# IDP (Individual Development Plan):

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## Part I - Describe career goals and set objectives.

**a) Describe your current career goal(s).**

My primary interests are computer programming, statistical analysis, mathematic modeling of complex systems and disease ecology. I enjoy solving puzzles and the computational approach to biology drives me. I hope to find a job in the private sector as a data scientist, ideally with a company that works in a disease related field (i.e. medicine, pharmaceuticals etc.).

**b) Set objectives for progressing toward these career goal(s) in the coming year.**

Currently I am fluent in the R programming language and am learning other languages pertinent to data science including Python, C++, Ruby and Unix as well as sub-languages that are commonly utilized in computational fields: LaTex, Markdown, HTML, regular expression etc. I am taking statistics courses rooted in programming like "Linear Models" and "Modeling Complex Systems." Classes on managing large genomic data sets would be useful as well as classes related to disease ecology and epidemiology. If the right internship came along related to the field I am interested in I would pursue it. I am not especially interested and teaching but anticipate beginning my job search in 2019, a year before I graduate.

## Part II – Review your progress: research and professional training in the past year.

**a) Provide a short overview of your research project(s) (2-3 sentences) and briefly describe your research progress in the past year.**

My interests include disease ecology, ecological modeling, statistics and pollinator conservation. I graduated from the University of Vermont with a B.S. in zoology where I began combining my interest in pollinators with my fascinations with disease and statistics. My graduate work broadly focusses on understanding the interactions that occur between multiple pathogens within their host organism. I am specifically interested in how temporal variation in RNA viruses and three species of the fungal parasite, *Nosema* might influence patterns of co-infection in both native and managed bees. In addition, I hope to understand what effects competition between pathogens (as well as other forms of interspecific interaction) might have on host health.

**b) Briefly describe your activities and accomplishments in the past year.**

- learned how to program in Python (focusing on using the language for mathematical modeling)
- Took Alison Brody's Scientific Survival Course
- Learning how to do negative strand analysis for determining whether RNA viruses are replicating form members of the University of MD Bee lab
- My abstract was accepted for a 45 minute talk at the American Beekeeping Federation Conference in Reno, NV
- Taught my first lab (BCOR 102)
- Working on data analysis for my "Temporal variation affects pattern of confection" paper
- Wrote and submitted my NSF-GFRP proposal
- Submitted a co-authored paper with Samantha Alger to PloS ONE on the effects of migratory beekeeping on the spread of honeybee disease
- I finished lab work for my collaboration with the Folks in the Hamilton College bee lab this summer
- Working on four manuscripts that will be ready for submission by the end of this academic year
    - 2014 bombus survey of the microsporidian pathogen *Nosema* (First Author)
        - mathematical models of the transmission route
        - empirical data no prevalence by caste and species
    - Influence of shared floral resources on viral spillover between native and managed bees (second author)
    - Influence of queen stock origin on pathogen resistance and productivity (third author)
    - 2015 survey of RNA viruses in Vermont bumble bees (second author)
- Data analysis for Local vs Imported Queen study
    - wrote generic four functions for data cleaning qPCR data
    - reading and comments on 1st draft of manuscript
- Data Analysis for Temporal Variation and Co-infection
- Pathogen-Pathogen Interaction Models
- Moved my data to a private Github repository
- Working on Organization

**c) How successfully did you meet last year's goals? Are there top-priority goals that you didn't meet?**

I was able to adequately meet me goals last year. I feel like I have accomplished the majority of my goals and am in a good position to finish my dissertation by 2020.

**d) Attach a copy of your updated CV.**

*See attached to email for PDF of my CV*

# Part III – Set research goals for the upcoming year.

**a) Set goals for your research project in the coming year.**

- Research methods or technical skills to learn
- I would like to submit my 2014 survey and Temporal variation papers
- I would like to acquire funding for my 2016 survey work
- I would like to learn how to isolate RNA viruses
- I will continue to work on my statistics and programming skills
- I want to begin running my competition studies in the lab

**b) Set training goals.**

I will be taking linear models and modeling complex systems and teaching BCOR 12 labs. I plan to increase may knowledge of the Python language by using it in my "modeling complex systems" class. The fall 2018 semester I plan to take my comprehensive exams. I would like to present at another conference and continue to give talks to the beekeeping community and well as give advise to legislators on pollinator conservation. I will also apply for grants for the Garden club of America and others to fund the molecular viral assays for my 2016 bombs survey work.