

Curriculum Vitae
Alexis Rojas-Briceño
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Personal website: <https://geobiology.co>

EDUCATION

- 2018-present Postdoctoral researcher
Department of Physics, Umeå University
Integrated Science Lab
<http://icelab.se/activities/research/>
Applied Network Science
Supervisor: Martin Rosvall
- 2017 Ph.D. Geology, minor in Geography, University of Florida
Dissertation: Paleobiological Implications of the Post-Paleozoic Fossil Record of the Lingulide Brachiopods and Associated Faunas.
Supervisor: Michal Kowalewski
<https://www.floridamuseum.ufl.edu/kowalewski-lab/>
- 2016 Graduate Certificate in Digital Geography and GIS at University of Florida
- 2008 B.S. Geology, Universidad Nacional de Colombia
Bachelor Thesis: Upper Carboniferous Brachiopods from the Rio Nevado, Colombia: Paleobiogeographic and Biostratigraphic Implications. (in Spanish)
Supervisor: Dr. Pedro Patarroyo.
- 2004 B.S. Biology, Universidad Pedagógica Nacional de Colombia
Bachelor Thesis: Alternative Conceptions of Species among Undergraduate Biology Students in the UPN-Diversity Component (in Spanish)
Supervisor: Professor Arcelio Velazco

PAST POSITIONS

- 2012- 2017 Graduate student, Department of Geological Sciences, University of Florida.
Research assistant, Division of Invertebrate Paleontology, Florida Museum of Natural History. <https://www.floridamuseum.ufl.edu/museum-voices/alexis-rojas/>
- 2010-2012 Intern, Smithsonian Tropical Research Institute. Project: Panama Geology Project
http://stri-sites.si.edu/sites/jaramillo/lab_members/alexis_rojas.html
- 2009 Intern, Smithsonian Tropical Research Institute. Project: Cretaceous Model of Northern South America
- 2008-2009 *Museum Exhibit Consultation*, MEF-Centro Comercial Las Américas-Ingeominas (Servicio Geológico Colombiano), Bogotá. *Giants of Patagonia Dinosaur Exhibition Museum of Paleontology Egidio Feruglio*. October 2008 – January 2009.

TEACHING EXPERIENCE

Lab. Instructor, Department of Geological Sciences, University of Florida. Courses:

Spring 2015 GLY 3603C-Paleontology (sections 0013 and 042B).

Fall 2015 GLY 3105C Evolution of Earth and Life in North America (section 6004).

Spring 2016 GLY 2100C Historical Geology (section 001F).

Spring 2017 GLY 2100C Historical Geology (section 19E8).

Teaching Assistant, Department of Geological Sciences, University of Florida. Courses:

Fall 2014 GLY 2030C Environmental and Engineering Geology (section 01EB).

Grader/Helper, Department of Geological Sciences, University of Florida. Online Courses:

Spring 2014 GLY 1880 Earthquakes, Volcanoes, and other Hazards (section 001B).

Fall 2016 GLY 1102 Age of Dinosaurs (section 0583).

Lecturer, Departamento de Biología, Universidad Pedagógica Nacional. Course:

2007-2 Diversity I (formerly Morphophysiology and Animal Systematic).

Primary School Assistant instructor, 1998, Second grade, Institución Educativa Liceo Conviva, Soacha. <http://www.liceoconviba.edu.co/>

HONORS AND AWARDS

- 2017 Nichol Paleontology Award. Department of Geological Sciences, University of Florida.
- 2016 Grant recipient of the Florida Museum of Natural History Travel Award (USD 900).
- 2014 Grant recipient of the Florida Paleontological Society's Gary S. Morgan Student Research Award. (USD 1000).
- 2013 Grant recipient of R. Jerry Britt, Jr. Paleobiology Scholarship, Florida Museum of Natural History (USD 500).
- 2011 Grant recipient for studying collections, Drs. Emily H. and Harold E. Vokes. Grants-in-Aid for Invertebrate Paleontology Collection-based Research (USD 500).
- 2010 Grant recipient for studying collections, Charles Schuchert and Carl O. Dunbar Grants-in-Aid Program for Invertebrate Paleontological Research, Yale University. (USD 1500)
<http://peabody.yale.edu/collections/invertebrate-paleontology/grants-aid-program>
- 2008 Grant recipient of the Asociación Colombiana de Geólogos y Geofísicos del Petróleo and Corporación ARES -ACGGP-ARES- (COP 2.000.000). <http://www.cgares.org>
- 2007 Grant recipient for the project "Ampliación y mantenimiento de las las Colecciones Paleontológicas del Departamento de Geociencias", Universidad Nacional de Colombia. UGP 129 (COP 491.810).
- 2007 Undergraduate Assistant. Activities: Study Decapod Collections and assistance in Paleontology courses, Departamento de Geociencias, Universidad Nacional de Colombia. Resolution 219 (COP 867.400).
- 2006 Undergraduate Assistant. Activities: Study Brachiopod Collections and assistance in Paleontology courses, Departamento de Geociencias, Universidad Nacional de Colombia. Resolution 1445 (COP 816.000).

