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Research

I have a strong track record of leading interdisciplinary research teams, successfully supervising PhD theses focused on the metabolic aspects of biological material processing. These projects required close collaboration with plant biologists, engineers, and food scientists, underscoring my ability to work across diverse scientific disciplines.
In addition to my supervisory roles, I have been actively involved in EU-funded projects and co-authored numerous publications with researchers from various fields. My research is focused on innovative food processing technologies, particularly pulsed electric fields and vacuum impregnation. This work has resulted in a patent and several patent applications, which were instrumental in the founding of OptiCept Technologies AB, a company pioneering the industrial application of these technologies. During my four years as a council member of the International Society for Electroporation-Based Technologies and Treatments, I also contributed to the organization of two world conferences on electroporation.
I am also engaged in the field of solar drying of fruits in rural areas of developing countries, addressing not only the technology but also the economic analysis and the social impact on rural development and food security.
In agriculture and food sciences, I have served as the Director of "PlantLink," a collaborative network between Lund University and the Swedish University of Agricultural Sciences (SLU). PlantLink focuses on promoting scientific research, education, and outreach in plant science.

Research outputs

Evaluation of laser diffraction as a fast method for particle size distribution measurement of plant cell structures in whole oat and soy beverages
Ransmark, E., Åkerfeldt, E., Liu, X., Sørensen, H., Gómez Galindo, F. & Håkansson, A., 2025 Oct, In: Food Research International. 217, 11 p., 116781.

Break-Up of Plant Cell Structures in High Pressure Homogenizers – Prospects and Challenges for Processing of Plant-Based Beverages
Ransmark, E., Sørensen, H., Gómez Galindo, F. & Håkansson, A., 2025, (E-pub ahead of print) In: Food Engineering Reviews.

Germination and stress tolerance of oats treated with pulsed electric field at different phases of seedling growth
Al-Khafaji, A. H., Kwao, S., Gómez Galindo, F. & Sajeevan, R. S., 2024 Aug, In: Bioelectrochemistry. 158, 108692.

A comparison between pulsed electric field and moderate electric field for their effectiveness in improving the freezing tolerance of rocket leaves
Nyoto, I. C. & Gómez Galindo, F., 2023 Sept, In: Biochemistry and Biophysics Reports. 35, 101515.

Reversible electroporation caused by pulsed electric field – Opportunities and challenges for the food sector
Demir, E., Tappi, S., Dymek, K., Rocculi, P. & Gómez Galindo, F., 2023, In: Trends in Food Science and Technology. 139 , 104120.

Influence of pulsed electric field-assisted dehydration on the volatile compounds of basil leaves
Kanafusa, S., Maspero, U., Petersen, M. A. & Gómez Galindo, F., 2022 May, In: Innovative Food Science and Emerging Technologies. 77, 102979.

Reversible Electroporation and Post-Electroporation Resting of Thai Basil Leaves Prior to Convective and Vacuum Drying
Thamkaew, G., Rasmusson, A. G., Orlov, D. & Galindo, F. G., 2022 Mar 1, In: Applied Sciences (Switzerland). 12, 5, 2343.

The effect of reversible permeabilization and post-electroporation resting on the survival of Thai basil (O. Basilicum cv. thyrsiflora) leaves during drying
Thamkaew, G., Wadsö, L., Rasmusson, A. G. & Gómez Galindo, F., 2021 Dec, In: Bioelectrochemistry. 142, 107912.

The effect of nanosecond pulsed electric field on the production of metabolites from lactic acid bacteria in fermented watermelon juice
Kanafusa, S., Uhlig, E., Uemura, K., Gómez Galindo, F. & Håkansson, Å., 2021 Aug 1, In: Innovative Food Science and Emerging Technologies. 72, 102749.

Decontamination of food packages from SARS-COV-2 RNA with a cold plasma-assisted system
Capelli, F., Tappi, S., Gritti, T., De Aguiar Saldanha Pinheiro, A. C., Laurita, R., Tylewicz, U., Spataro, F., Braschi, G., Lanciotti, R., Galindo, F. G., Siracusa, V., Romani, S., Gherardi, M., Colombo, V., Sambri, V. & Rocculi, P., 2021 May 1, In: Applied Sciences (Switzerland). 11, 9, 4177.

