
BIOGRAPHICAL SKETCH

NAME: Andrea Calixto

POSITION TITLE: Professor.

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
University of Havana, Cuba	B.S.	1997	Microbiology
Columbia University, USA	MPhil/ MA	2002-2006	Molecular Biology
Columbia University, USA	Ph.D.	2002-2008	Behavioral Genetics, Genomics
P. Catholic University of Chile	Postdoctoral	2009-2012	Microbe-Host interaction and Behavioral Genetics

Academic positions

2021- present, Professor, Institute of Neuroscience, Universidad de Valparaiso.

2021- present, Deputy Director, Centro Interdisciplinario de Neurociencia de Valparaiso.

2017- present, Investigator, Centro Interdisciplinario de Neurociencia de Valparaiso, Valparaiso, Chile.

2012- 2019, Assistant Professor, Center for Genomics and Bioinformatics, Universidad Mayor, Santiago de Chile.

Scientific statement

I have a broad background in the areas of Neuroscience, Microbiology and Molecular Biology. I have also developed tools to address methodological limitations to molecular intervention of the nervous system (Calixto et al., *Nature Methods* 2010). My current research is focused on understanding how bacterial metabolites and environmental changes affect life history traits. The traits we specifically study are the **degeneration** and regeneration **of neurons** and survival **behaviors** in animals. We use the nematode *Caenorhabditis elegans* and its dietary bacteria as model organisms (Palominos et al., 2017; Caneo et al., 2019). Both nematode and bacteria are genetically tractable, simplifying the detection of specific molecules and their effect on measurable characteristics. To identify these molecules we analyze their genomes, transcriptomes and metabolomes, followed by functional *in vivo* validation.

The research of our group focuses in two major scientific lines: 1) *The Discovery of Neuroprotective bacterial Metabolites and their mechanism of action in C. elegans*, and 2) *Transgenerational defensive strategies against bacterial pathogens*.

To identify bacterial enzymes and metabolites that delay and repair dying neurons, our lab uses a model of genetically triggered neuronal degeneration in *C. elegans* (Calixto et al., 2012). We use forward and reverse genetics to determine intrinsic (genetic, epigenetic) and extrinsic (environmental) susceptibility factors to neurodegeneration. We look for the molecular differences between protective and non-protective bacterial diets. Using mutant analysis of the individual bacterial genes, we have identified specific molecules that cause protection and regeneration of broken neurons (Urrutia et al, *Plos Biology*, 2020).

Work of our laboratory also discovered that animals defend themselves from pathogens by entering diapause, a behavioral strategy that is transmitted transgenerationally and ensures long term survival. By using simultaneous transcriptomic analysis of both mRNA and small RNAs from pathogens and worms, we aim at finding the molecular triggers of this novel defensive strategy. We hypothesize that the RNA interference machinery processes these molecules, changing the endogenous RNA repertoire, which ultimately shape behavior.

Published manuscripts

The assembly of bacteria living in natural environments shape neuronal integrity and behavioral outputs in *C. elegans*. ***mBio*, 2023. DOI: 10.1128/mbio.03402-22**

Sebastian Urquiza-Zurich, Victor Antonio Garcia-Angulo , Paula Burdisso , M. Fernanda Palominos, Lucia Fernandez-Hubeid , Paloma A Harcha , Juan Pablo Castillo, **Andrea Calixto**.

Bacterial small RNAs and host epigenetic effectors of a transgenerational memory of pathogens in *C. elegans*. ***iScience* 2022, DOI: 10.1016/j.isci.2022.104627**

Marcela Legüe, Blanca Aguila, Bernardo Pollak, **Andrea Calixto**.

Interspecies RNA Interactome of Pathogen and Host in a Heritable Defensive Strategy. ***Front Microbiol.* 2021. DOI: 10.3389/fmicb.2021.649858.**

Marcela Legüe, Blanca Aguila, **Andrea Calixto**.

The Heritability of Behaviors Associated with the Host Gut Microbiota. ***Frontiers Immunology* 2021, DOI:10.3389/fimmu.2021.6585512021.**

Marcia Manterola, M.Fernanda Palominos, **Andrea Calixto**.

Intergenerational pathogen-induced diapause in *C. elegans* is modulated by *mir-243*. ***mBio*, 2020 DOI: 10.1128/mBio.01950-20.**

Carolaing Gabaldon, Marcela Legüe, M. Fernanda Palominos, Lidia Verdugo, Florence Gutzwiller, **Andrea Calixto**.

Bacterially produced metabolites protect *C. elegans* neurons from degeneration. ***Plos Biology*, 2020. DOI: 10.1371/journal.pbio.3000638.**

Arles Urrutia, Victor A. Garcia, Andres Fuentes, Mauricio Caneo, Marcela Legüe, Sebastián Urquiza, Juan Ugalde, Paula Burdisso, **Andrea Calixto**.

Quantification of Bacteria Residing in *Caenorhabditis elegans* Intestine. ***Bio-protocol* 2020 DOI:10.21769/BioProtoc.3605.**

M.Fernanda Palominos and **Andrea Calixto**.

Inhibition of *miR-378a-3p* by Inflammation Enhances IL-33 Levels: A Novel Mechanism of Alarmin Modulation in Ulcerative Colitis. ***Front Immunol.* 2019 DOI: 10.3389/fimmu.2019.02449.**

Dubois-Camacho K, Diaz- Jimenez D, De la Fuente M, Quera R, Simian D, Martínez M, Landskron G, Olivares-Morales M, Cidlowski JA, Xu X, Gao G, Xie J, Chnaiderman J, Soto-Rifo R, González MJ, **Calixto A**, Hermoso MA.

