

Luis Angel Gutiérrez Soto

CURRICULUM VITAE

PERSONAL INFORMATION

Nationality	Colombian
Phone	(+54) 9 2216818395
E-Mail	gsoto.angel@gmail.com — gsotoangel@fcaglp.unlp.edu.ar
GitHub	https://github.com/AngelGSoto
Website	https://angelgsoto.github.io/
Languages	Spanish (Native), English (Fluent), Portuguese (Fluent)

EDUCATION

PhD in Astronomy <i>Observatório do Valongo, Universidade Federal do Rio de Janeiro (UFRJ), Rio de Janeiro, Brazil</i>	2015-2019
Advisors: Denise Rocha Gonçalves and Stavros Akras	
Master in science (Astrophysics) <i>Centro de Radioastronomía y Astrofísica (CRYA), Universidad Nacional autónoma de México (UNAM), Morelia, Michoacán, México</i>	2012-2015
Advisor: William John Henney	
Bachelor of Education in Mathematics and Physics <i>Universidad Popular del Cesar (UPC), Valledupar, Cesar, Colombia</i>	2005-2010
Advisor: Elio Fabio Mejía Henao	

ACADEMIC CERTIFICATIONS

Superior Normalist with Emphasis in Spanish Language <i>Escuela Normal Superior María Inmaculada, Manaure, Cesar, Colombia</i>	2003-2004
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ADDITIONAL EDUCATION

Spectral Synthesis of Stellar Populations in Galaxies. Short-term course <i>Facultad de Ciencias Astronómicas y Geofísicas – UNLP, La Plata, Argentina</i>	2024
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Third Winter School of the Valongo Observatory. Short-term course <i>Observatório do Valongo, UFRJ, Rio de Janeiro, Brazil</i>	2017
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XX Special Courses Cycle of the National Observatory. Short-term course <i>Observatório Nacional, Rio de Janeiro, Brazil</i>	2015
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ACADEMIC AND PROFESSIONAL PROFILE

Postdoctoral Researcher

2022-Present

*Instituto de Astrofísica de La Plata,
CONICET – UNLP, La Plata, Argentina*

Supervisor: Favio R. Faifer

Co-supervisor: Claudia Lucia Mendes de Oliveira

Postdoctoral Researcher

2020-2022

*Instituto de Astronomia, Geofísica e Ciências Atmosféricas (IAG),
Universidade de São Paulo, Brazil*

Supervisor: Claudia Lucia Mendes de Oliveira

ACADEMIC SERVICE

- **Member, Judging Committee:** 37th UFRGS Scientific Initiation Salon (Salão UFRGS 2025). Universidade Federal do Rio Grande do Sul, Brazil. October 2025.
- **Member, Local Organizing Committee (LOC):** XI La Plata International School: "Machine Learning and Deep Learning Techniques in Large Multi-band Photometric Surveys (S-PLUS)". FCAG-UNLP, Argentina. April 7-9, 2025.

TEACHING

Assistant Professor

2016

*Stellar Evolution, University level,
Observatório do Valongo, UFRJ, Rio de Janeiro, Brazil*

Assistant Professor

2016

*Extragalactic Astronomy, University level,
Observatório do Valongo, UFRJ, Rio de Janeiro, Brazil*

Mathematics and Physics Teacher

2010

*Centro de Enseñanza Media "Santa Teresita", High School,
Valledupar, Cesar, Colombia*

Mathematics and Physics Teacher

2009

*Institución Educativa Manuel Germán Cuello, High School,
Valledupar, Cesar, Colombia. Pedagogical and Educational
Practices of the Bachelor's Degree in Mathematics and Physics*

OBSERVATIONAL EXPERIENCE

PI

2022

SOAR Telescope

Spectroscopic confirmation of planetary nebula candidates in VPHAS+ (DR3) and ALLWISE, impacting Galaxy's PNe statistics

Telescope Operator

2020-2024

T80-Sur Telescope, Southern Photometric Local Universe Survey (S-PLUS)

Responsibilities included telescope operation, data acquisition, and instrument maintenance

MENTORSHIP AND SUPERVISION

Scientific Initiation

2023-Present

Débora Brandão dos Santos

Early-type star-forming galaxies in the Fornax cluster and the S-PLUS survey. Observatório do Valongo, Universidade Federal do Rio de Janeiro.