COURSES AND WORKSHOP PARTICIPATION

- 2018 *Short Course: Stratigraphic Forward Modeling*. International Association for Mathematical Geosciences. 19th Annual Conference, 2-3 September, Olomouc,

- Czech Republic. <http://www.iamg2018.org/index.php/short-course-8-stratigraphic-forward-modeling/>
- 2017 Icelab Research Camp 2017 at Umeå University, Sweden. September 2017. A communication and creativity camp for young scientists. Invited to attend. <http://www.kbc.umu.se/english/courses/icelab-camp/>
- 2017 *TBL101 Workshop on Team-Based Learning*. Dr. Rachel Walters, UF. April 2017
- 2016 *Database Management for Ecologists Workshop*. The Wildlife Graduate Student Association, University of Florida. March 2016.
- 2014 *Stratigraphic Paleobiology Field Course*. Tobacco Root Mountains. Montana. Mark Patzkowsky and Steven Holland. The Paleontological Society. 7-20 July 2014. <http://strata.uga.edu/fieldcourse/>

TECHNICAL SKILLS

Statistics: Efficient R programming skills and experience

GIS: ArcGIS 10.x, GeoDa, R-*Spatstat*

Networks: R-*Igraph*, ORA, Spatial Analyst and Network Analyst extensions in ArcGIS 10.x

Remote sensing: ENVI

RESEARCH INTERESTS

My current research program is focused on understanding the interactions between plate tectonics, climate and evolution of the marine life as a complex system phenomenon. I use an interdisciplinary approach that combines stratigraphy, paleobiology, and network science to address specific questions on spatiotemporal aspects of the marine invertebrate fossil record. My training in geology, biology and geospatial techniques have translated into this research program that I refer as Geobiology. Geoscience education at all levels is an integral component of my research program and I use fossil assemblages for teaching/learning geology in formal and informal learning settings.

ORGANIZATIONS AND MEMBERSHIPS

2010–present Geological Society of America.

2007–2008 Research Group on Freshwater Crustaceans. Instituto de Ciencias Naturales (ICN-UN). Colciencias, Colombia. Director, Martha Helena Rocha.

<http://scienti.colciencias.gov.co:8080/gruplac/jsp/visualiza/visualizagr.jsp?nro=0000000002633>

2005–2007 Philosophy of Geology – Student Group. Universidad Nacional de Colombia. Founding member and coordinator. Supervisor.

FEATURED PUBLICATION

Rojas, A., Patarroyo, P., Mao, L., Bengtson, P., and Kowalewski, M., 2017, Global biogeography of Albian ammonoids: A network-based approach: *Geology*, v. 45, p. 659–662, doi: 10.1130/G38944.1. <https://pubs.geoscienceworld.org/geology/article-lookup/45/7/659>

