

# Richard Boeri Decal

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## Profile

Machine learning scientist with domain expertise in applying cloud computing and statistical modeling to engineering, scientific, and real-world problems. Work in team-contexts to create and modify scientific software libraries to process and understand noisy data generated by stochastic real-world processes. Able to seek input from outside experts to create domain-crossing solutions designed to scale.

## Education

<b>M.S. Data Science</b> <i>New College of Florida</i>	Sarasota, FL Aug. 2017 — Dec. 2018
<b>B.A., Chemistry/Biology (with honors)</b> <i>New College of Florida</i>	Sarasota, FL Aug. 2007 — May 2011
<b>Early admission in lieu of 4th year high school</b> <i>Harriet L. Wilkes Honors College</i>	Jupiter, FL Sep. 2006 — May 2007

## Expertise

+ denotes proficiency

<b>Languages</b>	Python <sup>+</sup> · R Tidyverse · Español <sup>+</sup> · English <sup>+</sup> · Italiano
<b>Tools</b>	PyTorch, Keras, Tensorflow · (Geo)Pandas <sup>+</sup> , MongoDB, PostgreSQL · Ray, PySpark, Hadoop · Plotly Dash, Flask · BeautifulSoup, Scrapy · Docker · Kedro, MLFlow

## Computation

**Operating Systems** Proficient: MS Windows, Mac OS X, iOS, Linux, and Android.

**Software** Proficient: office suites, image manipulation and analysis software, and other common productivity packages. Novice: PyMol.

**Programming** Fluent:  $\LaTeX$ . Proficient: Python.

### TECHNICAL SKILLS

- Sci Python Stack
- ML Python Stack
- AWS EC2, S3
- Docker
- Git
- Data versioning
- Distributed computing: Ray Distributed, Spark

**Photography** I am a DSLR photographer and have proficiency with the Adobe suite ([portfolio](#)).

**Other** Fluent in English and Spanish. Known to dabble in the kitchen. I've played violin, piano, contrabass, and ukulele. Licensed scuba diver.

## Industry Work

### Lead Machine Learning Engineer

*Dendra Systems*

Sarasota, FL  
Feb. 2020 — Now

Enabling whole-ecosystem restoration using deep learning.

### Lead Data Scientist

*PaceMate<sup>TM</sup>*

Sarasota, FL  
Feb. 2019 — Dec. 2019

Automated remote detection of cardiac arrhythmias in Internet-enabled heart implants using deep learning.

## Academic Work

### Modeling Hospital Patient Trajectories

*Florence A. Rothman Institute*

Sarasota, FL  
Au. 2018 — Dec. 2018

Data-driven characterization of interactions between chronic conditions and heart failure using clustering and finite state modeling.

### Automated Tracing of Neurons

*Peng Lab, Allen Institute for Brain Science*

Seattle, WA  
June 2018 — Aug. 2018

Implemented proof-of-concept algorithm for automatically reconstructing brain cell morphologies from petabyte-scale microscope data using deep reinforcement learning.

### Multisensory Integration in Mosquitos

*Fairhall Lab, University of Washington*

Seattle, WA  
Oct. 2014 — May 2016

Developed agent-based dynamical models of mosquito thermal plume navigation behavior using wind-tunnel flight data.

### Humpback Whale Migratory Census

*Kimberley Community Whale Research Project*

James Price Point, Australia  
Aug. 2012 — Oct. 2012

Replicated a study at the proposed site of a gas processing port in Humpback calving waters. Our field research revealed gross inaccuracies in the oil conglomerate's report.

### Endogenous Genetic Control

*Walstrom Lab, New College of Florida*

Sarasota, FL  
Aug. 2010 — May 2011

Studied a genetic expression control pathway in *C. elegans*. My honors [thesis project](#) proposes a model for RNA Helicase A function in endogenous RNAi based on qRT-PCR evidence.