Role: Co-supervisor

Scientific Initiation

2020-2024

Giovanna Liberato Cézar

The identification and optical follow-up spectroscopy of PN and SySt candidates in photometric surveys. Observatório do Valongo, Universidade Federal do Rio de Janeiro.

Role: Co-supervisor

PARTICIPATION IN UNDERGRADUATE THESIS COMMITTEES

On February 27, 2024, I served as a member of the evaluation committee for the undergraduate thesis titled “*Photometric Selection and Spectroscopic Confirmation of Planetary Nebulae and Symbiotic Stars in the Galactic Plane*”, presented by Giovanna Liberato Cézar at the Observatório do Valongo, Universidade Federal do Rio de Janeiro.

PEER REVIEW ACTIVITIES

- Frontiers in Astronomy and Space Sciences - Peer reviewer
- Galaxies - Peer reviewer
- IJECE - Peer reviewer (topics: ML in scientific data)

RESEARCH VISITS

Observatório do Valongo, Universidade Federal do Rio de Janeiro

(UFRJ).

2024

Rio de Janeiro, Brazil

Host: Denise Rocha Gonçalves and Marco Grossi

Center for the Study of the Physics of the Cosmos of Aragón

(CEFCA).

2018

Teruel, Spain

Host: Carlos López Sanjuan

AWARDS AND TITLES

Young Researcher and Innovator

2010

“**Virginia Gutiérrez de Pineda**”

Colciencias, Colombia

SKILLS

- **Programming:** PYTHON, FORTRAN
- **Software:** TOPCAT, ALADIN, CLOUDY, L^AT_EX, GITHUB
- **Data Query:** Astronomical Data Query Language (ADQL)
- **Machine Learning:** Applied to astronomy and astrophysical simulations
- **Linux:** Development and maintenance of data analysis servers, task automation, system monitoring
- **Shell Scripting:** Automation of tasks
- **Astronomy:** Telescope operation, data processing, astronomical instrumentation
- **Experience:** Operated T80-Sul telescope for Southern Photometric Local Universe Survey (S-PLUS) project

REFEREED ARTICLES

1. *The S-PLUS Fornax Project (S+FP): An extragalactic catalog covering ~ 5 virial radius around NGC 1399 with galaxy properties.*
R. F. Haack, A. V. Smith Castelli, L. Sodré Jr., C. Mendes de Oliveira, A. R. Lopes, **L. A. Gutiérrez-Soto** et al., 2025, Submitted to *A&A*.
2. *Variables in S-PLUS. I. Period–Luminosity relations of Classical Cepheids in 12 bands.*
Debasish Hazarika, Carlos E. Ferreira Lopes, Márcio Catelan, Felipe Almeida-Fernandes, Nicolás Rodríguez-Segovia, ... **L. A. Gutiérrez-Soto** et al., 2025, Submitted to *A&A*.
3. *Discovery of thirteen new symbiotic stars in Gaia DR3.*
Stavros Akras, Anastasis Karagiannis, Giorgos Charalampopoulos, Panagiotis Gavras, **L. A. Gutiérrez-Soto** et al., 2025, Under review, *MNRAS*.
4. *Targeting cluster galaxies for the 4MOST CHANCES Low-z sub-survey with photometric redshifts.*
Hugo Méndez-Hernández, Ciria Lima-Dias, Antonela Monachesi, L. Yara Jaffé, P. Christopher Haines, ... **L. A. Gutiérrez-Soto** et al., 2025, Accepted, *A&A*.
5. *The Southern Photometrical Local Universe Survey (S-PLUS): searching for metal-poor dwarf galaxies.*
M. Grossi, D. R. Gonçalves, A. C. Krabbe, **L. A. Gutiérrez-Soto**, E. Telles et al., 2025, *ApJ*, in press, arXiv:2501.18498.
6. *The S-PLUS Fornax Project (S+FP): Mapping emission in 77 Fornax galaxy members reaching $\sim 4 R_{\text{vir}}$.*
A. R. Lopes, A. V. Smith Castelli, A. C. Krabbe, J. A. Hernandez-Jimenez, D. Pallero, ... **L. A. Gutiérrez-Soto** et al., 2025, *A&A*, 699, A331.
7. *The S-PLUS Fornax Project (S+FP): Mapping globular cluster systems within 5 virial radii around NGC 1399.*
L. Lomelí-Nuñez, A. Cortesi, A. V. Smith Castelli, M. L. Buzzo, Y. Divakara Mayya, ... **L. A. Gutiérrez-Soto** et al., 2025, *AJ*, 169, 263.