Opposing action of NCoR1 and PGC-1 α in mitochondrial redox homeostasis. ***Free Radic Biol Med.* 2019 DOI:10.1016/j.freeradbiomed.2019.08.006.**

Tanes I. Lima, Dimitrius Santiago P.S.F.Guimarães, André G.Oliveira, Hygor Araujo, Carlos H.G.Sponton, **Andrea Calixto**, Silas Pinto, Marcelo A.Mori, Joey Orofino, Valentina Perissi, Adrienne Mottis, Johan Auwerx, Leonardo Reis Silveira.

Worm corpses affect quantification of dauer recovery. *microPublication Biology* **2019**, DOI:10.17912/micropub.biology.00012.

Carolaing Gabaldon and **Andrea Calixto**.

Diapause induces functional axonal regeneration after necrotic insult in *C. elegans*. *PLoS Genet.* **2019**, DOI:10.1371/journal.pgen.1007863. Mauricio Caneo, Victoria Julian, Alexandra B. Byrne, Mark J. Alkema, and **Andrea Calixto**.

Use of *C. elegans* diapause to study transgenerational responses to pathogen infection *Methods Mol Biol.* **2019**, DOI:10.1007/978-1-4939-9000-9_16.

Francisco Chavez and **Andrea Calixto**.

RNA language in *Caenorhabditis elegans* and bacteria interspecies communication and memory. *Current Opinion in Systems Biology.* **2019**, DOI:10.1016/j.coisb.2018.08.005.

Marcela Legië and **Andrea Calixto**.

Transgenerational Diapause as an Avoidance Strategy against Bacterial Pathogens in *Caenorhabditis elegans*. *mBio* **2017**; DOI:10.1128/mBio.01234-17.

Palominos MF, Verdugo L, Gabaldon C, Pollak B, Ortíz-Severín J, Varas M, Chávez FP, **Calixto A**.

Life without food and the implications for neurodegeneration. *Advances in Genetics*, **2015**. DOI:10.1016/bs.adgen.2015.09.004.

Andrea Calixto.

FBN-1, a fibrillin-related protein, is required for resistance of the epidermis to mechanical deformation during *C. elegans* embryogenesis. *eLife* **2015** DOI: 10.7554/eLife.06565.

Kelley M, Yochem J, Krieg M, **Calixto A**, Heiman MG, Kuzmanov A, Meli V, Chalfie M, Goodman MB, Shaham S, Frand A, Fay DS.

Diapause Formation and Downregulation of Insulin-Like Signaling via DAF-16/FOXO Delays Axonal Degeneration and Neuronal Loss. *PLoS Genet* **2012**. DOI:10.1371/journal.pgen.1003141.

Calixto A, Jara JS, Court FA.

Enhanced neuronal RNAi in *C. elegans* using SID-1. *Nature Methods.* **2010**, DOI: 10.1038/nmeth.1463

Calixto A, Chelur D, Topalidou I, Xiaoyin Chen and Chalfie M.

Conditional gene expression and RNAi using MEC-8- dependent splicing in *C.elegans*. *Nature Methods* **2010**, DOI: 10.1038/nmeth.1445.

Calixto A, Ma C and Chalfie M.

Podocin and MEC-2 bind cholesterol to regulate the activity of associated ion channels. *Proc. Natl. Acad. Sci. U SA.* 2006. DOI: 10.1073/pnas.0607465103.

Huber TB, Schermer B, Müller RU, Höhne M, Bartram M, **Calixto A**, Hagmann H, Reinhardt C, et al.

Loss of LIN-35, the *Caenorhabditis elegans* ortholog of the tumor suppressor p105Rb, results in enhanced RNA interference. *Genome Biol.* 2006, DOI:10.1186/gb-2006-7-1-r4
Lehner B, **Calixto A**, Crombie C, Tischler J, Fortunato A, Chalfie M, Fraser AG.

Genome-wide RNAi identifies p53-dependent and -independent regulators of germ cell apoptosis in *C. elegans*. *CellDeath Differ.* DOI: 10.1038/sj.cdd.4401488.

Lette G, Kritikou EA, Jaeggi M, **Calixto A**, Fraser AG, Kamath RS, Ahringer J, Hengartner MO.

Nonselective cation channels as effectors of free radical-induced rat liver cell necrosis *Hepatology* 2001
DOI: 10.1053/jhep.2001.20530.

Barros LF, Stutzin A, **Calixto A**, Catalán M, Castro J, Hetz C, Hermosilla T.

Extracellular regulated kinase, but not protein kinase C, is an antiapoptotic signal of insulin-like growth factor-1 on cultured cardiac myocytes. *Biochem Biophys Res Commun.* 2000. DOI: 10.1006/bbrc.2000.3008

Foncea R, Gálvez A, Pérez V, Morales MP, **Calixto A**, Meléndez J, González-Jara F, Díaz-Araya G, Sapag-Hagar M, Sugden PH, LeRoith D, Lavandero S.

Differential expression of the p27Kip1 mRNA in IFN-sensitive and resistant cell lines. *Biochem Biophys Res Commun.* 1998 DOI: 10.1006/bbrc.1998.8512

Moro A, **Calixto A**, Suárez E, Araña MJ, Perea SE.

