

LUZ-ESTELA GONZALEZ DE-BASHAN

CURRICULUM VITAE

(January 1, 2016)

Professional preparation:

Undergraduate institution

Department of Biology,
Pontificia Universidad Javeriana,
Bogota, Colombia. Biology, B.Sc. 1990

Graduate institutions

- Department of Biology,
National University of Colombia, Bogota,
Colombia Systematics of microalgae, M.Sc. 1995

- Department of Soils and Food Engineering,
Laval University, Quebec City, Quebec, Canada Microbiology, Ph.D. 2006

Postdoctoral Institute

Department of Water, Soil and Environmental Science
The University of Arizona, Tucson, USA Phytoremediation, April 2007-Aug 2008

Positions:

2014 – Present. **Scientist-in-Chief**, The Bashan Institute of Science, Dadeville, AL. **Main position**

2014 – Present. **Associate Professor**, Environmental Microbiology Group, The Northwestern Center for Biological Research (a Federal Government Research Institute), La Paz, BCS, Mexico (*With tenure*), **Main position**.

2013 – present. **Affiliated Assistant Professor**; Department of Entomology and Plant Pathology, Auburn University, Alabama, USA.

2011-2013 - **Assistant Professor**. Environmental Microbiology Group, The Northwestern Center for Biological Research (a Federal Government Research Institute), La Paz, BCS, Mexico (*With tenure*),

2003 – present. **Scientist-in-Residence**; The Bashan foundation, Corvallis, Oregon, USA.

2000 – 2010. **Research Scientist**, Environmental Microbiology Group, The Northwestern Center for Biological Research (a Federal Government Research Institute), La Paz, BCS, Mexico (*With tenure*).

2000 – Present. **Honorific Professor-Researcher**. Department of Biology, Faculty of Science, Pontificia Universidad Javeriana, Bogota Colombia.

1994-2000. **Assistant Professor-Researcher**. Department of Biology, Faculty of Science, Pontificia Universidad Javeriana, Bogota Colombia.

1995- 2000. **Coordinator** of the Program of Sanitation and Environmental Biotechnology. Faculty of Science, Pontificia Universidad Javeriana, Bogota Colombia.

Main research field:

1994 - Present- Plant-bacteria interactions. Mainly, the use of microalgae and bacteria for environmental purposes such as bioremediation of water and eroded soils (Molecular and biochemical approaches).

Honors, recognition and awards:

1. 2015 - 2020. Asian PGPR Society of Sustainable Agriculture. **Founder and Secretary**.
2. 2014 – 2017. Promoted to the rank of **“National Researcher Level 2”** by the National research system (Sistema Nacional de Investigadores, SNI) of Mexico.

3. 2014-2015. Nominated as **editorial board member** of the international journal "Revista Argentina de Microbiologia" (Elsevier).
4. 2005-2014. Ad-hoc reviewer for scientific peer-reviewed journals: **165 manuscripts** (to November 5, 2015) for **42 journals**. Editorial board member of three journals.
5. 2012 - A top download article. The paper "The potential contribution of plant growth-promoting bacteria to reduce environmental degradation (Applied Soil Ecology, in press) originated from two conference presentations in Argentina and Colombia reached the first place in number of worldwide downloads in the "Top 25 articles" of the high impact journal "Applied Soil Ecology". (ScienceDirect.com; June 20, 2012).
6. 2012 - Nominated as **Editorial Board member** of "Bioencapsulation innovations". France
7. 2011- Invited to serve as **member of the Steering Committee** of The Bioencapsulation Research Group. An international scientific organization (over 9000 members) with headquarters in Nantes, France.
8. 2011- Institutional recognition of project. The project "Cellular mechanisms controlling the combined growth of microalgae and microalgae growth-promoting bacteria", where I served as co-PI, was recognized by the Director General of CIBNOR as exemplary, and was selected to be presented to the evaluation committee of the federal government of Mexico as a "success case" of basic research (March 7, 2011).
9. 2008- 2010. Nominated as a sponsored, foreign member to the New York Academy of Sciences.
10. 2007 - Evaluator of the international award in Applied Microbiology "Elizabeth Grose" that was presented at the 6th Simposio Latinoamericano de Biodeterioro y Biodegradacion. Bogota, Colombia, April 30, 2007
11. 2006 - **Ph.D. Graduation with High Distinction** (Thesis defense evaluation, "A+", 97/100; average Ph.D. studies, "A+") at Laval University, Quebec, Canada.
12. 2002-2013 (four times). Selected as member of the Sistema Nacional de Investigadores (SNI), Mexico (National Researcher level 1)
13. 2005 - National recognition of project. The Project "Bioremediation of wastewater" was recognized by the Ministry of Ecology of Mexico as exemplary, and was selected as a "success case" of applied research to be presented to the President of Mexico (5.8.2005).
14. 2005. Recognized by the "Sistema Nacional de Investigadores" (National Research System, SNI), Mexico as a scientist with high quality and high impact publications.
15. 2004 - A top download article. The paper on removing of phosphorus from wastewater (Water Research 38: 4222-4246) originated from the project "Bioremediation of wastewater" reached the first place in number of worldwide downloads in the "Top 25 articles" of the high impact journal "Water Research". (ScienceDirect.com; October-December, 2004)
16. 2001 – 2004. Received 3 merit scholarships (annually), as a foreign student, from the Provincial Government of Quebec, Canada to conduct Ph.D. studies.
17. 2000 - Received the title "Honorific Professor-Researcher", from the Department of Biology, Faculty of Science, Pontificia Universidad Javeriana, Bogota Colombia, allowing regular academic and research activities within the university from abroad without a salary.
18. 1999 - My Research group (two researchers, one technician and three students) was selected as Category "B" (from 6 possible categories) by the national evaluation of research groups of COLCIENCIAS, Colombia (National Science Foundation of Colombia), based on productivity and quality of the research.

