

## BODY MÉLANIE

---



Institut de Recherche sur la Biologie de l'Insecte (IRBI)  
UMR 7261 CNRS - Université François Rabelais  
Faculté des Sciences et Techniques  
Avenue Monge, Parc Grandmont  
37200 Tours, France  
Mobile: +33 (0)6 70 10 89 82  
Office: +33 (0)2 47 36 73 47  
Fax: +33 (0)2 47 36 69 66  
melanie.body@etu.univ-tours.fr  
<http://casas-lab.irbi.univ-tours.fr>  
<http://irbi.univ-tours.fr>

---

Born on July 18<sup>th</sup>, 1985 in Chambray-Les-Tours (France)  
French citizenship  
Civil status: single  
French driving license

ResearcherID: A-5784-2011

## CURRENT POSITION

---

**Teaching Assistant (ATER 100%)**  
CNU Section #68: Organism Biology

2012 - 2014

## RESEARCH INTERESTS

---

Nutritional ecology and physiology, Integrative physiology, Behavioural ecology, Plant-insect interactions, Insect-microbe interactions, Multitrophic interactions, Endophagous insects, *Wolbachia*

## HIGHER EDUCATION AND DIPLOMA

---

**PhD. in Biology** 2009 - 2013  
*Plant manipulation by endophagous organisms: physiological mechanisms, signaling and nutritional consequences in a leaf-miner insect*  
Supervisor: Dr. David GIRON ([david.giron@univ-tours.fr](mailto:david.giron@univ-tours.fr))  
Hosting team: "Ecology of Multitrophic Systems and Biomimetism" (Pr. Jérôme CASAS); "Functional Ecology" group (Dr. David GIRON)  
Laboratory: Institut de Recherche sur la Biologie de l'Insecte (IRBI), UMR 7261 CNRS - Université de Tours, France  
Thesis jury: Prof. Pierre ABAD (Reviewer; Nice, France), Dr. Heidi APPEL (Reviewer; Columbia, Missouri, USA), Dr. Audrey DUSSUTOUR (Toulouse, France), Prof. Elisabeth HUGUET (President; Tours, France), Dr. David GIRON (Thesis Supervisor; Tours, France)  
*Highest distinctions, very honourable with jury's congratulations*

**Master Research 2<sup>nd</sup> year in Insect Sciences**  
Université François Rabelais, Tours, France  
*Rank 3/14, with honours*

2008 - 2009

- Master 1<sup>st</sup> year in Population Biology** 2007 - 2008  
Université François Rabelais, Tours, France  
Option behavioural ecology, quantitative ecology and evolutive genetic  
*Rank 7/35, with honours*
- Bachelor's Degree in Integrative and Evolutive Biology** 2003 - 2007  
Université François Rabelais, Tours, France  
Option behavioural ecology, genetic, ecology
- High-School Diploma in Science** 2003  
(French, Baccalaureat)  
Lycée Jean Monnet, Joué-les-Tours, France  
Option mathematics

## RESEARCH INTERNSHIPS

---

- Master 2<sup>nd</sup> year Research Internship** November 2008 - October 2009  
*Differential use of energetic substrates in a parasitoid wasp Eupelmus vuiletti*  
Supervisor: Pr. Jérôme CASAS (jerome.casas@univ-tours.fr)  
Hosting team: "Ecology of Multitrophic Systems and Biomimetism" (Pr. Jérôme CASAS)  
Laboratory: Institut de Recherche sur la Biologie de l'Insecte (IRBI), UMR 7261 CNRS - Université de Tours, France
- Master 1<sup>st</sup> year Research Internship** March 2008 - May 2008  
*Study of escape behaviour and implication of different sensory systems in the wood cricket Nemobius sylvestris*  
*Rank 1/35, with honours*  
Supervisors: PhD. Fabienne DUPUY (fabienne.dupuy@angers.inra.fr), Pr. Claudio LAZZARI (claudio.lazzari@univ-tours.fr), Pr. Jérôme CASAS (jerome.casas@univ-tours.fr)  
Hosting team: "Physiology and Behavioural Ecology" (Pr. Claudio LAZZARI), "Ecology of Multitrophic Systems and Biomimetism" (Pr. Jérôme CASAS)  
Laboratory: Institut de Recherche sur la Biologie de l'Insecte (IRBI), UMR 7261 CNRS - Université de Tours, France