SELECTED PUBLICATIONS

- Rojas, A.**, Gregory P. D., Kowalewski, M., Roger W. P., Hendy, H., and Blackburn, J. K. Quantifying site-selectivity in drilling predation using spatial point process analysis. *Submitted to Paleobiology*
- Joaquín, C., Bernardo, R., Neuman, M., **Rojas, A.**, Rosvall, M., 2019: Exploring the solution landscape enables more reliable network community detection. [arXiv:1905.11230v2](https://arxiv.org/abs/1905.11230v2). *Submitted to Physical Review E*.
- Rojas, A.**, and Sandy M. R., 2019, Early Cretaceous (Valanginian) brachiopods from the Rosablanca Formation, Colombia, South America: Biostratigraphic significance and paleogeographic implications. *Cretaceous Research* 96:184–195.
<https://www.sciencedirect.com/science/article/pii/S0195667118303665>
- Rojas, A.**, Portell, R.W., and Kowalewski, M., 2017, The post-Palaeozoic fossil record of drilling predation on lingulide brachiopods: *Lethaia*, v. 50, no. 2, p. 296–305, doi: 10.1111/let.12198. <http://onlinelibrary.wiley.com/doi/10.1111/let.12198/abstract>
- Rojas, A.**, Gracia, A. and Patarroyo, P. 2015: Brachiopods from off the San Bernardo Archipelago (Colombian Caribbean), with comments on specific synonymies in *Tichosina*, Cooper, 1977. *Zootaxa*, v. 3914, no. 1, p. 55–63, doi: 10.11646/zootaxa.3914.1.3.
<https://www.biotaxa.org/Zootaxa/article/view/zootaxa.3914.1.3>
- Rojas, A.**, Hendy, A. and Dietl, G. 2015: Edge-drilling behavior in the predatory gastropod *Notocochlis unifasciata* (Lamarck, 1822) (Caenogastropoda, Naticidae) from the Pacific coast of Panama: taxonomic and biogeographical implications. *Vita Malacologica* 13, 63–72.
https://repository.si.edu/bitstream/handle/10088/27807/2015_Rojas_VitaMalac.pdf
- Schemm-Gregory, M., **Rojas, A.**, Patarroyo, P. and Jaramillo, C. 2012: First report of *Hadrosia* Cooper, 1983 in South America and its biostratigraphical and palaeobiogeographical implications. *Cretaceous Research*, v. 34, p. 257–267, doi: 10.1016/j.cretres.2011.11.005.
<http://dx.doi.org/10.1016/j.cretres.2011.11.005>
- Vega, F., Nyborg, T., Kovalchuk, G., Etayo-Serna, F., Luque, J., **Rojas, A.**, Patarroyo, P., Porrás-Muzquiz, H., Armstrong, A., Bermúdez, H. and Garibay, L. 2010: On some Panamerican Cretaceous crabs (Decapoda: Raninoidea). *Revista Mexicana de Ciencias Geológicas* 62, 263–279. [http://boletinsgm.igeolcu.unam.mx/bsgm/vols/epoca04/6202/\(6\)Vega.pdf](http://boletinsgm.igeolcu.unam.mx/bsgm/vols/epoca04/6202/(6)Vega.pdf)
- Rojas, A.** 2009: Fossils, sediments and strata: Darwin's geological thinking. *Boletín de la Sociedad Colombiana de Geología*. 11-14. (in Spanish)
- Rojas, A.**, and Patarroyo, P., 2009, Occurrence of *Sellithyris sella* (Brachiopoda) in the Rosablanca Formation. Boyacá, Colombia: Boletín de Geología, v. 31, p. 129–132.
- Vega, F., Nyborg, T., **Rojas, A.**, Patarroyo, P., Luque, J. and Porrás-Muzquiz, H. 2007: Upper Cretaceous Crustacea from Mexico and Colombia: Similar faunas and environments during Turonian times. *Revista Mexicana de Ciencias Geológicas* 24, 403–422.
[http://satori.geociencias.unam.mx/24-3/\(9\)Vega.pdf](http://satori.geociencias.unam.mx/24-3/(9)Vega.pdf)
- Patarroyo, P., and **Rojas, A.** 2007: La sucesión y la fauna del Turoniano de la Formación San Rafael en Pesca y su comparación con la sección tipo en Samacá (Boyacá-Colombia-S.A.): *Geología Colombiana*, v. 32, p. 89–96.

PUBLICATIONS UNDER REVIEW OR IN PREPARATION

- Rojas, A.**, Calatayud, J., Kowalewski, M., Neuman, M., Rosvall, M. Low-Latitude Origins of the Four Phanerozoic Evolutionary Faunas. *In preparation for Science*.

