



# EEMB 146: Biometry

(Analysis of Biological Data)

Winter 2023





# Professional Development

**Material curated by Samantha Sambado,  
Instructor of Record for UCSB's Biometry class;  
whom the material was originally shared with.**

**I have a limited perspective.  
If you would like to correct or add any information,  
please email [sbsambado@ucsb.edu](mailto:sbsambado@ucsb.edu)**



Today I'll cover  
some basics\*,  
but the  
material is  
yours for  
forever!

\*I have a limited  
perspective...  
want to edit/add anything?  
send [sbsambado@ucsb.edu](mailto:sbsambado@ucsb.edu)  
an email!

- [Email](#) etiquette
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- [CV](#) tips
- Purpose of the [SOP](#)
- Finding [funding](#)
- [Grad school application](#) timeline
- Questions to [ask advisors](#)
- Highlight [resources on GS](#) & from others
- My [personal TLDR](#);
- Other [random questions](#) you have? Just ask!

# Email Etiquette – General Tips

**\*\* WRITE AN EMAIL YOU'D LIKE TO READ \*\***

^ if this is the only thing you remember from today my job is done.

- **Subject line**
  - helpful & informative can increase chances of being read
- **Within the email**
  - address people properly – some still care
  - state who are you – clearly
  - state what you want – very clearly
  - bold deadlines – we're human

# Email Etiquette – for Research Inquiries

- **same rules** as [general email etiquette](#)
- add some **additional information**
  - what [specifically interests you](#)
    - don't copy & paste from research website
  - what [year you are in school](#)
    - mention transfer, senior thesis, etc.
  - what [your availability](#) is like
    - don't say free all the time – be realistic & honest
- **attach** a [CV](#) or [Resume](#)

# Email Etiquette – for Grad School

- **Slightly longer** than the other two email formats, but **keep it concise**
- **Paragraph structure**
  - **P1** – who you are, what you want
  - **P2** – your qualifications
  - **P3** – how your qualifications make you an assets to the lab group
    - bring in their own research and how it works with your questions/skill set
  - **P4** – going forward
    - say you'll write a grant, want to chat, attached CV

# Common jargon\* in academia

\*see GS for  
extended definitions

- **Individuals/roles**
  - **Technician**: position to help grad or prof w/ research
  - **PI (principal investigator)**: oversees the work supported by grant
  - **Research group**: referred to as a lab comprised of students, researchers, Pis
  - **Professors**: called different names based on their hiring status
    - **tenured**: indefinite appointment
    - **adjunct**: mostly lecturers
    - **assistant**: full time faculty, 1<sup>st</sup> step to tenure
    - **associate**: full time faculty, newly tenured
    - **full**: higher rank than associate
    - **endowed**: funded by an endowment (ie large donation)
    - **emeritus**: retired tenured professor

# Common jargon\* in academia

\*see GS for  
extended definitions

- **Money \$\$\$**

- **grant**: typically, support for a specific project
- **fellowship**: typically, support that has more weight on individual
- **external funding**: outside campus funding
  - **government**: NSF, NIH, NOAA, USGS, USDA
  - **private**: Ford, Hertz, Schmidt, Worster
- **internal funding**: within campus funding
  - **university**: central campus fellowships, merit or diversity fellowships
  - **department**: TAships, from advisor or collaborators



# What is a CV?

- **Curriculum vitae (CV):** tells the stories of the **professional lives** & to showcase **accomplishments**
    - **Essential** part of any application for grants, awards, positions
  - Different than a **Resume**
    - CV can be **long**
    - **flexibility** to highlight certain areas
  - CV or Resume, keep it **clean, concise, & strategic.**
- “If it’s not pristine on your CV, when will it be?”**

# CV Basics

## Building CV

- include [professional email](#)
- include comprehensive list of [professional experiences](#)
- [organize](#) important info [smartly](#)
- [simple & consistent](#) formatting
- use [reverse chronological](#) order
- make sure [references are up to date & aware](#)
- **PROOFREAD** x 10
- [Get feedback](#) from others

## Maintaining CV

- include [date of last revision](#) in file title
- [update](#) it as events occur
- always convert to [PDF](#) before submitting
- always look for [other examples](#)



# CV – UG examples

which is easiest to look at in a quick glance?

