



# 2<sup>nd</sup> International Virtual Cactaceae Symposium

## PROGRAM

DAY 1 - AUGUST 25  
Evolution, systematics and genomics

DAY 2 - AUGUST 26  
Ecology, conservation and biodiversity

DAY 3 - AUGUST 27  
Physiology, transcriptomics, development and  
morphology



The Hernandez Lab



iCAN

# Welcome to the 2nd IVCS!

The cactus family holds a special place in the hearts of many of us. Its extraordinary diversity has inspired countless collectors worldwide and continues to fascinate scientists with its unique structures, remarkable adaptations, intricate ecological relationships, and rich evolutionary history.

Because cacti are distributed across the American continent, many of the botanists and researchers who study them are Spanish or Portuguese speakers. Our community is truly international—just like this conference. This year, we are thrilled to welcome participants from 14 different countries! Although English is the main language of IVCS, we also embrace Spanish and Portuguese. We kindly ask for your patience if a talk is not in your native language. And to our presenters—please help make this a truly inclusive event: speak slowly and clearly, create slides that are self-explanatory, and avoid heavy jargon or local expressions.

The 2nd edition of IVCS promises to be exciting, enriching, and full of connections. Our program includes an exceptional line-up of plenary speakers and presentations spanning genomics, ecology, reproduction, and more. Conservation—and especially the urgent challenges of climate change—will be a central focus this year. We hope this gathering strengthens old friendships, sparks new ones, and inspires collaborations that cross borders and benefit all. Let's remember: cacti don't grow only in wealthy countries, and our efforts should reflect that—directing resources where they are most needed.

Thank you for being part of this global community. Our collective knowledge and dedication to cacti can inspire a new generation to explore, protect, and celebrate these extraordinary plants



Tania Hernández-Hernández (Tania Sanders)  
**DESERT BOTANICAL GARDEN**  
**iCAN**

Graphic design: Eddy Mendoza-Galindo



## GENERAL INFORMATION

Register to attend sessions and conferences:

**[ican-cactaceae.org/symposium](http://ican-cactaceae.org/symposium)**

Or scan the code:



Time is given for Arizona US (GTM -7)

Time difference with other regions:

Ciudad de México, México + 1h

Lima, Perú + 2h

Santiago, Chile + 3h

São Paulo, Brasil+ 4h

Buenos Aires, Argentina + 4h

London, England + 8h

Paris, France + 9h

Abu Dhabi, UAE + 11h





# DAY 1

## EVOLUTION, SYSTEMATICS AND GENOMICS

Time	Activity	Duration	Title	Speaker
08:30		10 min	Welcoming words	<b>Tania Hernandez</b> (USA-MEXICO)
08:40	Plenary Talk 1	45 min	<i>Adaptive Genomics of Cacti in a Changing World</i>	<b>Fernando Faria Franco</b> (BRAZIL)
09:25	5 min BREAK			
09:30	Talk 1	20 min	<i>The growth abnormalities in <u>Parodia scopa f. monstrosa</u> (f. <u>inermis</u>) are caused by a mutation of the pleiotropic DORNENLOS (DNL) gene involved in both thorn/areole and flower organ development</i>	<b>Andreas P. Mordhorst</b> (GERMANY)
09:50	Talk 2	20 min	<i>Phylogenetic Advances in Brazilian Cactaceae</i>	<b>Evandro M. Moraes</b> (BRAZIL)
10:10	Talk 3	20 min	<i>High-quality genome of cactus pear (<u>Opuntia cochenillifera</u>) provides insight into the evolution of crassulacean acid metabolism (CAM) within the Cactaceae</i>	<b>Johnathan S. Lomas</b> (USA)
10:30	Talk 4	20 min	<i>The Opuntiods, an underappreciated and fascinating radiation of cacti</i>	<b>Lucas Majure</b> (USA)
10:50	15 min BREAK			