Research support

Ongoing

- Fondecyt Regular 1220650 4 years (2022-2026) Interspecies effectors of a transgenerational memory of bacterial infection in *C. elegans*. Principal Investigator
- Apoyo Redes Formación de Centros (REDES190089): 3 years (2020-2023). Functional innovations under energy constraints and the evolution of animal diapause. Role: Co-investigator.

Past

- Millennium Institute Interdisciplinary Center of Neuroscience of Valparaíso – CINV (2016-2022) Adjunct Investigator
- CYTED grant P918PTE 3 years (2019-2022). Development of bacterial consortia for the treatment of neurodegenerative diseases. Principal Investigator
- Proyecto Apoyo Redes Formación de Centros (REDES180138): 3 years. (2019-2022). Discovery of Neuroprotective bacterial metabolites and their mechanism of action in *C. elegans*. Principal Investigator
- Fondecyt regular [1181089] 4 years (2018-2022). Development of computational methods for the determination of causal-condition specific gene regulatory networks. Co-investigator.
- FONDECYT Regular Competition 1131038 (2013-2017).
- Diapause formation signaled by the RNAi machinery as a novel innate defense mechanism against bacterial pathogens. Principal Investigator

- CONICYT Research Projects between Chile and the United States 2013-0041 (2013-2016). Analysis of gene regulatory networks that modulate behavior upon bacterial pathogenesis. Principal Investigator
- Anillo ACT-1109 (2012-2015) The Neuronal network initiative. Understanding Differential neuronal vulnerability in neurological diseases. Role: Associate Investigator
- FONDECYT Postdoctoral 3100099 (2009-2012)
- Discovery of neuronal roles for genes that cause lethality in *C. elegans* using RNA interference.
- Role: Principal Investigator

Teaching

Graduate programs

Ph.D. Program in Neuroscience Universidad de Valparaiso

- Microbiome and behavior (coordinator)
- Developmental Biology (invited)

Ph.D. Program in Biomedical Sciences, Universidad de Chile

- Epigenetics (lecturer)

Master's program in Biomedical Sciences Universidad de Valparaiso

- Molecular Biology (lecturer)

Ph.D. Program Integrative Genomics Universidad Mayor

- Molecular Biology of the Cell (coordinator)
- RNA language in interspecies communication (coordinator)
- Microbiome and behavior (coordinator)
- Seminar Advances in Current Biology (coordinator)

Undergraduate programs

Universidad Mayor, school of Biotechnology

Cell Biology (coordinator). Best Teacher Prize 2019.

Cellular physiology (coordinator)

Neuroscience (coordinator)

Universidad de Chile

Developmental Biology (lecturer and practical course)

Current and past Mentoring

Postdoctoral associates:

- Florence Gutzwiller (from 2016-2017, currently postdoctoral associate at Univesidad Andres Bello)
- Victor Garcia (currently Assistant Professor at the Medical School, Universidad de Chile)

- Federico Camicia (currently postdoctoral associate at the University of Buenos Aires)
- Ivan Neira (currently Professor at the University of Antofagasta)

Doctoral thesis

- Carolina Gabaldon (Universidad Mayor, graduated 2020)
- Arles Urrutia (Universidad Mayor, graduated 2020)
- Marcela Legue (Universidad Mayor, schedule to graduate 2021)
- Scarlett Delgado (Universidad de Valparaiso, scheduled to graduate 2021)
- Blanca Aguila (Universidad de Chile, joined 2020)
- Esteban Retamales (Universidad de Valparaiso, joined 2021)

Master's thesis

- Maria Fernanda Palominos (graduated 2013, Transgenerational strategies of defense against pathogens in *C. elegans* mediated by RNAi, University of Chile)
- Mauricio Caneo (graduated 2016, Genetic analysis to discover neuronal gene networks involved in regeneration during diapause, Universidad de Valparaiso.)
- Daniela Ponce (graduated 2017, Effects of diet on development, fertility and neuronal integrity in the nematode *Caenorhabditis elegans*, Universidad de Chile).

Undergraduate students

- Bernardo Pollak (P. Universidad Catolica de Chile, graduated 2012)
- Andres Fuentes (Universidad Mayor, graduated 2014)
- Sebastian Urquiza (Universidad Mayor, graduated 2020)
- Tomas Canepa (Universidad Mayor, scheduled to graduate 2021)
- Javiera Roman (Universidad Mayor, scheduled to graduate 2021)
- Fernanda Manrique (Universidad Mayor, joined 2019)

Attendance to Scientific Meetings (Oral presentations and Symposia)

The assembly of bacteria living in natural environments shape neuronal integrity and behavioral outputs in *C. elegans* Third Latin American *C. elegans* meeting, Valparaiso March 15th-19th, 2023 Paloma Harcha, Sebastián Urquiza-Zurich, Victor Garcia-Angulo, Paula Burdisso, M. Fernanda Palominos, Lucia Fernandez Hubeid, Juan Pablo Castillo, **Andrea Calixto**.

Can we know what it is like to be a worm? Integrated information and high order interdependences in *C. elegans*'s sleep-wake dynamics. Third Latin American *C. elegans* meeting, Valparaiso March 15th-19th, 2023. Diego Becerra, Manuel Zimmer, Rubén Herzog, **Andrea Calixto**, Patricio Orio.

Intracellular calcium management has a key role under diapause-induced neuroprotection. 23rd International *C. elegans* Conference. Online June 21-24th, 2021. Scarlett Delgado, Chiayu Chiu and **Andrea Calixto**.