## EX 1

Anna [REDACTED]  
746 [REDACTED] Lane  
California, Davis, 95616,  
Ph. (408) 7991214,  
[REDACTED]@ucdavis.edu

### Biological Technician (4/7/14 – Present)

(Crew Leader from 4/7/15 - Present)

WERC-USGS, Brian Halstead, Dixon, California

#### Duties:

- Trapped and processed over 250 Giant Garter Snakes (*Thamnophis gigas*), a federally threatened species, using aquatic funnel traps. Processing included measuring snout-vent length and vent-tail length, microbranding, pitting, and taking scale measurements.
- Primary duties included aquatic trap monitoring and capture for abundance, modifying and repairing traps, occupancy and mark-capture-recapture studies, habitat and vegetation surveys, visual surveys, husbandry of captive snakes for radio telemetry surgical implantation, and radio telemetry tracking.
- Organized a crew of 20 including training for all primary duties, managing schedules and days off, giving performance reviews, and assigning daily tasks.
- Ran Bayesian statistics in R using JAGs and winBUGS on data collected during the field season, including but not limited to abundance models, occupancy models, sex ratio and sexual dimorphism models. Also gained experience writing reports for land owners and partner agencies such as the Natomas Basin Conservancy and the DWR.
- Took the lead on a yearly update report on *T. gigas* occupancy and variables that affected this occupancy in 83 sites in 5 counties for the DWR. Wrote a new model for JAGs, organized all of the data to run the model, and wrote the preliminary introduction, methods and results.
- Gained extensive experience radio telemetry tracking snakes in both summer and winter months as well as tracking California Red-legged Frogs (*Rana draytonii*).
- Conducted night and day double-observer surveys for California Red-legged Frogs.
- Conducted double-observer day surveys for San Francisco Garter Snakes (*Thamnophis sirtalis tetrataenia*), a federally endangered species. Also assisted in assembling drift-fences and electric enclosures for study of this species.
- Conducted body condition surveys on waterfowl at National Wildlife Refuge hunter check stations and identified species, sex, and age. Took measurements of mass, culmen length, tarsus length, and wing chord.
- Participated in small wing-bees and gained experience identifying California waterfowl by wing-only.
- Minor experience in capturing, handling, and processing Ring-necked Pheasants.

### Intern (2011-2013)

Brad Shaffer, Davis, California

#### Duties:

- Repaired and set up drift fences
- Checked drift fences at sun rise and recorded data on California Tiger Salamander (*Ambystoma californiense*)(CTS) adults, juveniles and metamorphs.
- Handled over 2000 CTS, a federally endangered species
- Independently sorted and massed aquatic invertebrates from vernal pools to understand CTS diets
- Assisted in collecting measurements on Western Pond Turtles (*Emys marmorata*) in the UC Davis arboretum including carapace width and length and mass.
- Cared for the CTS colony on campus, including feeding colony and cleaning containers.

### Intern (Summer 2012)

Will Wetzel, Mammoth Lakes, California

## EX 2

Helen [REDACTED]  
[REDACTED] 686 • 1371 [REDACTED] San Francisco, CA • 94122  
[REDACTED]@sfsu.edu • www.linkedin.com/in/[REDACTED]

### Education

San Francisco State University

Graduate Student, Department of Biology

Concentration: Ecology, Evolution, and Conservation Biology

Virginia Tech

Class of 2015, B.S. Biology

University GPA 3.60, In Major GPA 3.45

Universidad Internacional Menéndez Pelayo, Sevilla

International Studies Abroad, Fall Semester 2014

### Research Experience

Master's Candidate • Vredenburg Lab

San Francisco State University, August 2017 – Current

*P3: People, Pathogens and Pollution*

*Mountain Ecosystems as Sentinels of Change*

My thesis examines the impacts of pathogens (chytrid fungal infection and Ranavirus) on the skin microbiome of amphibians that inhabit the alpine freshwater mountain ecosystems of the Pyrenees of France and Spain and the Dhofar Mountains of Oman.

Research Assistant • Sewall Lab

Virginia Tech, Summer 2015

*Behavioral Aggression of Rural vs Urban Song Sparrows*

During the summer of 2015 I assisted with a study in song sparrow aggressiveness. My duties include compiling and organizing data into the database, sectioning brains using the cryostat, performing field observations (behavioral recordings of aggression), reading color bands in the field, assisting with mist netting and extraction, assisting with passerine banding, and shadowing as blood samples and other measures are taken.