# DAY 1

## EVOLUTION, SYSTEMATICS AND GENOMICS

Time	Activity	Duration	Title	Speaker
11:10	Talk 5 (short)	5 min	<i>Post-embryonic cell proliferation in the primary root apical meristem of <u>Mammillaria</u> species</i>	Juan Manuel Palacios Corona (MEXICO)
11:15	Talk 6 (short)	5 min	<i>Building Genomic Resources for the Tribe Cacteeae: The Nuclear Genome of <u>Mammillaria san-angelensis</u></i>	Delil A. Chincoya (MEXICO)
11:20	Talk 7 (short)	5 min	<i>Mutants that reveal secrets</i>	Diego Castro Delgado (MEXICO)
11:25	Talk 8 (short)	5 min	<i>Cactaceae at Caryophyllales.org: current status</i>	Nadja Korotkova (GERMANY)
11:30	5 min BREAK			
11:40	Talk 9	20 min	<i>Isolation by distance and admixture uncovers evolutionary patterns in <u>Leucostele cacti</u> across desert and Mediterranean Chile</i>	Jose A Garcia-Beltran (CHILE)
12:00	Talk 10	20 min	<i>From Andes to South American Dry Diagonal: Phylogenomics and trait evolution elucidate the radiation of the tribe <u>Cereeae</u></i>	Monique Romeiro Brito (BRAZIL)
12:20	Talk 11	20 min	<i>Evaluation of genetic stability of <u>Cereus hildmannianus</u> K. Schum callus using ISSR molecular markers</i>	Felipe F dos Santos Dias (BRAZIL)
12:40	10 min BREAK			

AUGUST 25

# DAY 1 EVOLUTION, SYSTEMATICS AND GENOMICS

Time	Activity	Duration	Title	Speaker
12:50	Talk 12	20 min	<i>Elucidating Flower Betalains in Cactaceae</i>	Jonatan A Castillo Herrera (MEXICO)
13:10	Talk 13	20 min	<i>The decline of our desert icon: Genomic vulnerability of saguaro cactus (<u>Carnegieia gigantea</u>) under climate change</i>	Eddy Mendoza- Galindo (MEXICO-USA)
13:30	1:30 h BREAK			
15:00	Plenary Talk 2	45min	<i>Why Cactaceae? And What's Next?</i>	Peter Breslin (USA)
15:45	DISCUSSION SESSION: EVOLUTION, SYSTEMATICS, GENOMICS			

# DAY 2

## ECOLOGY, CONSERVATION AND BIODIVERSITY

Time	Activity	Duration	Title	Speaker
08:30	Plenary Talk 3	45 min	<i>Management and domestication of cacti and other succulents</i>	Alejandro Casas (MEXICO)
09:15	5 min BREAK			
09:20	Talk 1	15 min	<i>The benefits of a nurse plant, shade cloth, and nurse rock on <u>Carnegiea gigantea</u> (saguaro) growth and survival shift along a stress gradient</i>	Helen Rowe (USA)
09:35	Talk 2	15 min	<i>Climate Change-Resilient Conservation of Cacti</i>	Michiel D. Pillet (USA)
09:50	Talk 3	15 min	<i>Effect of crowding on the population dynamics of the endangered globose cactus <u>Sclerocactus johnsonii</u> var. <u>acunensis</u></i>	Ivan Romero-Garcia (MEXICO)
10:05	Talk 4	15 min	<i>Diagnosis of the emblematic giants (<u>Pachycereus pringlei</u>) in BCS</i>	Diana Medina Hernandez (MEXICO)
10:20	Talk 5	15 min	<i>Geographic patterns of fog-driven isotopic niches and root adaptations in cacti across the arid-to-hyperarid gradients of the Atacama Desert</i>	Sandy Toledo (CHILE)
10:35	15 min BREAK			