SCIENTIFIC PRODUCTIVITY AND INTERNATIONAL IMPACT:

- Original publications in peer-reviewed, scientific journals (JCR-listed with an impact factor)		
Published and "in press" -	54	
Submitted papers -	5	
- Publication of a scientific book	1	
- Publications of chapters in books -	29	
- Publications in languages other than English and popular scientific publications	19	
- Publications in websites (scientific)	4	
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- Total number of scientific papers - (published, "in press" and submitted)	112	
Others:		
- Theses (B.Sc., M.Sc., Ph.D.)	3	
- Technical reports for funding agencies	2	
- Presentations in scientific conferences	123	

PUBLICATIONS:

Peer-reviewed journal	No. Publications	Impact factor*
Biology and Fertility of Soils	6	2.505 - 3.398 (3.398)
Water Research	5	1.611 - 4.865 (5.528)
Canadian Journal of Microbiology	4	1.071 - 1.118 (1.221)
Journal of Phycology	4	2.239 - 2.811 (2.844)
Applied and Environmental Microbiology	3	3.389 - 3.801 (3.668)
Applied Microbiology and Biotechnology	3	1.641 - 3.811 (3.337)
Bioresource Technology	3	0.417 - 4.453 (4.494)
Enzyme and Microbial Technology	3	1.897 - 2.592 (2.322)
Applied Soil Ecology	2	2.106 - 2.664 (2.664)
Environmental and Experimental Botany	2	2.578 - 2.985 (3.359)
Journal of Applied Phycology	2	2.559
Naturwissenschaften	2	2.098 - 2.114 (2.098)
Research in Microbiology	2	2.705 (2.705)
Advances in Agronomy	1	3.64 (3.893)
Annals of Microbiology	1	0.990 (0.990)
European Journal of Plant Pathology	1	1.475 (1.490)
European Journal of Soil Biology	1	1.247 (1.719)
FEMS Microbiology Ecology	1	2.787 (3.568)
Journal of Biotechnology	1	2.871 (2.871)
Microbial Ecology	1	2.875 (2.973)
Natural Areas Journal	1	0.452 (0.659)
Plant Biology	1	1.352 (2.633)
Plant and Soil	1	2.952 (2.952)
Science of the Total Environment	1	2.359 (4.099)
Soil Biology & Biochemistry	1	2.414 (3.392)

*Range of impact factor (Journal Citation Reports®, Thomson Reuters) at the time of publication. In parenthesis Impact factor of 2014.

Average “Impact Factor” of refereed papers: 2.524 (According to the time of publication)

Average “Impact Factor” of refereed papers: 3.084 (According to ISI/JCR 2014)

Citations (to January 1, 2016): 5,002 (According to Google Scholar, USA)

H-index – 31 (According to Google Scholar, USA)

i-10 index – 46 (The number of scientific papers of an author that have at least 10 non-self citations, According to Google Scholar, USA)

RG Index -33.04 (According to Research Gate)

Invited lectures in scientific, national and international conferences: **48** (to November 2015).

Editorial board member: Wildflower, 2001-2004 (Canada); Bioencapsulation innovations, 2012-present (France); 2014-2015 - Revista Argentina de Microbiologia (The Netherlands).

Referee of international journals and funding agencies: Total: **165 manuscripts** (42 journals).

External grants: 1,453,200 U\$S. (Not included grants and salaries assigned by the Mexican Federal Government)

Advisor (director) of graduate student's theses- 16

Doctorate, M.Sc. and Diploma, **14** completed until November 2015.