Undergraduate Research Assistant • Sewall Lab

Virginia Tech, Spring 2015

*Effects of Mycoplasma Infection on House Finch Telencephalon and Hippocampus.*

Our group examined the neuroanatomy of wild house finches that were, or were not, infected with *Mycoplasma*. To quantify the impact of this infection on the brain we measured and compared the volume of the telencephalon (forebrain) and hippocampus using prepared histological slides and photomicrographs.

Undergraduate Lab Intern • Vredenburg and Zink Lab

San Francisco State University, Summer 2014

*Host/Pathogen Disease Dynamics*

I worked with Masters student Kendra Ritchie on studying behavioral ecology and disease in *Batrachoseps* salamanders, which included estimating transmission dynamics of the fungal pathogen *Batrachochytrium dendrobatidis* in host salamanders *Batrachoseps attenuatus*. My duties included cell culture, DNA extraction, qPCR, and recording salamander behavior. I participated in fieldwork for other projects, duties of which

## EX 3

[REDACTED] LUG  
1156 [REDACTED] Street Santa Cruz, CA 95064  
(831) 459-4420, [REDACTED]nyslug@ucsc.edu  
www.linkedin.com/[REDACTED]slug

### EDUCATION

Bachelor of Arts in Environmental Science

June 2021

University of California, Santa Cruz

- Senior Thesis: Evaluating Energy Conservation for Electricity in the Santa Cruz County

### AWARDS

- Dean's Honors Fall 2019- Spring 2020
- Honors in the Major
- UC Santa Cruz College Scholars Program
- Golden Key International Honor Society

### RESEARCH EXPERIENCE

Research Assistant, UCSC Department of Environmental Studies

Dec. 2018- Present

Santa Cruz, CA

- Conduct weekly interviews with city residents to assess city residents' electricity usage
- Collaborate with research team to construct surveys on electricity usage for a sample of 100+ households monthly
- Analyze and compile data in organized reports to inform policy recommendations

Fieldwork Assistant, UCSC Department of Environmental Studies

Sept. -Dec 2018

Santa Cruz, CA

- Evaluated and revised UCSC campus Environmental Impact Report
- Collected surface groundwater samples from the American River and analyzed for pesticide contamination

### RELEVANT WORK EXPERIENCE

Conservation Outreach Intern, Center for Biodiversity & Conservation

March 2018-Present

Santa Cruz, CA

- Create and implement program of applying remote sensing GIS applications to biodiversity conservation
- Develop targeted strategies incorporating city and county advice aimed at reaching out to government officials, citizens, and community educators

Waste Consultant, Ecology Now

Jan. 2016-March 2018

Santa Cruz, CA

- Recruited businesses and non-profits to participate in free water waste audit and performed waste audits
- Educated local citizens of environmental issues in person and via telephone

# Purpose of the SOP

- **Statement of Purpose (SOP):** Typically, an essay about your **research goals** & how your **personal experiences** shape your interests
- There will be a variety of prompts and lengths, so it's good to **create a ~2-page template**
- This is **your opportunity** to:
  - tell the reviewer **who you are**
  - highlight your **skills & accomplishments**
  - showcase your **writing ability**
- Highly **recommend**
  - reading **many examples**, **revising yours frequently**



# Crafting individual paragraphs within SOP

For **each paragraph**, the reader should identify:

- **where** you were/**who** you worked with
- what were the **questions you were testing**
- what were some of the **methods/skills** you learned
- any **products created** from that experience (paper, poster, grant)
- identify how it **builds from the previous paragraph & leads to the next paragraph**

# Highlighting ~some~ funding\*

\* On GauchoSpace, under 'Professional Development' tab

## Research opportunities explicitly for undergrads!

### UCSB or UC specific

#### Funds for research costs

Helpful for those who are thinking about senior thesis projects or want to pair up with a grad student on a particular project

#### **UCSB Undergrad Research & Creative Activities (URCA)**

The URCA grant is an opportunity for undergrads to pursue **\$750 in funding for their own independent research project**. By applying for the URCA grant, you become an integral part of the research community at UCSB and will develop important skills like taking a research project from conception to completion, learning how a typical grant application process works and getting hands-on experience with research.

#### **UCSB Transfer Student Research Award (TSRA)**

The TSRA grant is an opportunity for transfer students to pursue **\$750 in funding for their own independent research project**. By applying for the TSRA grant, you become an integral part of the research community at UCSB and will develop important skills like taking a research project from conception to completion, learning how a typical grant application process works and getting hands-on experience with research.