- Rojas, A.**, Dietl, G., Kowalewski, M., Hendy, A. Blackburn, J. K. and. Quantifying site-selectivity in drilling predation using spatial point process analysis. *Under review in Paleobiology*. PAB-OR-2019-0042.
- Calatayud, J., Bernardo-Madrid, R., Neuman, M., **Rojas, A.**, Rosvall, M. Exploring the solution landscape enables more reliable network community detection. *Under review in Physical Review E*. (ref EE12081) <https://arxiv.org/abs/1905.11230>
- Rojas, A.**, Smiljanic, J. A multilayer network analysis of cephalopod occurrences supports a three-fold division of the Cretaceous System. *In preparation for Cretaceous Research*.
- Rojas, A.**, Simon, E., Gómez-Cruz, A., Moreno, M., Kowalewski, M. Mesozoic to Cenozoic inversion of the size-latitude gradient in lingulide brachiopods. *In preparation for Geology*.
- Rojas, A.**, Gracia, A., Patarroyo, P., Hernández-Ávila and Kowalewski, M. Spatial distribution of brachiopods in tropical deep-shelf settings (Caribbean, Colombia): Implications for paleoenvironmental reconstructions. *In preparation for submission to Lethaia*.

SELECTED PUBLISHED ABSTRACTS

- Sandy, M., **Rojas, A.** 2018: Paleobiogeographic affinities, biostratigraphic potential, and taxonomy of Cretaceous Terebratulide brachiopods from Colombia. *Geological Society of America Abstracts with Programs Vol. 50, 6*. doi: 10.1130/abs/2018AM-325121
<https://gsa.confex.com/gsa/2018AM/webprogram/Paper325121.html>
- Rojas, A.**, Azzarone, M., Daniel, E., Calatayud, J., Rosvall, M., Kowalewski, M. and Scarponi, D. 2018: Mapping network flows through sedimentary deposits based on fossil assemblages: A case study from the Quaternary of the Po Plain (Italy). 5th International Palaeontological Congress. Abstracts with Programs, 639.
https://cris.unibo.it/handle/11585/659008#XMv2lOi3_b0
- Rojas, A.**, Barrera-Huertas, Y., Moreno-Ayala, A., Garcia, M., 2018, Saving a piece of the Colombian's geoheritage: Organizing and characterizing the macrofossil collection of the Floresta Formation (Devonian, South America) at the National Pedagogic University. 5th International Palaeontological Congress. Abstracts with Programs, 639. 2018
https://ipc5.sciencesconf.org/data/IPC5_schedule.pdf
- Rojas, A.** 2017: Geographic Paleobiology: adopting a spatially explicit perspective to study the fossil record. *XVI Congreso Colombiano de Geología*.
- Rojas, A.** 2017: Mapping the unknown neighborhood: A simple approach combining traditional geological maps and remote sensing data. *Geological Society of America Abstracts with Programs Vol. 48, 7*. doi: 10.1130/abs/2017SE-291018
<https://gsa.confex.com/gsa/2017SE/webprogram/Paper291018.html>
- Rojas, A.** 2016: Global biogeography of Albian ammonoids: a network-based approach. *Geological Society of America Abstracts with Programs Vol. 48, 7*. doi: 10.1130/abs/2016AM-285925
<https://gsa.confex.com/gsa/2016AM/webprogram/Paper285925.html>
- Oyuela-Caycedo, A., Jorge, G., and **Rojas, A.** 2015: Holocene paleoclimate reconstruction from $\delta^{18}\text{O}$ isotopes of *Neocyclus* opercula and a morphometric analysis of their variation at the archaic site of San Jacinto-1 Colombia. *Society for American Archaeology Abstracts with Programs 107, 117*. [tDAR id: 395000]
<https://core.tdar.org/>
- Rojas, A.** 2015: Testing the evolutionary trends in body size of Mesozoic Lingulidae brachiopods. *Geological Society of America Abstracts with Programs 47, 81*.
<https://gsa.confex.com/gsa/2015SE/webprogram/Paper253185.html>
- Lavine, R.J. et al. 2014: Ecological gradient structure in the Mississippian Lodgepole Formation,