8. *The S-PLUS 12-band photometry as a powerful tool for discovery and classification: ten cataclysmic variables in a proof-of-concept study.*
Raimundo Lopes de Oliveira, Amanda S. de Araujo, Angela C. Krabbe, Claudia L. Mendes de Oliveira, Koji Mukai, **L. A. Gutiérrez-Soto** et al., 2025, *ApJL*, 981, L1.
9. *Mapping H α -excess candidate point sources in the Southern Hemisphere using S-PLUS data.*
L. A. Gutiérrez-Soto, R. Lopes de Oliveira, S. Akras, D. R. Gonçalves, L. F. Lomelí-Núñez, et al., 2025, *A&A*, 695, A104.
10. *Stellar atmospheric parameters and chemical abundances of ~ 5 million stars from S-PLUS multi-band photometry.*
C. E. Ferreira Lopes, **L. A. Gutiérrez-Soto**, V. S. Ferreira Alberice, N. Monsalves, D. Hazarika, et al., 2025, *A&A*, 693, A306.
11. *The Fourth S-PLUS Data Release: 12-filter photometry covering 3000 square degrees in the Southern Hemisphere.*
F. R. Herpich, F. Almeida-Fernandes, G. B. Oliveira Schwarz, E. V. R. Lima, L. Nakazono, ... **L. A. Gutiérrez-Soto** et al., 2024, *A&A*, 689, A249.
12. *The S-PLUS Fornax Project (S+FP): A first 12-band glimpse of the Fornax galaxy cluster.*
A. V. Smith Castelli, A. Cortesi, R. F. Haack, A. R. Lopes, J. Thainá-Batista, ... **L. A. Gutiérrez-Soto** et al., 2024, *MNRAS*, 530, 3787.
13. *Unveiling compact planetary nebulae: broadband survey analysis and LAMOST confirmation.*
L. A. Gutiérrez-Soto, M. Belén Mari, W. A. Weidmann, F. R. Faifer, 2024, *NewA*, 109, 102207.
14. *Euclid preparation. XXVII. A UV–NIR spectral atlas of compact planetary nebulae for wavelength calibration.*
K. Paterson, M. Schirmer, Y. Copin, J.-C. Cuillandre, W. Gillard, **L. A. Gutiérrez-Soto** et al., 2023, *A&A*, 674, A172.
15. *Spectroscopic analysis tool for intEgraL fieLd unIt daTacubEs (SATELLITE): case studies of NGC 7009 and NGC 6778 with MUSE.*
S. Akras, H. Monteiro, J. R. Walsh, J. García-Rojas, I. Aleman, ... **L. A. Gutiérrez-Soto** et al., 2022, *MNRAS*, 512, 2202.
16. *Data Release 2 of S-PLUS: accurate template-fitting based photometry covering 1000 square degrees in 12 optical filters.*
F. Almeida-Fernandes, L. Sampedro, F. R. Herpich, A. Molino, C. E. Barbosa, ... **L. A. Gutiérrez-Soto** et al., 2022, *MNRAS*, 511, 4590.
17. *Catalogue of the central stars of planetary nebulae. Expanded edition.*
W. A. Weidmann, M. B. Mari, E. O. Schmidt, G. Gaspar, M. M. Miller Bertolami, G. A. Oio, **L. A. Gutiérrez-Soto**, M. G. Volpe, R. Gamen, and D. Mast, 2020, *A&A*, 640, A10.
18. *J-PLUS: Tools to identify compact planetary nebulae in the Javalambre and Southern Photometric Local Universe Surveys.*
L. A. Gutiérrez-Soto, D. R. Gonçalves, S. Akras, A. Cortesi, C. López-Sanjuan, M. A. Guerrero et al., 2020, *A&A*, 633, A123.
19. *The Southern Photometric Local Universe Survey (S-PLUS): improved SEDs, morphologies, and redshifts with 12 optical filters.*
C. Mendes de Oliveira, T. Ribeiro, W. Schoenell, A. Kanaan, R. A. Overzier, ... **L. A. Gutiérrez-Soto** et al., 2019, *MNRAS*, 489, 241.