A review of drying methods for improving the quality of dried herbs
Thamkaew, G., Sjöholm, I. & Galindo, F. G., 2021, In: Critical Reviews in Food Science and Nutrition. 61, 11, p. 1763-1786 24 p.

Influence of pulsed and moderate electric field protocols on the reversible permeabilization and drying of Thai basil leaves
Thamkaew, G. & Gómez Galindo, F., 2020, In: Innovative Food Science and Emerging Technologies. 64, 102430.

Effect of reversible permeabilization in combination with different drying methods on the structure and sensorial quality of dried basil (Ocimum basilicum L.) leaves
Telfser, A. & Gómez Galindo, F., 2019 Jan 1, In: LWT - Food Science and Technology. 99, p. 148-155 8 p.

Technology Allowing Baby Spinach Leaves to Acquire Freezing Tolerance
Demir, E., Dymek, K. & Galindo, F. G., 2018, In: Food and Bioprocess Technology. 11, 4, p. 809-817

Influence of Vacuum Impregnation with Different Substances on the Metabolic Heat Production and Sugar Metabolism of Spinach Leaves
Yusof, N. L., Wadsö, L., Rasmusson, A. G. & Gómez Galindo, F., 2017 Oct, In: Food and Bioprocess Technology. 10, 10, p. 1907-1917

Influence of Innovative Processing on γ-Aminobutyric Acid (GABA) Contents in Plant Food Materials
Poojary, M. M., Dellarosa, N., Roohinejad, S., Koubaa, M., Tylewicz, U., Galindo, F. G., Saraiva, J. A., Rosa, M. D. & Barba, F. J., 2017 Sept, In: Comprehensive Reviews in Food Science and Food Safety. 16, 5, p. 895-905

Pulsed electric fields in combination with vacuum impregnation for improving freezing tolerance of vegetables
Galindo, F. G. & Dymek, K., 2017 Aug 25, *Handbook of Electroporation.* Springer International Publishing, Vol. 3. p. 2135-2151 17 p.

Responses of plant cells and tissues to pulsed electric field treatments
Galindo, F. G., 2017 Aug 25, *Handbook of Electroporation.* Springer International Publishing, Vol. 4. p. 2621-2635 15 p.

Effect of guard cells electroporation on drying kinetics and aroma compounds of Genovese basil (Ocimum basilicum L.) leaves
Kwao, S., Alhamimi, S., Damas, M. E. V., Rasmusson, A. G. & Gómez Galindo, F., 2016 Dec 1, In: Innovative Food Science and Emerging Technologies. 38, p. 15-23 9 p.

Investigation of the metabolic consequences of impregnating spinach leaves with trehalose and applying a pulsed electric field.
Dymek, K., Panarese, V., Herremans, E., Cantre, D., Schoo, R., Toraño, J. S., Schluepmann, H., Wadsö, L., Verboven, P., Nicolai, B. M., Dejmek, P. & Gomez, F., 2016 Dec, In: Bioelectrochemistry. 112, p. 153-157 5 p.

Reduction of the nitrate content in baby spinach leaves by vacuum impregnation with sucrose
Yusof, N. L., Rasmusson, A. G. & Gomez, F., 2016 Aug, In: Food and Bioprocess Technology. 9, 8, p. 1358-1366

X-ray microtomography provides new insights into vacuum impregnation of spinach leaves
Panarese, V., Herremans, E., Cantre, D., Demir, E., Vicente, A., Gomez, F., Nicolai, B. M. & Verboven, P., 2016, In: Journal of Food Engineering. 188, p. 50-57

Analysis of polysaccharide and proteinaceous macromolecules in beer using asymmetrical flow field-flow fractionation
Tugel, I., Runyon, R., Gomez, F. & Nilsson, L., 2015, In: Journal of the Institute of Brewing. 121, 1, p. 44-48