- Southwest Montana. *Geological Society of America Abstracts with Programs* 46, 136.
https://gsa.confex.com/gsa/2014AM/finalprogram/abstract_242865.htm
- Rojas, A.**, Luque, J., Gomez, A., and Moreno, M. 2014: Cretaceous Lingulidae brachiopods of the Tropical America. *10th North American Paleontological Convention (NAPC). The Paleontological Society Special Publication*, 13, 63.
<https://www.floridamuseum.ufl.edu/index.php/napc/home/>
- Rojas, A.**, Patarroyo, P. and Gracia, A. 2013: Spatial structure and bathymetric distribution of Caribbean brachiopods in San Bernardo, Colombia: using brachiopods as a potential proxy of paleobathymetry. *Geological Society of America Abstracts with Programs* 45(7), p. 321.
<https://gsa.confex.com/gsa/2013AM/webprogram/Paper230143.html>
- Rojas, A.** 2013: The First Record of Lower Cretaceous Lingulidae (Brachiopoda) From the Tropical America. *Geological Society of America Abstracts with Programs* 45, 10.
<https://gsa.confex.com/gsa/2013SE/webprogram/Paper215804.html>
- Rojas, A.**, Hendy, A., and Dietl, G. 2012: Exploratory spatial analyses as an alternative approach for understanding the mechanisms that drive the naticid drillhole location. *Geological Society of America Abstracts with Programs* 44, 368.
<https://gsa.confex.com/gsa/2012AM/webprogram/Paper213297.html>
- Rojas, A.**, Hendy, A., and Schemm-Gregory, M. 2011: The first records of Cenozoic brachiopods from the Isthmus of Panama: implications for biogeography and the quality of the fossil record. *Geological Society of America Abstracts with Programs* 43 (5), p. 426.
https://gsa.confex.com/gsa/2011AM/finalprogram/abstract_198030.htm
- Hendy, A., and **Rojas, A.** 2010: Searching for predation hotspots: Sampling, environmental, and geographic effects on perceptions of predation intensity. *Geological Society of America Abstracts with Programs* 42 (5), p. 97.
<https://gsa.confex.com/gsa/2010AM/webprogram/Paper182509.html>
- Rojas, A.**, Schemm-Gregory, M., Hendy, A., Luque, J. & Jaramillo, C. 2010: New records of lingulid brachiopods from Northern South America and their biogeographical implications. *PalAss Meeting Abstracts with Programs* 75, 69.
<https://www.palass.org/meetings-events>
- Rojas, A.**, and O’Dea, A., 2010: Morphology and ecology of recent brachiopod assemblages from the Caribbean coast of Panama. *The Third International Palaeontological Congress, IPC3, Imperial College and Natural History Museum, Abstracts*, p. 278.
<http://www.ipa-assoc.org/index.php/archives>

PEER-REVIEW SERVICE

- 2015 Revista Boletín de Geología
- 2019 Systematic Biology. Kubo, T., Biogeographical Network Analysis of Cretaceous Terrestrial Tetrapods: A Phylogeny-Based Approach. <https://doi.org/10.1093/sysbio/syz024>
- 2019 PALAIOS

INVITED PRESENTATIONS – MUSEUMS, LOCAL PALEONTOLOGICAL SOCIETIES AND CLUBS

- 2019 Quantifying macroevolution using higher-order networks: A case study on Cretaceous cephalopods. *Institute of Paleobiology, Polish Academy of Sciences*. Poland, October 27-31.
- 2018 Quantifying evolutionary biogeography using networks. *Swedish Museum of Natural History*. Sweden, October 10.

- 2017 A preliminary study of the collaboration Network of Colombian geo-scientist. *The Administrative Department of Science, Technology and Innovation (Colciencias)*. Bogota, Colombia, November 17.
- 2015 Post-Paleozoic lingulide brachiopods: Body size evolution and biological interactions. *Florida Paleontological Society*. USA.
- 2015 The good, the bad and the ugly of the fossils preserved as molds: A preliminary study of mollusks-dominated assemblages from the Lower Cretaceous of northern South America. *Florida United Malacologists (FUM)*. USA.
- 2014 The fossil record of the brachiopods in northern South America. *Florida Paleontological Society*. USA.
- 2013 The Fossil Record of Tropical American Brachiopods: New data and interpretations. *Southwest Florida Fossil Society*. USA
- 2010 Selectivity of naticid predators: from modern experiments to the fossil record and back. *Smithsonian Tropical Research Institute*. Panama.
- 2010 Brachiopods from Colombia and Panamá: A 550-million-year record of history. *Smithsonian Tropical Research Institute*. Panama (In Spanish)
- 2009 *Darwin the Geologist*, Catedrá José Celestino Mutis: “*Darwin 200 años*”, *Facultad de Ciencias, Universidad Nacional de Colombia*. Colombia. In Spanish.

