, G. (2019) The agar-specific hydrolase ZgAgaC from the marine bacterium *Zobellia galactanivorans* defines a new GH16 protein subfamily, *J. Biol. Chem.* 294, 6923-6939.
 5. Sun, L., Ropartz, D., Cui, L.N., Shi, H.M., Ralet, M.C., and Zhou, Y.F. (2019). Structural characterization of rhamnogalacturonan domains from *Panax ginseng* C. A. Meyer. *Carbohydrate Polymers* 203, 119-127.
 6. Ujma, J., Ropartz, D., Giles, K., Richardson, K., Langridge, D., Wildgoose, J., Green, M., and Pringle, S. (2019). Cyclic Ion Mobility Mass Spectrometry Distinguishes Anomers and Open-Ring Forms of Pentasaccharides. *Journal of the American Society for Mass Spectrometry*.
 7. Sola, K., Gilchrist, E.J., Ropartz, D., Wang, L., Feussner, I., Mansfield, S.D., Ralet, M.C., and Haughn, G.W. (2019). RUBY, a Putative Galactose Oxidase, Influences Pectin Properties and Promotes Cell-To-Cell Adhesion in the Seed Coat Epidermis of *Arabidopsis*. *Plant Cell* 31, 809-831.
 8. Moreau, C., Tapin - Lingua, S., Grisel, S., Gimbert, I., Le Gall, S., Meyer, V., Petit - Conil, M., Berrin, J-G., Cathala B. and Villares A. (2019) Lytic polysaccharide monooxygenases (LPMOs) facilitate cellulose nanofibrils production. *Biotechnol Biofuels* (2019) 12:156 doi.org/10.1186/s13068-019-1501-0
 9. Nessi, V., Falourd, X., Maigret, J-E., Cahier, K., D'Orlando, A., Descamps, N., Gaucher, V., Lourdin, D., Chevigny, C., Cellulose nanocrystals-starch nanocomposites produced by extrusion: structure and behavior in physiological conditions, *Carbohydrate Polymers*. Accepted (2019).
 10. Verherbruggen, Y., Falourd, X., Sterner, M., Guillon, F., Grousse, C., Foucat, L., Le Gall, S., Chateigner-Boutin, A-L., Saulnier, L., Challenging the putative structure of mannan in wheat (*Triticum aestivum*) endosperm, *Carbohydrate Polymers*. Available online (2019).
 11. Jha, P.K., Vidot, K., Xanthakis, E., Falourd, X., Fontaine, J., Jury, V., LeBail, A., Benchmarking of techniques used to assess the freeze damage in potatoes, *Journal of Food Engineering*. 262 : 60-74 (2019)
 12. Moukhtar, J., Trubuil, A., Belcram, K., Legland, D., Zhor, K., Urbain, A., Palauqui, J.C., Andrey, P. (2019) Cell geometry determines symmetric and asymmetric division plane selection in *Arabidopsis* early embryos, *PLOS Computational Biology* 15(2), 1-27.
 13. Padovani, J., Legland, D., Pernes, M., Gallo, A., Thomachot-Schneider, C., Shah, D., Bourmaud, A., Baugrand, J., (2019) Beating of hemp fibres: an examination of a hydro-mechanical treatment on chemical, structural, and nanomechanical property evolutions. *Cellulose* 26(9) 5665-5683.