# DAY 2

## ECOLOGY, CONSERVATION AND BIODIVERSITY

Time	Activity	Duration	Title	Speaker
10:50	Talk 6 (short)	5 min	<i>Digging into the fire: microbial growth response in <u>Carnegiea gigantea</u> and associated nurse plants</i>	Danika Thiele (USA)
10:55	Talk 7 (short)	5 min	<i>Fenología de la fructificación, dispersión y banco de semillas del pitayo <u>Stenocereus thurberi</u> (Engelm.) Buxb. en el Desierto Sonorense en México</i>	Sonia Marquez Guerra (MEXICO)
11:00	Talk 8 (short)	5 min	<i>Dispersal at what cost? Frugivory-mediated dispersal by a multitaxa assemblage reduces germination success but increases spatial range in <u>Leucostele chiloensis</u> (Cactaceae)</i>	Sebastian Cordero (CHILE)
11:05	Talk 9 (short)	5 min	<i>Investigating the causal agent of <u>Opuntia</u> Stunting Disease (OSD)</i>	Elijah Holschbach (USA)
11:10	Talk 10 (short)	5 min	<i>Diversity of phytopathogenic fungi associated with Cactaceae in a Tropical Deciduous Forest of central Mexico.</i>	Ximena Gaytan Mosqueda (MEXICO)
11:15	Talk 11 (short)	5 min	<i>Variation in morphological and phenological traits of Cactaceae in a Tropical Deciduous Forest in Central Mexico.</i>	Diana Luz Lara Elizarraraz (MEXICO)
11:20	Talk 12 (short)	5 min	<i><u>Mammillaria haageana</u> (Cactaceae) species complex share a core bacterial microbiome in contrasting environments</i>	Giovani Joel Colchado Lopez (MEXICO)



# DAY 2

## ECOLOGY, CONSERVATION AND BIODIVERSITY

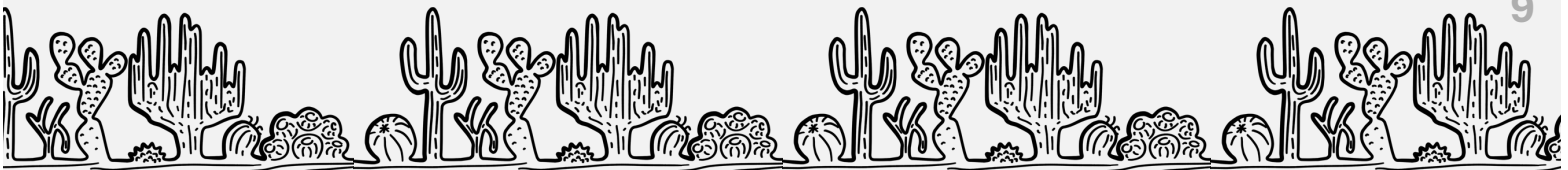
Time	Activity	Duration	Title	Speaker
11:25	Talk 13 (short)	5 min	<i>Population structure and distribution of the genus Mila (Cactaceae) as a contribution to its conservation.</i>	<b>Alejandra Huaman-Pinedo</b> (PERU)
11:30	Talk 14 (short)	5 min	<i>Extraction and Characterization of Seed Oil from Yellow, Orange, and Red Cereus sp. Fruits</i>	<b>Everaldo dos Santos</b> (BRAZIL)
11:35	Talk 15 (short)	5 min	<i>Total Phenolic Content and Antioxidant Activity in the Peel of Cereus sp. Fruits with Yellow, Orange, and Red Colors</i>	<b>Maria Eduarda da Silva Vanderlei</b> (BRAZIL)
11:40	Talk 16 (short)	5 min	<i>Antioxidant Potential, Phenolic Content, and Mineral Composition of the Pulp of Yellow, Orange, and Red Cereus sp. Fruits</i>	<b>Bianca Silvino Martines Batista</b> (BRAZIL)
11:45	Talk 17 (short)	5 min	<i>Influence of microwaved nopal cactus (Opuntia ficus-indica) mucilage on probiotic yogurt</i>	<b>Raquel Gutierrez Gomes</b> (BRAZIL)
10:50	10 min BREAK			



