



Scientific Committee on Antarctic Research

National Report Mexico

Jorge Cortés Ramos

CONACYT-CICESE Unidad La Paz



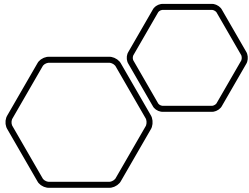
Summary

- November 2021: Designation as National Representatives for Mexico
 - Elva Escobar, Universidad Nacional Autónoma de México
 - Jorge Cortés Ramos, CONACYT-CICESE Unidad La Paz
- Directory of Principal Mexican Investigators on Antarctic Studies.
- Dissemination of SCAGI documents and guidelines, Report 41.
- First contact with the Mexican Representative of SCAR and president of the Mexican Antarctic Studies Agency.
- No documentation about Mexican researches where new names or new toponymy of Antarctica were done.

Papers published since 2020

- Azziz, G., Giménez, M., Romero, H., Valdespino-Castillo, P. M., Falcón, L. I., Ruberto, L. A., ... & Batista, S. (2019). Detection of presumed genes encoding beta-lactamases by sequence based screening of metagenomes derived from Antarctic microbial mats. *Frontiers of Environmental Science & Engineering*, 13(3), 1-12. DOI: <https://doi.org/10.1007/s11783-019-1128-1>.
- Alcántara-Hernández, R. J., Falcón, L. I., Tas, N., Valdespino-Castillo, P. M., Batista, S., Merino-Ibarra, M., & Campo, J. E. (2021). Antarctic Bacteria in Microbial Mats From King George Island, Maritime Antarctica. In *Extreme Environments* (pp. 171-183). CRC Press.
- Antelo, V., Giménez, M., Azziz, G., Valdespino-Castillo, P., Falcón, L. I., Ruberto, L. A. M., Mac Cormack, W. P., Mazel, D., & Batista, S. (2021). Metagenomic strategies identify diverse integron-integrase and antibiotic resistance genes in the Antarctic environment. *MicrobiologyOpen*, 10, e1219. <https://doi.org/10.1002/mbo3.1219>.
- Lima, L. S., Pezzi, L. P., Mata, M. M., Santini, M. F., Carvalho, J. T., Sutil, U. A., ... & Vega, X. A. (2022). Glacial meltwater input to the ocean around the Antarctic Peninsula: forcings and consequences. *Anais da Academia Brasileira de Ciências*, 94. DOI: <https://doi.org/10.1590/0001-3765202220210811>.





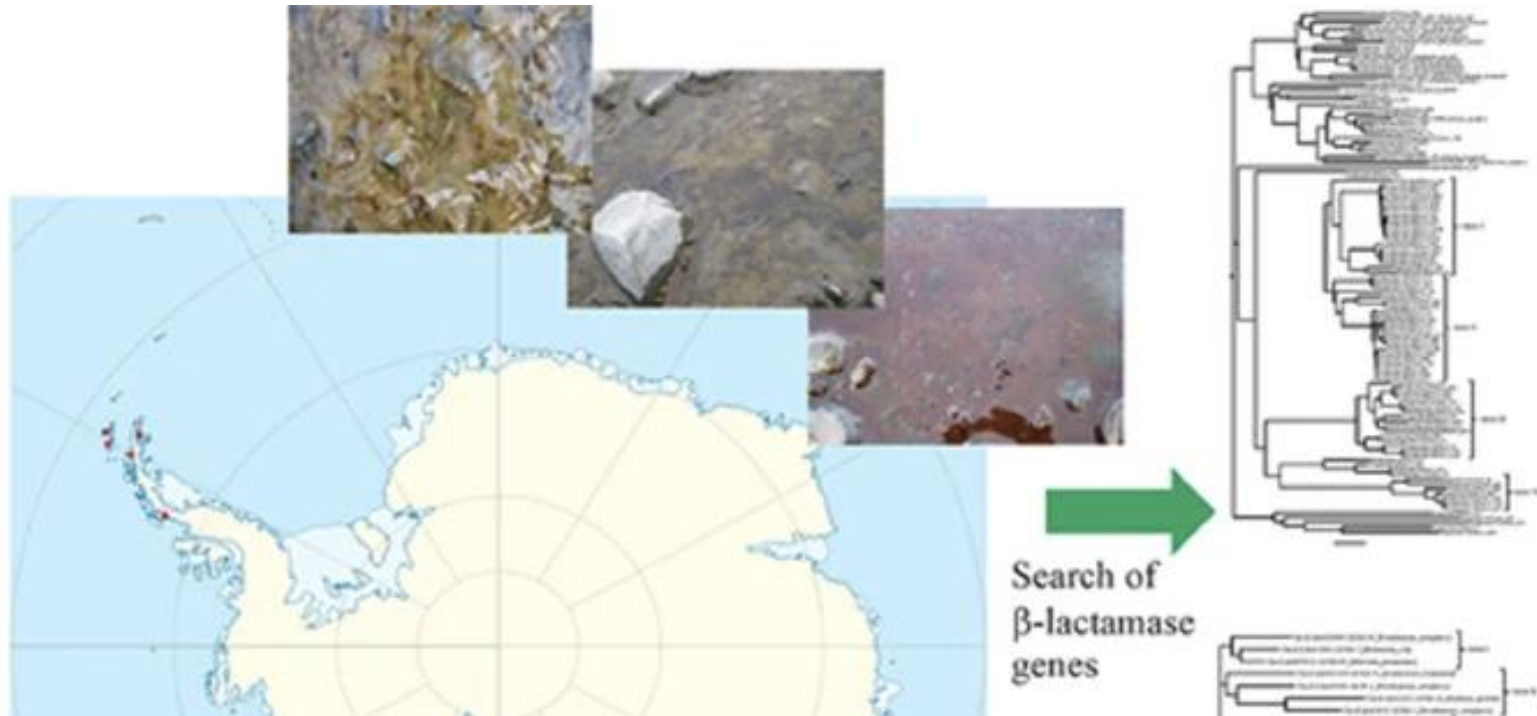
Detection of presumed genes encoding beta-lactamases by sequence based screening of metagenomes derived from Antarctic microbial mats.