Influence of vacuum impregnation and pulsed electric field on the freezing temperature and ice propagation rates of spinach leaves
Dymek, K., Dejmek, P., Gomez, F. & Wisniewski, M., 2015, In: LWT - Food Science and Technology. 64, 1, p. 497-502

Modeling electroporation of the non-treated and vacuum impregnated heterogeneous tissue of spinach leaves
Dymek, K., Rems, L., Zorec, B., Dejmek, P., Gomez, F. & Miklavcic, D., 2015, In: Innovative Food Science & Emerging Technologies. 29, p. 55-64

New insights into the dynamics of vacuum impregnation of plant tissues and its metabolic consequences.
Gomez, F. & Yusof, L., 2015, In: Journal of the Science of Food and Agriculture. 95, 6, p. 1127-1130

Influence of Pulsed Electric Field Protocols on the Reversible Permeabilization of Rucola Leaves
Dymek, K., Dejmek, P. & Gomez, F., 2014, In: Food and Bioprocess Technology. 7, 3, p. 761-773

Vacuum impregnation modulates the metabolic activity of spinach leaves
Panarese, V., Rocculi, P., Baldi, E., Wadsö, L., Rasmusson, A. G. & Gomez, F., 2014, In: Innovative Food Science & Emerging Technologies. 26, p. 286-293

Behavior of the surviving population of Lactobacillus plantarum 564 upon the application of pulsed electric fields
Seratlic, S., Bugarski, B., Nedovic, V., Radulovic, Z., Wadsö, L., Dejmek, P. & Gomez, F., 2013, In: Innovative Food Science & Emerging Technologies. 17, p. 93-98

Effect of vacuum infused cryoprotectants on the freezing tolerance of strawberry tissues
Velickova, E., Tylewicz, U., Dalla Rosa, M., Winkelhausen, E., Kuzmanova, S. & Gomez, F., 2013, In: LWT - Food Science and Technology. 52, 2, p. 146-150

Induction of Vesicle Formation by Exposing Apple Tissue to Vacuum Impregnation
Tylewicz, U., Romani, S., Widell, S. & Gomez, F., 2013, In: Food and Bioprocess Technology. 6, 4, p. 1099-1104

Microscopic studies providing insight into the mechanisms of mass transfer in vacuum impregnation
Panarese, V., Dejmek, P., Rocculi, P. & Gomez, F., 2013, In: Innovative Food Science & Emerging Technologies. 18, p. 169-176

Effect of pulsed electric field on the germination of barley seeds
Dymek, K., Dejmek, P., Panarese, V., Vicente, A. A., Wadsö, L., Finnie, C. & Gomez, F., 2012, In: LWT - Food Science and Technology. 47, 1, p. 161-166

Gas in Scattering Media Absorption Spectroscopy (GASMAS) Detected Persistent Vacuum in Apple Tissue After Vacuum Impregnation
Tylewicz, U., Lundin, P., Cocola, L., Dymek, K., Rocculi, P., Svanberg, S., Dejmek, P. & Gomez, F., 2012, In: Food Biophysics. 7, 1, p. 28-34

Pulsed Electric Field Processing Design
Gomez, F. & Henriksson, P., 2012, *Handbook of food process design.* Ahmed, J. & Rahman, M. S. (eds.). John Wiley & Sons Inc., p. 1078-1106

The potential role of isothermal calorimetry in studies of the stability of fresh-cut fruits
Rocculi, P., Panarese, V., Tylewicz, U., Santagapita, P., Cocci, E., Gomez, F., Romani, S. & Rosa, M. D., 2012, In: LWT - Food Science and Technology. 49, 2, p. 320-323

Effect of minimal processing on physiology and quality of fresh-cut potatoes, a review
Rocculi, P., Romani, S., Gomez, F. & Dalla Rosa, M., 2009, In: Food. 3, p. 18-30

Effects of Pulsed Electric Field on the Viscoelastic Properties of Potato Tissue
Pereira, R. N., Gomez, F., Vicente, A. A. & Dejmek, P., 2009, In: Food Biophysics. 4, 3, p. 229-239

Isothermal Calorimetry for Biological Applications in Food Science and Technology
Wadsö, L. & Gomez, F., 2009, In: Food Control. 20, 10, p. 956-961

Metabolomic evaluation of pulsed electric field-induced stress on potato tissue
Gomez, F., Dejmek, P., Lundgren, K., Rasmusson, A., Vicente, A. & Moritz, T., 2009, In: Planta. 230, 3, p. 469-479

Exploring metabolic responses of potato tissue induced by electric pulses
Gomez, F., Wadsö, L., Vicente, A. & Dejmek, P., 2008, In: Food Biophysics.

