

Prof. Karina Caballero-Gallardo. Ph.D

Associate Professor

School of Pharmaceutical Sciences
University of Cartagena
Cartagena, Colombia (South America)

Date of Birth: April 14th, 1980
Passport: AT801867, Colombia
Nationality: Colombian

Address: Conjunto Prado Verde. Ceiba 43. Turbaco (Colombia).

Phone: 57-5-3126363365. Fax. (57)-5 6699771 Ext. 142.

E-mail: kcaballerog@unicartagena.edu.co, karinarocioc@yahoo.es

EDUCATION

2005 B.Sc. Food Engineer. University of Cartagena, Cartagena, Colombia.
2010 M.Sc. Environmental Sciences. University of Sucre, Sincelejo, Colombia.
2010 Certified Program in Third Level Education. Canal del Dique Alliance.
Cartagena, Colombia.
2010 Internacional Certified Program in Acuiculture. Canal del Dique Alliance.
Cartagena, Colombia.
2018-Present Visiting Scholar/Researcher. Universitat de Valencia. España.
2014-2015 Visiting Scholar/Researcher. Purdue University. USA.
2016 Visiting Researcher. UNESP. Botucatu, Brazil.
2016 Ph.D. Environmental Toxicology. University of Cartagena, Cartagena,
Colombia.

EXPERIENCE

2015-2017 Head of postgraduate and continuing education. School of Pharmaceutical
Chemistry. University of Cartagena. Cartagena, Colombia.
2016-2017 Member Teaching Committee. School of Pharmaceutical Chemistry.
University of Cartagena. Cartagena, Colombia. Resolution No. 005, 2016.
2016-2017 Member Curricular Committee. School of Pharmaceutical Chemistry.
University of Cartagena. Cartagena, Colombia. Resolution No. 005, 2016.
2018-Present Member environmental Committee, Colombia. Resolution No. 018, 2018.
2018-Present Member admissions Committee, Colombia. Resolution No. 018, 2018.
2016-2018 Member Research Committee. School of Pharmaceutical Chemistry.
University of Cartagena. Cartagena, Colombia. Resolution No. 005, 2016.
2016-2017 Member Graduate Committee. School of Pharmaceutical Chemistry.
University of Cartagena. Cartagena, Colombia. Resolution No. 005, 2016.
2018-Present Associate Professor. Department of Pharmaceutical Chemistry. University
of Cartagena. Cartagena, Colombia.
2015-2018 Assistant Professor. Department of Pharmaceutical Chemistry. University
of Cartagena. Cartagena, Colombia.

- 2012-2015 Auxiliar Professor. Department of Pharmaceutical Chemistry. University of Cartagena. Cartagena, Colombia.
- 2008-2010 Professor/researcher. CREAD. University of Cartagena. Cartagena, Colombia.
- 2006-Present. Associate Investigator. Environmental and Computational Chemistry Group. University of Cartagena. Cartagena, Colombia..

Research experience

- RNA Isolation from mice, insects, human blood, and cells
- Determination of RNA concentration and purity
- cDNA Synthesis
- Gene expression analysis by Real-Time PCR in samples from mice, insects, human blood, and cells
- Maintenance of cell lines
- Cytotoxicity assays
- Bioassays
- Microarrays
- Repellent and toxicity bioactivity assays with essential oils and insects
- Fish processing for mercury analysis
- Processing of human and environmental samples for mercury analysis.
- Determination of total mercury in several human and environmental matrices, such as hair, fish, sediments, ashes, rice, plants, coal, glass, dragonfly.
- Handling of the Direct Mercury Analyzer DMA-80.
- Handling of the Lumex Mercury Analyzer RA-915+/M and PYRO-915

AWARDS

1. **Mobility-scholarship.** Fourth Call for funding for participation in scientific events for plant teachers and students assigned to research groups categorized by the Administrative Department of Science, Technology and Innovation - Colciencias in categories A1, A, B, and C and D and endorsed by the University of Cartagena. Resolution No. 01265-2018.
2. **Book award.** Seventh internal call for the publication of research books of the University of Cartagena, José Joaquín Gómez collection "Libro: perspectives of environmental health in lead contamination in children in northern Colombia". Resolution 00330-2018.
3. **Teaching mobility-scholarship.** Tenth call for international mobility, internship mobility, for teachers of plant attached to research groups visible in the Scienti platform of the Administrative Department of Science, Technology and Innovation- Colciencias and endorsed by the University of Cartagena. Resolution 02243-2018.
4. **First place for research in the mitigation and remediation category.** III International Seminar on Environmental Sciences. Barranquilla, Colombia June 28-29, 2017.

5. **Book award.** Third internal call for the publication of research books of the University of Cartagena, Gabriel García Márquez collection. Resolution 3252, **2015**.
6. **Teaching mobility-scholarship.** Fifth call for international mobility, internship mobility, for teachers of plant attached to research groups visible in the Scienti platform of the Administrative Department of Science, Technology and Innovation-Colciencias and endorsed by the University of Cartagena. Resolution 01153, **2016**.
7. **Best Poster Award.** 8th Brazilian Symposium on Essential Oils-International Symposium on Essential Oils. Chromaleont. Brazil. November, **2015**.
8. **Best Poster Award in Natural Products.** XIII Symposium on Science and Technology Cosmetics, y IX Congress of Pharmaceutical Sciences. National College of Pharmacists of Colombia. Cali, Colombia. August, **2014**.
9. **SOT Travel award.** San Antonio. TX. March, **2013**.
10. **SOT/AstraZeneca Travel Fellowship Awards .** San Antonio. TX. March, **2013**.
11. **Innovation Award of Phytopharmaceutical Products. National College of Pharmacists of Colombia. Bogotá, Colombia. October, 2013.**
12. **COLCIENCIAS Scholarship.** National Ph.D. Programs. Bogotá, Colombia. Sixth Place nationwide. **2012**.
13. **Young Investigator Program. Sponsored by COLCIENCIAS.** National Institute of Science and Technology of Colombia. COLCIENCIAS. Bogotá. **2005**.