## SUMMER SCHOOLS

---

### INTERNATIONAL

- 3<sup>rd</sup> Annual Meeting of the European PhD School on "Insect Science"** 2012  
Ivrea (Turin), Italy  
Oral presentation: *Impact of leaf-miner insects on the primary metabolism of their host-plant: Manipulating from the inside*  
Some speakers: Klaus Hoffmann, Ilaria Negri, Elena Gonella, Maria-Cristina Lorenzi
- 2<sup>nd</sup> Annual Meeting of the European PhD School on "Insect Science"** 2011  
Joué-Les-Tours (Tours), France  
Oral presentation: *Impact of leaf-miner insects on the primary metabolism of their host-plant: Manipulating from the inside*  
Some speakers: Graham Stone, Jérôme Casas, Francesco Pennacchio, Klaus Hoffmann

- 1<sup>st</sup> Annual Meeting of the European PhD School on “Insect Science”** 2010  
Impruneta (Florence), Italy  
Poster: *Impact of leaf-miner insects on the sugar metabolism of their host-plant: Manipulating from the inside*  
Some speakers: Alessandro Minelli, Roxina Soler
- 13<sup>rd</sup> Annual Meeting of the European PhD School on “Insect Science and Biotechnology”** 2009  
Pacognano (Naples), Italy  
Oral presentation: *Plant manipulation by endophagous insects: physiological mechanisms, signaling and nutritional consequences in a leaf-miner insect*  
Some speakers: Francesco Pennacchio, Angharad Gatehouse

## WORKSHOPS

---

### NATIONAL

- Ecole Thématique d'Ecologie Chimique** 2012  
**L'écologie et la Chimie : un Lien Indissociable dans les Interactions du Monde Vivant par le Biais des Substances Naturelles**  
Fréjus, France  
Some speakers: Martine Hossaert-McKey, Gregory Röder, Laurence Gaume, Olivier Ploux, Gilles Boeuf, Xavier Fernandez, Gilles Barnathan, Alain Brunelle, Bernard Banaigs, Erwan Poupon, Philippe Potin

### INTERNATIONAL

- 6<sup>th</sup> International Course on Chemical Ecology** 2012  
**Frontiers of Chemical Ecology 2012**  
Jena, Germany  
Poster: *Impact of leaf-miner insects on the primary metabolism of their host-plant: Manipulating from the inside*  
Some speakers: Ian Baldwin, Wilhelm Boland, Teun Dekker, Matthias Erb, Jonathan Gershenzon, David Heckel, Martin Kaltenpoth, Zeyaur Khan, Fredrick Marion-Poll, Sybille Unsicker, Peter Witzgall
- IX<sup>th</sup> Course on Plant genetic** 2010  
**Interactions between Plants and other Organisms: from Molecular Aspects to Crop Improvement**  
Pacognano (Naples), Italy  
Some speakers: Claudio Bandi, Anna Benedetti, Piero Bianco, Paola Bonfante, Sara Borin, Jim Bradeen, Maurizio Chiurazzi, Giandomenico Corrado, Giulia De Lorenzo, Christiane Gebhardt, Matteo Lorito, Uta Paszkowski, Luciano Pecetti, Franco Pennacchio, Mario Tavazza

## CONGRESSES

---

### NATIONAL

- Meeting PATRON (Poitiers, Angers, Tours, Rennes, Orléans, Nantes) on Technical Analysis on the Apple-Tree** 2011  
Angers, France