14. Zhang, Y., Legland, D., El Hage, F., Devaux, M.F., Guillon, F., Reymond, M., Méchin, V. (2019) Changes in cell walls lignification, feruloylation and p-coumaroylation throughout maize internode development. *Plos ONE*, 14(7) 1-21.
15. Le, T.D.Q., Alvarado, C., Girousse, C., Legland, D., Chateigner-Boutin, A.-L. (2019) Use of X-ray micro computed tomography imaging to analyze the morphology of wheat grain through its development. *Plant Methods* 15(1), 84.
16. Jaafar, Z., Mazeau, K., Boissière, A., Le Gall S., Villares A., Vigouroux J., Beury N., Moreau C., Lahaye M., Cathala B. (2019) Meaning of xylan acetylation on xylan-cellulose interactions: a quartz crystal microbalance with dissipation (QCM-D) and molecular dynamic study. *Carbohydrate Polymers* 226, 115315.
17. Talantikite, M., Gourlay, A., Le Gall S., Cathala B. (2019) Influence of xyloglucan molar mass on rheological properties of cellulose nanocrystal/xyloglucan hydrogels. *Journal of Renewable Materials*.
18. Patnode, M., Beller, Z., Han, N., Cheng, J., Peters, S., Terrapon, N., Henrissat, B., Le Gall, S., Saulnier, L., Hayashi, D., Meynier, A., Vinoy, S., Giannone, R., Hettich, R., Gordon, J. (2019) Interspecies Competition Impacts Targeted Manipulation of Human Gut Bacteria by Fiber-Derived Glycans. *Cell*, 179, 59–73.
19. Akoumany, K.; Zykwiniska, A.; Siquin, C.; Marchand, L.; Fanuel, M.; Ropartz, D.; Rogniaux, H.; Pipelier, M.; Delbarre-Ladrat, C.; Collic-Jouault, S. (2019) Characterization of New Oligosaccharides Obtained by An Enzymatic Cleavage of the Exopolysaccharide Produced by the Deep-Sea Bacterium *Alteromonas infernus* Using its Cell Extract. *Molecules*, 24 (19), 15.
20. Filiatrault-Chastel, C.; Navarro, D.; Haon, M.; Grisel, S.; Herpoel-Gimbert, I.; Chevret, D.; Fanuel, M.; Henrissat, B.; Heiss-Blanquet, S.; Margeot, A.; Berrin, J. G. (2019) AA16, a new lytic polysaccharide monooxygenase family identified in fungal secretomes. *Biotechnology for Biofuels*, 12, 15.
21. Gadea, A.; Charrier, M.; Fanuel, M.; Clerc, P.; Daugan, C.; Sauvager, A.; Rogniaux, H.; Boustie, J.; Le Lamer, A. C.; Lohezic-Le Devehat, F. (2019) Overcoming deterrent metabolites by gaining essential nutrients: A lichen/snail case study. *Phytochemistry*, 164, 86-93.
22. Hernandez-Mesa, M.; Ropartz, D.; Garcia-Campana, A. M.; Rogniaux, H.; Dervilly-Pinel, G.; Le Bizec, B. (2019) Ion Mobility Spectrometry in Food Analysis: Principles, Current Applications and Future Trends. *Molecules*, 24 (15), 28.
23. Ray, S.; Vigouroux, J.; Boudier, A.; Allami, M. F.; Geairon, A.; Fanuel, M.; Ropartz, D.; Helbert, W.; Lahaye, M.; Bonnin, E. (2019) Functional exploration of *Pseudoalteromonas atlantica* as a source of hemicellulose-active enzymes: Evidence for a GH8 xylanase with unusual mode of action. *Enzyme Microb. Technol.*, 127, 6-16.
24. Ropartz, D.; Fanuel, M.; Ujma, J.; Palmer, M.; Giles, K.; Rogniaux, H. (2019) Structure Determination of Large Isomeric Oligosaccharides of Natural Origin through Multipass and Multistage Cyclic Traveling-Wave Ion Mobility Mass Spectrometry. *Analytical Chemistry*, 91 (18), 12030-12037.
25. Le Bris, P.; Wang, Y.; Barbereau, C.; Antelme, S.; Cézard, L.; Legée, F.; D'Orlando, A.; Dalmais, M.; Bendahmane, A.; Schuetz, M.; Samuels, L.; Lapierre, C.; Sibout, R. (2019). Inactivation of LACCASE8 and LACCASE5 genes in *Brachypodium distachyon* leads to severe decrease in lignin content and high increase in saccharification yield without impacting plant integrity. *Biotechnology for biofuels*, 12(1), 181.
26. Davantès, A.; Nigen, M.; Sanchez, C.; D'Orlando, A.; & Renard, D. (2019). Adsorption of Hyperbranched Arabinogalactan-Proteins from Plant Exudate at the Solid–Liquid Interface. *Colloids and Interfaces*, 3(2), 49.
27. Chalakov, A.; Villares, A.; Moreau, C.; Haon, M.; Grisel, S.; D'Orlando, A.; Herpoël-Gimbert, I.; Labourel, A.; Cathala, B.; Berrin, J. G. (2019). Influence of the carbohydrate-binding module on the activity of a fungal AA9 lytic polysaccharide monooxygenase on cellulosic substrates. *Biotechnology for biofuels*, 12(1), 1-10

