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**Curriculum Vitae**

**Luisa A. Marcelino**

Research Assistant Professor

Department of Civil and Environmental Engineering  
McCormick School of Engineering and Applied Sciences  
Northwestern University  
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#### 0Beducation

6B**University of Lisbon, Portugal - Massachusetts Institute of Technology,** Cambridge, MA

Ph.D. in Molecular Biology/Genetics, 1998

University of Lisbon Portugal, degree *in absentia* through Massachusetts Institute of Technology

7B

**University of Lisbon, Portugal -** BS./MS. in Plant Biotechnology and Molecular Biology, 1990

#### 1B

#### Professional Experience

**Northwestern University**, Evanston, IL. July 2009 – present

*Lecturer,* Department of Civil and Environmental Engineering

**Northwestern University**, Evanston, IL. June 2007 – present

*Research Assistant Professor,* Department of Civil and Environmental Engineering

**Field Museum of Natural History**, Chicago, IL. May 2007 – present

*Research Associate,* Department of Zoology, Fishes

**Northwestern University**, Evanston, IL. January 2006 – December 2006

*Research Associate,* Biomedical Engineering Department*.*

**Massachusetts Institute of Technology**, Cambridge, MA. 2001 – November 2005

*Postdoctoral Associate and later Research Scientist,* Department of Civil and Environmental Engineering

**Massachusetts Institute of Technology**, Cambridge, MA. August 1998 – December 2000

*Postdoctoral Associate,* Center for Environmental Health Sciences

**Massachusetts Institute of Technology**, Cambridge, MA. 1995 – July 1998

*Ph.D. candidate and Research Assistant,* Center for Environmental Health Sciences

**University of Lisbon,** Lisbon, Portugal 1993 – December 1994

*Ph.D. candidate and Research Assistant,* Department of Genetics, Medical School

**Perkin Elmer (Applied Biosystems),** Foster City, CA September 1993 – October 1993

*Visiting Research Scientist,* Research and Development Department

**University of Lisbon,** Lisbon, Portugal September 1991 – 1992

*Research Assistant,* Department of Plant Biology, School of Sciences

#### Teaching AND UNDERGRADUATE RESEARCH SUPERVISING

**CEE 361-2:** Public and Environmental Health since 2010 - present

**CEE 361-1:** Environmental Microbiology Winter since 2010 - present

**CEE 361:** Environmental Microbiology and Public Health, Winter 2008 and 2009

**CEE 399:** undergraduate research Project (16 undergraduates), from 2008 -2014

1998-2005, Undergraduate Research Projects Supervisor, MIT

1992-1994, Continuous Education Studies Instructor, Medical School, University of Lisbon Portugal

**POST-DOCTORAL FELLOW RESEARCH SUPERVISION**

Tim Swain, 2010, Ph.D. Biology, Florida State University

**GRADUATE STUDENT RESEARCH SUPERVISION**

Valentina Stoyneva, MS Biomedical Engineering, 2011 Thesis entitled “Experimental techniques for measuring light amplification in corals and role of the skeleton in the modulation of their susceptibility to bleaching”.

**UNDERGRADUATE STUDENT RESEARCH SUPERVISION**

Erin Daily, CBE 2008

Andrew Fang, CBE 2009 (Oral presentation: Annual Argonne Symposium for Undergraduates in Science, 2008)

Jenny Fung, WCAS 2009 (Oral presentation: Annual Argonne Symposium for Undergraduates in Science, 2008)

Hannah Wolfman, MEAS 2010 (Honors Thesis: The Statistical Significance of the Correlation between Bleaching Susceptibility and Optical and Microstructural Parameters of Coral Skeletons)

Arielle Berens, WCAS 2011

Kendra Pickard, MEAS 2011

Natalie Lake, MEAS 2011

Michael Goldberg MEAS 2012

Emily DuBois WCAS 2012 (awarded the Fletcher Undergraduate Research Grant Awards, 2012 and awarded best Honor Thesis: The role of coral micro-skeletal structures in modulating physiological response to temperature and light stress, May 2013. Due to her outstanding contribution to our work, Emily is a co-author of 3 of our recent publications under review or submission)

Elizabeth Velazquez MEAS 2013 (due to her excellent contribution to our work Elizabeth is a co-author of the PLoS One 2013 paper)