MEMBERSHIP OF PROFESSIONAL ORGANIZATIONS

- 2011-Present Member of the National Society of Engineers (COPNIA)
2011-Present Member of Society of Toxicology. USA
2011-Present Member of Hispanic Organization of Toxicologists

PROFESSIONAL ACTIVITIES

Ocassional Reviewer for the following journals: *Environment International, Science of the Total Environment, MethodsX, Aquaculture.*

MAJOR RESEARCH INTERESTS

- Bioprospection of Natural Products
- Food Pollutants
- Molecular and Cell Biology
- Environmental Education
- Mechanisms of toxicity of pollutants
- Distribution, behavior and fate of metals and organic compounds in the environment.
- Wildlife exposures, bioaccumulation and toxicology
- Ecological risk assessment

PUBLICATIONS

Citations

H index: 12

<https://scholar.google.com/citations?user=LuARztEAAA&hl=es>

H index: 10

<https://www.scopus.com/authid/detail.uri?authorId=36087148000>

Thesis

1. **Caballero-Gallardo, K.** (2016). Environmental health perspectives on coal pollution: a view from the shipping ports to direct contact with coal dust or their extracts. Doctoral thesis. University of Cartagena, Cartagena, Colombia.
2. **Caballero-Gallardo, K.** (2010). Bioactivity of essential oils from aromatic plants grown in Colombia and some of their individual constituents against *Tribolium castaneum* Herbst (Coleoptera: Tenebrionidae). Master's Degree Thesis, University of Sucre, Sincelejo, Colombia.
3. **Caballero-Gallardo, K.**, and Castro, K. (2005). Aflatoxins present in corn (*Zea mays*) samples from Cartagena, Turbaco and Arjona. Undergraduate thesis, University of Cartagena. Cartagena, Colombia.

Research Papers in Peer Reviewed Journals (a total of 30 papers)

1. **Caballero-Gallardo, K.**, Wirbisky-Hershberger, S.E., Olivero-Verbel, J., de la Rosa, J., Freeman, J.L. **2018**. Embryonic exposure to an aqueous coal dust extract results in gene expression alterations associated with the development and function of connective tissue and the hematological system, immunological and inflammatory disease, and cancer in zebrafish. *Metallomics*. 10(3): 463-473.
2. Rocha-Román, L., **Caballero-Gallardo K**, Olivero-Verbel J. **2018**. Impacto de la minería del oro asociado con la contaminación por mercurio en suelo superficial de San Martín de Loba, sur de Bolívar (Colombia). *Rev. Int. Contam. Ambie.* 34(1): 93-102.
3. Palacios-Torres Y, **Caballero-Gallardo K**, Olivero-Verbel J. **2018**. Mercury pollution by gold mining in a global biodiversity hotspot, the Choco biogeographic region, Colombia. *Chemosphere*. 193: 421-430.
4. Pajaro-Castro, N., **Caballero-Gallardo, K.**, Olivero-Verbel, J. **2017**. Neurotoxic Effects of Linalool and β -Pinene on *Tribolium castaneum* Herbst. *Molecules*. 24: 22(12).
5. Alvarez-Ortega N, Caballero-Gallardo K, Olivero-Verbel J. **2017**. Low blood lead levels impair intellectual and hematological function in children from Cartagena, Caribbean coast of Colombia. *J. Trace Elem. Med. Biol.* 44: 233-240.

6. Pajaro-Castro, N., **Caballero-Gallardo, K.**, Olivero-Verbel. **2017**. Toxicity of Naphthalene and Benzene on *Tribolium castaneum* Herbst. Int. J. Environ. Res. Public Health. 14(6): 667.
7. Alcala-Orozco, M., Morillo-Garcia, Y., **Caballero-Gallardo, K.**, Olivero-Verbel, J. **2017**. Mercury in canned tuna marketed in Cartagena, Colombia and estimation of human exposure. Food Addit Contam Part B Surveill. 10(4): 241-247.
8. **Caballero-Gallardo, K.** Olivero-Verbel, J., Freeman, J. **2016**. Toxicogenomics to evaluate endocrine disrupting effects of environmental chemicals using the zebrafish model. Curr. Genomics. 17(6): 515-527.
9. Olivero-Verbel J, Carranza-Lopez L, **Caballero-Gallardo K**, Ripoll-Arboleda A, Muñoz-Sosa D. **2016**. Human exposure and risk assessment associated with mercury pollution in the Caqueta River, Colombian Amazon. Environ. Sci. Pollut. Res. 23(20): 20761-20771.
10. **Caballero-Gallardo, K.**, Olivero-Verbel, J. **2016**. Mice housed on coal dust-contaminated sand: A model to evaluate the impacts of coal mining on health. Toxicol. Appl. Pharmacol. 294: 11-20.
11. Morillo-Garcia, Y., **Caballero-Gallardo, K.**, Olivero-Verbel, J. **2016**. Life cycle of *Ulomoides dermestoides* (Fairmaire, 1893) (Coleoptera: Tenebrionidae) under laboratory conditions. Journal of Stored Products Research. 69: 272-275.
12. **Caballero-Gallardo, K.**, Guerrero-Castilla, A., Johnson-Restrepo, B., de la Rosa, J., Olivero-Verbel, J. **2015**. Chemical and toxicological characterization of sediments along a Colombian shoreline impacted by coal export terminals. Chemosphere. 138: 837-846.
13. Cervantes-Ceballos, L., **Caballero-Gallardo, K.**, Olivero-Verbel, J. **2015**. Repellent and Anti-quorum sensing activity of six aromatic plants occurring in Colombia. Nat. Prod. Commun. 10(10): 1753-1757.
14. Hernandez-Lambraño, R., Pajaro-Castro, N., **Caballero-Gallardo, K.**, Stashenko, E., Olivero-Verbel, J. **2015**. Essential oils from plants of the genus *Cymbopogon* as natural insecticides to control stored product pests. J. Stored Prod. Res. 62: 81-83.
15. Olivero-Verbel, J., **Caballero-Gallardo, K.**, Turizo-Tapia, A. **2015**. Mercury in the gold mining district of San Martín de Loba, South of Bolívar (Colombia). Environ. Sci. Pollut. Res. 22(8): 5895-5907.
16. Pino-Benitez, N., **Caballero-Gallardo, K.**, Valencia, C. **2014**. Actividad repelente de especies vegetales que crecen en la región del Chocó. Revista Facultad de Ciencias Básicas. 10(2).
17. Olivero-Verbel, J., Young-Castro, F., **Caballero-Gallardo, K.** **2014**. Mercury air pollution in the gold mining district of the municipality of San Martín de Loba, Bolívar Department, Colombia. Rev. Int. Contam. Amb. 30(1): 07-13.
18. **Caballero-Gallardo, K.**, Pino-Benitez, N., Pajaro-Castro, N., Stashenko, E., Olivero-Verbel, J. (2014). Plants cultivated in Choco, Colombia, as source of repellents against *Tribolium castaneum* (Herbst). J. Asia-Pac. Entomol. 17(4): 753-759.
19. Pajaro-Castro, N., **Caballero-Gallardo, K.**, Olivero-Verbel, J. **2014**. Identification of volatile organic compounds (VOCs) in plastic products using gas chromatography and mass spectrometry (GC/MS). Rev. Amb. Água. 9(4): 610-620.