ORGANIZING OF SYMPOSIUM/SESSION

Session Organizer, “Paleontología”, XI Congreso Colombiano de Geología. Agosto de 2007. Bucaramanga, Colombia.

<https://www.scribd.com/document/122886425/2a-Circular-Xi-Congresocolgeologia>

Symposium Coordinator, " I Foro Nacional de Paleontología: Desarrollo, Estado Actual y Perspectivas". Noviembre de 2007. Universidad Nacional de Colombia, Bogotá, Colombia.

MEDIA COVERAGE

To the rescue of fossils at the Panama Canal Caribbean Locks – FLMNH

<https://www.floridamuseum.ufl.edu/panama-pire/archived-enevs/2011/v1i2r/>

‘Jurassic Park’, en Bogotá – El Tiempo

<http://www.elespectador.com/impreso/bogota/articuloimpreso-jurassic-park-bogota>

Estudian braquiópodos fósiles de Panamá – La Prensa

http://www.prensa.com/cultura/Estudian-braquiopodos-fosiles-Panama_0_2860963898.html

SCIENCE OUTREACH

Can You Dig It? 2013-2017. Florida Museum of Natural History and Department of Geological Sciences, University of Florida.

<https://www.floridamuseum.ufl.edu/event/can-you-dig-it/>

Earth Day Exploration. 2014-2015. Department of Geological Sciences, University of Florida.

<https://www.floridamuseum.ufl.edu/event/earth-day/>

National Fossil Day. 2016. Florida Museum of Natural History.

<https://www.floridamuseum.ufl.edu/event/fossil-day/>

GEOLOGICAL FIELD WORK

- 2007–present Lower Cretaceous from Zapatoca, Santander-Colombia.
2014 Paleozoic, Tobacco Root Mountains, Montana (7-20 July 2014).
2013-2015 Pliocene, Eastern United States, Smr Aggregates Quarry.
2005–2010 Upper Cretaceous from Samacá, Boyacá–Colombia.
2007–2010 Upper Paleozoic of the Rio Nevado River, Santander–Colombia.
2010–2012 Neogene from Panama (Panama Canal Basin and Chiriqui Province).
2008 Lower Cretaceous, La Paz, Santander-Colombia. Field course, Departamento de Geociencias, Universidad Nacional de Colombia.

[Explore selected field localities using Google TIME MACHINE](#)

LIST OF COLLABORATORS

- Dr. Michal Kowalewski. Florida Museum of Natural History, USA (PhD adviser)
Dr. Austin Hendy. Natural History Museum of Los Angeles County, USA
Dr. Liang Mao. Department of Geography, University of Florida, USA
Dr. Gregory P. Dietl. Paleontological Research Institution, Cornell University, USA
Dr. Peter Bengtson. Institut für Geowissenschaften, Universität Heidelberg, Germany
Dr. Francisco J. Vega. Museo de Geología Ciudad de México, México
Dr. Pedro Patarroyo. Departamento de Geociencias, Universidad Nacional de Colombia, Colombia
Dr. David Blackburn. Emerging Pathogens Institute, University of Florida, USA.

LIST OF REREFENCES

Dr. Michal Kowalewski (PhD adviser)
Jon L. and Beverly A. Thompson Chair of Invertebrate Paleontology,
Florida Museum of Natural History, USA
e-mail: mkowalewski@flmnh.ufl.edu
Telephone: (352) 273-1944

Dr. Austin Hendy
Collections Manager
Invertebrate Paleontology
Natural History Museum of Los Angeles County, USA
e-mail: ahendy@nhm.org
Telephone: (310) 851-4764

Dr. Pedro Patarroyo
Associate Professor
Department of Geological Sciences, Universidad Nacional de Colombia
e-mail: pcpatarroyog@unal.edu.co
Telephone: 3165000 Ext. 16534

Dr. Liang Mao
Associate Professor
Department of Geography, University of Florida, USA
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Martin Rosvall
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