Brian Kennedy MEAS 2011 (due to his excellent contribution to our work Brian is a co-author of the PLoS One 2013 paper)

Paige Humecki MEAS 2012

Hannah Walker Grooms MEAS 2013 (due to her excellent contribution to our work Hannah is a co-author of the PLoS One 2013 paper)

Kylia Alexandra Williams WCAS3

Michelle Elizabeth Wagner MEAS4 (due to her excellent contribution to our work Michelle is a co-author of the PLoS One 2013 paper)

William Oestreich MEAS4 (William’s contributions have earned him co-authorship in 2 manuscripts under submission).

#### Honors and Awards

Fletcher Undergraduate Research Awards for Adviser of best UGR, Northwestern, 2012

Chemistry of Life Processes Chairman's Innovation Award, 2009 Chemistry of Life Processes, Northwestern University

Takeda Entrepreneurship Award, Finalist, 2002

European foundation E.R.A.S.M.U.S (March to August, 1990)

Portuguese Engineering and Biotechnology Foundation (September, 1990)

Scholarship of the Science Program conceded by the Portuguese National Technological and Scientific Organization (1991-1994)

Scholarship of the Portuguese PRAXIS XXI Program (1995)

Scholarship of the Portuguese-American Foundation (January to June, 1996)

European Community (Environment Contract EV5V-CT920197, 1994-1995)

#### 4BPUBLICATIONS

[http://www.ncbi.nlm.nih.gov/pubmed/?term=%28%28Marcelino+Luisa%29+OR+Marcelino+LA[Author]%29+OR+Marcelino%2C+Luisa+A[Author](http://www.ncbi.nlm.nih.gov/pubmed/?term=%28%28Marcelino+Luisa%29+OR+Marcelino+LA%5bAuthor%5d%29+OR+Marcelino%2C+Luisa+A%5bAuthor)]