# DAY 2

## ECOLOGY, CONSERVATION AND BIODIVERSITY

Time	Activity	Duration	Title	Speaker
12:00	Talk 18	15 min	<i>Temperature Change Variation in Biotic Communities of the Southwestern US and northern Mexico, 1950-2020</i>	<b>Theresa Foley</b> (USA)
12:15	Talk 19	15 min	<i>Integrating life-history and trait-based approaches to explore functional diversity in Cactaceae: preliminary findings</i>	<b>Graciela Jimenez-Guzman</b> (MEXICO)
12:30	Talk 20	15 min	<i>Mass mortality of saguaros (<u>Carnegiea gigantea</u>) following a windstorm</i>	<b>Don E. Swann</b> (USA)
12:45	Talk 21	15 min	<i>Morphological characterization of two native varieties of prickly pear (<u>Opuntia ficus-indica</u>), in Yamparaez municipality, Chuquisaca, Bolivia</i>	<b>Martha Serrano Pacheco</b> (BOLIVIA)
13:00	Talk 22	15 min	<i>Cactus Ecology in Argentina: What We Know and Where We Are (or Should Be) Headed</i>	<b>Diego E. Gurvich</b> (ARGENTINA)
13:15	<b>1 h 15 min BREAK</b>			
02:30	Talk 23	15 min	<i>Leveraging the molecular basis of self-incompatibility across cacti for studies of ecology and conservation</i>	<b>Boris Igic</b> (USA)
14:45	Talk 24	15 min	<i>Analysis of the floral diversity of Peruvian cacti</i>	<b>Jorge Ernesto Romero Banda</b> (PERU)
15:00	Talk 25	15 min	<i>New Kew Biodiversity Areas (KBAs) for Peru triggered by Cactaceae</i>	<b>Susy J. Castillo</b> (PERU)
15:15	<b>10 min BREAK</b>			
15:25	<b>Plenary Talk 4</b>	40 min	<i>Planeación de la Conservación de <u>Copiapoa</u>, logros y lecciones aprendidas</i>	<b>Barbara Goettsch</b> (UK)
16:05	<b>DISCUSSION SESSION: ECOLOGY, CONSERVATION, BIODIVERSITY</b>			



# DAY 3

## PHYSIOLOGY, TRANSCRIPTOMICS, DEVELOPMENT AND MORPHOLOGY

Time	Activity	Duration	Title	Speaker
08:30	Plenary Talk 5	45 min	<i>Toward a Global Strategy for the Ex Situ Conservation of Cactaceae in the Face of Climate Change</i>	<b>Tania Hernandez</b> (USA-MEXICO)
09:15	5 min BREAK			
09:20	Talk 1	20 min	<i>In Silico Exploration of Antimicrobial Properties in the Neotropical Plant Mandacaru (Cereus)</i>	<b>Joao Alfredo Teodoro</b> (BRAZIL)
09:40	Talk 2	20 min	<i>In silico Approach for the Prospecting of Fatty Acid-Binding Proteins in <u>Cereus jamacaru</u> DC. (Cereeae)</i>	<b>Maria Izadora Oliveira Cardoso</b> (BRAZIL)
10:00	Talk 3	20 min	<i>Shoot Apical Meristem (SAM) morphoanatomy of <u>Mammillaria san-angelensis</u> and its significance for Developmental Biology</i>	<b>Brenda Anabel Lopez Ruiz</b> (MEXICO)
10:20	Talk 4	20 min	<i>From the Outside to the Inside: Morphoanatomy in the Understanding of Mutations in <u>Mammillaria bocasana</u></i>	<b>Valeria Romero Gomez</b> (MEXICO)
10:40	Talk 5	20 min	<i>The advancements of the analysis of determinate growth of the Cactaceae primary root</i>	<b>Svetlana Shishkova</b> (MEXICO)
11:00	Talk 6	20 min	<i>The Comparative Anatomy of Extrafloral Nectaries in the Cactus Family (Cactaceae)</i>	<b>Jackson Burkholder</b> (USA)
11:25	1 h BREAK			

