

AURELIE BAK

4005 Cowell Blvd, Davis, CA 95618 / +352-871-1177 / bak@ucdavis.edu

PROFESSIONAL EXPERIENCE

January 2015-until now

Post-doctoral associate at University of Davis, Department of Plant Pathology, USA.

Subject: Study the role of viral proteins on plant-aphid interactions

- Research focused on molecular and cellular biology: The subject is to study how a viral protein increases aphid fecundity and how to prevent aphid attraction and viruses spread in the field.
- Supervisor: Clare Casteel

February 2014- January 2015

Post-doctoral associate at University of Florida, Department of Plant Pathology, USA.

Subject: Study the function of the viral protein p33 of the Citrus tristeza virus in the superinfection exclusion

- Research focused on molecular and cellular biology
- Supervisor: Svetlana Folimonova

November 2010- November 2013

PhD thesis at UMR BGPI (Biology of Plant Pathogen Interactions research unit, *Institut de la Recherche Agronomique [INRA]*), Montpellier, France, with a INRA/Région de Languedoc-Roussillon fellowship.

Subject: Formation and mode of action of the Cauliflower mosaic virus (CaMV) transmission body

- Research focused on molecular and cellular biology: The subject was to study how a viral inclusion, the transmission body that forms in the cytoplasm of infected cells, responds to the presence of the aphid vector and prepares virus transmission.
- Thesis supervisors: Stephane Blanc and Martin Drucker

January 2010- June 2010

Graduate (Master 2) training at the *Institut de la Recherche pour le Développement (IRD)*, Montpellier, France.

Subject: Characterization of the interaction *Meloidogyne incognita*-rice (*Oryza spp.*) and research of virulence effectors

- Research focused on molecular and cellular biology: This work examined the compatible and incompatible interaction between nematode and rice and was focused on the research of virulence effectors.
- Supervisors: Stephane Bellafiore and Diana Fernandez

June 2009- August 2009

Undergraduate (Master 1) training at the *Plant Biotechnology Center and Department of Plant Cellular and Molecular Biology, Ohio State University, USA.*

Subject: Study the structure, function, and localization of *Arabidopsis* long coiled-coil proteins

- Research focused on molecular and cellular biology. This work studied by transient expression of GFP fusions the cellular localization and by mutation the function of long coiled-coil proteins.
- Supervisors: Patrice Hamel and Iris Meier

ACADEMIC ACHIEVEMENTS

2013 PhD in Molecular and Cellular Biology at *SupAgro* graduate school, Montpellier, France.

2010 Master degree in Molecular and Cellular Biology at University of Strasbourg, France.

2008 Bachelor degree in Cellular Biology and Physiology at University of Strasbourg, France.

2005 Begin of studies in Molecular and Cellular Biology at University of Strasbourg, France.

SKILLS AND EXPERIENCE

TECHNICAL SKILLS

- Molecular biology: nucleic acid purification (DNA and RNA), cloning, PCR, bacteria transformation, qPCR, RNA binding assay.
- Cell biology: protoplastation, transient expression of proteins in plants (protoplast transfection, agroinfiltration).
- Protein analysis techniques: coimmunoprecipitation, electrophoresis, extraction of cellular and pathogen proteins, western blot analysis, Far western, protein purification, protein expression induction.
- Aphid manipulation (Rearing, fecundity test, attraction test, virus transmission test)

- Imaging techniques: confocal and epifluorescence microscopy, fluorescent in vivo cell imaging, histology (vibratome, cryotome, microtome, ultramicrotome), cell and tissue immunostaining, FRAP, BiFC.
- Others: plant transformation by floral dip, virus purification and inoculation, yeast two hybrid system, ELISA, gas chromatography (GC), liquid chromatography mass spectrometry (LCMS), high performance liquid chromatography (HPLC).
- Statistical analyses (GraphPad, JMP).
- Plant growing, field experiments.

LANGUAGES

- English
- French Native.

PUBLICATIONS

Bak, A., Cheung, A., Yang, C., Whitham, S., Casteel, C. (2016). Relocalization of a virus protease in the presence of the insect vector is essential to promoting vector performance. Accepted in Nature Communications.

Bergua, M., Phelan, D., Bak, A., Bloom, D., Folimonova, S. (2016). Simultaneous visualization of two Citrus tristeza virus genotypes provides new insights into the structure of multi-component virus populations in a host. Virology, accepted.

Casteel, C., De Alvis, M., Bak, A., Dong, H., Whitham, S., Jander, G. (2015). Disruption of ethylene signaling by Turnip mosaic virus mediates suppression of plant defense against the aphid vector, *Myzus persicae*. Plant Physiology, 169(1):209-18.

Bak, A., Folimonova, S. (2015). The p33 protein of Citrus tristeza virus shows characteristics of viral movement proteins. Virology, 485:86-95.

Kang, SH., Bak, A., Kim, OK., Folimonova, S. (2015). Membrane association of a nonconserved viral protein confers virus ability to extend its host range. Virology, 482 :208-217.