20. **Caballero-Gallardo, K.**, Olivero-Verbel, J., Pino-Benitez, N., Stashenko, E. E. **2014**. Chemical composition and bioactivity of *Piper auritum* and *P. multiplinervium* essential oils against the red flour beetle, *Tribolium castaneum* (Herbst). Bol. Latinoam. Caribe Plant. Med. Aromat. 13(1), 10-19.
21. Hernández-Lambraño, R., **Caballero-Gallardo, K.**, Olivero-Verbel, J. **2014**. Toxicity and antifeedant activity of essential oils from three aromatic plants grown in Colombia against *Euprosterina elaeasa* and *Acharia fusca* (Lepidoptera: Limacodidae). Asian Pac. J. Trop. Biomed. 4(9): 695-700.
22. Olivero-Verbel, J., **Caballero-Gallardo, K.** **2013**. Nematode and mercury content in freshwater fish belonging to different trophic levels. Parasitol. Res. 112: 2187-2195.
23. Olivero-Verbel, J., Agudelo-Frias, D., **Caballero-Gallardo, K.** **2013**. Morphometric parameters and total mercury in eggs of snowy egret (*Egretta thula*) from Cartagena Bay and Totumo Marsh, north of Colombia. Mar. Pollut. Bull. 69: 105-109.
24. Olivero-Verbel, J., Tirado-Ballestas, I., **Caballero-Gallardo, K.**, Stashenko, E. **2013**. Essential oils applied to the food act as repellents toward *Tribolium castaneum*. J. Stored Prod. Res. 55: 145-147.
25. **Caballero-Gallardo, K.**, Olivero-Verbel, J., Stashenko, E. **2012**. Repellency and toxicity of essential oils from *Cymbopogon martinii*, *Cymbopogon flexuosus* and *Lippia organoides* cultivated in Colombia against *Tribolium castaneum*. J. Stored Prod. Res. 50: 62-65.
26. **Caballero-Gallardo, K.**, Olivero-Verbel, J., Stashenko E. **2011**. Repellent activity of essential oils and some of their individual constituents against *Tribolium castaneum* Herbst. J. Agric. Food Chem. 59: 1690-1696.
27. Olivero-Verbel, J., **Caballero-Gallardo, K.**, Negrete-Marrugo, J. **2011**. Relationship between localization of gold mining areas and hair mercury levels in people from Bolivar, North of Colombia. Biol. Trace Elem. Res. 144: 118-132.
28. Olivero-Verbel, J., **Caballero-Gallardo, K.**, Arroyo, B. **2011**. Nematode infection in fish from Cartagena Bay, North of Colombia. Vet. Parasitol. 177: 119-126
29. Olivero, J., **Caballero-Gallardo, K.**, Jaramillo, B., Stashenko, E. **2009**. Repellent activity of essential oils from *Lippia organoides*, *Citrus sinensis*, and *Cymbopogon nardus* grown in Colombia against *Tribolium castaneum*, Herbst. Salud UIS. 41, 244-250.
30. Olivero, J., **Caballero-Gallardo, K.**, Torres, N. **2009**. Assessment of mercury in muscle of fish from Cartagena Bay, a tropical estuary at the north of Colombia. International J. Environ. Health Res. 1: 1-13.

Manuscript submitted/accepted for publication

1. Alcalá-Orozco, María., **Caballero Gallardo, Karina.**, Olivero-Verbel, Jesús. Repellent and fumigant actions of the essential oils from *Elettaria cardamomum*, *Salvia officinalis* and *Lippia organoides* against *Tribolium castaneum* and *Ulomoides dermestoides*. Article submitted to the *Journal of Essential Oil Bearing Plants*. 2018.
2. Carranza-Lopez, L., **Caballero Gallardo, K.**, Olivero-Verbel, J. Multicompartment mercury contamination in major gold mining districts at the Department of Bolivar,

Colombia. Article submitted to the *Archives of Environmental Contamination and Toxicology*. 2018.