**Peer-reviewed Journal Publications**

1. Marcelino L.A., Westneat M., Stoyneva V., Henss J., Rogers J.D., Radosevich A., Turzhitsky V., Siple M., Fang A., Swain T.D., Fung J. and Backman V. U Light scattering in coral skeleton - evolutionary trends in coral bleaching and in light amplification, PLoS One, 2013; 8 :e61492
2. Swain T.D., DuBois E., Gomes, A., Stoyneva V.P., Radosevich A.J., Henss J., Wagner M.E., Velazquez E., Traub J., Kennedy B.J., Janczak C.M., Grigorescu A.A., Westneat M.W., Sanborn K., Levine S., Schick M., Parsons G., Rogers J.D., Backman V., Marcelino L.A. Skeletal light scattering decreases bleaching susceptibility of reef-building corals, under review at Proc Natl Acad Sci USA.
3. Swain T.D, DuBois E., J., Henss J., Siple M., Oestreich W., Baird, A., Westneat M., Backman V., Marcelino L.A., Global patterns of coral bleaching – Construction and analysis of a bleaching and mortality dataset, submitted to Coral Reefs
4. Swain T.D, Westneat M., Oestreich W., Backman V., Marcelino L.A., Algal- symbionts affect coral bleaching susceptibility, submitted to Proc R Soc Lond
5. Sudo H.; Li-Sucholeiki X.-C.; UMarcelino L.A.;U Gruhl A.N.; Herrero-Jimenez P.; Thilly W.G., et al., Fetal-juvenile origins of point mutations in the adult human tracheal bronchial epithelium: absence of detectable effects of age, gender or smoking status. Mutation Res., 2008; 646:25-40
6. UMarcelino L.AU., Backman V., Donaldson A., Steadman C., Thompson J, Pacocha S., Lien C., Veneziano D., Lim E., and Polz M.F., Accurate identification of low abundant targets in pools of similar sequences by revealing hidden correlations in oligonucleotide microarray data, Proc Natl Acad Sci USA. 2006; 103(37):13629-34.
7. Sudo H., Li-Sucholeiki X.-C., UMarcelino L.AU., Thilly W.G., *et al.*, Distributions of five common point mutants in the human tracheal-bronchial epithelium, Mutation Res, 2006; 596(1-2):113-1127.
8. Thompson J.R., Randa M.A., UL.A MarcelinoU, Tomita-Mitchell A., Lim E., Polz M.F., Diversity and dynamics of a North Atlantic coastal Vibrio community, Applied and Environmental Microbiology 2004; 70(7):4103-10.
9. Acinas S.G., UMarcelino L.A.,U Klepac-Ceraj V., Polz M.F., Divergence and redundancy of 16s rRNA sequences in genomes with multiple rrn operons J. Bacteriology, 2004; 186 (9): 2629-2635.
10. Thompson JR, UMarcelino L.A.U, Polz MF. Heteroduplexes in mixed-template amplifications: formation, consequence and elimination by 'reconditioning PCR". Nucleic Acids Res. 2002; 30(9):2083-8.
11. Zheng W, Marcelino L.A., Thilly WG. Scanning low-frequency point mutants in the mitochondrial genome using constant denaturant capillary electrophoresis. Methods Mol Biol. 2002;197:93-106, PMID:12013815
12. Tomita-Mitchell A., Kat A.G., UMarcelino L.AU., Li-Sucholeiki X.-C., Griffith J., and Thilly W.G., Mismatch repair deficient human cells: spontaneous and MMNG-induced mutational spectra in the HPRT gene, Mutation Res, 2000; 450:125-38.
13. Monteiro C, UMarcelino LAU, Armour JA *et al.,*. Molecular methods for the detection of mutations. Teratog Carcinog Mutagen, 2000; 20(6): 357-86.
14. UMarcelino L.AU., Galvin M., Mayrand E., Proenca M.J., Martins G., Rueff J., and Monteiro C., Fast and reliable method for the routine detection of mutations in human tumors: Multiple fluorescence-based long linker arm nucleotides assay (mf- LLA), BioTechniques, 1999; 26, 1134-1148.
15. UMarcelino L.AU., and Thilly W.G., Mitochondrial mutagenesis in Human cells and tissues, Mutat Res, 1999; 434,177- 203.
16. Li-Sucholeiki X.-C., Khrapko K., Andre P.C., UMarcelino L.A.U, Karger B.L., and Thilly W.G., Applications of constant denaturant capillary electrophoresis/high fidelity polymerase chain reaction to human genetic analysis, Electrophoresis, 1999; 20, 1224-1232.
17. UMarcelino L.A.,U Andre P., Krapko K., Coller H.A, Griffith J. and Thilly W.G., Chemically induced mutations in mitochondrial DNA of human cells: mutational spectrum of N-methyl-N'-nitro-N-nitrosoguanidine, Cancer Res, 1998; 58, 2857-2862.
18. Glaser P, Kunst F, Arnaud M, Coudart MP, Gonzales W, Hullo MF, Ionescu M, Lubochinsky B, UMarcelino LU, Moszer I, *et al.*, *Bacillus subtilis* genome project: cloning and sequencing of the 97 kb region from 325 degrees to 333 degrees, Mol. Microbiol, 1993; 10 (2): 371-84.

**Book Chapters**

1. Thompson J.R., UMarcelino L.A.U, Polz M.F., Diversity, sources and detection of human bacterial pathogens in the environment. Oceans and Health: Pathogens in the marine environment (eds. Shimshon S. and Colwell R.). 29- 68 (Springer New York, 2005).
2. UMarcelino L.A.U, and Monteiro C.J., Update to: Multiple fluorescence-based long linker arm nucleotides assay (mf- LLA): a fast and reliable method for the routine detection of mutations in human tumors, polymorphisms- detection and analysis. BioTechniques series, (eds. Burczak JD and Mardis E). 378-383 (Eaton Publishing/ Natick, 2000).

