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**Tools and applications in plant metabolomics at
Bordeaux Metabolome Fluxome Facility (PMFB;
<http://www.bordeaux.inra.fr/umr619/NMR.htm>)**

Catherine C. Deborde, Stéphane Bernillon, Mickael M. Maucourt, Cécile Cabasson, Benoit Biais, Patricia Ballias, Duyên D. Prodhomme, Guillaume G. Menard, Daniel Jacob, Joël Masciocchi, et al.

► **To cite this version:**

Catherine C. Deborde, Stéphane Bernillon, Mickael M. Maucourt, Cécile Cabasson, Benoit Biais, et al.. Tools and applications in plant metabolomics at Bordeaux Metabolome Fluxome Facility (PMFB; <http://www.bordeaux.inra.fr/umr619/NMR.htm>). 5. Journées scientifiques du Réseau Français de Métabolomique et Fluxomique, Labo/service de l'auteur, Ville service., May 2011, Paris, France. hal-02749839

HAL Id: hal-02749839

<https://hal.inrae.fr/hal-02749839>

Submitted on 3 Jun 2020

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Tools and Applications in Plant Metabolomics at Bordeaux Metabolome-Fluxome Facility (PMFB; <http://www.bordeaux.inra.fr/umr619/NMR.htm>)

Catherine Deborde, Stéphane Bernillon, Mickaël Maucourt, Cécile Cabasson, Benoît Biais, Patricia Ballias, Duyen Prodhomme, Guillaume Ménard, Daniel Jacob, Joël Masciocchi, Yves Gibon, Dominique Rolin and Annick Moing

PMFB, Centre INRA de Bordeaux, IBVM, BP81, 33140 Villenave d'Ornon

Main collaborations: in Japan (Univ. of Tsukuba - C. Matsukura), in Israel (Volcani Center, A. Schaffer; Ben Gourion University, A. Fait), in UK (Univ of Manchester -R. Goodacre and J.W. Allwood; Oxford Univ, Lee Sweetlove; Oxford Brookes Univ, D. Fell) in France (INRA Avignon, M. Causse, M. Génard, J.L. Poëssel; INRA Bordeaux, D. Thiéry ; INRA Montpellier, F. Tardieu ; INRA Sophia Antipolis, P. Frenedo).

The **Bordeaux Metabolome-Fluxome Facility (PMFB)** develops and applies plant metabolomics and high-throughput metabolic phenotyping for local, national and international projects. Applications range from the characterization of plant derived extracts to systems biology:

- 1- Quantitative metabolic profiling of plant organs or tissues by $^1\text{H-NMR}$ [1, 2, 3, 4],
- 2- Plant metabolomics by LC-HRMS,
- 3- Robotised high-throughput measurements of metabolite concentrations and enzyme activities and kinetics [5],
- 4- Storage of metadata and raw data and biostatistical analysis. A web-based application, "MeRy-B" (for Metabolomics Repository of Bordeaux) is being developed in collaboration with the Bordeaux Bioinformatics Centre (<http://www.cbib.u-bordeaux2.fr/MERYB/home/home.php>) [6],
- 5- Identification of metabolic markers for biotic or abiotic environmental changes [7] or agricultural practices [8],
- 6- Characterization of plant extracts having bioactive properties (J.L. Poëssel INRA Avignon and D. Thiery INRA Bordeaux),
- 7- Characterization of mutants [9] or transformants [10,11] for candidate genes for grain or fruit quality,
- 8- Screening of genetic resources or offsprings for fruit composition (A. Schaffer, Bet Dagan, Israel and META-PHOR consortium <http://www.meta-phor.eu/>; ISAFRUIT consortium <http://www.isafruit.org>) or resistance to water stress (F. Tardieu, INRA Montpellier, FP7 DROPS project),
- 9- Integrative modelling of tomato fruit metabolism (ERASysBio FRIM project),
- 10- Integration of metabolomics data with other 'omics data for the study of fleshy fruit development and metabolism [10,12].

In this poster, we will provide an overview of the major features of some of these metabolomics studies and tools developed at Bordeaux.

References:

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