- Sampling microbial mats from different biogeographic regions of maritime and continental Antarctica. Genes encoding beta-lactamases.

<https://doi.org/10.1007/s11783-019-1128-1>

Table 1 Geographic location of sampling sites

Sample	Geographic reference	Latitude	Longitude
Sample 1	King George Island (Fildes Peninsula)	62°09'31" S	58°56'31" W
Sample 2	King George Island (Fildes Peninsula)	62°09'59" S	58°58'33" W
Sample 3	King George Island (Fildes Peninsula)	62°12'14" S	58°57'16" W
Sample 4	King George Island (Fildes Peninsula)	62°10'00" S	58°58'34" W
Sample 5	King George Island (Potter Peninsula)	62°14'35" S	58°40'39" W
Sample 6	King George Island (Potter Peninsula)	62°14'34" S	58°40'26" W
Sample 7	Antarctic Peninsula (Trinity Peninsula)	63°28'13" S	57°12'30" W
Sample 8	Antarctic Peninsula (Danco Coast)	64°09'22" S	60°57'30" W
Sample 9	Antarctic Peninsula (Fallieres Coast)	68°07'45" S	67°06'20" W
Sample 10	McMurdo Dry Valleys	78°01'24" S	163°55'03" E
Sample 11	McMurdo Dry Valleys	78°01'23" S	163°54'56" E
Sample 12	McMurdo Dry Valleys	78°01'23" S	163°54'07" E
Sample 13	McMurdo Dry Valleys	78°01'30" S	164°06'02" E
Sample 14	McMurdo Dry Valleys	77°39'40" S	163°05'31" E



- The bacterial diversity in microbial mats from Fildes Peninsula in Maritime Antarctica and their genetic potential for nitrogen acquisition has been explored.



Chapter

Antarctic Bacteria in Microbial Mats From King George Island, Maritime Antarctica

By Rocío J. Alcántara-Hernández, Luisa I. Falcón, Neslihan Tas, Patricia M. Valdespino-Castillo, Silvia Batista, Martin Merino-Ibarra, Julio E. Campo

Book [Extreme Environments](#)

