

# Claudia R. Solís-Lemus

## Curriculum Vitae

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### Education

- 2010–2015 **Ph.D., Statistics**, *University of Wisconsin-Madison*, Madison.  
2014 **M.A., Mathematics**, *University of Wisconsin-Madison*, Madison.  
2003–2008 **B.S., Applied Mathematics**, *Instituto Tecnológico Autónomo de México (ITAM)*, Mexico City, Summa cum laude.  
2003–2008 **B.S., Actuarial Sciences**, *Instituto Tecnológico Autónomo de México (ITAM)*, Mexico City, Summa cum laude.

### Publications

- 2016 **Inferring phylogenetic networks with maximum pseudolikelihood under incomplete lineage sorting**, *Solís-Lemus, Claudia and Ané, Cécile*, PLoS Genetics 12(3): e1005896, doi:10.1371/journal.pgen.1005896.  
2016 **Inconsistency of species-tree methods under gene flow**, *Solís-Lemus, Claudia and Yang, Mengyao and Ané, Cécile*, Systematic Biology, doi: 10.1093/sysbio/syw030.  
2016 **Statistical evidence for common ancestry: application to primates**, *Baum, D., Ané, C., Larget, B., Solís-Lemus, C., Ho, L.S.T., Boone, P., Drummond, C., Bontrager, M., Hunter, S., Saucier, B.*, Evolution, doi: 10.1111/evo.12934.  
2015 **Bayesian species delimitation combining multiple genes and traits in a unified framework**, *Solís-Lemus, Claudia, Knowles, L. Lacey and Ané, Cécile*, Evolution, 2. 69, 492–507

#### Conference papers

- 2017 **Adversarial Principal Component Analysis**, *Pimentel-Alarcón, D., Biswas A. and C. Solís-Lemus*, IEEE International Symposium on Information Theory (ISIT).  
2016 **Crime detection via crowdsourcing**, *Pimentel-Alarcón, D. and C. Solís-Lemus*, 8th Mexican Conference on Pattern Recognition, Springer International.

#### Submitted

- 2017 **Greatly reduced phylogenetic structure in the cultivated potato clade of *Solanum* section Petota**, *D. M. Spooner, H. Ruess, C. Arbizu, F. Rodr  guez, and C. Solís-Lemus*.  
2016 **PhyloNetworks: Julia package for inference and manipulation of phylogenetic networks**, *Solís-Lemus, Claudia and Ané, Cécile*.

- 2016 **A new robust measure of relative dispersion**, *Guerrero, Victor and Solís-Lemus, Claudia*.  
In preparation
- 2016 **Bayesian importance sampling for phylogenetic inference**, *with Bret Larget*, UW-Madison.
- 2016 **Modelling and inference of endogenous retrovirus dynamics**, *with Fabricia Nascimiento*, U. of Oxford.
- 2016 **Identificación de los factores del éxito del programa educativo para indígenas**, INEA, Mexico.

## Fellowships and Awards

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| 2015 | Student travel support                             | <i>Society for Systematic Biologists</i> |
| 2015 | Vilas conference presentation funds                | <i>UW-Madison</i>                        |
| 2014 | Advanced Computing Infrastructure Fellowship       | <i>UW-Madison</i>                        |
| 2012 | College of Letters and Science Teaching Fellowship | <i>UW-Madison</i>                        |
| 2009 | Ex-ITAM Research Award in Actuarial Sciences       | <i>ITAM</i>                              |
| 2008 | Social Responsibility Award                        | <i>ITAM</i>                              |
| 2003 | Academic Excellence Scholarship                    | <i>ITAM</i>                              |

## Software development

- 2015 **PhyloNetworks**, <https://github.com/crsl4/PhyloNetworks>, Julia package for phylogenetic networks including estimation method SNaQ.
- 2014 **iBPP**, <https://github.com/cecileane/iBPP>, Bayesian species delimitation integrating genes and traits.