2- Ouvrages et chapitres d'ouvrages

[MODELE : Gaillard, C., Douliez, JP. Cryo-TEM and AFM for the characterization of vesicle-like nanoparticle dispersions and self-assembled supramolecular fatty-acid-based structures: a few examples, in: A. Méndez-Vilas. (Ed.) Current microscopy contributions to advances in science and technology. 2012. v.5, 912-922].

3- Communications orales

3.1 Conférences invitées

- [MODELE : Ropartz, D., Giuliani, A., Lemoine, J., Bittebière, Y., Ralet, M.-C., and Rogniaux, H. 2013. Deciphering the structure of oligosaccharides by a new tandem mass spectrometry method based on photo-activation in the VUV range. XIII Cell Wall Meeting. Nantes (FRA): 2013/07/07-12].
- Arnaud, B., Fanuel, M., Ropartz, D., Guillon, F., Durand, S., Bonnini, E., Novalès, B., Méchin, V., and Rogniaux, H. 2019. Etude de la distribution des structures lignocellulosiques dans des tiges de graminées par imagerie par spectrométrie de masse. Lien avec la dégradabilité des tiges. Séminaire IJPB. Versailles (FRA): 2019/03/22.
- Ropartz, D. 2019. HauteS resolutionS en spectrométrie de masse pour la recherche agronomique. Forum Agro-Enviro waters. Paris (FRA): 2019/06/18