20. *J-PLUS: The Javalambre Photometric Local Universe Survey.*
A. J. Cenarro, M. Moles, D. Cristóbal-Hornillos, A. Marín-Franch, A. Ederoclite, ... **L. A. Gutiérrez-Soto** et al., 2019, *A&A*, 622, A176.

PREPRINTS

1. *Bow shocks, bow waves, and dust waves. IV. Shell shape statistics.*
W. J. Henney, J. A. Tarango-Yong, **L. A. Gutiérrez-Soto**, S. J. Arthur, 2019, arXiv:1907.00122.

PUBLISHED WORKS IN CONFERENCE PROCEEDINGS

1. *El pasado caótico de NGC 4546 vs. la evolución pacífica de sus estrellas.*
J. P. Varela, V. Reynaldi, F. R. Faifer, **L. A. Gutiérrez-Soto**, T. Ricci, 2025, BAAA, 66, 266–268.
2. *Blue elliptical galaxies in the Fornax cluster through S-PLUS data.*
D. Brandão, A. Cortesi, R. F. Haack, **L. A. Gutiérrez-Soto**, F. Ferrari, A. R. Lopes, A. V. Smith Castelli, P. A. Lopes, D. Brambilla, 2025, BAAA, 66, 301–304.
3. *Los colores del proceso de ensamble de las galaxias elípticas masivas: fotometría óptica e IR de NGC 1395.*
A. Boland, F. Faifer, V. Reynaldi, **L. A. Gutiérrez-Soto**, C. Escudero, 2025, BAAA, 66, 305–308.
4. *S-PLUS: An atlas of integrated H α + [N II] fluxes for planetary nebulae in the Magellanic Clouds.*
L. A. Gutiérrez-Soto, A. R. Lopes, A. V. Smith Castelli, F. R. Faifer & R. Haack, 2024, BAAA, 65, 181.
5. *Ultra Diffuse Galaxy formation constraints and possible detection in S-PLUS images.*
P. Astudillo Sotomayor, N. W. C. Leigh, R. Demarco, A. V. Smith Castelli, R. F. Haack, ... **L. A. Gutiérrez-Soto**, 2024, BAAA, 65, 244.
6. *Photometric candidate selection and spectroscopic confirmation of new PNe and SySts in the Galactic plane.*
G. Liberato, D. R. Gonçalves, **L. A. Gutiérrez-Soto**, S. Akras, 2023, BAAA, 34, 100–103.
7. *Exploring the population of H α emitters in the Southern Photometric Local Universe Survey (S-PLUS).*
L. A. Gutiérrez-Soto, R. Lopes de Oliveira, S. Akras, et al., 2023, BAAA, 64, 187.
8. *Identification of interacting galaxies in the S-PLUS database.*
G. B. Oliveira Schwarz, N. M. Cardoso, A. Cortesi, A. V. Smith Castelli, G. Lucatelli, ... **L. A. Gutiérrez-Soto** et al., 2022, BAAA, 63, 259.
9. *Identifying Galactic halo PN candidates in the imaging surveys: J-PLUS/S-PLUS and J-PAS.*
L. A. Gutiérrez-Soto, D. R. Gonçalves, S. Akras, A. Cortesi, A. Ederoclite, et al., 2017, Rev. Mex. Astron. Astrofís. (Serie Conf.), 49, 162.