## Research Experience

- 2017 **Postdoctoral fellow**, *NIH-supported project*, Department of Human Genetics, PI: Michael Epstein.  
Emory University
- 2016–2017 **Postdoctoral research**, *NSF-supported project*, Improved Bayesian phylogenetic inference based on approximate conditional independence, PI: Bret Larget.  
University of Wisconsin-Madison
- 2014–2015 **Research assistant**, *NSF-supported project*, ATOL: Assembling a taxonomically balanced genome-scale reconstruction of the evolutionary history of the Enterobacteriaceae, PI: Nicole Perna, Bret Larget, Cécile Ané, Colin Dewey.  
University of Wisconsin-Madison
- 2013–2014 **Research assistant**, *NSF-supported project*, Reconciling gene trees: Deciphering the source and extent of genealogical discordance, PI: David Spooner, David Baum, Bret Larget, Cécile Ané, Gregory Thain.  
University of Wisconsin-Madison

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## Teaching Experience

- 2016 **Guest lecturer**, *Botany 563: Phylogenetic networks*, UW-Madison.
- 2014 **Statistics tutorial**, *PhD qualifying examination summer camp*, UW-Madison.
- 2012–2013 **Teaching assistant**, *Regression methods for population health*, UW-Madison, Professor Ron Gangnon.
- 2011–2012 **Teaching assistant**, *Introduction to Biostatistics for population health*, UW-Madison, Professor Ron Gangnon.
- 2011 **Teaching assistant**, *Introduction to Statistical methods*, UW-Madison, Professor Kevin Packard (Spring), Kam Wah Tsui (Summer).
- 2010 **Teaching assistant**, *Introduction to theory and methods of mathematical statistics I*, UW-Madison, Professor Zhengjun Zhang.
- 2010 **Instructor in Mathematics**, *Advanced Algebra II*, ITAM.
- 2010 **Instructor in Mathematics**, *Calculus II*, ITAM.
- 2009 **Instructor in Mathematics**, *Calculus III*, ITAM.
- 2009–2010 **Instructor in Actuarial Sciences**, *Actuarial Mathematics I*, ITAM.
- 2009–2010 **Instructor in Actuarial Sciences**, *Actuarial Mathematics III*, ITAM.

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## Mentoring Experience

- 2016 **Software Development Project**, *Parallelization of SNaQ in PhyloNetworks*, Josh McGrath – University of Wisconsin-Madison.
- 2016 **Undergraduate Research Scholar**, *Computing tools for bayesian phylogenetic inference*, Jordan Vonderwell – University of Wisconsin-Madison.
- 2016 **Statistics Senior Honors Thesis**, *Computing tools and performance of PhyloNetworks*, Nan Ji – University of Wisconsin-Madison.
- 2015 **Statistics Senior Honors Thesis**, *Inconsistency of species-tree methods under gene flow*, Mengyao Yang – University of Wisconsin-Madison, published work.
- 2015 **Integrated Biological Sciences Summer Research Program**, *Visualizing inferred phylogenetic networks in Julia*, John Spaw – University of Wisconsin-Madison.
- 2014 **Integrated Biological Sciences Summer Research Program**, *Using quartets to estimate phylogenetic networks*, John Malloy – University of Wisconsin-Madison.

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## Presentations

### Invited talks

- 2017 **Mathematical Approaches to Evolutionary Trees and Networks – BIRS**, *Likelihood challenges for big trees and networks*.
- 2016 **Statistics Seminar – UW-Madison**, *Phylogenetic inference for Big Data*.
- 2016 **Instituto de Biología UNAM – Mexico City, Mexico**, *Quartet-based inference of phylogenetic networks*.
- 2016 **Simpósio de Inferencia y modelación estadística – Guanajuato, Mexico**, *Bayesian phylogenetic inference for big data*.

- 2016 **SSB symposium: Advances in the analysis of reticulate population networks** – Evolution meeting, *Quartet-based inference of phylogenetic networks*.
- 2016 **SSB spotlight: Next generation phylogenetic inference** – Evolution meeting, *Bayesian Phylogenetics with Importance Sampling*, (speaker Bret Larget).
- 2016 **Phylogenomics symposium and software school** – Evolution meeting, *Quartet-based estimation of reticulate evolution*.
- 2015 **System Information Learning Optimization Seminar** – UW Madison, *Statistical inference of phylogenetic networks*.
- 2015 **Evolution Seminar Series** – UW Madison, *Fast reconstruction of hybridization networks from multilocus data*.
- 2015 **Networks seminar** – UW Madison, *Statistical inference on phylogenetic networks*.
- 2015 **Statistics student seminar** – UW Madison, *Statistical inference on phylogenetic networks*.
- 2014 **Seminario Aleatorio** – ITAM, *The role of Statistics in the inference of the Tree of Life*.