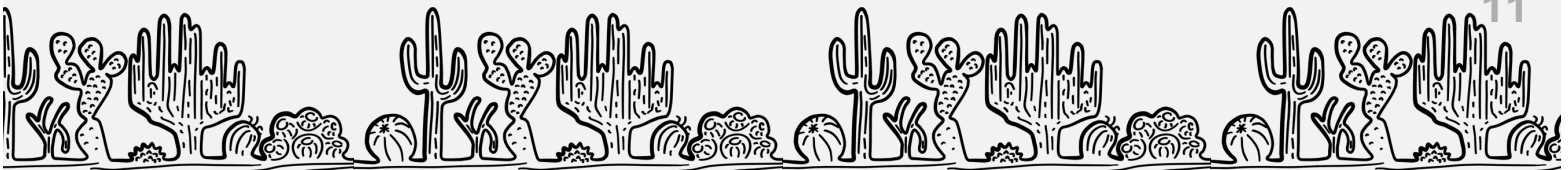




# DAY 3

## PHYSIOLOGY, TRANSCRIPTOMICS, DEVELOPMENT AND MORPHOLOGY

Time	Activity	Duration	Title	Speaker
12:25	Talk 7 (short)	5 min	<i>Exploring the biopesticide potential of <u>Cereus</u> spp. proteins using bioinformatics</i>	<b>Eduardo Toral</b> (BRAZIL)
12:30	Talk 8 (short)	5 min	<i>Fertilization impacts on cactus pear (<u>Opuntia</u> spp.) production under semi-arid land conditions</i>	<b>Dhurba Neupane</b> (USA)
12:35	Talk 9 (short)	5 min	<i>Cladode structure of <u>Cereus hildmannianus</u> K. <u>Schumann</u> (Cactaceae): analysis of morphotypes and somaclones</i>	<b>Sanny Damazio Domingues</b> (BRAZIL)
12:40	Talk 10 (short)	5 min	<i>Investigation of lignin content as an indicator of genetic diversity in somaclones of <u>Cereus peruvianus</u> (L.) Mill</i>	<b>Silvana Alves Rosa</b> (BRAZIL)
12:45	Talk 11 (short)	5 min	<i>Analysis of the activation of cell proliferation in the apical meristem of the primary root of <u>Rhipsalis epiphytic cacti</u></i>	<b>Perla E Calderon Delgado</b> (MEXICO)
12:50	Talk 12 (short)	5 min	<i>Growth and survival of columnar cacti seedlings under drought stress</i>	<b>Lourdes Enriquez Clerici</b> (MEXICO)
12:55	Talk 13 (short)	5 min	<i>Higher temperatures and lower osmotic potentials combined decrease germination and kill seeds of <u>Epiphyllum phyllanthus</u> (L.) Haw. <u>subsp. phyllanthus</u> (Cactaceae)</i>	<b>Renan Marcelo de Souza Palma</b> (BRAZIL)
13:00	Talk 14 (short)	5 min	<i>Floral Morphology of <u>Selenicereus setaceus</u> (Cactaceae): Adaptations to the Sphingophilous Syndrome</i>	<b>Paulo de Salles Penteadó Sampaio</b> (BRAZIL)



# DAY 3

## PHYSIOLOGY, TRANSCRIPTOMICS, DEVELOPMENT AND MORPHOLOGY

Time	Activity	Duration	Title	Speaker
13:05	Talk 15 (short)	5 min	<i>Anatomy of the gynoecium and floral nectary of the scandent/epiphytic cactus <i>Selenicereus setaceus</i> (Cactaceae)</i>	<b>Paulo de Salles Penteado Sampaio</b> (BRAZIL)
13:10	15 min BREAK			
13:25	Plenary Talk 6	30 min	<i>From taxonomic uncertainty to the drivers of speciation and extinction of endemic cacti along the Atacama–Mediterranean arid gradient</i>	<b>Pablo Guerrero</b> (CHILE)
14:45	Plenary Talk 7	30 min	<i>Succulents in distress: prickly wonders, precarious future</i>	<b>Maria del Carmen Mandujano</b> (MEXICO)
15:20	CONCLUDING REMARKS AND DISCUSSION SESSION			
16:00	30 min BREAK			

### CELEBRATE!!

#### BEST STUDENT PRESENTATION AWARD

Bring your preferred beverage and join the zoom. Activities will include:

- 16:30
- IVCS cocktail/mocktail toast (bring your cactus-inspired creation and explain recipe to everybody)
  - Networking and random breakrooms
  - Breakrooms with plenary speakers