Symposium Neurogenetic and Neurogenomic: Microbiome and Neuropsychiatric diseases. LXXV CONGRESO SONEPSYN 2020. November 21-28th, 2020. Online Meeting. **Andrea Calixto**.

Following calcium under *mec-4d* neurodegeneration and regeneration in *Caenorhabditis elegans*. 1st Junior European Calcium Society Meeting: Calcium Signaling Across Scales, Kingdoms and Countries.

October 21, 2020. Online. Scarlett Delgado, Chiayu Chiu and **Andrea Calixto**.

Andrea Calixto. Bacterial metabolites change the fate of dying neurons. IBRO Symposium Neural mechanisms of ageing, stress and neurodegeneration. February 19th-21st, 2020. Bolsa de Comercio de Rosario. 2nd Latin American Worm Meeting, Rosario, Argentina.

Marcela Legüe and **Andrea Calixto**. Bacterial small RNA RsmY is required for a transgenerationally inherited behavior in *C. elegans*. February 19th-21st, 2020. Bolsa de Comercio de Rosario. 2nd Latin American Worm Meeting, Rosario, Argentina.

Arles Urrutia and **Andrea Calixto**. Bacterially produced metabolites protect *C. elegans* neurons from degeneration. February 19th-21st, 2020. Bolsa de Comercio de Rosario. 2nd Latin American Worm Meeting, Rosario, Argentina.

Andrea Calixto. RNA language in interspecies communication and transgenerational memory. November 5th-8th, 2019. RNA biology Symposium, XXXXI Congreso Chileno de Microbiología, Puerto Varas, Chile.

Marcela Legüe, Carolina Gabaldon and **Andrea Calixto**. RNA language in *Caenorhabditis elegans* and bacteria interspecies communication and transgenerational memory. September 30-October 4, 2019. Molecular Biosystems Conference Eukaryotic Gene Regulation & Functional Genomics. Puerto Varas.

Marcela Legüe and **Andrea Calixto**. *C. elegans* diapause formation as a defense mechanism against pathogens requires bacterial RsmY. June 20th-24th, 2019. International *C. elegans* Meeting UCLA.

Arles Urrutia and **Andrea Calixto**. Bacterially produced neurotransmitter protects neurons from degeneration. June 20th-24th. International *C. elegans* Meeting UCLA 2019

Andrea Calixto. Transgenerational diapause as an avoidance strategy against bacterial pathogens in *Caenorhabditis elegans*. *Simposio ALAM* November 13-16, 2018. Parque Araucano, Santiago de Chile.

Urrutia Arles, Fuentes Andrés, García-Angulo Víctor, Caneo Mauricio, Gutzwiller Florence, Kurzchalia Teymuraz, **Calixto Andrea**. Lifesaver molecules for *C. elegans* neurons produced by bacterial diet. September, 25-28, 2018 XLI Annual Meeting of the Chilean Biochemistry and Molecular Biology Society, Iquique, Chile.

Andrea Calixto. Lifesaver molecules for *C. elegans* neurons found in bacterial diets. 47th Annual Meeting of the Brazilian Society for Biochemistry and Molecular Biology (SBBq), Joinville, SC, Brazil, May 26th to 29th, 2018.

Andrea Calixto. Transgenerational strategies against pathogens mediated by small RNAs in *C. elegans*. Symposium New Horizons in Epigenetics. Fundacion Ciencia y Vida. January 16th, 2018.

Carolina Gabaldon and **Andrea Calixto**. *mir-243* is required for diapause formation in *C. elegans* as a transgenerational defense mechanism against bacterial pathogens. Molecular Biosystems Conference Eukaryotic Gene Regulation & Functional Genomics September 23-26, 2017, Puerto Varas, Chile.

Andrea Calixto. Bacteria-worm crosstalk in transgenerational strategies of survival, mediated by small RNA networks. First Latin American *C. elegans* Symposium, Pasteur Institute, Montevideo, Uruguay, February 22-25, 2017.

Alberto J.M. Martin, Carolina Gabaldon, **Andrea Calixto** and Tomas Perez-Acle. Combining miRNA and their regulators to understand the formation of diapause as transgenerational defense against pathogens in *C. elegans*. 2016, International Society for Computational Biology Latin America Bioinformatics Conference, Buenos Aires, Argentina

Lidia Verdugo, Fernanda Palominos, Carolina Sanchez, Yessenia Vasquez, Vinicius Maracaja, Francisco Chavez, **Andrea Calixto.** Small RNAs and RNAi machinery mediate transgenerational dauer formation in response to bacterial pathogens in *C. elegans*. International *C. elegans* Meeting UCLA 2015

Calixto A. Pathogen induced diapause is a transgenerational mechanism of defense in *C. elegans*. Chilean Society for Microbiology Meeting, Marbella, November 2013.

Calixto A, Jara JS, Court FA Diapause Formation and Downregulation of Insulin-Like Signaling via DAF-16/FOXO Delays Axonal Degeneration and Neuronal Loss. Chilean Society for Cell Biology, Annual Meeting, Puerto Varas, October 2012

Calixto A and Court F. Prevention of neuronal degeneration by changes in the metabolic state. 1st Argentinian *C. elegans* Symposium, University of Quilmes. Dec 2011.