3. Pajaro-Castro, N., **Caballero Gallardo, K.**, Olivero-Verbel, J. Toxicity and expression of oxidative stress genes in *Tribolium castaneum* induced by toluene, xylene, and thinner. Article accepted to publication in the *Journal of Toxicology and Environmental Health, Part A*. 2018

Book Chapters

1. **Molecular and histopathological markers in mice and iguanas from coal mining areas at the Cesar Department, Colombia.** *Chapters 2. Metals in rodent liver (Mus musculus) and iguana (Iguana iguana)*. University editorial. ISBN 9789588736556. 2014.
2. **Molecular and histopathological markers in mice and iguanas from coal mining areas at the Cesar Department, Colombia.** *Chapter 7. Final remarks*. University editorial. ISBN 9789588736556. 2014.
3. **Rural tourism and protected areas.** *Chapter 16. Regional development and tourism in Latin America: Colombian case. Sintesis editorial (Spain)*. ISBN 978-84-995887-1-1. 2013. p. 263.
4. **Mining in Colombia: Institutionality and territory, paradoxes and conflicts.** *Chapter 5. Implications of the coal mining on the environment and human health*. Comptroller General of the Republic of Colombia. Imprenta Nacional de Colombia. ISBN 978-958-9351-92-5. 2013. p. 229.
5. **Environmental management of coastal areas.** *Biomagnification of parasites in fish of the Canal del Dique*. Colombia. ISBN: 978-958-725-080-0. Universidad de Las Palmas de Gran Canaria. 2011. p 54-62.
6. **Aromatic plants and essential oils: study and applications.** *Chapter 6. Repellent activity of essential oils*. UIS publications division. ISBN 978-958-57687-0-3. 2012.
7. **Parasites in Colombian fish. Are our ecosystems sickening?** *Chapters 4. Anisakid nematodes in Lisas (Mugil incilis) from Cartagena bay and Totumo marsh, Colombia*. Colombia. University editorial. ISBN 978-958-44-3888-1. 2008. p. 52-62.
8. **Parasites in Colombian fish. Are our ecosystems sickening?** *Chapters 5. Nematodes of the family Anisakidae in fish species from Cartagena bay and Dique Channel Dique*. Colombia. ISBN: 978-958-44-3888-1. University editorial. 2008. p. 63 – 84.

Books

1. Environmental profile of the Miramar marsh. Barrancabermeja-Santander. **2015**. ISBN: 978-958-8736-78-5. University Editorial.
2. **Caballero-Gallardo, K.**, Viola, M., Alvarez-Ortega, N. Biochemistry tests applied to health sciences programs. Editorial Universitaria. University of Cartagena. Collection of Gabriel García Márquez. University Editorial. **2016**.

3. Baldiris, R., **Caballero-Gallardo, K.**, Olivero-Verbel, J. Parasites in fish: emerging danger. 2nd Edition. University Editorial. In writing. **2018**.
4. Alvarez-Ortega, N., **Caballero-Gallardo, K.**, Olivero-Verbel, J. Perspectives of environmental health in lead contamination in children in northern Colombia. University Editorial. In writing. **2018**.

Conference Presentations/Proceedings/Abstracts (More than 30 presentations in meetings worldwide)

1. **Caballero-Gallardo, K.**, Alcalá-Orozco, M., Barraza-Quiroz, D., Olivero-Verbel, J., Mercury Persistence in Sediments from Cartagena Bay, an Industrial Area in Northern Colombia. 19th International Conference on Heavy Metals in the Environment (ICHMET), Athens, Georgia. July 22-24, 2018.
2. Alcalá-Orozco, M., **Caballero-Gallardo, K.**, Olivero-Verbel, J., Mercury Pollution in Indigenous Communities Bordering the Cotuhe and Putumayo Rivers, Colombian Amazon. 19th International Conference on Heavy Metals in the Environment (ICHMET), Athens, Georgia. July 22-24, 2018.
3. Alvarez-Ortega, N., **Caballero-Gallardo, K.**, Olivero-Verbel, J., Lead Exposure and Toxicity in Children from the Colombian Caribbean. 19th International Conference on Heavy Metals in the Environment (ICHMET), Athens, Georgia. July 22-24, 2018.
4. Alvarez-Ortega, N., Olivero-Verbel, J., **Caballero-Gallardo, K.** Toxicological effects of lead in children from a fishing area at the Colombian Caribbean. Society of Toxicology Meeting. San Antonio, Texas, March 11-15, **2018**.
5. Alcalá-Orozco, M., Olivero-Verbel, J., **Caballero-Gallardo, K.** Transgenerational Effects of Coal Dust on *Tribolium castaneum*, Herbst. Society of Toxicology Meeting. San Antonio, Texas, March 11-15, **2018**.
6. Fuentes-Lopez, K., Olivero-Verbel, J., **Caballero-Gallardo, K.** Toxic Effects of Inhalable Coal Dust in BALB/c Mice. Society of Toxicology Meeting. San Antonio, Texas, March 11-15, **2018**.
7. Tirado-Ballestas, I., Olivero-Verbel, J., **Caballero-Gallardo, K.** Effects of Coal Dust on *Eisenia fetida*, Savigny 1826. Society of Toxicology Meeting. San Antonio, Texas, March 11-15, **2018**.
8. **Caballero-Gallardo, K.** Emerging contaminants. International Forum on Quality, Safety, Health at Work and Corporate Sustainability. Cartagena. November 29 **2017**.
9. **Caballero-Gallardo, K.**, Olivero-Verbel, J. Mercury in fish: Human exposure and methods to determine risk. IV International Seminar on Science, Research and Technology in Food and XIV Food Week. Florencia, Colombia. October, **2017**.
10. Santos D. C., **Caballero-Gallardo, K.**, Scudeler E. L., Olivero-Verbel, J., Stashenko E. Antifeedant activity of essential oils from four aromatic plants grown in Colombia on larvae of *Ceraeochrysa claveri* (Neuroptera: Chrysopidae). II International Conference on Reproductive Biology and Toxicology. Botucatu-Brazil. October, **2017**.

