



Sébastien Verne, Ph.D.

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Personal data:

Citizenship: French

Date of birth: 1st march 1979

Marital status: single

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Professional experience:

- 2008-2010 **Postdoctoral Fellow:**
Genomics of Spruce (*Picea sp.*) resistance to White Pine Weevil (*Pissodes strobi*).
Population genetics and genomics lab (Prof. Kermit Ritland)
Department of Forest Sciences
University of British Columbia, Vancouver, BC, Canada
<http://www.treenomix.ca/>
- 2006-2007 **ATER position (Research and teaching assistantship):**
Feminizing *Wolbachia* and multiple paternity in *Armadillidium vulgare*.
Laboratoire Génétique et Biologie des populations de Crustacés,
(renamed Laboratoire Ecologie, Evolution, Symbiose in January 2008),
University of Poitiers, France

Education:

- 2003-2007 **Ph.D.: "Diversity and impact of feminizing *Wolbachia* on the genetic structure of *Armadillidium vulgare*"**
Supervisors: Pr. Frédéric Grandjean & Dr. Monique Johnson
Laboratoire Génétique et Biologie des populations de Crustacés,
(renamed Laboratoire Ecologie, Evolution, Symbiose in January 2008),
UMR CNRS 6556, University of Poitiers, France
See page 10 for details.
- 2002-2003 **Master 2 "Biology: Evolution and Control of populations"**
(5th year degree)
Research training of 8 months (*cf.* Practical trainings).
University François Rabelais (Tours, France)
- 2001-2002 **Master 1 "Biology of Populations and Ecosystems"** (4th year degree)
option "Evolution"
University of Lille I (France)
- 1999-2001 **Licence of Biology of Organisms** (3rd year degree)
University of Lille I (France)
- 1997-1999 **DEUG Sciences of the Life, Biostage** (2nd year degree)
University of Lille I (France)

Languages: French (Native), English (fluent), Spanish (basics) and German (basics).

Other: French (B) and Canadian (class 5) driving licenses, 1st level of scuba-diving.

Research trainings:

- 2003
(8 months) **Population analysis of genetic polymorphism of *Amyrel* and *XDH* genes in two invasive species: *Drosophila ananassae* et *D. malerkotliana***
Supervisor Dr. J.-L. Da Lage, Laboratoire Population, Genetic and Evolution, CNRS of Gif-sur-Yvette, France
- 2002
(4 months) **Microsatellite loci analysis in the Nile perch (*Lates niloticus*)**
Supervisor : Dr. J.-F. Agnès, Laboratoire Génome, Population, Interactions, University Montpellier II, France
- 2001
(6 weeks) **Study of the influence of temperature on the activity of the invasive crayfish *Pacifastacus leniusculus***
Supervisor Dr. M. Lucas, School of Biological and Biomedical Sciences University of Durham, United Kingdom
- 2000-2001
(9 months) **Systematic Checking of collections of *Cichlidae Bathybatini* and *Ectodini* in the Africa Museum of Tervuren**
Supervisor Dr. J. Snoeks, Africa Museum, Tervuren, Belgium
- 2000
(3 months) **Update of the Check-List Of Freshwater Fishes of Africa (CLOFFA) for the family *Cichlidae***
Supervisor Dr. Y. Fermon, Muséum National d'Histoire Naturelle, Paris, France
- 1999
(2 months) **Experimental salmoniculture and perciculture**
Supervisor C. Gillet, Station d'Hydrobiologie Lacustre de Thonon-les-bains, France
- 1999
(2 months) **Experimental larval rearing of Sea-Bass (*Dicentrarchus labrax*)**
Supervisor Dr. P. Fontaine, Laboratoire de Biologie Appliquée of Nancy, France

Grants and Awards:

- 2006 NSF Student travel awards for 4th *Wolbachia* conference
- 2003-2006 PhD grant of the Région Poitou Charentes (3 years)

Research Skills:

- **Molecular Biology:**
 - ✓ Microsatellite genotyping
 - ✓ PCR detection/identification of endosymbiotic parasites (e.g. *Wolbachia*)
 - ✓ Routine DNA manipulations such as DNA and RNA extraction, PCR, sequencing, restriction digestion, ligation, cloning of DNA fragments
 - ✓ Agarose and acrylamide gel electrophoresis
 - ✓ Gene expression profiling (two-channel microarrays technology)
 - ✓ Quantitative PCR
 - ✓ Reverse transcriptase PCR
- **Statistical Analysis**
 - ✓ Population genetics: Polymorphism analysis, F-statistics, AMOVA, assignment methods (GeneClass, Structure), etc.
 - ✓ Molecular Phylogeny
 - ✓ Neutrality Tests of molecular evolution (selection, demographic bottlenecks)
 - ✓ R software
 - ✓ Microarray data analysis: both gene expression levels comparison and functional annotation and analysis
 - ✓ Genetic mapping
 - ✓ Morphometric and meristic analysis
- **Electric fishing**
- **Use of de cryogenic Microtome**

Publications:

Sébastien VERNE & Frédéric GRANDJEAN, *in prep. for Evolution*. All *Wolbachia* symbiotic females are not sexy... impact of *Wolbachia* on multiple paternity in *Armadillidium vulgare*

Sébastien VERNE, Monique JOHNSON, Didier BOUCHON & Frédéric GRANDJEAN, *submitted to Journal of Evolutionary Biology* Effects of parasitic sex-ratio distorters on host genetic structure in the *Armadillidium vulgare*-*Wolbachia* association.

Sébastien VERNE, Barry Jaquish, Rick White, Carol Ritland & Kermit Ritland, *in press*. Transcriptome analysis of constitutive resistance to white pine weevil in Interior spruce. *Genome Biology and Evolution*

Mauricio P. ALMERAÑO, Nelson J.R. FAGUNDES, Aldo M. ARAUJO, Paula B. ARAUJO, Frédéric GRANDJEAN, Sébastien VERNE & Didier BOUCHON, *submitted to Current Microbiology* The first record of *Wolbachia* in South American terrestrial Isopods: High diversity of *Wolbachia* strains in two species of the genus *Balloniscus* (Crustacea: Oniscidea).

Frédéric GRANDJEAN, Sébastien VERNE, Corinne CHERBONNEL & Arnaud RICHARD, 2008 - Fine-scale genetic structure of Atlantic salmon (*Salmo salar*) using microsatellite markers: effects of restocking and natural recolonization. *Freshwater Biology* 54(2): 417-433

Sébastien VERNE, Monique JOHNSON, Didier BOUCHON & Frédéric GRANDJEAN, 2007 - Evidence for recombination between feminizing *Wolbachia* in the isopod genus *Armadillidium*. *Gene* 397(1-2):58-66

Sébastien VERNE, Jérôme MOREAU, Yves CAUBET, Didier BOUCHON & Frédéric GRANDJEAN, 2007 - Male mating success between two parturial moult in the terrestrial isopod *Armadillidium vulgare* revealed by the use of microsatellite loci. *Journal of Crustacean Biology* 27(2): 217-219

Sébastien VERNE, Nicolas PULLANDRE, Géraldine BRUNET, Nicolas GOUIN, Paul B. SAMOLLO, Joel D. ANDERSON, Frédéric GRANDJEAN, 2006 - Characterization of polymorphic microsatellite loci in the terrestrial isopod *Armadillidium vulgare*. *Molecular Ecology Notes* 6(2):328-330

Frédéric GRANDJEAN, Nicolas GOUIN, Sébastien VERNE, Carine DELAUNAY, Sylvie PATRI, 2005 - Characterization of polymorphic microsatellite loci in the terrestrial isopod *Porcellionides pruinosus*. *Molecular Ecology Notes* 5(3):507-509

Oral Communications:

'Petit Pois Dérivé 2011', 31^e Réunion du Groupe de Biologie et Génétique des Populations, August 29th-31st 2011

A large scale gene expression scan in white spruce reveals differentially expressed genes in trees resistant to the white pine weevil

Sébastien VERNE, Rick WHITE, Barry JAQUISH, Carol RITLAND & Kermit RITLAND

'TREENOMIX / ARBOREA Joint Workshop'; June 28th 2009, Whistler, British Columbia, Canada

A study of constitutive resistance to white pine weevil in interior spruce

Sébastien VERNE, Leyla TABANFAR, Nima FARZANEH, Rick WHITE, Barry JAQUISH & Kermit RITLAND

'"Fun" duh-mentals of Genomics workshop'; June 1-5th 2009; Vancouver, British Columbia, Canada

Provenance experiment: a case study of constitutive resistance to white pine weevil in interior spruce

Sébastien VERNE

'Petit Pois Dérivé 2007', 29^e Réunion du Groupe de Biologie et Génétique des Populations, August 27th-30th 2007

Quand les facteurs féminisants brouillent les pistes...

Sébastien VERNE, Yves CAUBET, Monique JOHNSON & Frédéric GRANDJEAN

'7th International Symposium on the Biology of Terrestrial Isopods'; March 28-31st 2007, Tunis, Tunisia

The costs and advantages of a Wolbachia-woodlice infection. A classical example of parasite trade-off

Monique JOHNSON, Sébastien VERNE, Karima BOUAZIZ & Didier BOUCHON

'Petit Pois Dérivé 2006', 28^e Réunion du Groupe de Biologie et Génétique des Populations,
August 28th - September 1st 2006

*Wolbachia féminisantes et recombinaison chez les isopodes terrestres du genre
Armadillidium*

Sébastien VERNE, Monique JOHNSON, Didier BOUCHON & Frédéric
GRANDJEAN

'4th Wolbachia Conference' ; June 24-26th 2006 ; Puerto Rico

*Genetic structuration of Armadillidium vulgare and its reproductive parasite
Wolbachia*

Sébastien VERNE, Monique JOHNSON, Didier BOUCHON & Frédéric
GRANDJEAN

'Réunion du Réseau Ecologie des Interactions Durables (REID)', January 9-11th 2006,
University of Bourgogne, Dijon, France

*Structuration génétique des populations d'Armadillidium vulgare et de son parasite de
la reproduction Wolbachia à une échelle régionale: Etude du transect Chizé/Ensoulesse*

Sébastien VERNE, Monique JOHNSON & Frédéric GRANDJEAN

'Petit Pois Dérivé 2005', 27^e Réunion du Groupe de Biologie et Génétique des Populations,
August 29th - September 2nd. 2005, Bordeaux, France

*Structuration génétique d'une métapopulation d'Armadillidium vulgare infectée par
deux lignées Wolbachia*

Sébastien VERNE, Monique JOHNSON, Yves CAUBET, Roland RAIMOND, Didier
BOUCHON & Frédéric GRANDJEAN

'Réunion du Réseau Ecologie des Interactions Durables (REID)', January 18-19th 2005,
University Claude Bernard, Lyon, France

*Structuration génétique à petite échelle d'Armadillidium vulgare et de son parasite de
la reproduction Wolbachia sp.*

Sébastien VERNE & Frédéric GRANDJEAN

'Petit Pois Dérivé 2004', 26^e Réunion du Groupe de Biologie et Génétique des Populations,
August 24-27th 2004, Paris, France

*Structuration génétique d'Armadillidium vulgare dans une métapopulation hébergeant
Wolbachia*

Sébastien VERNE, Nicolas PUILANDRE, Monique JOHNSON, Didier BOUCHON
& Frédéric GRANDJEAN

'6th International Symposium on the Biology of Terrestrial Isopods'; July 12-15th.
2004 ; Aveiro, Portugal