Calixto A and Court F. Entry to dauer state prevents necrotic neuronal degeneration. International *C. elegans* Meeting UCLA 2011

Calixto A, Topalidou I and Chalfie M. SID-1 expression enhances neuronal RNAi. International *C. elegans* Meeting UCLA 2009

Calixto A, Neira I and Inestrosa N. Discovery of neuronal functions for lethal genes in *C. elegans* using RNAi. Annual Meeting Society of Cell Biology. Pucon 2009

Calixto A and Chalfie M. An *in vivo* system to regulate gene expression using a *mec-8*-dependent intron. International Worm Meeting UCLA 2005

Attendance to Scientific Meetings (Poster Presentations)

The identification of intergenerational diapause-inducing bacteria from complex natural ecosystems. Third Latin American *C. elegans* meeting, Valparaiso March 15th-19th, 2023. Marcela Serey, Juan Pablo Castillo, **Andrea Calixto**

Intergenerational effects of high temperature induced diapause. Third Latin American *C. elegans* meeting, Valparaiso March 15th-19th, 2023. Sol Retamales and **Andrea Calixto.**

Innexin contribution on the visual system of *C. elegans*. Third Latin American *C. elegans* meeting, Valparaiso March 15th-19th, 2023. Paloma Harcha and **Andrea Calixto.**

Effects of temperature on mechanosensation and neurodegeneration. Third Latin American *C. elegans* meeting, Valparaiso March 15th-19th, 2023. Victoria Collio, Juan Pablo Castillo and **Andrea Calixto**

Multigenerational inheritance of beneficial bacterial effects on neuronal integrity and development. *C. elegans* Topic Meeting: Neuronal Development, Synaptic Function and Behavior. July 24-27, 2022 University of Vienna, Austria. Juan Pablo Castillo, Mauricio Caneo, Paloma Harcha and **Andrea Calixto**.

Intergenerational memory of diapause control sensory perception circuitry in a stress dependent manner. Esteban Retamales, Marcela Serey and **Andrea Calixto**. *C. elegans* Topic Meeting: Neuronal Development, Synaptic Function and Behavior. July 24-27, 2022 University of Vienna, Austria.

Strategies to study *C. elegans* dauer energetics and microbiome influence. February 19th-21st, 2020. Bolsa de Comercio de Rosario. 2nd Latin American Worm Meeting, Rosario, Argentina. Ilvanna Salas and **Andrea Calixto**.

Can bacterial sRNAs RsmY and RsmZ cause a behavioral change in *C. elegans*. A road to a paradigm shift in holobiont communication. February 19th-21st, 2020. Bolsa de Comercio de Rosario. 2nd Latin American Worm Meeting, Rosario, Argentina. Blanca Aguila, Marcela Legue, Bernardo Pollak and **Andrea Calixto**.

Two-photon imaging to follow the path of neuronal degeneration and regeneration in *Caenorhabditis elegans*. February 19th-21st, 2020. Bolsa de Comercio de Rosario. 2nd Latin American Worm Meeting, Rosario, Argentina. Scarlett Delgado, Chiayu Chiu and Andrea Calixto.

C. elegans diapause formation as a defense mechanism against *P. aeruginosa* infection is mediated by bacterial quorum sensing regulator rsmY. September 30-October 4, 2019. Molecular Biosystems Conference Eukaryotic Gene Regulation & Functional Genomics. Puerto Varas, Chile. Marcela Legue, Florence Gutzwiller and **Andrea Calixto**.

Transcription factors involved in dauer formation under pathogenesis identified by analysis of knowledge-based networks. September 30-October 4, 2019. Molecular Biosystems Conference Eukaryotic Gene Regulation & Functional Genomics. Puerto Varas, Chile. Carolaing Gabaldon, A. J. Martin, **Andrea Calixto**.

Carnobacterium inhibens a bacterium innocuous for its fishnatural host kills *Caenorhabditis elegans*. June 20th-24th, 2019. International *C. elegans* Meeting UCLA. Carolaing Gabaldon, Victor Garcia and **Andrea Calixto**.

Natural microbiome of Chilean *C. elegans* isolates and their relationship with neuroprotection. June 20th-24th, 2019. International *C. elegans* Meeting UCLA. Sebastian Urquiza, Arles Urrutia and **Andrea Calixto**.

In vivo two-photon calcium imaging to measure neuronal activity under a pro-regenerative condition in *Caenorhabditis elegans*. June 20th-24th, 2019. International *C. elegans* Meeting UCLA. Scarlett Delgado, Chiayu Chiu and **Andrea Calixto**.

Transcription factors involved in dauer formation under pathogenesis identified by analysis of

knowledge-based networks. June 20th-24th, 2019. International *C. elegans* Meeting UCLA. Carolina Gabaldon, Alberto Martin and **Andrea Calixto**.

Small RNA transcriptomic landscape unveils putative epigenetic effectors of transgenerational memory of interspecies communication. Sept 11th-15th, 2018. Cold Spring Harbor Laboratory Meetings. Epigenetics and Chromatin. CSHL, New York. Marcela Legue, Florence Gutzwiller and **Andrea Calixto**.

Diapause changes in size and number of mitochondria in *Caenorhabditis elegans*. June 28th-June 1st, 2018. *C. elegans* Meeting University of Madison, Wisconsin, 2018. Sebastian Urquiza, Arles Urrutia and **Andrea Calixto**.

mir-243 and *mir-51* are required for diapause formation in *C. elegans* as a transgenerational defense mechanism against bacterial pathogens. June 28th-June 1st, 2018. *C. elegans* Meeting University of Madison, Wisconsin, 2018. Carolina Gabaldón, Lidia Verdugo, Sebastián Contreras, Leandro Murgas, Alberto J.M. Martin and **Andrea Calixto**.