11. **Caballero-Gallardo, K.**, Scudeler E. L., Gastelbondo-Pastrana, B.I., Olivero-Verbel, J., De la Rosa, J., Santos, D.C. Efeitos da ingestão do extrato aquoso de pó de carvão no ciclo de vida e no intestino médio do predador *Ceraeochrysa claveri* (Navás, 1911) (Neuroptera: Chrysopidae). XVI Jornada de Toxicologia - Agrotóxicos: Ambiente e Saúde. Botucatu-Brazil. August, **2017**.
12. Alcalá-Orozco, M., Morillo-García, Y., **Caballero-Gallardo, K.**, Olivero-Verbel, J. Mercury In Canned Tuna Commercially Available In Cartagena, Colombia. Providence, Rhode Island, USA. The International Conference on Mercury as a Global Pollutant (ICMGP) July, **2017**.
13. Palacios-Torres, Y., **Caballero-Gallardo, K.**, Olivero-Verbel, J. Mercury pollution by gold mining in Choco, Colombia. Providence, Rhode Island, USA. The International Conference on Mercury as a Global Pollutant (ICMGP) July, **2017**.
14. Alcalá-Orozco, M., **Caballero-Gallardo, K.**, Fuentes-Lopez, K., Olivero-Verbel, J., Stashenko, E. Repellent activity of essential oils of *Elettia cardamomum*, *Salvia officinalis* and *Lippia origanoides* Carvacrol against two insect pests of stored products. III International Seminar on Environmental Sciences. Barranquilla, Colombia June 18-29, **2017**.
15. Fuentes-Lopez, K., **Caballero-Gallardo, K.**, Olivero-Verbel, J. Changes in the expression of genes associated with oxidative stress in BALB/c mice exposed to carbon dust. III International Seminar on Environmental Sciences. Barranquilla, Colombia June 18-29, **2017**.
16. **Caballero-Gallardo, K.**, Olivero-Verbel, J., Wirbisky, S., Freeman, J. Effects of an aqueous extract of carbon dust on development and gene expression profile of the zebrafish (*Danio rerio*). Second Colombian Congress of Biochemistry and Molecular Biology. Medellín, Colombia. November, **2016**.
17. Alvarez-Ortega, N., Carranza-Lopez, L., **Caballero-Gallardo, K.**, Olivero-Verbel, J. Polymorphisms of delta amino levulinic acid dehydratase (ALAD) in children exposed to lead in Tasajera (Magdalena) and Lomarena (Bolívar), two fishing areas in northern Colombia. Second Colombian Congress of Biochemistry and Molecular Biology. November, **2016**.
18. **Caballero-Gallardo, K.**, Olivero-Verbel, J. An animal model to evaluate the toxic effects of coal dust. IUTOX. Merida. Mexico. October, **2016**.
19. Bertel-Sevilla, A., Carranza-Lopez, L., **Caballero-Gallardo, K.**, Olivero-Verbel, J. Lead effects in children from fishing communities at the Caribbean coast of Colombia. IUTOX. Merida. Mexico. October, **2016**.
20. Alvarez-Ortega, N., **Caballero-Gallardo, K.**, Olivero-Verbel, J. Low blood lead levels impair intellectual and hematological function in children from a tropical city. IUTOX. Merida. Mexico. October, **2016**.
21. Alvarez-Ortega, N., **Caballero-Gallardo, K.**, Olivero-Verbel, J. Intellectual function, hematological, hepatic and molecular markers in children exposed to lead in Cartagena, Colombia. Louisiana, New Orleans. March, **2016**.
22. **Caballero-Gallardo, K.**, Wirbisky, S., Olivero-Verbel, J., Freeman, J. Effects of an aqueous coal dust extract on developmental toxicity and gene expression profiling of Zebrafish (*Danio rerio*). Louisiana, New Orleans. March, **2016**.

23. Pajaro-Castro, N., **Caballero-Gallardo, K.**, Olivero-Verbel, J. Neurotoxic effects of linalool and β -pinene on *Tribolium castaneum* Herbst. V Iberoamerican Congress of Natural Products, XIII Colombian Congress of Phytochemistry and VIII Colombian Congress of Chromatography. Bogota. April, **2016**.
24. **Caballero-Gallardo, K.**, Olivero-Verbel, J. Molecular, celular and histological changes in mice living on sand contaminated with coal dust (<38 um) under laboratory conditions. Purdue University. **2015**.
25. Durán, D., Martínez, J., **Caballero-Gallardo, K.**, Olivero-Verbel, J., Stashenko, L. Study of the repellent activity and encapsulation of Lippia origanoides HBK essential oil and fractions. 8th Brazilian Symposium on Essential Oils - International Symposium on Essential Oils. Brazil. November, **2015**.
26. Pajaro-Castro, N., **Caballero-Gallardo, K.**, Olivero-Verbel, J. Toxicological effects of toluene and thinner in *Tribolium castaneum* Herbst. The Society of Toxicology (SOT) Annual Meeting. Phoenix, Arizona. March, **2014**.
27. **Caballero-Gallardo, K.**, De la Rosa, J., Johnson-Restrepo, B., Garcia-Cantillo, A., Guerrero-Castilla, A., Olivero-Verbel, J. Metals, PAHs, and Toxicity of Sediments from Santa Marta, a Coal Port in Colombia. The Society of Toxicology (SOT) Annual Meeting. Phoenix, Arizona. March, **2014**.
28. **Caballero-Gallardo, K.**, Carranza-Lopez L, Olivero-Verbel, J. Molecular, Cellular, and Histological Changes in Mice Living on Sand Contaminated with Coal Dust under Laboratory Conditions. The Society of Toxicology (SOT) Annual Meeting. San Antonio, TX. March, **2013**.
29. Jaramillo-Colorado, B., Olivero-Verbel, J., **Caballero-Gallardo, K.**, Stashenko, E. Acute toxicity (LC₅₀) against *Artemia franciscana* of essential oils from *Lantana armata* Schauer, *Xylopiá aromática* Lamarck and *Satureja brownei* Briq, collected in Colombia. Póster. SOT Meeting. March, **2011**. Washington, D.C. (USA).
30. **Caballero, K.**, Olivero-Verbel, J. 2011. Relationships between mercury content in muscle tissue and nematode infections in fish from Dique Channel, Colombia. Poster. Environmental Health Meeting. Resetting our Priorities. Salvador Bahia. February, **2011**. Brazil.
31. Olivero-Verbel, J., **Caballero-Gallardo, K.** The biomagnification of parasites in fish of the Canal del Dique. oral presentation. Course workshop on environmental management of coastal areas. August 17, **2011**. Cartagena, Colombia.
32. Olivero, J., **Caballero, K.** In fish biomagnification occurs for both ions and organisms. Poster. VII Congress of Pharmaceutical Sciences and XI Colombian Symposium of Cosmetic Science and Technology. National College of Pharmaceutical Chemists - Colombian Association of Cosmetic Science and Technology. Cartagena, October, **2010**. Cartagena, Colombia.
33. **Caballero, K.**, Olivero, J., Jaramillo, B., Stashenko, E. 2009. Repellent activity of essential oils of aromatic plants grown in Colombia against *Tribolium castaneum* Herbst. I Ibero-American Congress of Chemistry, Biochemistry and Chemical Engineering. October 12-16, **2009**. La Habana, Cuba.
34. Olivero, J., **Caballero, K.**, Castro, K. Determination of aflatoxins in commercial corn (*Zea mays*). II Meeting of Researchers (Riescar). May **2006**. Cartagena, Colombia.

