

# Héctor García Martín, Ph. D.

<https://sites.google.com/view/hectorgarciamartinhomepage>

Green card holder

510-229-8329

hgmartin@lbl.gov

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Quantitative modeler with strong mathematical background experienced in integrating diverse data sets to produce actionable items using machine learning and mechanistic modeling

## EDUCATION

Physics Ph. D. October 2004  
University of Illinois at Urbana-Champaign Urbana, IL USA

Physics B. Sc. June 1999  
University of the Basque Country Bilbao, Spain

## WORK EXPERIENCE

**Deputy Vice President, Biofuels and Bioproducts Division** 2018-Present  
Joint BioEnergy Institute ([www.jbei.org](http://www.jbei.org)) Berkeley, CA USA

**Director, Quantitative Metabolic Modeling** 2011-Present  
Joint BioEnergy Institute ([www.jbei.org](http://www.jbei.org)) Berkeley, CA USA

**Computational Biologist Research Scientist Engineer** 2009-Present  
Lawrence Berkeley National Laboratory ([www.lbl.gov/](http://www.lbl.gov/)) Berkeley, CA USA

- Used *mechanistic models* and metabolomics data to improve biofuel production in bioengineered strains.
- Used *machine learning* and proteomics data to improve biofuel production in bioengineered strains.
- Developed an online tool for large-scale standardized *data storage and visualization*.
- Developed a *microfluidics* chip for performing automated CRISPR-based strain modification.

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**Deputy Director, Host Engineering** 2008-2011  
Joint BioEnergy Institute Berkeley, CA USA

**Computer Project Scientist** 2007-2009  
Lawrence Berkeley National Laboratory Berkeley, CA USA

- Developed *quantitative predictive models* for microbial metabolism.
- Developed *novel methods to measure metabolic fluxes* using  $^{13}\text{C}$  tracing experiments, genome-scale models and nonlinear optimization techniques.

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**Computational Biologist Post Doctoral Fellow** 2005-2007  
DOE Joint Genome Institute (Lawrence Berkeley National Laboratory) Berkeley, CA USA

- Used metagenomics to create *first comprehensive metabolic map* of phosphorus removing microbial communities.
- Researched wood degradation in termite guts through *metagenomic* techniques.

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**Graduate Research Assistant** 2000-2004  
University of Illinois at Urbana-Champaign, Dept. of Physics Urbana, IL USA

- Derived quantitative explanation for the *universal scaling law* known as Species Area Relationship.
- Used *Path Integral Monte Carlo* techniques to simulate Bose Einstein Condensates at very high rotation rates.

Thesis: [http://guava.physics.uiuc.edu/people/Theses/Martin\\_PhD\\_thesis.pdf](http://guava.physics.uiuc.edu/people/Theses/Martin_PhD_thesis.pdf)

## SELECTED INVITED TALKS

10 <sup>th</sup> International Workshop on Bio-Design and Automation	August 2018, Berkeley, USA
REDBIO 2016 conference	June 2016, Lima, Peru
Society for Industrial Microbiology (SIMB) annual meeting	August 2015, Philadelphia, USA
Cell factories and sustainability conference	May 2015, Hillerod, Denmark
Metabolomics 2014 conference	June 2014, Tsuruoka, Japan
RECOMB ISCB Conference on Regulatory and Systems Genomics	November 2013, Toronto, Canada
EMSL Biosciences Theme Advisory Panel	May 2013, Richland, USA
2 <sup>nd</sup> International conference on COBRA	October 2012, Elsinore, Denmark
Industrial Biotechnology conference	April 2012, Xian, China

## SELECTED PUBLICATIONS

Costello, Z. *et al.* "[A machine learning approach to predict metabolic pathway dynamics from time-series multiomics data](#)"  
**Nature *npj Systems Biology & Applications* 4.1: 19 (2018)**

Chubukov, V. *et al.* "[Synthetic and systems biology for microbial production of commodity chemicals](#)"  
**Nature *npj Systems Biology & Applications* 2: 16009 (2016)**

Garcia Martin, H. *et al.* "[A method to constrain genome-scale models with <sup>13</sup>C labeling data](#)"  
**PLoS Computational Biology 11(9):e1004363 (2015)**

Warnecke, F., *et al.* "[Metagenomic and functional analysis of hindgut microbiota of a wood feeding higher termite](#)"  
**Nature, 450(7169):560-5 (2007).**

García Martín, H., *et al.* "[Metagenomic analysis of phosphorus removing sludge communities](#)"  
**Nature Biotechnology, 24: 1263-9 (2006).**

García Martín, H. and Goldenfeld, N. "[On the origin and robustness of power-law species-area relationships in ecology](#)"  
**Proceedings of the National Academy of Sciences USA (PNAS), 103(27):10310-5 (2006).**

Other publications available at: <http://www.researcherid.com/rid/B-5357-2009>

## AWARDS AND HONORS

Member of Congresswoman Barbara Lee's biotech advisory committee

US permanent resident as Outstanding Researcher (EB-12)

Member of the Pacific Northwest National Lab's advisory committee for the "Microbes in Transition" initiative

Renato Bobone Award to the Outstanding European Graduate Student in Physics (UIUC)

Excellence in Teaching award (UIUC)

Incomplete List of Teachers Ranked as Excellent (UIUC)

Phi Kappa Phi Honors Society

## SKILLS

Python, Matlab, Perl, GAMS, C/C++, UNIX, Linux