**GDR d'Ecologie Chimique** 2011  
Dijon, France

**Ecologie 2010** 2010  
Montpellier, France  
Poster: *Interactions physiologiques entre un insecte mineur de feuilles et sa plante hôte*

#### INTERNATIONAL

**XXIV International Congress of Entomology** 2012  
Daegu, South Korea  
Oral presentation: *Impact of leaf-miner insects on the primary metabolism of their host-plant: Manipulating from the inside*  
Poster: *Leaf-miner insects trigger the host plant physiology through an unexpected association with endosymbiotic bacteria*

**Symposium on Insect-Plant Interactions SIP14** 2011  
Wageningen, The Netherlands  
Oral presentation: *Impact of leaf-miner insects on the primary metabolism of their host-plant: Manipulating from the inside*  
Poster: *Leaf-miner insects trigger the host plant physiology through an unexpected association with endosymbiotic bacteria*

**26<sup>th</sup> Annual Meeting of the International Society of Chemical Ecology** 2010  
Tours, France  
Poster: *Impact of leaf-miner insects on the sugar metabolism of their host-plant: Manipulating from the inside*

#### ADDITIONAL TRAININGS

---

**Quantitative PCR** April 2013  
Tours, France  
Theoretical and practical aspects, experiments, data analysis  
Organizer: Bariza Blanquier, IFR 128 BioSciences, Lyon

**Health and Safety** April 2013  
Tours, France  
Accidents – first aid, fire risk, electrical risk, waste management, biological risk, chemical risk, ionizing and non-ionizing radiation risk

**Capillary electrophoresis** June 2010  
Paris, France  
Organizer: Beckman Coulter

**Respirometry** May 2009  
Tours, France  
Theoretical and practical aspects, experiments, data analysis  
Organizer: Andreas Moelich, Sable Systems Europe (for Sable Systems International)

## TEACHING EXPERIENCES

---

### Teaching Assistant (ATER 100%)

2012 - 2013

Master 1<sup>st</sup> year: Ecology (Fieldworks: 18h), Statistics on R freeware (Practical works: 56h)

Licence 3<sup>rd</sup> year: Ecology (Practical works: 60h; Graphical and statistical analyses on R freeware)

Licence 2<sup>nd</sup> year: Organism Biology (Practical works: 12h; Roach-fish dissection, Frog dissection), Ecology (Practical works: 40h; Report and oral presentation of different animal groups)

Licence 1<sup>st</sup> year: Histology (Tutorials: 22h), Diversity of the Animal Kingdom (Tutorials: 9h, Practical works: 27h; Protists observation, Earthworm dissection)

## STUDENT SUPERVISION

---

### Alexandre Lebrun

2012

Master 1<sup>st</sup> year "Insect Sciences" Research Internship, Tours, France

*Impacte d'un insecte mineur de feuille sur le métabolisme primaire de sa plante-hôte*

### Florence Gutzwiller

2010

Master 1<sup>st</sup> year "Insect Sciences" Research Internship, Tours, France

*Etude du métabolisme respiratoire d'une guêpe parasitoïde Eupelmus vuiletti*

## SCIENTIFIC COLLABORATIONS

---

### Dr. Aurélien Salle and France Dardeau

2013

Orléans, France

*Characterization of amino acids content in poplar galls of the aphid Phloeomyzus passerinii*

Free and protein-bound amino acid characterization by GC/MS

### Dr. Marc-Antoine Cannesan

2012

Rouen, France

*Biochemical characterization of cell-walls in mined tissues by the leaf-miner caterpillar Phyllonorycter blancardella*

Analysis of ArabinoGalactan Proteins by radial diffusion gel, rocket-gel, GC/MS, Agarose gel, 2D-gel; analysis of Pectines, Soluble Hemicellulose, Unsoluble Hemicellulose, Cellulose by GC/MS

### Dr. Pierre-François Pelisson and Dr. Samuel Venner

2012

Lyon, France

*Nutrient quantification in the leaf-miner caterpillar Phyllonorycter blancardella*