Graduate students in process: **2** (M.Sc. and Doctorate)

Supervision of visiting researchers from other countries: **12**

Cooperation with commercial companies: 4

Peer reviewed publications with impact factor (last 5 years, impact factor in parenthesis): **29**

1. Bashan, Y., Kloepper, J.W., **de-Bashan, L.E.**, and Nannipieri, P. 2016. A need for disclosure of formulation and application methods when reporting tests with microbe-based products. *Biology and Fertility of Soils* (3.396) (In press)
2. Pereg, L., **de-Bashan, L.E.**, and Bashan, Y. 2016. Assessment of affinity and specificity of *Azospirillum* for plants. *Plant And Soil* (In press)(2.952)
3. Palacios, O.A., Bashan, Y., Schmid, M., Hartmann, A., **de-Bashan L. E.** 2016. Enhancement of thiamine release during synthetic mutualism between *Chlorella sorokiniana* and *Azospirillum brasilense* growing under stress conditions. *Journal of Applied Phycology* (In Press) (2.559)
4. Bashan Y., Lopez, B.R., Huss, V.A.R., Amavizca, E. and **de-Bashan, L.E.** 2016. *Chlorella sorokiniana* (formerly *C. vulgaris*) UTEX 2714, a non-thermotolerant microalgal species useful for biotechnological applications and as a reference strain. *Journal of Applied Phycology* (In press)(2.492)

5. Meza, B., de-Bashan, L.E., Hernandez, J.-P., and **Bashan, Y.** 2015. Accumulation of intra-cellular polyphosphate in *Chlorella vulgaris* cells is related to indole-3-acetic acid produced by *Azospirillum brasilense*. **Research in Microbiology** 166: 399-407 (2.826)
6. Meza, B., **de-Bashan, L.E.**, and Bashan, Y. 2015. Involvement of indole-3-acetic acid produced by *Azospirillum brasilense* in accumulating intra-cellular ammonium in *Chlorella vulgaris*. **Research in Microbiology** 166: 72-83 (2.826)
7. Leyva, L.A., Bashan Y., and **de-Bashan, L.E.** 2015. Activity of acetyl-CoA carboxylase is not directly linked to accumulation of lipids when *Chlorella vulgaris* is co-immobilised with *Azospirillum brasilense* in alginate under autotrophic and heterotrophic conditions. **Annals of Microbiology** 65: 339-349 (1.039)
8. Bashan, Y., **de-Bashan, L.E.**, Prabhu, S.R., and Hernandez, J.-P. 2014. Advances in plant growth-promoting inoculant technology: formulations and practical perspectives (1998-2013). **Plant and Soil** 378: 1-33 (3.713)
9. Palacios, O.A., Bashan, Y., and **de-Bashan, L.E.** 2014. Proven and potential involvement of vitamins in interactions of plants with plant growth-promoting bacteria—an overview. **Biology and Fertility of Soils** 50: 415-432 (3.396)
10. Leyva, L.A., Bashan Y., Mendoza, A., and **de-Bashan, L.E.** 2014. Accumulation of fatty acids in *Chlorella vulgaris* under heterotrophic conditions in relation to activity of acetyl-CoA carboxylase, temperature, and co-immobilization with *Azospirillum brasilense*. **Naturwissenschaften** 101:819–830 (1971)
11. Ramírez-Elias, M.A., Ferrera-Cerrato, R., Alarcón, A., Almaráz, J.J., Ramírez-Valverde, G., **de-Bashan, L.E.**, Esparza-García, F.J., and García-Barradas, O. 2014. Identification of culturable microbial functional groups isolated from the rhizosphere of four species of mangroves and their biotechnological potential. **Applied Soil Ecology** 82: 1-10 (2.206)
12. Choix, F.J., Bashan, Y., Mendoza, A., and **de-Bashan, L.E.** 2014. Enhanced activity of ADP glucose pyrophosphorylase and formation of starch induced by *Azospirillum brasilense* in *Chlorella vulgaris*. **Journal of Biotechnology** 177: 22-34 (2.884)
13. Lopez, B.R., Bashan, Y., Trejo, A., and **de-Bashan, L.E.** 2013. Amendment of degraded desert soil with wastewater debris containing immobilized *Chlorella sorokiniana* and *Azospirillum brasilense* significantly modifies soil bacterial community structure, diversity, and richness. **Biology and Fertility of Soils** 49: 1053-1063 (3.396)
14. Bashan, Y., Kamnev, A.A., and **de-Bashan, L.E.** 2013. A proposal for isolating and testing phosphate-solubilizing bacteria that enhance plant growth. **Biology and Fertility of Soils** 49: 1-2 (3.396)
15. Cruz, I., Bashan, Y., Hernández-Carmona, G., and **de-Bashan, L.E.** 2013. Biological deterioration of alginate beads containing immobilized microalgae and bacteria during tertiary wastewater treatment. **Applied Microbiology and Biotechnology** 97: 9847-9858 (3.811)
16. Bashan, Y., Kamnev, A.A., and **de-Bashan, L.E.** 2013. Tricalcium phosphate is inappropriate as a universal selection factor for isolating and testing phosphate-

solubilizing bacteria that enhance plant growth: a proposal for an alternative procedure. **Biology and Fertility of Soils** **49**: 465-479 (3.396)