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eBook ISBN	9780429343452

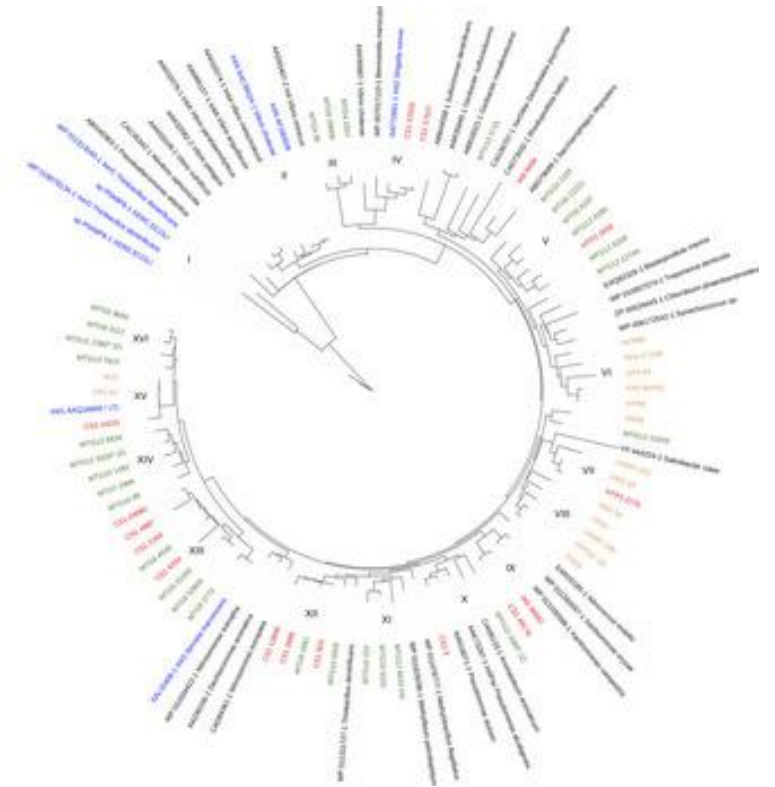
Metagenomic strategies identify diverse integron-integrase and antibiotic resistance genes in the Antarctic environment

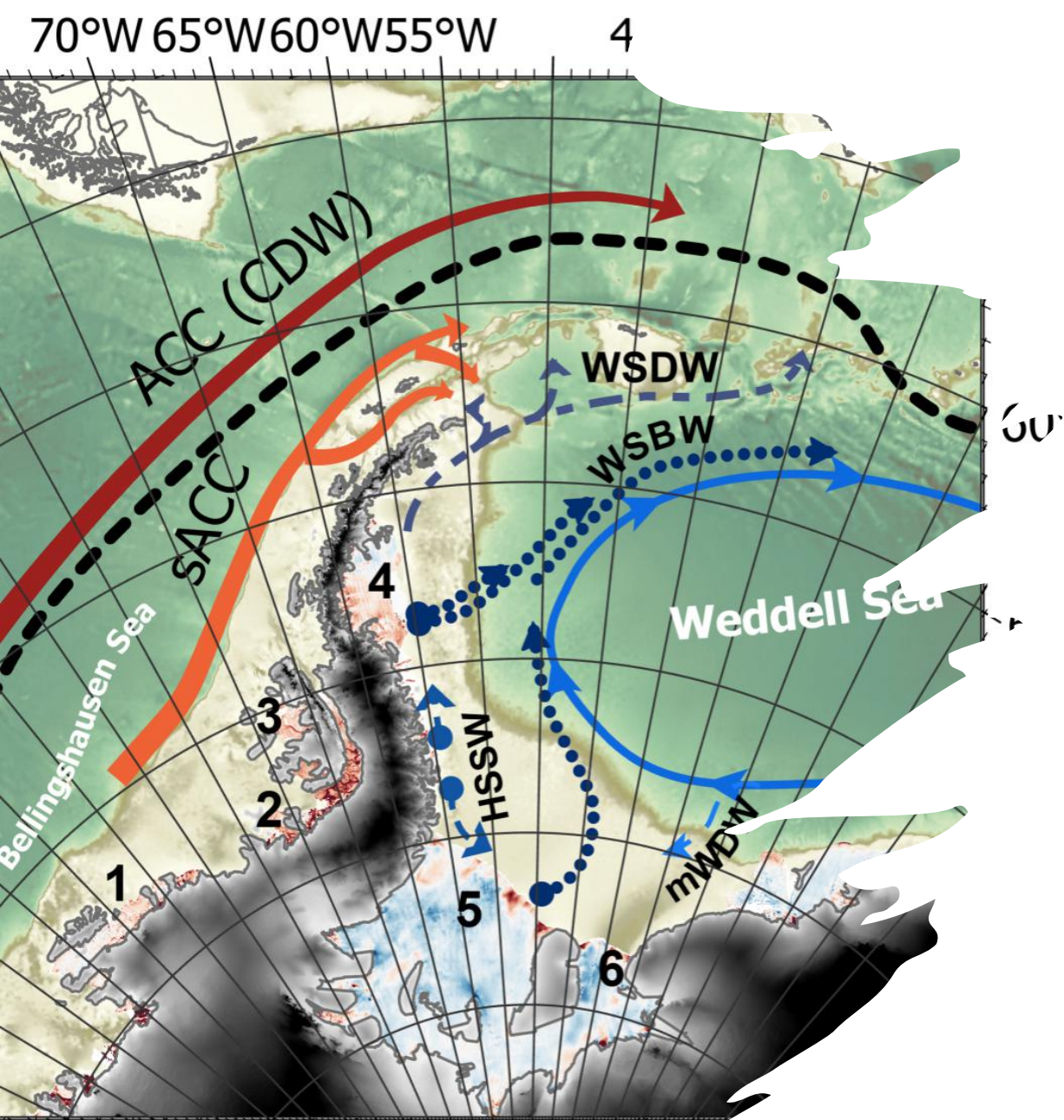
- The objective of this study is to identify and analyze integrons and antibiotic resistance genes (ARGs) in samples collected from diverse sites in terrestrial Antarctica. The metagenomic analysis allowed us to identify novel predicted intl integrases and gene cassettes (GCs), which mostly encode unknown functions.