3.2 Communications orales dans des congrès nationaux ou internationaux

- [MODELE : Ropartz, D., Giuliani, A., Lemoine, J., Bittebière, Y., Ralet, M.-C., and Rogniaux, H. 2013. Deciphering the structure of oligosaccharides by a new tandem mass spectrometry method based on photo-activation in the VUV range. XIII Cell Wall Meeting. Nantes (FRA): 2013/07/07-12].
- 1- Rogniaux, H., Ropartz, D., Hervé, C., 2019. Analyse structurale de la paroi de *Chondrus crispus* : exploration de nouvelles méthodologies en spectrométrie de masse. Journée scientifique du réseau GlycoOuest. Roscoff (FRA): 2019/01/31.
 - 2- Fanuel, M., Ropartz, D., Saulnier, L., Guillon, F., and Rogniaux, H. 2019. Imagerie par spectrométrie de masse en science des plantes et des aliments : une perspective en 3D. III FJIN. Nantes (FRA): 2019/02/27.
 - 3- Arnaud, B., Fanuel, M., Ropartz, D., Guillon, F., Durand, S., Méchin, V., and Rogniaux, H. 2019. A MALDI mass spectrometry study of the segregation of lignocellulosic structures in several maize stems with contrasted degradability in biorefinery. XXIV RCJSM. Saint-Pierre-Quiberon (FRA): 2019/03/18-22.
 - 4- Fanuel, M. 2019. Imagerie par spectrométrie de masse des hémicelluloses dans les parois de graminées: une perspective en 3D. JRFP 2019. Roscoff (FRA): 2019/05/14-16.
 - 5- Ropartz, D. 2019. Highlights on the latest advances in mass spectrometry for the characterization of the fine structure of polysaccharides JRFP 2019. Roscoff (FRA): 2019/05/14-16.
 - 6- Beaugrand, J., Bourmaud, A., Foucat, L., Falourd, X., Arnould, O., Baley, C., Flax cell wall structure modifications during retting. 4th International Conference on Natural Fibers, Porto (POR): 2019/07/1-3.
 - 7- Fanuel, M., Ropartz, D., Guillon, F., Saulnier, L. and Rogniaux, H. 2019 Distribution of cell wall hemicelluloses in the wheat grain endosperm: a 3D perspective. XV Cell Wall Meeting. Cambridge (UK): 2019/07/12.
 - 8- Tessier, D., David, M., Rogniaux, H., Fertin, G. 2019. Mass spectra interpretation and the interest of SpecFit for identifying uncommon modifications. 16th International Conference on Computational Intelligence methods for Bioinformatics and Biostatistics. Bergamo (IT): 2019/09/4-6.
 - 9- Ropartz, D., Fanuel, M., Ujma, J., Giles, K., Rogniaux, H. 2019. Structure determination of large isomeric oligosaccharides of natural origin through multi-pass and multi-stage cyclic traveling wave ion mobility mass spectrometry. SMAP2019. Strasbourg (FR): 2019/09/17-19
 - 10- Arnaud B., Durand S., Fanuel M., Guillon F., Méchin V., Rogniaux H. 2019. A study of the segregation of lignocellulosic structures in several maize stems with contrasted degradability by mass spectrometry imaging. OurCon VII (7th Conference of the European MSI Society). Saint-Malo (FR): 2019/10/28-31
 - 11- D'Orlando A. 2019. Couplage AFM-Raman pour les biomatériaux: vers une imagerie chimique nanométrique sans marquage. Rµl 2019, Nantes (FRA): 2019/11/25-27.
 - 12- Legland, D., Bourmaud, A., Gager, V. (2019). Orientation maps from gray-level images using oriented granulometry. International Conference on Stereology and Image Analysis. Aarhus (DK), 2019/05/26-2019/05/30.
 - 13- Devaux, M.-F., Guillon F., Legland, . Barron, C. (2019) Multiscale and Multimodal Spectral Imaging for Mapping Cell Wall Polymers in Plant Organs; International Plant Spectroscopy Conference, Berlin (ALL), 2019/03/24-2019/03/28.
 - 14- Legland, D., Devaux, M.-F., Guillon, F., Méchin, V., Reymond, M., Hanafi, M.(2019). Fusion de données pour l'histologie du végétal. Journées de BioInformatique et Modélisation, Nantes (France): 2019/07/03-2019/07/03

- 15- Legland, D., Devaux, M.-F., Guillon, F.(2019). Statistical integration of image data for modelling maize stem histology. Image Analysis and Methods for Plant Sciences, Lyon (FRANCE): 2019/07/04-2019/07/25
- 16- Legland, D., Devaux, M.-F., Guillon, F., Méchin, V., Reymond, M (2019). Cartographies paramétriques de la morphologie cellulaire de tissus végétaux. Folles journée de l'imagerie nantaise, Nantes(France): 2019/02/04

4- Communications par affiches

[MODELE : Le Gall S., Falourd X., Rogniaux H., Jaillais B. 2012. PHENOCHEM: A new component of the BIBS platform dedicated to the screening of cell wall polysaccharides composition and structure in plant collections. Phenodays. Wageningen (NLD): 2012/10/10.].