**Abstracts and Conference Proceedings**

1. Swain TD, DuBois E, Gomes A, Stoyneva VP, Radosevich AJ, Henss J, Wagner ME, Derbas J, Grooms HW, Velazquez EM, Traub J, Kennedy BJ, Janczak CM, Grigorescu AA, Westneat MW, Sanborn K, Levine S, Schick M, Parsons G, Rogers JD, Backman VB, Marcelino LA. Efficient light transport through coral skeletons precipitates bleaching response. 44th Annual Benthic Ecology Meeting, Québec, Canada, 4-7 March 2015
2. Swain T.D., Gomes A., Lake N., Radosevich A., Pickard K.,Kennedy B., Humecki P., Westneat M.W., Backman V., Luisa A. Marcelino, Coral skeletal fractality modulates light-backscattering to symbionts and bleaching susceptibility, International Coral Reef Symposium, Cairns, Queensland, Australia, 9-13 July 2012
3. Swain T.D., Pickard K,Lake N,Henss J., Radosevich A, Gomes A., Westneat M.W., Backman V., Luisa A. Marcelino “Light-scattering properties of coral skeletons at multiple morphological length-scales increase the risk of Coral Bleaching” Benthic Ecology Meetings, Mobil, Alabama, March 16-20, 2011
4. Marcelino LA, Henss J, Turzhitsky V, Fang A, Fung J, Siple M, Wolfman H, Marks KW, Stoyneva V, Westneat M, Rogers J and Backman V “The role of coral skeleton in enhancing light absorption by symbiont algae—implications for coral bleaching.” *American Society of Microbiology 110th General Meeting*, San Diego, CA, USA, May 23-27, 2010.
5. Turzhitsky, V.; Fang, A.; Fung, J.; Henss, J.; Siple, M.; Stoyneva, V.; Rogers, J. D; Wolfman, H.; Radosevich, A.; Backman, V.; Marcelino, L. A. “Optical characterization of coral skeleton with low-coherence enhanced backscattering spectroscopy.” *Optical Society of America: Biomedical Optics*, Miami, FL, USA, April 11-14, 2010.
6. A. Fang, J. Fung, E. Daly, J. Henss, M. Siple, V. Stoyneva, V. Turzhitsky, J. Rogers, M. Westneat, V. Backman, L. Marcelino (November, 2008), Characterization of optical properties of reef-building corals and its implications on bleaching susceptibility, 19th. Annual Argonne Symposium for Undergraduates in Science, Engineering and Mathematics, Argonne, IL
7. Backman V., Siple M., Daly E., Fang A., Fung J., Stoyneva V., Henss J., Westneat M., Turzhitsky V., Rogers J., Marcelino L.A. (July 2008) Novel Optical Technique for characterization of light absorption and distribution in reef-building corals, 11th International Coral Reef Symposium. Fort-Lauderdale, Florida
8. Backman V., Siple M., Daly E., Fang A., Fung J., Stoyneva V., Henss J., Westneat M., Turzhitsky V., Rogers J., Marcelino L.A. (July 2008) Characterization of optical properties of reef-building coral skeletons, 11th International Coral Reef Symposium. Fort-Lauderdale, Florida
9. Thompson J.R., Acinas S.G., Klepac-Ceraj V., Pacocha S., Pharino C., Hunt D.E., Marcelino L.A., Benoit J., Rupavtarm-Sarma R., Distel D.L., and Polz M.P. (February 2005) Environmental bacterial diversity from communities to genomes, Genomes to Life, Department of Energy. Washington DC
10. Marcelino L.A., Lien C., Pacocha S., Bouzo B. Polz M.F., (May 2004), A DNA microarray approach to identifying specific bacterial strains, based on microarray fingerprinting, American Society of Microbiology. Washington Convention Center, Washington DC.
11. Sudo H., Li-Sucholeiki X.-C., Marcelino L.A., Gruhl A., Zarbl H., Willey J.C. and Thilly W.G., (July 2004) The effect of cigarette smoking on point mutations in human lung epithelium. The Nineteenth Aspen Cancer Conference: Mechanisms of toxicity, carcinogenesis, cancer prevention and cancer therapy 2004, Aspen CO.
12. Marcelino L.A., Lien C., Polz M.F., (May 2003) Optimization and evaluation of direct and indirect incorporation of fluorescent dyes into ribosomal RNA for microarray analysis of naturally occurring bacteria. American Society of Microbiology. Washington Convention Center, Washington DC.
13. Khrapko, K, Coller, H.A, Hanekamp, J.S., Marcelino L. A., and Thilly, W.G.(1998) capillary hybridization for identification of mutations. Bioengineering: building the future of biology and medicine. National Institute of Health. Bethesda, Maryland.
14. Marcelino, L.A., and Thilly (1997) Mutational spectrum of N-methly-N'-nitro-N- nitrosoguanindine (MNNG) in human cell mitochondrial DNA. Gordon Research Conferences, New London, New Hampshire.
15. Marcelino L.A., M. Galvin, E. Mayrand, and C. Monteiro (1995) Multiple Color Fluorescence Based Long Linker Arm (LLA) Analysis: A rapid method for the detection of point mutations. American Journal of Human Genetics, 1995:57: 1265: Suppl. Human Genome Meeting- 9196, Heidelberg, Germany, 1996.
16. Moreira, A , da Costa, J. D., Santos, R.N., Monteiro, M.J., Matias, D., Marcelino, L.A., Martins, G., Almeida, M.R., Rueff, J.A., and Monteiro, C.(1995). Loss of heterozygosity in the MCC Gene in Human lung squamous cell carcinoma using microsatellites and fluorescence-based semi-automated genotyping, Medizinische Genetik, 2: 138: abs.
17. Moreira A, da Costa J. D., Santos R.N., Marcelino L. A., Martins G, Almeida M.R, Matias D, Rueff, J.A., Monteiro C. (1994). Loss of heterosigosity in the MCC locus in human squamous lung cancer using (CA)n and fluorescent DNA technology. Annals of Oncology, 5:8 :abs.
18. Albergaria I, Martins G, Marcelino L.A., Rueff, J., Monteiro C.J. (1993). The Use Of Glycerol in G/C-rich DNA amplification - *g6dp* gene as an example, American Journal of Human Genetics 1993: 53 (3): 1605: Suppl.
19. Monteiro C.J., Santos, R.N., Martins, G., Marcelino, L.A, Almeida, M.R., Martins, A.P., Ramos, S., Rueff, J., Melo, J. (1993). Di-nucleotide individual profiles as a tool to identify the origin of homograph cells (in non- and immunosupressed patients), American Journal of Human Genetics :53:1742: Suppl.
20. Monteiro, C.J., Albergaria, I., Almeida, M.R.,. Martins, G, Marcelino, L.A, Rueff, J. (1993). The use of glycerol in G/C-rich DNA amplification: *g6dp* gene as an example, American Journal of Human Genetics, 53: 1605: abs.