17. **de-Bashan, L.E.**, Hernandez, J.-P., and Bashan, Y., 2012. The potential contribution of plant growth-promoting bacteria to reduce environmental degradation - A comprehensive evaluation. **Applied Soil Ecology** **61**: 171-189 (2.106)
18. Choix, F.J., **de-Bashan, L.E.**, and Bashan, Y. 2012. Enhanced accumulation of starch and total carbohydrates in alginate-immobilized *Chlorella* spp. induced by *Azospirillum brasilense*. I. Autotrophic conditions. **Enzyme and Microbial Technology** **51**: 294-299 (2.592)
19. Choix, F.J., **de-Bashan, L.E.**, and Bashan, Y. 2012. Enhanced accumulation of starch and total carbohydrates in alginate-immobilized *Chlorella* spp. induced by *Azospirillum brasilense*. II. Heterotrophic conditions. **Enzyme and Microbial Technology** **51**: 300-309 (2.592)
20. Covarrubias, S.A., **de-Bashan, L.E.**, Moreno, M., and Bashan, Y. 2012. Alginate beads provide a beneficial physical barrier against native microorganisms in wastewater treated with immobilized bacteria and microalgae. **Applied Microbiology and Biotechnology** **93**: 2669-2680 (3.689)
21. Trejo, A., **de-Bashan, L.E.**, Hartmann, A., Hernandez, J.-P., Rothballer, M., Schmid, M., and Bashan Y. 2012. Recycling waste debris of immobilized microalgae and plant growth-promoting bacteria from wastewater treatment as a resource to improve fertility of eroded desert soil. **Environmental and Experimental Botany** **75**: 65-73 (2.578).
22. Perez-Garcia, O., Escalante, F.M.E., **de-Bashan L.E.**, and Bashan, Y. 2011. Heterotrophic cultures of microalgae: Metabolism and potential products. **Water Research** **45**: 11-36 (4.865)
23. **de-Bashan, L.E.**, Schmid, M., Rothballer, M., Hartmann, A., and Bashan Y., 2011. Cell-cell interaction in the eukaryote-prokaryote model using the microalgae *Chlorella vulgaris* and the bacterium *Azospirillum brasilense* immobilized in polymer beads. **Journal of Phycology** **47**:1350-1359 (2.49)
24. Bashan Y., Trejo, A., and **de-Bashan, L.E.** 2011. Development of two culture media for mass cultivation of *Azospirillum* spp. and for production of inoculants to enhance plant growth. **Biology and Fertility of Soils** **47**: 963-969 (2.316)
25. Bashan, Y., and **de-Bashan, L.E.** 2010. How the plant growth-promoting bacterium *Azospirillum* promotes plant growth – a critical assessment. **Advances in Agronomy** **108**: 77-136 (3.64).
26. **de-Bashan, L.E.**, and Bashan, Y. 2010. Immobilized microalgae for removing pollutants: Review of practical aspects. **Bioresource Technology** **101**: 1611–1627 (4.365)
27. Perez-Garcia, O., **de-Bashan, L.E.**, Hernandez, J.-P., and Bashan, Y. 2010. Efficiency of growth and nutrient uptake from wastewater by heterotrophic, autotrophic, and

mixotrophic cultivation of *Chlorella vulgaris* immobilized with *Azospirillum brasilense*. **Journal of Phycology** 46: 800-812 (2.239)

28. **de-Bashan, L. E.**, Hernandez, J.-P., Nelson, K.N., Bashan, Y., and Maier, R. M. 2010. Growth of quailbush in acidic, metalliferous desert mine tailings: effect of *Azospirillum brasilense* Sp6 on biomass production and rhizosphere community structure. **Microbial Ecology** 60: 915-927 (2.875).

29. **de-Bashan, L.E.**, Hernandez, J.-P., Bashan, Y., and Maier, R. M. 2010. *Bacillus pumilus* ES4: Candidate plant growth-promoting bacterium to enhance establishment of plants in mine tailings. **Environmental and Experimental Botany** 69: 343–352 (2.699)