*Use of microsatellites : an indirect approach to estimate the gene flow among
populations in the terrestrial isopod Armadillidium vulgare*

Sébastien VERNE, Nicolas PUILANDRE, Géraldine BRUNET & **Frédéric
GRANDJEAN**

Poster communications:

'13th Congress of the European Society for Evolutionary Biology'; August 20-25th 2011, Tübingen, Germany

A large scale gene expression scan in white spruce reveals differentially expressed genes in trees resistant to the white pine weevil

Sébastien VERNE, Rick WHITE, Barry JAQUISH, Carol Ritland and Kermit RITLAND

'8th International Symposium on Terrestrial Isopod Biology'; June 19-23th 2011, Bled, Slovenia

Wolbachia symbiotic females are not that sexy... impact of Wolbachia on multiple paternity in Armadillidium vulgare

Sébastien VERNE & Frédéric GRANDJEAN

'Evolution 2010 Conference'; June 25-29th 2010 ; Portland, USA

sHSP and constitutive resistance to white pine weevil in interior spruce

Sébastien VERNE, Rick WHITE, Barry JAQUISH, Carol RITLAND and Kermit RITLAND

'9th International Plant Molecular Biology Congress'; October 25-30th 2009, Saint Louis, MO, USA

A study of constitutive resistance to white pine weevil in interior spruce

Sébastien VERNE, Rick WHITE, Barry JAQUISH, Nima FARZANEH, Leila TABANFAR, Kermit RITLAND

'12th Congress of the European Society for Evolutionary Biology'; August 24-29th 2009, Turin, Italy

Consequences of feminizing cytoplasmic factors on host genetic structure: the case of Armadillidium vulgare and Wolbachia

Sébastien VERNE, Monique JOHNSON, Didier BOUCHON & Frédéric GRANDJEAN

'Petit Pois Dérivé 2007', 29^e Réunion du Groupe de Biologie et Génétique des Populations, August 27th-30th 2007

- *Résultats préliminaires de la structuration génétique de deux espèces proches (Balloniscus sellowii, B. glaber) dans la pleine côtière du sud du Brésil*
Mauricio ALMERÃO, Sébastien VERNE, Yves CAUBET, Frédéric GRANDJEAN, Paula Beatriz de ARAUJO & Aldo Mellender de ARAUJO
- *Température et inefficacité de la féminisation par Wolbachia chez Armadillidium vulgare*
Karima BOUAZIZ, Sébastien VERNE, Frédéric GRANDJEAN, Didier BOUCHON & Monique JOHNSON
- *Genetic structure of Atlantic Salmon (Salmo salar) in Normandy (France) inferred by the use of microsatellite markers: positive or negative impact of human management*
Frédéric GRANDJEAN, Sébastien VERNE, Didier BOUCHON, Corinne CHARBONNEL & Arnaud RICHARD

'Petit Pois Dérivé 2005', 27^e Réunion du Groupe de Biologie et Génétique des Populations,
 August 28th-September 1st 2006
Wolbachia féminisantes et recombinaison chez les isopodes terrestres du genre Armadillidium
Sébastien VERNE, Monique JOHNSON, Didier BOUCHON & Frédéric GRANDJEAN

Conférences Jacques Monod "Réponses biologiques aux dommages de l'ADN" ; October 2-6th 2004 ; Roscoff, France
 Comparative analysis of two feminizers in a single host : a tale of two *Wolbachia*
Didier BOUCHON, Monique JOHNSON, Yves CAUBET, **Sébastien VERNE** & Frédéric GRANDJEAN

Teaching experience:

2006-2007	ATER position (Research and teaching assistantship) University of Poitiers 268 hours (266 h non-major courses and 2 hours major courses)
2003-2006	Teaching activity University of Poitiers 160 hours (non-major courses)