**Research Grant Support**

**Active Grants**

1. Source: National Institutes of Health

Title: Mechanisms of Light Scattering in Living Tissues

Role: Co-Investigator (PI: Backman)

Period of Support: 7/01/2010 to 5/31/2015

(Marcelino’s portion $305,000)

2. Source: National Science Foundation

EFRI-BSBA: Photonic Technique for Sensing and Understanding subcellular structures at nanoscale

Role: Co-Investigator (PI: Backman)

Period of Support: 9/1/2009 to 8/31/2014

(Marcelino’s portion $175,514)

3. Source: National Institutes of Health

Title: Novel Biophotonics methodology for colon cancer screening

Role: Co-Investigator (PI: Backman)

Period of Support: 5/5/2008 to 2/28/2015

(Marcelino’s portion $324,000)

**Completed Grants**

4. Source: National Science Foundation

Title: EAGER: BISH Biophotonics Technique for detection of Lung Cancer

Role: Co-Investigator (PI: Backman)

Period of Support: 8/01/2009 to 2/28/2013

(Marcelino’s portion $ 90,000)

5. Source: Chemistry of Life Processes Chairman's Innovation Award, Northwestern University

Title: Use of Novel Optics Technology to establish susceptibility, resistance and recovery indicators of stony corals to bleaching

Role: Principal Investigator

Period of Support: 6/1/2009 to 12/31/2010

Total Costs: $30,000

6. Source: National Science Foundation

Title: Biophotonics: Towards Nondestructive Optical Analysis of Nanostructures Using Photonic Nanojets

Role: Co-Investigator (PI: Backman)

Period of Support: 7/1/2007 to 6/30/2008

(Marcelino’s portion $50,000)

#### 5ProFESSIONAL SERVICE

Membership in Professional Societies: American Society for Microbiology, American Association for the Advancement of Science, International Society for Reef Studies (ISRS), American Society of Limnology and Oceanography

Journal Peer-reviewer: Biotechniques, Journal of Medical Genetics, Limnology and Oceanography

**FORGOT TO INCLUDE MY COLLABORATORS!!!!**