Sugars, lipids, proteins, glycogen and triglycerides content quantification by colorimetric assays on microplates

### Dr. Nathan Morehouse and Prof. Jérôme Casas

2011

Tours, France

*Chemical composition of the Araschnia levana caterpillar host-plant*

Free amino acids characterization of *Urtica dioica* stinging nettle leaves by GC/MS

**Dr. Christelle Robert, Dr. Matthias Erb and Prof. Ted Turlings**

2011

Neuchatel, Switzerland

*Characterization of sugar content in Maize roots attacked by an herbivorous nematod Diabrotica virgifera virgifera*

Individual sugars quantification by capillary electrophoresis

**Alicia Colin-Jarrige and Dr. Marlène Goubault**

2010, 2013

Tours, France

*Chemical composition of the spermatophore in Ehippiger ehippiger*

Protein analyses of spermatophores by colorimetric assays

Protein-bound and free amino acids characterization of spermatophores by GC/MS

## LABORATORY SKILLS

---

### **Biochemistry**

Quantification of total soluble sugars, starch, lipids, proteins, glycogen and triglycerides by colorimetric assays (Van Handel and Bradford's methods)

Analysis of sugars and amino acids by capillary electrophoresis

Analysis of free and protein-bound amino acids by GC/MS

### **Molecular biology**

DNA extraction

Screening of insect endosymbionts (*Wolbachia*) by PCR and sequencing

Quantification of insect endosymbionts (*Wolbachia*) by qPCR

Gel electrophoresis

DNA-microarray experiment (under- or over-expression of plant genes)

Coming soon: transcriptomic (candidate insect salivary genes)

### **Physiology**

Characterization of metabolic rate by respirometry

### **Morphology**

Characterization of insect larvae mouthparts by scanning electron microscopy (SEM)

### **Behaviour**

Behavioural set-up (arena)

Piston controlled by computer

Camera video

### **Other skills**

Field work

Insect rearing

Insect manipulation

Insect dissection

Plant rearing

Plant dissection

## TEACHING SKILLS

---

### **Supervision**

Supervision of protocol design, of experiments, of results analyses

Supervision of report writing, and of oral presentation

### Teaching

Development of a new course (10h practical works about statistics on R freeware for Master 1st degree)

Teaching

Tests supervision and correction

Referee for written reports and oral presentation

## RESEARCH FUNDINGS

---

### Funding Findings

2011

Organization of the Annual Meeting of the European PhD Network "Insect Sciences" (Joué-Les-Tours (Tours), France)

14000€

### Travel Grant

2010

1<sup>st</sup> Annual Meeting of the European PhD School on "Insect Sciences" (Impruneta (Florence), Italy)

500€

## REFeree FOR SCIENTIFIC JOURNALS

---

Journal of Insect Physiology

## NETWORK MEMBERSHIPS

---

European PhD Network on Insect Science

2009 - 2013

International Society of Chemical Ecology

2010

## PUBLICATIONS

---

### PUBLISHED:

[4] **Body Mélanie**, Kaiser Wilfried, Dubreuil Géraldine, Casas Jérôme and Giron David, 2013. Leaf-miners co-opt microorganisms to enhance their nutritional environment. *Journal of Chemical Ecology – Special issue: Microbial Interactions*. 39 : 969-977. doi: 10.1007/s10886-013-0307-y IF 2012: 2.462

[3] Morehouse Nathan I., Mandon Nicole, Christidès Jean-Philippe, **Body Mélanie**, Bimbard Gaëlle and Casas Jérôme, 2013. Seasonal selection and resource dynamics in a seasonally polyphenic butterfly. *Journal of Evolutionary Biology*. 26 : 175-185. doi: 10.1111/jeb.12051. IF 2012: 3.479