Mauricio Caneo, Mark Alkema and **Andrea Calixto**. Neuronal somas suffice for morphofunctional regeneration during diapause in *C. elegans*. June 23-28, 2018. *C. elegans* Neuro Meeting University of Madison, Wisconsin, 2018.

Carolina Gabaldon and **Andrea Calixto**. *mir-243* is required for diapause formation in *C. elegans* as a transgenerational defense mechanism against bacterial pathogens. September 23-26, 2017. Molecular Biosystems Conference Eukaryotic Gene Regulation & Functional Genomics. Puerto Varas, Chile.

mir-243, *mir-51* and *mir-52* are required for diapause formation in *C. elegans* as a transgenerational defense mechanism against bacterial pathogens. Carolina Gabaldon, Lidia Verdugo, Alberto J. M Martin, Carlos Caris, **Andrea Calixto**. International *C. elegans* Meeting UCLA 2017

New triggers, old targets: Searching for bacterial small RNAs that elicit an interkingdom RNAi-based behavioral response. Marcela Legüe, Carlos Caris, Alberto Martin, Lidia Verdugo, **Andrea Calixto**. International *C. elegans* Meeting UCLA 2017

Strategies for identifying neuroprotective molecules in the bacterial diet of *Caenorhabditis elegans*. Arles Urrutia, Ornella Realini, J. Carlos Caris, Víctor García-Angulo, Mauricio Caneo, **Andrea Calixto**. International *C. elegans* Meeting UCLA 2017

Carolina Gabaldón, Marcela Legue, Alberto J.M. Martin, Tomas Perez-Acle, **Andrea Calixto**. sRNA-mRNA interaction networks underlie the formation of diapause as a transgenerational defense mechanism against bacterial pathogens. *C. elegans* Meeting University of Madison, Wisconsin, 2016

Mauricio Caneo, Mark Alkema, **Andrea Calixto**. Molecular requirements of axonal regeneration in diapause. International *C. elegans* Meeting UCLA 2015

A. Fuentes, V. Garcia, MF. Palominos, **A. Calixto**. Diet affects neurodegenerative processes in *C. elegans*. International *C. elegans* Meeting UCLA 2015

Fuentes A. A, Garcia-Angulo V. A., Camicia F. and **Calixto A**. Diet affects neurodegenerative

processes induced genetically in *C. elegans*. Chilean Society for Microbiology, XXXVI Annual Meeting, December 2nd-5th, 2014, La Serena, CHILE.

Garcia-Angulo V. A., Fuentes A. A, Camicia F. and **Calixto A.** Bacterial diet affects neurodegeneration in *Caenorhabditis elegans*. XXII Latin American Society for Microbiology. November, 5th- 8th, 2014, Cartagena de Indias, COLOMBIA.

Caneo M. and **Calixto A.** Gene networks involved in axonal regrowth during diapause in *C. elegans*. Chilean Society for Neuroscience, X Annual Meeting, 1st -4th October, Valdivia, CHILE.

Verdugo L, Palominos MF, Chávez FP, and **Calixto A.** RNAi-mediated diapause formation as a bacterial pathogen avoidance mechanism in *C. elegans*. Chilean Society for Microbiology, XXXVI Annual Meeting, December 2nd-5th, 2014, La Serena, CHILE.

Palominos MF, Garcia VA, and **Calixto A.** Diet modulates behavioral responses in *Caenorhabditis elegans*. Chilean Society for Microbiology, XXXVI Annual Meeting, December 2nd-5th, 2014, La Serena, CHILE.

Fuentes A and Calixto A. Diapause protects neurons from degeneration and promotes axonal regrowth. International *C. elegans* Meeting UCLA 2013

Palominos MF, Verdugo L, Chavez F and **Calixto A.** Pathogen induced diapause formation requires the RNAi machinery. International *C. elegans* Meeting UCLA 2013

Chavez F, Pollak B, Ortiz J, and Calixto A. *Pseudomonas aeruginosa* induces diapause formation in *Caenorhabditis elegans*: A link between antibacterial immunity and RNAi. Annual Meeting Society of Cell Biology. Puerto Varas 2011.

Calixto A, Pollak B, Neira I and Inestrosa N. Lifting the veil of silence: Neuronal functions for lethal genes in *C. elegans*. Annual Meeting of the Society for Cell Biology. Pucon 2010.

Pollak B, Chavez F and Calixto A. Associative Learning in *C. elegans*: Worms know what's good for them. Annual Meeting of the Society for Cell Biology. Pucon 2010.

Pollak B and Calixto A. A World of Wormptions (WormNeuroRNAi 1.0) Annual Meeting of the Society for Cell Biology Pucon 2010.

Pollak B, Neira I, Inestrosa N and Calixto A. Jumping over the silence: Discovering postembryonic neuronal functions for lethal genes in *C. elegans*. 5th Latin American Society for Developmental Biology International Meeting. Santa Cruz 2010.

Neira I, Rojas M, Figueroa G, Inestrosa N and Calixto A. Bacterial polyamines act as a strong attractant in feeding behavior of *C. elegans*. Annual Meeting of the Society for Cell Biology. Pucon 2010.