#### **UCSB Faculty Research Assistance Program (FRAP)**

If you are an undergrad in the College of Letters & Science, you can apply for **\$350 grants** to work directly with a faculty member on a specific research project. You can also earn **academic credit for your time spent researching**. To find research opportunities, inquire with a professor directly or search through the FRAP directory.

#### **Gene & Susan Lucas Undergrad Research Fund**

The Gene & Susan Lucas Undergrad Research Fund was created to help **first-generation undergrad** students experience research alongside UCSB faculty. The program supports research for first-generation UCSB undergrad in STEM. Funds may be used for **stipend, research materials, travel, conferences, or field experience**.

#### **UCSB Coastal Fund**

The Coastal Fund (CF) is a student initiative dedicated to the conservation of UCSB coastline. The CF accepts proposals during 3 funding cycles throughout the year (one per academic quarter). Research proposals are intended for undergrad and graduate coastal research, community and campus programs or coastal education. **Funds can be used for experiment supplies or undergrad stipend**. Find out more information by clicking [this link](#).

#### **UCNRS Hastings Reserve William Simes Award**

Hastings, located in Carmel Valley, is part of the UC Natural Reserve System (UCNRS) that is offering research money for undergrads. The Simes Fund is intended to support costs associated with an extended (e.g., several month) period of **field research at Hastings**. Appropriate uses include costs of housing, food, and other supplies required to conduct fieldwork.

#### **UCSB Undergrad Research Assistance Program Directory**

Maybe you don't really get what "research" is, or may have many different interests, but would like to gain experience. The Undergrad Research Assistance (RA) Directory is a great tool to start with - it will **give you an idea of different research opportunities that are currently advertised by faculty**. Peruse through [this link](#) to find out more information.

## Fellowship programs

Admission to these programs offer financial and professional development support. Highly recommend applying for a program if you qualify.

#### **Field-based Undergrad Engagement through Research, Teaching, & Education (FUERTE)**

A National Science Foundation (NSF) program for UCSB undergrads organized by members of EEMB department. FUERTE is designed to **build students foundation to succeed at UCSB and develop the skills students need for a career in conservation and environmental sciences**. FUERTE is meant to welcome and support students who are traditionally under-represented in these fields, especially Latinx, Indigenous, Black, and first-generation undergraduates. As a FUERTE member, students will **receive financial support in summers** in addition to training and experience.

#### **UCSB McNair Scholars Program**

The McNair Scholars Program is specifically designed to assist undergrads on their entrance to a PhD program. If accepted into the program, participant will receive a **stipend of \$3,000, all expense paid travel to academic conferences, a one-year academic advising and opportunities to have research published in the UCSB McNair Journal**. To qualify for the McNair Scholars Program, you must be either a low-income as defined by US Department of Education and first generation college student or a member of group underrepresented in higher education as defined by US Department of Education (African-American, Hispanic-Latino, Native American, and Alaskan, Pacific Islander/Native Hawaiian).

#### **UCSB Monarch Opportunity Scholarship**

The Monarch Opportunity Scholarship is a collaboration between Office of Financial Aid & Scholarships (OFAS), Career Services, and Undocumented Student Services scholarship developed to ensure that all students have the opportunity to receive financial support and achieve their educational and professional goals. By participating in the Monarch Opportunity Scholarship with the Undocumented Student Services (USS), selected students will serve as Student Mentors for the USS Pre-Pair Program. As a Pre-Pair Program Student Mentors at UCSB, **students will primarily support a cohort of undocumented students participating in USS's Pre-Pair Program** in order to help them navigate their first year at UCSB. Furthermore, Student Mentors will provide holistic support to UCSB undergraduate undocumented students who are not part of the Pre-Pair Program. Student Mentors will work with Lead Intern and USS Team to identify and develop resources tailored to undocumented students.

#### **UCNRS Advancing Inclusivity Fellowship**

The University of California Natural Reserve System (UCNRS) has a **10-week summer internship** that pairs undergraduates with faculty or staff working at the [UC Riverside Natural Reserves](#). Students will work with advisors on a summer research project to gain field experience. Undergraduates from accredited universities within Southern California. First generation students and Pell Grant recipients are encouraged to apply. No field experience is necessary. **Recipients receive a \$4,500 stipend for 30 hours/week of work**.