### Role of Mitochondrial Fusion in Parkinson's

*Pallanck Lab, University of Washington*

Seattle, WA  
May 2010 — Aug. 2010

Establish a method to grow, stain, and image primary dopaminergic neural cultures from *Drosophila* embryos. I tested whether Parkin and PINK1, proteins involved in Parkinson's disease, are recruited to depolarized mitochondria in dopaminergic neurons. This research was [published](#) in *PNAS*.

## Functional Study of APC2 Protein

McCartney Lab, Carnegie Mellon University

Pittsburgh, PA

May 2009 — Aug. 2009

I determined that APC2, a protein with roles in colon cancer tumorigenesis, did not directly interact with  $\beta$ -catenin of the Wnt pathway's destruction complex. I disproved the theory that APC2's N-terminal domain was essential for its proper localization. This research was [published](#) in *Genetics*.

## Organic Synthesis of P450-like Molecule

Scudder Lab, New College of Florida

Sarasota, FL

Sep. 2008 — Nov. 2009

Partial synthesis of a high-valent iron-stabilizing macrocycle based on the active site of cytochrome P450, with potential applications for cleaning industrial pollution.

## Publications

Burman JL, Yu S, Poole AC, **Decal RB** and Pallanck LJ. "[Analysis of neural subtypes reveals selective mitochondrial dysfunction in dopaminergic neurons from parkin mutants](#)". *Proc Natl Acad Sci USA*. 2012 Jun 26;109(26):10438-43.

Kunttas-Tatli E, Zhou M, Zimmerman S, Molinar O, Zhouzheng F, Carter K, Kapur M, Cheadle A, **Decal RB**, McCartney BM. "[Destruction Complex Function in the Wnt Signaling Pathway of Drosophila Requires Multiple Interactions Between Adenomatous Polyposis Coli 2 and Armadillo](#)". *Genetics*. 2012 Mar; 190(3):1059-75.

**Decal RB**. "A Proposal for RNA Helicase A Function in Endogenous RNA Interference Pathways". Honors thesis, New College of Florida. May 2011.

## Presentations

**Decal RB**, Burman JB, Pallanck L. "Is Parkin Recruited to Damaged Mitochondria in Dopaminergic Neurons?" SACNAS Conference. Anaheim, CA. September 2010. Poster.

**Decal RB**, McCartney BM. "APC2 Does Not Interact with in the  $\beta$ -Catenin Destruction Complex". Annual Sigma Xi Conference. The Woodlands, TX. November 2009. Poster.

**Decal RB**, McCartney BM. "APC2 Does Not Interact with in the  $\beta$ -Catenin Destruction Complex". ABRCMS Conference. Phoenix, AZ. November 2009. Poster.

## Teaching & Outreach

**Data Analysis Mentor**, Intro to Programming Nanodegree. Udacity. 2017 — 2018

**Brain Awareness Week 2015**. University of Washington. March 2015

**Upward Bound**. University of Washington. July 2010

## Awards, Grants & Honors

**Full tuition waiver for master's program***New College of Florida*

Aug. 2017 — Dec. 2018

**NIH PA-12-149 Supplement Grant***University of Washington*

Jan. 2015 — Jan. 2016

**Florida "First Generation" Scholar** (two-time recipient)*New College of Florida*

Aug. 2009 — May 2011

**Florida "Bright Futures" Scholar***New College of Florida*

Aug. 2007 — May 2011

**Four Winds Silver Scholar***New College of Florida*

Aug. 2007 — May 2011

**Student Research Grant***Dubois-Felsmann Research Endowment*

Nov. 2010

**Student Travel Grant***Dubois-Felsmann Research Endowment*

Sep. 2009

**ABRCMS Travel Award***American Society for Microbiology*

Aug. 2009

**Honors Scholarship***Harriet L. Wilkes Honors College*

Sep. 2006 — May 2007

**AP Scholar Award***J.P. Taravella High*

Apr. 2006