General and Applied biology	(45 hours)	1 st year level
Ecology	(41 hours)	1 st year level
Biodiversity	(100 hours)	1 st year level
Organismal biology	(72 hours)	2 nd and 3 rd year levels
Population dynamics	(16 hours)	3 rd year level
Molecular Biology	(30 hours)	4 th year level
Evolutionary biology	(24 hours)	4 th year level
Population genetics	(72 hours)	4 th year level
	(2 hours)	5 th year level, major course
Behavioural ecology	(26 hours)	4 th year level

Students supervision:

2007 (10 mois)	Mauricio Almerão , Brazilian PhD student Population genetics, Molecular Biology (sequencing)
2007 (2 months)	Johanna Jaurès , Licence degree student (3 rd year). Molecular Biology (microsatellite genotyping, sequencing)
2006 (2 months)	Lenka Filipova , Master 1 degree student (4 th year). Population genetics, Molecular Biology (microsatellite genotyping, sequencing)
2006 (2 months)	Marion de Latude , Master 1 degree student (4 th year). Ethology, Molecular Biology (paternity tests)
2003-2004 (8 months)	Nicolas Puillandre , Master 1 degree student (4 th year). Population genetics, Molecular Biology (microsatellite genotyping)

Other informations:

- ❖ Chairman in the session "Structure génétique des Populations" of the congress 'Petit Pois Dérivé 2007', 29^e Réunion du Groupe de Biologie et Génétique des Populations, August 27th-30th 2007
- ❖ Scientific advisor and webmaster in the association 'Haplochromis' (genetic and conservation of Haplochromine Cichlids in captivity, particularly those originating from the Lake Victoria)
<http://www.haplochromis.org/>
- ❖ Hobby: Aquarist for ~25 years (mainly African cichlids), naturalism for ~18 years (orchids, insects, etc... but now mainly moths), ride (hiking , biking), photography, Internet, music.

PhD details:

Thesis title: Diversity and impact of feminizing *Wolbachia* on the genetic structure of *Armadillidium vulgare*

Laboratoire Génétique et Biologie des Populations de Crustacés
UMR CNRS 6556 – University of Poitiers

Download : <http://tel.archives-ouvertes.fr/tel-00181052/en/>

Supervisors: Pr. Frédéric Grandjean frederic.grandjean@univ-poitiers.fr
Dr. Monique Johnson monique.johnson@univ-poitiers.fr

Financial support: Doctoral fellowship from the Région Poitou Charentes (3 years)

Abstract:

Among endosymbionts, *Wolbachia pipientis* is the most studied reproductive parasite. This parasite also induces the most diverse effects on its hosts. By manipulating host reproduction, *Wolbachia* is therefore expected to affect the host genetic structuration. *Armadillidium vulgare* (Isopod Crustacean) is known to host two feminizing *Wolbachia* strains (*wVulC* and *wVulM*), as well as another unidentified feminizing genetic factor (*f*). This work shows the discovery of a third *Wolbachia* strain that is probably appeared by recombination of the two previously known strains. *Wolbachia* prevalence is generally low but varies greatly among populations. Genetic structuration of the host *A. vulgare* was analyzed both at a sub-regional scale and at a metapopulation scale. The use of microsatellite markers reveals a high genetic diversity and a low genetic structuration between populations that is compatible with isolation by distance (IBD). mtDNA shows a low polymorphism within populations and a high genetic structuration among populations, that is incompatible with IBD. As a consequence, it is proposed that feminizing factors evolve under frequency dependent selection and favor the maintenance of a low number of divergent mitotypes by genetic hitchhiking. Within the metapopulation of the RBI of Chizé, a lower female than male dispersal and a high connectivity between subpopulations seems to favor a high *Wolbachia* prevalence. The analyses of sex-bias in genetic structuration indicates that feminizing factors, like *Wolbachia* and *f*, can highly bias mitotype frequencies between sexes, but also induce a sex biased genetic structuration on nuclear DNA.

KEYWORDS: *Armadillidium vulgare*, *Wolbachia pipientis*, feminization, population genetics, metapopulation, dispersion bias.