Pulsed electric field in combination with vacuum impregnation with trehalose improves the freezing tolerance of spinach leaves
Phoon, P. Y., Gomez, F., Vicente, A. & Dejmek, P., 2008, In: Journal of Food Engineering. 88, 1, p. 144-148

Pulsed electric field reduces the permeability of potato cell wall
Gomez, F., Vernier, P. T., Dejmek, P., Vicente, A. & Gundersen, M. A., 2008, In: Bioelectromagnetics. 29, 4, p. 296-301

Review: reversible electroporation of vegetable tissues – metabolic consequences and applications
Gomez, F., 2008, In: Bolivian Journal of Chemistry / Revista Boliviana de Quimica. 25, 1, p. 30-35

Effect of long-term storage and blanching pre-treatments on the osmotic dehydration kinetics of carrots (Daucus carota L. cv. Nerac)
Escobar, M. P., Gomez, F., Wadsö, L., Najera, J. R. & Sjöholm, I., 2007, In: Journal of Food Engineering. 81, 2, p. 313-317

Effects of the application of anti-browning substances on the metabolic activity and sugar composition of fresh-cut potatoes
Rocculi, P., Gomez, F., Mendoza, F., Wadsö, L., Romani, S., Dalla Rosa, M. & Sjöholm, I., 2007, In: Postharvest Biology and Technology. 43, 1, p. 151-157

Plant stress physiology: opportunities and challenges for the food industry
Gomez, F., Sjöholm, I., Rasmusson, A., Widell, S. & Kaack, K., 2007, In: Critical Reviews in Food Science and Nutrition. 47, 8, p. 749-763

Principles of Postharvest Physiology Applied to the Minimal Processing of Biological Materials
Gomez, F., Sjöholm, I., Wadsö, L., Rasmusson, A., Widell, S. & Kaack, K., 2006, *Advances in Postharvest Technologies for Horticultural Crops.* Noureddine, B. & Norio, S. (eds.). Research Signpost, p. 41-58

On the induction of cold acclimation in carrots (Daucus carota L.) and its influence on storage performance
Gomez, F., Elias, L., Gekas, V., Herppich, W., Smallwood, M., Sommarin, M., Worrall, D. & Sjöholm, I., 2005, In: Food Research International. 38, 1, p. 29-36

The potential of isothermal calorimetry in monitoring and predicting quality changes during processing and storage of minimally processed fruits and vegetables
Gomez, F., Rocculi, P., Wadsö, L. & Sjöholm, I., 2005, In: Trends in Food Science & Technology. 16, 8, p. 325-331

Tissue damage in heated carrot slices. Comparing mild hot water blanching and infrared heating
Gomez, F., Toledo, R. T. & Sjöholm, I., 2005, In: Journal of Food Engineering. 67, 4, p. 381-385

Applying biochemical and physiological principles in the industrial freezing of vegetables: a case study on carrots
Gomez, F. & Sjöholm, I., 2004, In: Trends in Food Science & Technology. 15, 1, p. 39-43

Changes in the carrot (Daucus carota L. cv. Nerac) cell wall during storage
Gomez, F., Bråthen, E., Knutsen, S. H., Sommarin, M., Gekas, V. & Sjöholm, I., 2004, In: Food Research International. 37 , 3, p. 225-232

Effect of tissue wounding on the results from calorimetric measurements of vegetable respiration
Wadsö, L., Gomez, F., Sjöholm, I. & Rocculi, P., 2004, In: Thermochimica Acta. 422, 1-2, p. 89-93