Dictated courses

1. **Precongress course** "Monitoring of metals in different matrices". IV International Seminar on Science, Research and Technology in Food and XIV Food Week. Florencia, Colombia. October 17, **2017**.
2. **Course** "Theoretical-practical in molecular biology techniques". Molecular Biology Laboratory of the Environmental and Computational Chemistry Group. Cartagena Colombia. September-November **2017**.
3. **Pre-Congress course** "Cell culture". Molecular Biology Laboratory of the Environmental and Computational Chemistry Group. XVI National Congress of Pharmaceutical Chemistry students. Research: the basis of progress. Cartagena Colombia. October 20, **2015**.

Assistant in courses / seminars / conferences

- **Seminar** "International seminar on marine pollution". Doctorado en Toxicología Ambiental- Fulbright US Specialist. Cartagena. **2018**.
- **Course** "I course of structural analysis of organic compounds by spectroscopic techniques". Group of Biological Evaluation of Promising Substances and LIFUC. Cartagena. **2016**.
- **Symposium** "IV symposium of the IBB electronic microscopy center". Microscopy center. Botucatu (Brazil). **2016**.
- **Course** "Toxicology applied to the area of health". CEATOX. Botucatu (Brazil). **2016**.
- **Seminar** "Seminar series on heavy metal toxicity". Doctorado en Toxicología Ambiental. Cartagena. **2015**.
- **Course** "Current issues in environmental toxicology". Doctorado en Toxicología Ambiental. Cartagena. **2014**.
- **Course** "Basic management of StepOne Plus™ thermal cycler equipment for real-time PCR and its operation and analysis program". Applied Biosystems and Exógena Ltda. Cartagena. **2014**.
- **Symposium** "Allergens" Institute of immunological research. Cartagena. **2014**.
- **Course** "Advanced molecular biology: recombinant DNA technologies and heterologous protein expression". International University of Andalucia. Cartagena. **2012**.
- **Course** "Fundamentation and methodology of comprehensive professional training". SENA. Cartagena. **2007**.

H. Educational Handouts

- Alcalá-Orozco, M., **Caballero-Gallardo, K.**, Olivero-Verbel, J. The Minamata Convention on Mercury and its Implementation in Colombia. **2017**.
- Alcalá-Orozco, M., Morillo-García, Y., **Caballero, K.** **2016**. Mercury in tuna: An environmental and public health threat.
- **Caballero, K.**, Freeman, J. **2015**. Zebrafish: As a model in toxicological studies.

- Coronado, N., **Caballero, K.**, Cervantes, L., Carranza, L., Young, F. **2011**. Mercury.
- **Caballero, K.**, Cruz, K., Diaz, J., Maldonado, W., Duarte, D., Echenique, M. **2007**. Lead: Common and silent toxic.

STUDENTS

Currently, 3 Ph.D. students and 1 M.Sc.

Three M.Sc.s and 5 B.Sc.s. Graduated.

THESIS SUPERVISOR

Ph.D.

- Selenium modulatory role against the toxicodynamic effects of mercury in indigenous communities of Puerto Nariño, Amazonas (Colombia). *Maria Alcala Orozco*. Approval date: May, **2018**. Present.
- Methylation profile and genetic susceptibility in children exposed to lead in a vulnerable population of northern Colombia. *Neda Alvarez Ortega*. Ph.D. Program in Environmental Toxicology. School of Pharmaceutical Sciences. Approval date: April, **2017**. Present.
- Morphological, genotoxic and molecular effects on *Eisenia fetida* exposed to coal dust. *Irina Tirado Ballestas*. Ph.D. Program in Environmental Toxicology. School of Pharmaceutical Sciences. Approval date: May, **2017**. Present.

M.Sc.

- Determination of mercury levels in sediments of the Bay of Cartagena, Colombia. *Diana Barraza Quiroz*. Master's Program in Environmental Sciences. University of Cartagena **2018**. Present.
- Changes in the expression of genes associated with oxidative stress in BALB / c mice exposed to carbon dust. *Katerin Fuentes Lopez*. Master's Program in Pharmaceutical Sciences. University of Cartagena May **2017**.
- Hematological, cellular and molecular markers in children exposed to lead in metal smelting zones in the city of Cartagena (Colombia). *Neda Alvarez Ortega*. Master's Program in Biochemistry. University of Cartagena December. **2015**.
- Determination of mercury levels in soil in San Martín de Loba, South of Bolívar - Colombia. *Leobardo Rocha*. Master's Program in Environmental Sciences. University of Cartagena. July. **2015**.

