

Frédéric CARLIN

Research Director at UMR408 INRA –University of Avignon
Sécurité et Qualité des Produits D'origine Végétale (SQPOV)
Born September 11, 1962

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Education

2003 *Habilitation à Diriger les Recherches*, University of Aix-Marseille
1989 PhD from INAPG.
1986 Agricultural Engineer from INAPG – Master degree in Plant Pathology.

Carrier at INRA 1991-2020

2012 - Deputy Director and Director (since 2018) at UMR SQPOV (48 permanent staff, including 22 scientists and professors).
2003 Research Director
2000 - 2015 Animation of the research group « Microbiology and Food Safety » (13 permanent staff, five PhDs)
1994 PostDoc at Food Safety and Spoilage laboratory, Institute of Food Research, Norwich, UK.
1991 Research Scientist at INRA

Scientific domains of interest

Food microbiology and food safety. Spore-forming bacteria, ecology, adaptation and control in the food chain. Quantitative microbiology. Predictive Microbiology and Risk Assessment. Fresh and (minimally) processed fruits and vegetables. Novel technologies of elimination of microbiological contaminants.

Other activities and responsibilities

- Associate Editor of Food Microbiology
- Ex-Member of the Editorial Board of International Journal of Food Microbiology (2008-2020)
- Past President (2002-2013) of the Scientific Committee of Sym'Previus, the French network for predictive microbiology.
- Member of the panel Bio-Risk Risk assessment in Food at Anses - *Agence nationale de sécurité sanitaire de l'alimentation, de l'environnement et du travail* (France).
- Teaching Microbial Food Safety at Master and PhD level at University of Avignon, Aix-Marseille University, Montpellier Doctoral School and UNICAMP (Brazil)
- Member of the Scientific Council of CTCPA(Centre Technique de la Conservation des Produits Agricoles) and of APRIFEL (Agence pour la Recherche et l'Information en Fruits et Légumes).
- Supervisor of 11 PhD students and 5 Post-Doc junior scientists.

Some selected recent scientific publications

- Aguilo-Aguayo, I., Charles, F., Renard, C., Page, D. and Carlin, F. (2013) Pulsed light effects on surface decontamination, physical qualities and nutritional composition of tomato fruit. *Postharv Biol Technol* **86**, 29-36.
- Bressuire-Isoard, C., Bornard, I., Henriques, A.O., Carlin, F. and Broussolle, V. (2016) Sporulation temperature reveals a requirement for CotE in the assembly of both the coat and exosporium layers of *Bacillus cereus* spores. *Appl Environ Microbiol* **82**, 232-243.
- Bressuire-Isoard, C., Broussolle, V. and Carlin, F. (2018) Sporulation environment influences spore properties in *Bacillus*: evidence and insights on underlying molecular and physiological mechanisms. *FEMS Microbiology Reviews* **42**, 614-626.
- Carlin, F. (2011) Origin of bacterial spores contaminating foods **28**, 177-182.
- Carlin, F., Albagnac, C., Rida, A., Guinebretière, M.-H., Couvert, O. and Nguyen-the, C. (2013) Variation of cardinal growth parameters and growth limits according to phylogenetic affiliation in the *Bacillus cereus* Group. Consequences for risk assessment. *Food Microbiol* **33**, 69-76.
- Clair, G., Esbelin, J., Mallea, S., Bornard, I. and Carlin, F. (2020) The spore coat is essential for *Bacillus subtilis* spore resistance to pulsed light, and pulsed light treatment eliminates some spore coat proteins. *Int J Food Microbiol* **323**.
- Durand, L., Planchon, S., Guinebretiere, M.-H., André, S., Carlin, F. and Remize, F. (2015) Contamination pathways of spore-forming bacteria in a vegetable cannery. *Int J Food Microbiol* **202**, 10-19.
- Esbelin, J., Mallea, S., Clair, G. and Carlin, F. (2016) Inactivation by Pulsed Light of *Bacillus subtilis* Spores with Impaired Protection Factors. *Photochem Photobiol* **92**, 301-307.
- Esbelin, J., Mallea, S., Ram, A.F.J. and Carlin, F. (2013) Role of pigmentation in protecting *Aspergillus niger* conidiospores against pulsed light radiation. *Photobiol Photochem* **89**, 758-761.
- Espirito-Santo, A.P., Carlin, F. and Renard, C.M.G.C. (2015) Apple, grape or orange juice: Which one offers the best substrate for lactobacilli growth? — A screening study on bacteria viability, superoxide dismutase activity, folates production and hedonic characteristics. *Food Res Int* **78**, 352-360.
- Francais, M., Carlin, F., Broussolle, V. and Nguyen-The, C. (2019) *Bacillus cereus cshA* is expressed during the lag phase of growth and serves as a potential marker of early adaptation to low temperature and pH. *Appl Environ Microbiol* **85**.
- Labadie, C., Ginies, C., Guinebretiere, M.-H., Renard, C.M.G.C., Cerutti, C. and Carlin, F. (2015) Hydrosols of orange blossom (*Citrus aurantium*), and rose flower (*Rosa damascena* and *Rosa centifolia*) support the growth of a heterogeneous spoilage microbiota. *Food Res Int* **76, Part 3**, 576-586.
- Levy, C., Aubert, X., Lacour, B. and Carlin, F. (2012) Relevant factors affecting microbial surface decontamination by pulsed light. *Int J Food Microbiol* **152**, 168-174.
- Nguyen-the, C., Bardin, M., Berard, A., Berge, O., Brillard, J., Broussolle, V., Carlin, F., Renault, P., Tchamitchian, M. and Morris, C.E. (2016) Agrifood systems and the microbial safety of fresh produce: Trade-offs in the wake of increased sustainability. *Science of the Total Environment* **562**, 751-759.
- Rigaux, C., Denis, J.B., Albert, I. and Carlin, F. (2013) A meta-analysis accounting for sources of variability to estimate heat resistance reference parameters of bacteria using hierarchical Bayesian modeling: Estimation of D at 121.1 degrees C and pH 7, z(T) and z(pH) of *Geobacillus stearothermophilus*. *Int J Food Microbiol* **161**, 112-120.
- Rigaux, C., Georgé, S., Albert, I., Renard, C.M.G.C. and Carlin, F. (2016) A mechanistic and probabilistic model estimating micronutrient losses in industrial food processing: Vitamin C and canned green beans, a case-study. *LWT - Food Sci Technol* **69**, 236-243.
- Trunet, C., Carlin, F. and Coroller, L. (2017) Investigating germination and outgrowth of bacterial spores at several scales. *Trends in Food Science & Technology* **64**, 60-68.
- Trunet, C., Mtimet, N., Mathot, A.G., Postollec, F., Leguerinel, I., Couvert, O., Broussolle, V., Carlin, F. and Coroller, L. (2020) Suboptimal *Bacillus licheniformis* and *Bacillus weihenstephanensis* spore incubation conditions increase heterogeneity of spore outgrowth time. *Appl Environ Microbiol* **86**.