Effects of temperature and water relations on carrots and radish tuber texture
Herppich, W. B., Herold, B., Geyer, M. & Gomez, F., 2004, In: Journal of Applied Botany and Food Quality / Angewandte Botanik. 78, 1, p. 11-17

Factors affecting quality and postharvest properties of vegetables: Integration of water relations and metabolism
Gomez, F., Herppich, W., Gekas, V. & Sjöholm, I., 2004, In: Critical Reviews in Food Science and Nutrition. 44, 3, p. 139-154

Influence of cold acclimation on the mechanical strength of carrot (Daucus carota L.) tissue
Gomez, F., Vaughan, D., Herppich, W., Smallwood, M., Sommarin, M., Gekas, V. & Sjöholm, I., 2004, In: European Journal of Horticultural Science. 69, 6, p. 229-234

Isothermal calorimetry approach to evaluate tissue damage in carrot slices upon thermal processing
Gomez, F., Toledo, R., Wadsö, L., Gekas, V. & Sjöholm, I., 2004, In: Journal of Food Engineering. 65, 2, p. 165-173

Physiological and biochemical aspects of vegetable processing. A case study on carrots
Galindo, F. G., 2004, Food Engineering, Lund Univeristy. 180 p.

Biochemical aspects of carrot processing
Gomez, F., Sommarin, M., Sjöholm, I., Smallwood, M., Knutsen, S. & Herppich, W., 2003, *International Symposium on Future Technologies for Food Production and Future Food Scientists, Proceedings.* SIK - Svenska Livsmedelsinstitutet, p. 87-87

Cold acclimation of carrots during storage mechanical properties and antifreezing protein.
Gomez, F., Sommarin, M., Gekas, V. & Sjöholm, I., 2003, *Acta horticulturae : technical communications of ISHS.* Verlinden, B. E., Nicolai, B. M. & De Baerdemaeker, J. (eds.). International Society for Horticultural Science (ISHS), Vol. 599. p. 699-703

Projects

Emerging technologies
Gomez, F. (PI) & Viola, P. (Research student)
2009/01/06 → …

LUPS: Lund University Plant Sciences
Ahrén, D. (CoI), Andersson, S. (CoI), Bülow, L. (CoI), Cronberg, N. (CoI), Dotson, B. (CoI), Leiva Eriksson, N. (CoI), Friberg, M. (CoI), Gomez, F. (CoI), Hansson, M. (CoI), Jarl Sunesson, C. (CoI), Leonova, S. (CoI), Loncarevic, I. (CoI), Löfstedt, C. (CoI), Marmon, S. (CoI), Olsson, O. (CoI), Olsson, P. A. (CoI), Prentice, H. C. (CoI), Rasmusson, A. (CoI), Rollano Penaloza, O. M. (CoI), Sirijovski, N. (CoI), Säll, T. (CoI), Tyler, T. (CoI), Van Aken, O. (Project coordinator), Zakhrabekova, S. (CoI), Opedal, Ø. (Researcher), Du Toit, S. F. (Researcher), Panthapulakkal Narayanan, S. (Researcher) & Khairoullina, A. (Researcher)
2019/01/01 → …

Activities

Foods (Journal)
Gomez, F. (Role not specified)
2024 Nov 1

“Biodiversity: the key to resilient agri-food systems”
Gomez, F. (Role not specified)
2023 Oct 16

“What to eat in times of crisis – the perspective of innovation and sustainability”.
Gomez, F. (Role not specified)
2023 May 15

Frontiers in Food Science and Technology (Journal)
Gomez, F. (Role not specified)
2023 Apr 1

Scientific Reports (Journal)
Gomez, F. (Role not specified)
2022 Jan 1

Solar food drying systems suitable for smallholder farmers
Östbring, K. (Second supervisor) & Gomez, F. (First/primary/lead supervisor)
2019 Aug 1 → …

Awards

Decreasing antinutrients in whole, cooked legumes with novel processing technologies
Gomez, F. (PI)
Dir Albert Påhlssons stiftelse för forskning och välgörenhet: SEK100,000.00
2025/01/01 → 2025/12/31