- 1- Le Moine, C., Jam, M., Fanuel, M., Le-Gall, S., Krueger-Hadfield, S., Valero, M., Hervé, C., Czjzek, M., Ropartz, D., Rogniaux, H. Cell wall dynamics in the red alga *Chondrus crispus*: a model system to develop new technologies for the analyses of glycans. JRFP 2019. Roscoff (FRA): 2019/05/14-16
- 2- Tessier, D., David, M., Lollier, V., Fertin, G., Rogniaux, H. SpecOMS : découverte des modifications portées par les protéines. JOBIM 2019. Nantes(FRA) : 2019/07/2-5
- 3- Ropartz, D., Fanuel, M., Ujma, J., Jackson, G.P., Rogniaux, H. 2019 Highlights on the latest advances in mass spectrometry for the characterization of the fine structure of polysaccharides. XV Cell Wall Meeting. Cambridge (UK): 2019/07/7-12.
- 4- Arnaud B., Durand S., Fanuel M., Guillon F., Méchin V., Rogniaux H. A MALDI mass spectrometry study of the segregation of lignocellulosic structures in several maize stems with contrasted degradability. SMAP2019. Strasbourg (FR): 2019/09/17-19
- 5- Legland, D., Devaux, M.-F., Guillon, F., Reymond, M., Méchin, V.(2019). Image fusion for quantitative histology of plant tissue sections obtained by several imaging modalities, Network of European Bio-Image Analysis, Luxembourg (Luxembourg): 2019/03/05-2019/03/06
- 6- Le, T.D.Q., Alvarado, C., Grousse, C., Legland, D., Chateigner-Boutin, A.-L. (2019) Use of X-ray micro computed tomography imaging to analyze the morphology of wheat grain through its development. Quantitative Bio-Imaging, Rennes (France): 2019/01/20-2019/01/22
- 7- Le, T.D.Q., Grousse, C., Legland, D., Chateigner-Boutin, A.-L. (2019) Use of X-ray micro computed tomography imaging to analyze the morphology of wheat grain through its development. Network of European Bio-Image Analysis, Luxembourg (Luxembourg): 2016/03/05-2016/03/06
- 8- Le, T.D.Q., Grousse, C., Legland, D., Chateigner-Boutin, A.-L. (2019) Use of X-ray micro computed tomography imaging to analyze the morphology of wheat grain through its development. Image Analysis and Methods for Plant Sciences, Lyon (FRANCE): 2019/07/04-2019/07/25
- 9- Le Gall, S., Le Bot, L., Marais, B., Masson, E., Ropartz, D., Boizot, N., Laurans, F., Déjardin, A., Pilate, G. (2019) Caractérisation des polysaccharides de bois de peuplier soumis à des contraintes environnementales. JRFP 2019. Roscoff (FRA): 2019/05/14-16
- 10- Solé-Jamault, V., Le Goff, A., Le Bot, L., Nars Chasseray, M., Guinet, T., Jeandroz, S., Gervais, J., Le Gall, S. (2019) Caractérisation de la variabilité biochimique de la graine pour expliquer la consistance de la pâte de moutarde. Colloque Graines. Angers (FRA) : 2019/05/21-23
- 11- Le Gall, S. (2019) Structural characterization and localization of dietary fibers (Poly/oligosaccharides) on a range of scale from nanometer to millimeter. European meeting NutrEvent (Stand Biogenouest). Rennes (FRA) : 2019/10/22-23

5- Thèses soutenues

[MODELE : ROPARTZ, David. Titre : Apport des dernières évolutions en spectrométrie de masse pour l'étude structurale des polysaccharides (Directrice de thèse : MC Ralet, Encadrante : H Rogniaux). Université de Nantes, Ecole Doctorale VENAM. Soutenue le 5 mars 2015.]

6- Enseignements (cours, ateliers, etc.)

[MODELE : Master I Chimie, Parcours A3M (Université de Nantes). Spectrométrie de masse MALDI. Durée : 3h. ROGNIAUX, Hélène. 2017/12/12]

7- Mémoires de stage

[MODELE : LUCAS, Pierrick. Rapport de stage MI Bioinformatique-Biostatistique (Université de Nantes, 2 mois, 2013). Comparaison de logiciels de prédiction de temps de rétention.]

8- Brevets

[MODELE : Gaillard C., Sire A. Dispositif de transport et de traitement pour sondes AFM. 2010. Brevet FR 10 57057. Extension Européenne n° PCT/FR2011/051989. 2011.]

9- Documents à vocation de transfert

[MODELE : Foucat, L., Clerjon, S., Damez, J.L., Bonny, J.M. Analyse de la mobilité et de la distribution du sel dans les produits alimentaires par résonance magnétique nucléaire. Techniques de l'Ingénieur. RE139.]