Undergraduate

- Repellent action, fumigant and inhibitor of the oviposition of two essential oils against *Ulomoides dermestoides*. *Dalilia Rodríguez Niño*. Pharmaceutical Chemistry. University Cartagena. Cartagena, Colombia. **2018**.
- Development of a repellent pill against *Tribolium castaneum* based on essential oils of *Cymbopogon nardus* and *Rosmarinus officinalis*. *Leonardo Vargas Acosta*. Pharmaceutical Chemistry. University Cartagena. Cartagena, Colombia. **2017**.
- Determination of total mercury levels in canned tuna distributed in Cartagena, Bolívar. *Maria Alcalá Orozco y Yenifer Morillo Garcia*. Pharmaceutical Chemistry. University Cartagena. Cartagena, Colombia. August, **2016**.
- Presence of mercury in crabs (*Callinectes sapidus*) captured at the Ciénaga de la Virgen of Cartagena, for commercial use. *Luis Enrique Ramírez Sarmiento*. Pharmaceutical Chemistry. University Cartagena. Cartagena. Cartagena, Colombia. March. **2016**.
- Effect of the essential oils of *Tagetes lucida* and *Eucalyptus citriodora* on the inhibition of corn germination (*Zea mays*) induced by cadmium and glyphosate. *Emilce Mena Ripoll*. Pharmaceutical Chemistry. University Cartagena. Cartagena. Cartagena, Colombia. September. **2010**.

THESIS EVALUATED

Ph.D.

Sources, distribution and evaluation of environmental risks of polycyclic aromatic hydrocarbons in the colombian caribbean as a marine pollution analysis tool. *Gisela Mayo Mancebo*. Ph.D. Program in Doctorado en Sea Sciences. Cartagena. June, 2017.

M.Sc.

- Bacterias aisladas de suelos arroceros contaminados con cadmio. *Nataly Ayubb Torres*. Programa de Maestría en Ciencias Ambientales. Sue Caribe-Universidad de Sucre. Junio, 2018.
- 2. Bacterias endofitas aisladas de cultivos de arroz con capacidad de tolerar diferentes concentraciones de cadmio. *Armando Rafael Cerra Guzman*. Programa de Maestría en Ciencias Ambientales. Sue Caribe-Universidad de Sucre. Junio, **2018**.
- Design of a cosmetic type emulgel with antioxidant activity using active coo nyrocapsules of thyme essential oils (*Thymus vulgaris* L.), cinnamon (*Cinnamomum verum* J.) and clove (*Eugenia caryophyllata* T.). *Glicerio León Méndez*. Master's Program in Pharmaceutical Sciences. 2016.
- Contamination by heavy metals polycyclic aromatic hydrocarbons and parasitic infection by anisakid nematodes in fish from the Gulf of Morrosquillo north of Colombia. *Jaime Rafael Mendez Chavez*. Master's Program in Environmental Sciences. University of Sucre. Dicember, 2016.

- Exposure to mercury in inhabitants of the municipality of San Marcos, Sucre - Colombia, due to the ingestion of contaminated food. *Moises David Hernandez Ruiz*. Master's Program in Environmental Sciences. University of Sucre 2016.
- Environmental impact of the control of vegetable pathogens with agro-inputs and essential oils in the dry Colombian Caribbean. *Eduardo Oliver Mena Rodríguez*. Master's Program in Environmental Sciences. Popular University of Cesar. October, 2016.
- Biomonitoring of buccal cells from micronuclei in metal welders in Cartagena (Bolívar). *Isidro Tejedor*. Master's Program in Toxicology. National University of Colombia.
- Evaluation of the concentration of mercury in various brands of canned tuna marketed in the city of Cartagena de Índias. *Juan Manuel Sánchez*. Master's Program in Toxicology. National University of Colombia.
- Determination of mercury levels in the air in dental offices and clinics in Cartagena (Colombia). *Armida Arazola*. Master's Program in Toxicology. National University of Colombia.
- Determination of the acute toxicity (LC₅₀) of coal dust extract against larvae of *Artemia franciscana*. *Jesús Pacheco Gómez*. Master's Program in Toxicology. National University of Colombia.
- Evaluation of the repellent and insecticide activity of essential oils extracted from aromatic plants used against *Tribolium castaneum* Herbst. (Coleoptera: Tenebrionidae). *Carmen Espitia*. Master's Program in Toxicology. National University of Colombia.
- Determination of persistent organic pollutants (POPs) in breast milk and risk assessment of potential toxicity in newborns. *Alberto Garcia*. Master's Program in Chemistry. University of Cartagena.

Undergraduate

- Prevalencia y daño oxidativo eritrocitario de la deficiencia de glucosa 6-fosfato deshidrogenasa en estudiantes de los campus san pablo y Zaragocilla, Universidad de Cartagena. *Liliana Margarita Montalvo Alvarez y Jaison Enrique Torres Pacheco*. Programa de Biología. Agosto de **2018**.
- Evaluación del efecto citotóxico y antileishmanial del extracto total y fracciones de *Maclura tinctoria* Linn., *Cassia fistula* Linn., y *Malachra alceifolia* Jacq frente a *Leishmania panamensis*. *Luis Moneris y Liseth Revollo*. Química Farmacéutica. Agosto de **2018**.
- Evaluación in vitro del efecto antibacteriano de los extractos etanólicos de *Maclura tinctoria* Linn., *Cassia fistula* Linn., y *Malachra alceifolia* Jacq, y su contribución a la formulación de un fitoterapéutico para el tratamiento del acné. *Johan Perez y Luis Salazar*. Julio de **2018**.
- Promotion of good hygiene practices for food handlers-sellers of public roads in the sector progress Zaragocilla neighborhood. *Jose Vanegas Leon and Alicia Henríquez Diaz*. Pharmaceutical Chemistry program. March, **2018**.