TALKS AND POSTERS AT SCIENTIFIC MEETINGS

1. *Probing the Low-Surface-Brightness Universe with S-PLUS: Can a Small Telescope Compete?*
L. A. Gutiérrez-Soto & S-PLUS Collaboration. Búzios, Brazil, 2025, Conference. Galaxy Memoirs: Inferring their past from their present. **Poster Presenter**.
2. *Unveiling the Hidden Population of H-alpha Excess Sources in the Southern Sky: A Synergy of S-PLUS Photometry and Machine Learning.*
L. A. Gutiérrez-Soto & S-PLUS Collaboration. Córdoba, Argentina, 2025, Conference. XIV Friends of Friends Meeting. **Invited Speaker**.
3. *Mapping H α -Excess Candidate Point Sources in the Southern Hemisphere Using S-PLUS Data.*
L. A. Gutiérrez-Soto & S-PLUS Collaboration. 19th S-PLUS Collaboration Meeting, 2024, Rio de Janeiro, Brazil. **Speaker**.
4. *An Integrated H α Flux Atlas of Planetary Nebulae in the Magellanic Clouds: Combining S-PLUS Photometry and Spectroscopic Analysis.*
L. A. Gutiérrez-Soto, A. R. Lopes, A. V. Smith Castelli & F. R. Faifer. Montevideo, Uruguay, 2023. Conference. XVII Latin American Regional IAU Meeting. **Speaker**.
5. *S-PLUS: An atlas of integrated H α fluxes for planetary nebulae in the Magellanic Clouds.*
L. A. Gutiérrez-Soto, A. R. Lopes, A. V. Smith Castelli, F. R. Faifer & R. Haack. San Juan, Argentina, 2023. Conference. La 65º Reunión Anual de la Asociación Argentina de Astronomía. **Poster Presenter**.
6. *S-PLUS: An atlas of integrated H α fluxes for planetary nebulae in the Magellanic Clouds.*
L. A. Gutiérrez-Soto, A. R. Lopes, A. V. Smith Castelli & F. R. Faifer. La Serena, Chile. 2023, Conference. Galaxy Groups and Clusters III: Laboratories to study Galaxy Evolution (GGCIII). **Poster Presenter**.
7. *An atlas of integrated H α fluxes for planetary nebulae in the Magellanic Clouds.*
L. A. Gutiérrez-Soto, A. R. Lopes, A. V. Smith Castelli & F. R. Faifer. Córdoba, Argentina, 2023, Conference. XII Friends of Friends Meeting. **Poster Presenter**.
8. *Exploring the population of H α emitters in the Southern Photometric Local Universe Survey (S-PLUS).*
L. A. Gutiérrez-Soto, R. Lopes de Oliveira, S. Akras, et al., 2022, Conference. 64º Reunión Anual de la Asociación Argentina de Astronomía. **Speaker**.
9. *Revealing the population of compact emission line sources in the Southern Photometric Local Universe Survey (S-PLUS).*
L. A. Gutiérrez-Soto & S-PLUS Collaboration. 17th S-PLUS Collaboration Meeting, 2022, Rio de Janeiro, Brazil. **Speaker**.
10. *H α emitters from the Southern Photometric Local Universe Survey (S-PLUS).*
L. A. Gutiérrez-Soto, R. Lopes de Oliveira, S. Akras, D. R. Gonçalves, C. Mendes de Oliveira & S-PLUS Collaboration. 16th S-PLUS Collaboration Meeting, 2021, São Paulo, Brazil. **Poster Presenter**.
11. *Planetary nebulae in S-PLUS.*
L. A. Gutiérrez-Soto, D. R. Gonçalves, S. Akras & S-PLUS Collaboration. 15th S-PLUS Collaboration Meeting, 2021, São Paulo, Brazil. **Speaker**.