[2] Robert Christelle A.M., Veyrat Nathalie, Marti Guillaume, Glauser Gaétan, Doyen Gwladys R., Villard Neil, Köllner Tobias, Giron David, **Body Mélanie**, Babst Benjamin A., Ferrieri Richard A., Turlings Ted C.J. and Erb Matthias, 2012. A specialist root herbivore exploits defensive metabolites to locate nutritious tissues. *Ecology Letters*. 15 : 55-64. doi: 10.1111/j.1461-0248.2011.01708.x. IF 2012: 17.949

[1] Dupuy Fabienne, Casas Jérôme, **Body Mélanie** and Lazzari Claudio, 2011. Danger detection and escape behaviour in wood crickets. **Journal of Insect Physiology**. 57 : 865-871. doi:10.1016/j.jinsphys.2011.03.020 IF 2012: 2.379

**SUBMITTED:**

[5] **Body Mélanie**, Behmer T. Spencer, Casas Jérôme, Pelisson Pierre-François and Giron David. Nutrient regulation in a leaf-miner insect. **Submitted to PloS One**. IF 2012: 3.730

[6] **Body Mélanie**, Burlat Vincent and Giron David. Dynamics of plant tissue alterations following mouthpart hypermetamorphosis in an herbivorous insect. **Submitted in Arthropod-Plant Interactions**. IF 2012: 1.574

[7] **Body Mélanie**, Christidès Jean-Philippe and Giron David. Understanding of ecological interactions may be biased by the underestimation of carbohydrate content by classical anthrone-based colorimetric techniques. **Submitted in Physiological Entomology**. IF 2012: 1.417

**IN PREPARATION:**

[8] **Body Mélanie**, Casas Jérôme, Christidès Jean-Philippe, Mazerie Isabelle, Monge Jean-Paul, Lanoue Arnaud and Giron David. Leaf-miner larvae trigger the modulation of the plant primary metabolism according to their larval feeding-mode. **In preparation**.

[9] **Body Mélanie**, Lebrun Alexandre, Christidès Jean-Philippe, Lanoue Arnaud, Casas Jérôme and Giron David. Senescence improves essential amino acid availability for a leaf-miner insect. **In preparation**.

[10] **Body Mélanie\***, Cannesan Marc-Antoine\*, Bernard Sophie and Giron David. Alteration of host-plant cell wall by a leaf-miner insect. **In preparation**.

\* *These authors contributed equally to this study.*

[11] **Body Mélanie**, Lopez-Llandres Ana, Gutzwiller Florence, Lazzari Claudio, Bodin Aurélie, Mondy Nathalie and Casas Jérôme. Lifetime dynamics of energy sources and allocation targets in an adult insect. **In preparation**.

[12] Dardeau France, **Body Mélanie**, Berthier A., Miard Florie, Christidès Jean-Philippe, Feinard-Duranceau Muriel, Brignolas Franck, Giron David, Lieutier François, Sallé Aurélien. Host manipulation by the woolly poplar aphid, *Phloeomyzus passerinii* (Sign.). **In preparation**.

[13] Glevarec Gaëlle, Lanoue Arnaud, Dumas Pascaline, Melin Céline, **Body Mélanie**, Kaiser Wilfried, Crèche Joël, St-Pierre Benoît, Bresseau Sébastien, Oudin Audrey, Courdavault Vincent and Giron David. A-type response regulator transduces cytokinin signal during the interaction of leaf-miner insect with apple-tree. **In preparation**.



## SERVICE

---

- Organization Committee Member** 2011  
Annual Meeting of the European PhD Network "Insect Sciences", Joué-Les-Tours (Tours), France (102 participants)  
Co-organization, finding of fundings, abstract books, registration forms, announcement posters, programme, ....
- Webmaster/Webdesigner**  
Asian Hornet Project, Tours, France: Webdesigner and Logo Designer 2012  
IRBI Website, Tours, France: Co-Webdesigner 2012  
European PhD Network on "Insect Science": Logo Designer 2011
- Implication in the Life of the Institute** 2012 - 2014  
Co-redaction of the PhD charter, PhD committee form, mediation process form and PhD follow-up form for the Research Institute on Insect Biology (IRBI), Tours, France  
Co-mentoring of one PhD student (moral support, mediation process, ...)