TABLE 2 Geographic location of sampling sites used for NGS metagenomics analysis

Sample	Geographic reference and type of sample	Latitude	Longitude	Name of the contig_XXX
Drake(1)	King George Island (Fildes Peninsula, microbial mat)	62°09'30" S	58°56'31" W	MTG1_
Espejo(2)	King George Island (Fildes Peninsula, microbial mat)	62°09'59" S	58°58'33" W	MTG2_
HTP(3)	King George Island (Halfthree point, microbial mat)	62°12'14" S	58°57'16" W	MTG3_
Pista(4)	King George Island (next to Chilean Airport, microbial mat)	62° 10'0" S	58° 58'34" W	MTG4_
Carlini I(5)	King George Island (microbial mat)	62° 14'35" S	58° 40'39" W	MTG5_
Carlini II(6)	King George Island (microbial mat)	62° 14'34" S	58° 40'26" W	MTG6_
Esperanza(7)	Antarctic Peninsula (Trinity Peninsula, microbial mat)	63°28'13" S	57°12'3" W	MTG7_
Primavera(8)	Antarctic Peninsula (microbial mat)	64°09'22" S	60°57'30" W	MTG8_
San Martín(9)	Antarctic Peninsula (Fallieres Coast, microbial mat)	68°07'45" S	67°06'2" W	MTG9_
B012-2015-14(10)	McMurdo Dry Valleys (microbial mat)	78°01'24" S	163°55'03" E	MTG10_
B012-2015-15(11)	McMurdo Dry Valleys (microbial mat)	78°01'23" S	163°54'56" E	MTG11_
B012-2015-16(12)	McMurdo Dry Valleys (microbial mat)	78°01'23" S	163°54'07" E	MTG12_
B012-2015-16 Mid Good(13)	McMurdo Dry Valleys (microbial mat)	78°01'30" S	164°06'02" E	MTG13_
B012-2015-18(14)	McMurdo Dry Valleys (microbial mat)	77°39'40" S	163°05'31" E	MTG14_
CS1(15)	King George Island (septic chamber next to BCAA, soil)	62°11'35" S	58°54'19" W	CS1_
HTP2(16)	King George Island (Halfthree-point, soil)	62° 13' 09" S	58° 57' 09" W	HTP2_
IA6(17)	King George Island (Ardley Island, soil)	62° 12' 03" S	58° 55' 04" W	IA6_

Tree scale: 1





Glacial meltwater input to the ocean around the Antarctic Peninsula: forcings and consequences

- Review of the influence of the glacial freshwater input on the Antarctic Peninsula adjacent ocean.
- Show the role of each hydrological cycle processes and their contributions to the regional oceanography and potentially to climate

Future activities

- Followed in-progress Mexican research with the potential to produce new geographic material about the Antarctic.
- Bring the Mexican colleagues closer to the SCAGI guidelines for managing and homogenizing geographic information and its potential use in the Gazetteer of Antarctica.
- Strengthen the communication with Mexican delegates of the SCAR and other colleagues working on topics related to Antarctica to provide support about the SCAGI guidelines for naming places.
- Compile most of the printed or digital material (maps, infographics, scientific articles, notes, technical reports) produced by Mexican researchers on geographic information of Antarctica.