12. *Planetary nebulae in S-PLUS.*
L. A. Gutiérrez-Soto, D. R. Gonçalves, S. Akras & S-PLUS Collaboration. 14th S-PLUS Collaboration Meeting, 2020, São Paulo, Brazil. **Speaker**.
13. *Tools to identify planetary nebulae and symbiotic stars.*
L. A. Gutiérrez-Soto, Denise R. Gonçalves, Stavros Akras and the J-PLUS & S-PLUS collaborations. 10th S-PLUS Meeting. 2019, São Paulo, Brazil. **Speaker**.
14. *Photometric tools to select planetary nebulae and symbiotic stars in J-PLUS and S-PLUS surveys.*
L. A. Gutiérrez-Soto, Denise R. Gonçalves, Stavros Akras and J-PLUS & S-PLUS collaborations. II Workshop: chemical abundances in gaseous nebulae. 2019, São José dos Campos, São Paulo, Brazil. **Poster Presenter**.
15. *Detecting Galactic halo planetary nebulae and symbiotic stars in multi-band photometric surveys.*
L. A. Gutiérrez-Soto, D. R. Gonçalves & S. Akras. XXXth General Assembly of the International Astronomical Union (IAU). Division G: Stars and Stellar Physics, 2018, Vienna, Austria. **Speaker**.
16. *Galactic halo planetary nebulae and symbiotic stars in multi-band photometric surveys.*
L. A. Gutiérrez-Soto, D. R. Gonçalves & S. Akras. Workshop "Science with SOAR and Gemini telescopes: preparing for the GMT". 2018, São José dos Campos, São Paulo, Brazil. **Speaker**.
17. *S-PLUS, J-PLUS and J-PAS in the search for planetary nebulae.*
L. A. Gutiérrez-Soto, D. R. Gonçalves, S. Akras, A. Cortesi, S. Daflon, et al. XLI Reunião Anual da Sociedade Astronômica Brasileira 2017, 2018, São Paulo, Brazil. Boletim da Sociedade Astronômica Brasileira, 30, no. 1, 158-159. **Poster Presenter**.
18. *Identifying Galactic halo PN candidates in the imaging surveys: J-PLUS/S-PLUS and J-PAS.*
L. A. Gutiérrez-Soto, D. R. Gonçalves, S. Akras, A. Cortesi, A. Ederoclite, et al., Latin American Regional IAU Meeting (LARIM) Cartagena 2016, Cartagena de Indias, Colombia. *Rev. Mex. Astron. Astrofís. (Serie de Conferencias)*. **Poster Presenter**.
19. *A catalog of stationary bow shocks in the Orion Nebula.*
L. A. Gutiérrez-Soto, W. J. Henney, J. A. Tarango-Yong, OSSF14: The Olympian Symposium on Star Formation, 2014, Paralia Katerini, Greece. **Poster Presenter**.

PARTICIPATION IN OTHER EVENTS

1. 3rd J-PLUS Virtual Meeting. 2020, Teruel, España.
2. 12th J-PAS Collaboration Meeting. 2016, Río de Janeiro, Brasil.
3. Frontiers in Contemporary Astrophysics. 2013, Morelia, México.
4. 9th Colombian Conference on Mathematics Education. 2008, Valledupar, Colombia.

PUBLIC OUTREACH & SCIENCE COMMUNICATION

1. **Noche de las Estrellas / Star Night** (2013)
Morelia, Mexico.
Organized astronomical observations and workshops for 500+ attendees.

2. **Lotería Matemática / Math Bingo** (2013)
Universidad Michoacana de San Nicolás de Hidalgo, Mexico.
Designed and facilitated an educational math bingo game for high-school students.
3. **El Universo en tu Escuela / Universe in Your School** (2013)
Pre-university program, Morelia, Mexico.
Organized and delivered astrophysics lectures to underserved schools.
4. **Feria Matemática de Morelia / Morelia Science Fair** (2012)
Centro de Ciencias Matemáticas (UNAM), Mexico.
Volunteer: Developed hands-on activities on applied mathematics for public engagement.

COLLABORATIONS

S-PLUS Collaboration <i>Southern Photometric Local Universe Survey (S-PLUS)</i> Active member of the S-PLUS collaboration, contributing to the technical team as a telescope operator and data processor. Involved in data analysis and scientific exploitation of photometric data from the survey. Participated in projects focused on the identification of planetary nebulae and emission-line objects.	2015-Present
J-PAS Collaboration <i>Javalambre Physics of the Accelerating Universe Astrophysical Survey (J-PAS)</i> Contributing to the scientific analysis and exploitation of J-PAS data, focusing on the detection and characterization of planetary nebulae and symbiotic stars. Responsible for photometric analysis and integration of multi-wavelength data.	2024-Present

FINANCIAL SUBSIDIES

Consejo Nacional de Investigaciones Científicas y Técnicas, CONICET. <i>Postdoctoral Fellowship</i>	2022
Fundação de Amparo à Pesquisa do Estado de São Paulo, FAPESP. <i>Postdoctoral Fellowship</i>	2020
Coordenação de Aperfeiçoamento de Pessoal de Nível Superior, CAPES. <i>Doctoral Studies Fellowship</i>	2015
Dirección General de Asuntos del Personal Académico, DGAPA. <i>Master's Studies Fellowship</i>	2013
Departamento Administrativo de Ciencia, Tecnología e Innovación, COLCIENCIAS. <i>Research Stay Fellowship</i>	2010