Bak, A., Blanc, S., Gargani, D., Martinière, A., Drucker, M. (2014). Les usines virales sont plus que des centres de réplication : Le cas particulier du *Cauliflower mosaic virus*. Virologie, 18 (4): 201-210.

Nghuyen, P., Bellafiore, S., Petitot, A-S., Haidar, R., Bak, A., Abed, A., Gantet, P., Mezzalana, I., De Almeida-Engler, J., Fernandez, D. (2014). Meloidogyne incognita - rice (*Oryza sativa*) interaction: a new model system to study plant-root-knot nematode interactions in monocotyledons. Rice, 7:23.

Bak, A., Gargani, D., Macia, J-L., Malouvet, E., Vernerey, M-S., Blanc, S., Drucker, M. (2013). Virus factories of Cauliflower mosaic virus are virion reservoirs that engage actively in vector-transmission. Journal of Virology, 01883-13.

Martinière, A.*, Bak, A.*, Macia, J.-L., Lautredou, N., Gargani, D., Doumayrou, J., Garzo, E., Moreno, A., Fereres, A., Blanc, S., et al. (2013). A virus responds instantly to the presence of the vector on the host and forms transmission morphs. *eLife* 2, e00183.

Bak, A.*, Martinière, A.*, Blanc, S., and Drucker, M. (2013). Early interactions during the encounter of plants, aphids and arboviruses. *Plant Signaling & Behavior* 8, e24225.

Bak, A.*, Irons, S.L.*, Martinière, A.*, Blanc, S., and Drucker, M. (2012). Host cell processes to accomplish mechanical and non-circulative virus transmission. *Protoplasma* 249, 529–539.

Martinière, A., Macia, J.-L., Bagnolini, G., Jridi, C., Bak, A., Blanc, S., and Drucker, M. (2011). VAPA, an Innovative “Virus-Acquisition Phenotyping Assay” Opens New Horizons in Research into the Vector-Transmission of Plant Viruses. *PLoS ONE* 6, e23241.

PARTICIPATION IN CONGRESSES

American Society of Plant Biology (2017), Honolulu, USA. A viral protein increases vector attraction by manipulating ethylene signaling. A. Bak, A. Cheung, A. Mende and C. L. Casteel.

American Phytopathological Society (2016), Tampa, USA. Oral communication: Ethylene production inhibition can prevent aphid attraction and Potato Virus Y spread. A. Bak, L. Perilla, S. Chen, T. Antichera and C. L. Casteel.

14^{èmes} Rencontres de Virologie Végétale (2013) Aussois, France. Oral communication: CaMV uses the host sensory system for instantaneous transmission by an insect vector. A. Bak, A. Martinière, JL. Macia, S. Blanc, M. Drucker.

5^{ème} Réunion du Réseau Français de Biologie Adaptative des Pucerons et Organismes Associés (2012) Lyon, France. Oral communication: CaMV uses the host sensory system for instantaneous transmission by an insect vector. A. Bak, A. Martinière, JL. Macia, S. Blanc, M. Drucker.

3^{èmes} Journées Scientifiques et Techniques du Réseau des Microscopistes Inra (2012) Montpellier, France. Poster: Cauliflower mosaic virus prepares its transmission. A. Bak, A. Martinière, JL. Macia, D. Gargani, S. Blanc, M. Drucker.

XV International Congress on Molecular Plant-Microbe Interactions (2012) Kyoto, Japan. Poster: Cauliflower mosaic virus prepares its transmission. A. Bak, A. Martinière, J.L. Macia, D. Gargani, S. Blanc, M. Drucker.

9th International Botanical Microscopy Meeting (2011), Wageningen, The Netherlands. Poster: Dynamics of the cauliflower mosaic virus transmission body. A. Bak, J.L. Macia, A. Martinière, S. Blanc, M. Drucker.

13^{èmes} Rencontres de Virologie Végétale (2011) Aussois, France. Poster : Transmission des virus non circulants à partir des protoplastes infectés. J.L. Macia, A. Martinière, G. Bagnolini, A. Bak, S. Blanc, M. Drucker.

OTHERS

2017 ASPB (American Society of Plant Biology) Travel Grant winner.

Research mentor for a highschool student in the UC Davis Young Scholars Program.

Research mentor for 6 undergraduates and 1 rotating student at UC Davis.

Research mentor for a PhD student at University of Florida. Project:

- Characterization of Citrus tristeza virus protein interactions by BiFC (Bimolecular fluorescence complementation)

Research mentor of two Master students during the thesis. Projects:

- Identification of P2 transmission protein domains involved in the formation and the function of the cauliflower mosaic virus transmission body.
- Involvement of the aphid saliva in the cauliflower mosaic virus transmission.

Science faire judge 2014 at Oak View Middle School, Newberry, FL.

Organizing member of the 4th and 5th Printemps de Baillarguet student campus meeting (2011 and 2012) at Montpellier, France.