Calixto A, Green J and Chalfie M. Identification of genes that are synthetic lethal with the alternative splicing factor gene *mec-8* using a genome-wide RNAi screen. International *C. elegans* Meeting UCLA 2007

Calixto A, Zhang S and Chalfie M. MEC-8 regulates the alternative splicing of *mec-2*. International *C. elegans* Meeting UCLA 2003

Jaeggi M, Calixto A, Milstein S, Fraser A, Kamath K, Zipperlen P, Martinez-Campos M, Ahringer J, Hengartner M. RNA interference, a way to check for inhibitors involved in germline cell death. International *C. elegans* Meeting UCLA 2001

Organization of Courses and International Meetings

Course Organization and Teaching

Small Brains Big Ideas Las Cruces, October 2021

Small Brains Big Ideas Las Cruces, April 2019

Small Brains Big Ideas November 2016

Neural Systems and Behavior. Woods Hole Massachusetts July 2014

Small Brains Big Ideas Plus October 2014

Small Brains Big Ideas Plus November 2012

Small Brains Big Ideas Plus November 2010

Meeting Organization

1st *C. elegans* Latin American Meeting, Montevideo, 2017

2nd *C. elegans* Latin American Meeting, Rosario, 2020

3rd *C. elegans* Latin American Meeting, Valparaiso 2023

Administration

Associative grants

Member of the organizing and executive team of the grant “Nodos para la Aceleración de Impacto Territorial de la CTCI”. I will be an active member in the execution and supervision of this grant, which aims at discovering and bridging the gaps in education, scientific development, connectivity with the enterprise and all productive sectors of the Macrozone Valparaiso-Coquimbo.

Coordinator and director of the CYTED Project “Generation of microbial consortia for the treatment of neurodegenerative diseases. This is an ANID-CYTED (Iberoamerican Agency for Scientific Development) joint Project. My role is to direct and coordinate the network, which is formed by investigators of Chile, Argentina and Mexico.

Grant ANID-Apoyo a la Formación de Redes Internacionales.

I direct the Network between CINV and the Max Planck Institute in Dresden, Germany, which includes bilateral training, course organization and the use of foreign equipment.

The organization of the Latin American Network of *C. elegans* researchers.

This organization consists in the permanent support of young and established researchers within the region in terms of resources, training and travels. I have participated in the organization of meetings courses and symposia involving *C. elegans* research since 2010.

Academic

Funding member of the Doctorate in Integrative Genomics of Universidad Mayor.

Member of the academic committee of this, design of course structure and course coordination (2014-2019).

President of the Evaluation committee of the Doctorate in *Integrative Genomics, Universidad Mayor* (2018-2019).

Invited seminars (2018-2021)

Seattle Worm Meeting Talk, University of Washington, Microbiota in the health of the nervous system and the response to stress. October 19th, 2021.

Serie Brain and Body Interactions, Champalimaud Centre for the Unknown, Lisbon Portugal. September 27th, 2021.

New York University Seminar, New York, USA. Bacterial RNAs in interspecies communication and host behavior. December 8th, 2020.

Millennium Institute BNI, Universidad de Chile. Bacterial metabolites and their mechanisms of action in *C. elegans* neurodegeneration. August 10th, 2020.

Institute of Molecular and Cellular Biology, Rosario, Argentina. *Bacterial dietary impact on neuronal repair in C.elegans*. September 13th, 2019.

Cátedra del Futuro, Universidad Mayor. *Neuroproteccion en la comida: Lecciones de un gusano y sus bacterias*. September 5th, 2019.

Centro Interdisciplinario de Neurociencias Seminar. *Bacterial GABA protects neurons from degeneration*. Universidad de Valparaiso. December 7th, 2018.

Department of Genetics Seminar. *RNA language in interspecies communication and transgenerational memory*. School of Medicine, University of Chile. October 5, 2018.

ACCDIS Seminar. Interspecies systems biology reveals bacterial metabolites protecting *C. elegans* neurons School of Medicine, University of Chile. July, 19th, 2018.

Active International Collaborations

- Northwestern University, Chicago USA (Erik Andersen, supported by REDES grant)
- Max Planck Institute (Teymuraz Kurzchalia, supported by REDES grant)
- Instituto de Biología Molecular de Rosario (Diego de Mendoza, supported by REDES grant and CYTED grant)
- Universidad Autónoma de México (Ernesto Perez Rueda, supported by CYTED grant)
- University of Massachusetts at Worcester (Victor Ambros, supported by a Conicyt-USA grant)
- University of Washington, Seattle (Irin Topalidou)