#### **California Alliance for Minority Participation (CAMP)**

The California Alliance for Minority Participation (CAMP) provides resources and opportunities to underrepresented students in STEM across many UC campuses. The Summer Research Program provides a **10-week intensive research experience** for CAMP eligible students interested in a career in STEM. CAMP participants work in a UCSB laboratory with a grad student or post-doc research mentor to receive one-on-one training and support for the research project. CAMP interns also participate in weekly group meetings to develop oral presentation skills, attend specific seminars and present their results at the end-of-summer poster session.

#### **MARC U\*STAR**

The Maximizing Access to Research Careers at UCSB is funded by National Institute of Health (NIH). The program seeks to increase number of biomedical and behavioral scientists from underrepresented backgrounds in leadership positions. MARC Scholars go through a **two-year program of research, leadership development, and graduate school preparation** guided by individual biomedical faculty mentors.

#### **EUREKA!**

A program designed for UCSB undergrads in STEM disciplines. The program is focused on **introducing students in their first year to the broader science community** on campus & **providing exposure to research** through academic year internships. EUREKA is hosted by the Center for Science & Engineering Partnerships (CSEP) at the CA Nanosystems Institute (CNSI).



# Grad school\* application timeline\*\*

\*\* additional details  
on GS, under  
'Professional  
Development' tab



Now	May	July - August	Sept - Nov	Jan - April
<ul style="list-style-type: none"><li>• Develop system to keep track of papers</li><li>• Read very broadly!</li></ul>	<ul style="list-style-type: none"><li>• Make list of potential advisors &amp; programs you're interested in</li><li>• Develop this list from your reading habits</li></ul>	<ul style="list-style-type: none"><li>• Email potential advisors inquiring about a MS/PhD position</li><li>• Set up meeting with advisor/lab group</li></ul>	<ul style="list-style-type: none"><li>• Work on application materials</li><li>• Although I recommend to do this earlier – Fall is busy!</li></ul>	<ul style="list-style-type: none"><li>• Hear back from programs</li><li>• Maybe recruitment/interview weekend</li><li>• Regardless, email PI thanking them for their time &amp; to stay in touch</li></ul>

\* if you are applying to a **direct admit MS/PhD program** (typical for ecology/evolution) – different than rotational program

# Questions to ask PI/advisors

1. Can you describe your **mentoring approach**?
2. **How many** grad students have you advised?
3. What are those **students doing now**?
4. Have any students had to **leave your program**? What do you think happened?
5. How would I **develop my project**?
6. Can I **talk to folks** in your lab?
7. Can I **read the proposal** funding my position?
8. Have your **students obtained fellowships** under your mentorship? Can you talk about that process?
9. Where do you see are the **biggest areas of innovation** in your field?
10. What are your **expectations** to take the qualifying exam & graduate?



Highlight  
some\*  
professional  
development  
resources\*\*

\*\* additional details on  
GS, under 'Professional  
Development' tab

1. [How to find different paths in science](#)
2. [How to write a CV](#)
3. [How to write an email/cover letter to a potential PI/boss](#)
4. [Funding opportunities](#)
5. [How to get a government job with a biology bachelor's degree](#) - written by my friend, [Jacob Weverka!](#)

**\*I have a limited perspective...**

Want to edit/add anything? send [sbsambado@ucsb.edu](mailto:sbsambado@ucsb.edu) an email!

I'm only one person – lots of other ideas out there!


If you want to add others, please email [sbsambado@ucsb.edu](mailto:sbsambado@ucsb.edu)

- [Cesar O Estien's resource page](#) on grad school & preview weekend applications, NSF GRFP
- [Erin Mordecai's blog](#) that shares resources on the pre-, during, & post- grad school experience
- [A guide](#) by E3B Columbia students on applying & deciding on a PhD program
- [Hidden curriculum](#) by Mara Duncan
- [A thread](#) on grad school application process
- [Another thread](#) on the GRFP by Amelia Zietlow

TLDR; my  
biggest  
takeaways  
are

- **shoot your shot** –
  - **no one is too important** for you to talk with
- **write an email you want to read** –
  - **short & simple**
- **persistence is key** –
  - **it's usually not you**, people are just really, busy





Have any questions about  
professional development?  
See me in Office Hours

Email [sbsambado@ucsb.edu](mailto:sbsambado@ucsb.edu) for any corrections/additions.