- Study of the repellent and fumigant activity of the essential oil *Astronium graveolens* Jacq on *Tribolium castaneum* Herbst. *Andres Ariza Arnedo*. Chemistry program. May, **2016**.
- Standardization of a purification protocol for recombinant roteins using FPLC (Fast Protein Liquid Chromatography). *Helber José Herazo Alvarez*. Pharmaceutical Chemistry program. August, 2014.
- Current status of dietary supplements in Colombia. *Nelson Enrique Peinado Martínez*. Pharmaceutical Chemistry program. August, 2014.
- Determination of mercury from the effluent of a column packed with a biosorbent using the atomic absorption spectroscopy method with hydride generation. *Ledis Gutiérrez Fernández/Jhon Leon Rodríguez*. Pharmaceutical Chemistry program. August, 2013.
- Toxicity in animals and humans of Pyrethrum, Pyrethrins and Pyrethroids. *Angélica Petro Cardona*. Pharmaceutical Chemistry program. September de 2013.
- Thermal analysis of native hawthorn starch (*Dioscorea rotundata*) and its chemical modifications. *Keri Berrio/José Rivera*. Pharmaceutical Chemistry program. July, 2012.
- Production of a film based on modified starch hawthorn (*Dioscorea rotundata*) for possible use in food packaging. *Ana María Fortich/Gladis Pájaro Padilla*. Pharmaceutical Chemistry program. July, 2012.
- Removal of cyanide ions from contaminated waters through the use of copper-modified chitosan as a bioadsorbent material. *Claudia Muñoz*. Pharmaceutical Chemistry program. July, 2012.

TEACHING EXPERIENCE

Currently I am teaching Biochemistry, Research Methodology, and Toxicological Bioassays for undergraduates, Research Seminars and bioassays in postgraduate programs (MSc and PhD), as well as supervisor of doctoral theses in the B.Sc, M.Sc, and Ph.D Programs at the University of Cartagena.

RESEARCH PROJECTS/GRANTS AWARDED

- *Principal research. University of Cartagena. 2018-Present.* Interaction between the mercury and the selenio in indigenous communities of Puerto Nariño, Amazonas (Colombia). Contrat No. 114-**2018**.
- *Principal research. University of Cartagena. 2018-Present.* Transgenerational effects of carbon dust on *Tribolium castaneum*, Herbst. Contrat No. 119-**2018**.
- *Principal research. COLCIENCIAS – University of Cartagena. 2017-Actual.* Chemical and toxicological profile of the sediments of Cartagena Bay. Contrat No. FP448442-197/**2017**. Present.
- *Co-research.* Colciencias-Industrial University of Santander. 2018-2022. Bio-Reto XXI - 15:50. Development of bioproducts for the health, agricultural and cosmetic sectors, as a result of the study of Colombian biodiversity. P14: Development of cosmeceuticals made from natural products from the Colombian Caribbean for use in the cosmetics industry. Contract FP 44842-212-**2018**. Present.

- *Co-research. Dow Chemistry of Colombia SA – University of Cartagena. 2017-2018.* Methodological approach to costs for compensation to the spill of Clorpirifos in the Bay of Cartagena. Contract 31 May/2017.
- *Co- research. World Wildlife Fund (WWF) – University of Cartagena. 2015-2016.* Biodiversity conservation in places impacted by mining at the Biogeographic Choco, Colombia. Grant: TZ37/2015.
- *Co- research. Alcaldía de Barrancabermeja – University of Cartagena. 2012-2014.* Study and evaluation of toxicity markers in organisms in Miramar marsh. Grant: 1018/2012. .
- *Co- research. COLCIENCIAS – University of Cartagena. 2013-2015.* Profile genotoxic, transcriptional and epigenetic associated with exposure to carbon particles in rodents. Grant: 110756933952.
- *Research associate. CENIVAM – University of Cartagena. 2012-2017.* Therapeutic agents derived from the computational prospecting of molecules isolated from Colombian biodiversity. Contract RC-0572-2012.
- *Research associate. COLCIENCIAS – Universidad de Cartagena. 2012-2016.* IQ, molecular, haematological and cellular markers linked to genotoxicity in children exposed to lead. Contract No. 323 de 2012. Grant: 1107-545-31458. Contract: 323/2012.
- *Co- research. Vice-Rectory for research – University of Cartagena. 2013-2015.* Expression of genes in the repellent action of linalool and β -pinene against *Tribolium castaneum* (Herbst). Resolution No. 02295. July 4, 2013.
- *Co- research. Vice-Rectory for research - University of Cartagena. 2012.* Creation of a production line from natural repellents essential oils obtained from plants grown in Colombia.
- *Co- research. Government of the Department of Cesar - University of Cartagena. 2009-2011.* Impact of coal mining in two species collected in the Department of Cesar. Grant: 1235.
- *Co- research. COLCIENCIAS - University of Cartagena. 2010-2012.* Toxicity of sediments polluted by coal at the Department of Magdalena. Grant: 110749326186.
- *Co- research. COLCIENCIAS - University of Cartagena. 2009-2011.* Design, shynthesis and evaluation of the activation of the insuln receptor by derivatives of alpha lipoic acid. Grant: 110745921616.
- *Research associate. CARDIQUE – University of Cartagena. 2005.* Characterization of the life cycle of nematodes in the ecosystems of Cartagena Bay. Grant: 057/05.
- *Research associate. COLCIENCIAS-University of Cartagena. 2004-2006.* Development of an information system for the early detection of mercury poisoning at the North of Colombia. Grant: 1107-04-16346.


Karina Caballero Gallardo
Passport 22.804.654 Cartagena
Professional Registration:13254210137BLV