Appearances in the media and Outreach

Puerto de Ideas

Podcast

1. Científicas chilenas lideran importantes investigaciones en un espacio dominado en un 95% por hombres. Entrevista en CNN por conmemoración del Día de la Mujer y la Niña en la Ciencia. 14 de febrero de 2022 <https://cinv.uv.cl/cientificas-chilenas-lideran/>
2. Por un futuro lleno de ciencia. Columna en El Mercurio de Valparaíso 01 de marzo de 2022 <https://cinv.uv.cl/futuro-lleno-de-ciencia/>
3. Día Internacional de la Mujer. Entrevista en Radio Duna. 8 Marzo de 2022 <https://cinv.uv.cl/andrea-calixto-dia-internacional-mujer/>
4. “Los desafíos de la ciencia en el Gobierno de Boric” Reportaje de CNN Chile 16 de marzo de 2022 <https://cinv.uv.cl/desafios-de-la-ciencia/>
5. Investigadores del CINV Se reúnen con Ministro de Ciencias Flavio Salazar 28 de abril de 2022: <https://cinv.uv.cl/autoridades-ministeriales-y-cinv/>
6. CINV Recibió visita de autoridades del Ministerio de Ciencias. 29 de abril de 2022: <https://uv.cl/archivo-noticias-uv/13104>
7. Actividad de actividad en conmemoración por el Día del Patrimonio 2022 en frontis edificio en Barrio Puerto. 29 mayo 2022 | galería de imágenes: <https://cinv.uv.cl/dia-del-patrimonio-2022/>
8. Entrevista: CINV: aportando al desarrollo de la ciencia, la región y su gente 02 de octubre de 2022 <https://cinv.uv.cl/cinv-aportando-al-desarrollo/>.
9. *Entrevista para la revista ya de el Mercurio a propósito del nombramiento de Andrea Calixto para el Wormboard.* <https://cinv.uv.cl/valor-de-la-mirada-andrea-calixto/>. Sept 28th, 2021.
10. Article in the press “Chilean Scientist Andrea Calixto is elected to International Scientific Organization. July, 2nd, 2021.
11. <https://www.elmostrador.cl/cultura/2021/07/02/chilena-fue-elegida-representante-de-america-latina-en-organizacion-cientifica-mundial/>.
12. Radio Interview about the long-lasting effect of hunger and malnutrition in future generations. Radio Meridional. May 27th, 2021. <https://we.tl/t-x0uDfkdDr5>; <https://www.youtube.com/watch?v=80gk80Wr6iE>.
13. Article in the press “The effects of hunger derived from the pandemic could last generations”. El Mostrador. May 19th, 2021. <https://www.elmostrador.cl/cultura/2021/05/19/neurocientifica-advierte-que-el-hambre-de-la-pandemia-afectara-a-generaciones-futuras-de-manera-irreversible/>
14. Article in website Entorno Inteligente. May 19th, 2021. <https://www.entornointeligente.com/neurocientifica-advierte-que-el-hambre-de-la-pandemia->

[afectar-a-generaciones-futuras-de-manera-irreversible/](#)

15. Radio Interview in scientific program “Fresh Air” about the heritability of learned experiences in *C. elegans*. Radio Duna, February 23rd, 2021.
<https://www.youtube.com/watch?v=cKx04cRUwNg>
16. Interview in National Television on the celebration of the International Day of Women and Girls in Science. February 11th, 2021. <https://www.youtube.com/watch?v=YXjGU6VWObg>
17. Festival of Authors-Santiago. Conversations “Brains under lock-down”: The effects of confinement on the nervous system. October 3rd, 2020. <https://pluglatam.live/encuentros/>
18. Festival of Science- Video series organized by the Ministry of Science. What is the curiosity? November 11th-15th, 2020. <https://www.youtube.com/watch?v=QjDdMZKO16M&t=10s>
19. Festival of Science- Video series organized by the Ministry of Science. What is knowledge? November 11th-15th, 2020.
https://www.youtube.com/watch?v=ejkG71K1968&t=1s&ab_channel=CienciaPublica
20. Opinion in press article “Scientists show that intestinal microbiota influences learning and memory”. Newspaper *Las Ultimas Noticias*, October 7th, 2020.
<https://www.lun.com/Pages/NewsDetail.aspx?dt=2020-10%2007&NewsID=458489&BodyID=0&PaginaId=11>
21. Article in the press “Recommended Books, records and movies, by Andrea Calixto, scientist of the month” Newspaper *La Tercera- Que Pasa Magazine*, August 22nd, 2020.
22. Article in the press “Can Sleep prevent diseases caused by the stress of the pandemic?” Newspaper *Las Ultimas Noticias*, July 22nd, 2020.
<http://www.lun.com/Pages/NewsDetail.aspx?dt=2020-07-22&PaginaId=8&bodyid=0>
23. Interview in National Television “Program Conectados”, Are we what we eat? July 26th, 2020. (online international broadcasting).
24. Interview in Argentinian television “On the organization of the Latin American Meeting of *C. elegans* in Rosario”. February 21st, 2020. <https://youtu.be/aV65ndNoRYU>
25. Interview in National Television “On the celebration of the International Day of Women and Girls in Science”. February 12th, 2020. <https://youtu.be/CdOfRCAQ3ug>
26. Article in the press “Scientists investigate the neuronal regeneration using a worm”. Newspaper *Hoy por Hoy*, January 7th, 2019. <http://www.hoyxhoy.cl/2019/01/07/full/cuerpo-principal/6/>
27. Radio Interview in scientific program “Hibernation induces the regeneration of broken neurons”. January 11th, 2019. *Radio Pauta*. <https://youtu.be/bHSOPn5Crel>
28. Tertulias Porteñas “Are we our food?” Centex Center in Valparaíso. April 2nd, 2018.
<https://m.elmostrador.cl/cultura/2018/04/02/ciclo-tertulias-portenas-somos-lo-que-comemos-en-centex-valparaiso/>

29. Article in the press “First Tertulia Porteña of 2018. Newspaper *El Mercurio de Valparaíso*, April 19th, 2018. <https://www.mercuriovalpo.cl/impres/2018/04/19/full/cuerpo-principal/27/>
30. Opinion in press article “In over a century only 17 women have been awarded a Nobel in science” Newspaper *La Tercera*, October 9th, 2017. <https://www.latercera.com/noticia/mas-siglo-solo-17-mujeres-ganado-nobel-ciencias/>
31. Article in the press “Scientist discovers how worms inherit mechanisms of survival to their progenies”. Newspaper *Las Ultimas Noticias*, December 26th, 2017. <http://www.lun.com/Pages/NewsDetail.aspx?dt=2017-12-26&PaginaId=32&bodyid=0>