## LANGUAGES

---

### French

Native language

### English

Fluently read, written and spoken: academic level – 18 years  
TOEIC (2008): 630/990 (oral understanding: 275/495, written: 355/495)

### German

Basis: high-school level – 5 years

### Italian

Notions: high-school level – 1 year

### Latin

Notions: school level – 1 year

### French Sign Language (FSL)

Level 1 validated

## INFORMATICS

---

### Informatics and Internet Certificate (C2I)

Level 1 validated

### Softwares

*Operating systems:* Windows XP, Windows Vista, Windows Seven

*Office automation softwares:* Microsoft Word, Microsoft Excel, Microsoft PowerPoint, Microsoft Publisher, Microsoft Works, Open Office suite and Libre Office suite (Writer, Calc, Draw)

*Statistical and analysis softwares:* R, Minitab, Statistica, SigmaPlot, SigmaStat, Systat, ExpeData (Respirometer, Sable Systems International), 32 Karat™

Software (Capillary Electrophoresis, Beckman Coulter), TurboMass (GC/MS, Perkin Elmer)

Web browsers: Mozilla Firefox, Google Chrome, Opera, Safari, Internet Explorer  
Desktop Publishing: Website creation (NotePad++; html, css) and uploading (FileZilla FTP Client), Webdesign, Adobe Photoshop, Adobe InDesign, Adobe Illustrator, The Gimp, Paint.net, Corel VideoStudio, Windows Movie Maker, Blender 3D

## PERSONAL INTERESTS

---

### Travelling

France, United Kingdom, Germany, Italy, The Netherlands, South Korea, Japan

### Sport

Basket-Ball: 8 years – competitions in regional level

Tennis: 3 years – competitions

Interest for motorbike

### Diverse

Informatics, macro photography, reading, drawing, guitar, arts and crafts, mechanical basics

## REFEREES

---

### RESEARCH:

#### Dr. David GIRON

Institut de Recherche sur la Biologie de l'Insecte (IRBI), UMR 7261 CNRS - Université de Tours, France

+33 (0)2 47 36 73 49

david.giron@univ-tours.fr

#### Pr. Jérôme CASAS

Institut de Recherche sur la Biologie de l'Insecte (IRBI), UMR 7261 CNRS - Université de Tours, France

+33 (0)2 47 36 69 78

jerome.casas@univ-tours.fr

#### Pr. Claudio LAZZARI

Institut de Recherche sur la Biologie de l'Insecte (IRBI), UMR 7261 CNRS - Université de Tours, France

+33 (0)2 47 36 73 89

claudio.lazzari@univ-tours.fr

#### Dr. Fabienne DUPUY

Récepteurs et Canaux Ioniques Membranaires, UPRES-EA 2647 / USC INRA 1330, Université d'Angers, Angers, France

+33 (0)2 41 73 52 12

fabienne.dupuy@angers.inra.fr

**TEACHING:**

**Pr. Christelle SUPPO**

Institut de Recherche sur la Biologie de l'Insecte (IRBI), UMR 7261 CNRS - Université de Tours, France  
+33 (0)2 47 36 69 79  
christelle.suppo@univ-tours.fr

**Dr. Dominique PIERRE**

Institut de Recherche sur la Biologie de l'Insecte (IRBI), UMR 7261 CNRS - Université de Tours, France  
+33 (0)2 47 36 72 38  
dominique.pierre@univ-tours.fr

**Dr. Marie ZIMMERMANN**

Institut de Recherche sur la Biologie de l'Insecte (IRBI), UMR 7261 CNRS - Université de Tours, France  
+33 (0)2 47 36 71 23  
marie.zimmermann@univ-tours.fr