#### Contributed talks

- 2016 **8th Mexican Conference on Pattern Recognition** – Guanajuato, Mexico, *Crime detection via crowdsourcing*.
- 2015 **Evolutionary System Biology and Modeling Workshop** – UW Madison, *Statistical inference of phylogenetic networks*.
- 2015 **Bayesian Models and Inference** – Contributed speed talk JSM, *Bayesian species delimitation combining multiple genes and traits in a unified framework*.
- 2015 **Mathematical and Computational Evolutionary Biology Conference**, *Inferring phylogenetic networks from quartets with maximum pseudolikelihood estimation*.
- 2012 **Data, skewness and testing** – Contributed papers JSM, *A parametric measure of dispersion derived from the generalized mean*.  
(presenter: Victor Guerrero)
- 2009 **XXIV Foro Nacional de Estadística**, *A parametric measure of dispersion derived from the generalized mean*.

#### Tutorials

- 2016 **Instituto de Biología – UNAM**, *PhyloNetworks: julia package for phylogenetic networks*.
- 2016 **Phylogenomics symposium and software school** – Evolution meeting, *PhyloNetworks: julia package for phylogenetic networks*.
- 2016 **Botany 563** – UW Madison, *Small tutorial on PhyloNetworks and SNaQ*.
- 2015 **The hacker within series** – UW Madison, *Short introduction to Julia*.
- 2015 **Statistics student seminar** – UW Madison, *Short introduction to HTCondor*.

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#### Service

- 2016 **Systematic Biology**, *Editorial Board Member*.

## Symposium organization

- 2016 **Evolution meeting SSB symposium**, *Advances in the analysis of reticulate population networks*, Co-organizer: David Baum.

## Volunteer work

- 2005-2008 **Sistema de preparatoria abierta para adultos**, *Math high-school teacher for adults*, ITAM, Mexico.

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## Languages

- Spanish Native language  
English Proficient level: TOEFL iBT (2009), IELTS (2009)  
French Advanced level: DALF C1 (2007)  
Portuguese Advanced level: CELPE-BRAS (2008)  
German Beginner level: A1 Start Deutsch 1 (2008)

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## Computer skills

- Programming C++, Java, Julia, Perl, Python  
Statistics R, SAS, SPSS  
Mathematics Matlab, Mathematica, Macaulay2  
HTC HTCondor, OSG, SLURM

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## Certifications

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| Exam C  | Society of Actuaries (SOA) | <i>Construction of Actuarial Models Certificate</i> |
| Exam FM | Society of Actuaries (SOA) | <i>Financial Mathematics Certificate</i>            |
| Exam P  | Society of Actuaries (SOA) | <i>Probability Certificate</i>                      |

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## Statistical consulting

- 2016 Analysis of education programs for adults in indigenous populations *INEA, Mexico*

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## References

- **Cécile Ané**, Professor of Statistics and Botany, UW-Madison [cecile.ane@wisc.edu](mailto:cecile.ane@wisc.edu)
- **Bret Larget**, Professor of Statistics and Botany, UW-Madison [bret.larget@wisc.edu](mailto:bret.larget@wisc.edu)
- **Douglas Bates**, Emeritus Professor of Statistics, UW-Madison [bates@wisc.edu](mailto:bates@wisc.edu)
- **David Baum**, Chair of Botany, UW-Madison [dbaum@wisc.edu](mailto:dbaum@wisc.edu)
- **Kevin Packard**, Statistical consultant, Cornell U. (to address teaching), [kcp48@cornell.edu](mailto:kcp48@cornell.edu)
- **Ron Gangnon**, Professor of Biostatistics and Population Health (to address teaching) [ronald@biostat.wisc.edu](mailto:ronald@biostat.wisc.edu)