

# Melinda A. Yang, Ph.D.

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## CURRENT POSITION

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**2010 – 2015** CAS - IVPP  
Postdoctoral Scholar in the Molecular Paleontology Lab  
Adviser: Qiaomei Fu

## EDUCATION

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**Filed Dec '15** University of California, Berkeley  
Ph.D in Integrative Biology, D.E. in Computational Biology  
Thesis Committee: M. Slatkin (Adviser), R. Nielsen (Adviser), J. Habu  
Thesis Title: "Using aspects of the site frequency spectrum to determine demographic history in ancient and modern populations."  
Graduation Date: December 2015

**2010** Swarthmore College  
B.A. Honors Biology Major, Course Sociology & Anthropology Major, High Honors

## TEACHING / WORK EXPERIENCE

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**Summer '17** **Introduction to Programming in Python for Biologists**, Head Instructor  
CAS-IVPP  
Created/taught one-month course on Python programming in genomics. Created syllabus, lectures and exercises. Advised undergraduates, masters and doctoral students. Facilitated discussion in journal club. Arranged guest lectures. Mentored students on final projects.

**Feb '16** **Guest lectured in course 'Analysis of High Throughput Sequencing Data'**  
Temple University, taught by Prof. Joshua Schraiber  
Gave one lecture on population genetics in bioinformatics class.

**2012–2016** **Python Bootcamp**, 1-2 weeks, 9-5 pm, summer and winter, Instructor and TA  
QB3 and the Center for Computational Biology, UC Berkeley  
Python bootcamp for biology graduate students. Co-instructor Summer 2014, Winter and Summer 2015, and Winter 2016. Gave lectures, assisted students with exercises.

**Fall '15** **Berkeley Connect in Computational Biology (BCCB)**, Instructor  
Berkeley Connect Program and CCB, UC Berkeley  
Mentored students interested in CB. First BCCB fellow. Created course syllabus, planned events, developed information sheets to advise undergraduates. Contacted professionals in industry to recruit panelists and speakers. Organized on-site field trip at *Ancestry.com* and *Invitae*. Facilitated discussion, moderated panels, advised students.

**Spring '15** **Intro to Biological Anthropology**, Graduate Student Instructor (GSI)  
Dept. of Anthropology, UC Berkeley, Taught by Prof. Terrence Deacon

Guided weekly labs, taught mostly lower level undergraduates. Coordinated lessons with co-GSIs and professor. Contributed questions to/graded weekly quizzes and course exams. Held office hours.

**Fall '13**

**Human Biological Variation, GSI**

Dept. of Integrative Biology, UC Berkeley, Taught by Prof. Leslea Hlusko  
Led four sections, taught mostly non-majors. Coordinated lesson plans with co-GSIs and professor, facilitated discussion in section, developed and graded course exams, graded final essays, and held office hours. Developed two section lesson plans and assisted in development of others. One explored coalescent theory as applied to human population genetics. The other explored ethics in scientific research, where students organized into mock IRB Panels. Co-guest lectured once to 300-student class.

**Fall '10**

**Human Genetics and Genomics, GSI**

Dept. of Integrative Biology, UC Berkeley, Taught by Prof. Monty Slatkin  
Led two labs, taught upper level undergraduates, coordinated lesson plans with co-GSIs and professors, lectured and guided lab activities in section. Introduced students to *R* and multiple population genetics-focused software. Developed and graded course exams, held office hours.

**2006 – 2010    Circulation Assistant at Swarthmore College McCabe Library**

**Summer 2007   Student Worker at the Institutional Review Board, LSU Health and Sciences Ctr**

**PUBLISHED WORK**

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1. **Yang MA**, Gao X, Theunert C, Tong H, Aximu Petri A, Nickel B, Slatkin M, Meyer M, Pääbo S, Kelso J, Fu Q. 2017. "40,000-year-old individual from Asia provides insight into early population structure in Eurasia." *Current Biology*. In Press.
2. **Yang MA** and Slatkin M. 2016. "Using ancient samples in projection analysis." *G3: Genes, Genomes, Genetics*. Doi:10.1534/g3.115.023788
3. Librado P, Der Sarkissian C, Ermini L, Schubert M, Jonsson H, Albrechtsen A, Fumagalli M, **Yang MA**, Gambo C, Seguin-Orlando A, et al. 2015. "Tracking the origins of Yakutian horses and the genetic basis for their fast adaptation to subarctic environments." *Proc Nat Acad Sci*. 112(50). doi:10.1073/pnas.1513696112
4. Der Sarkissian C, Ermini L, Schubert M, **Yang MA**, Librado P, Fumagalli M, Jonsson H, Bar-Gal GK, Albrechtsen A, Vieira FG, et al. 2015. "Evolutionary genomics and conservation of the endangered Przewalski's horse." *Current Biology*. 25(19). doi:10.1016/j.cub.2015.08.032
5. **Yang MA**, Harris K, and Slatkin M. 2014. "The projection of a test genome onto a reference population and applications to humans and archaic hominins." *Genetics*. 198(4). doi:10.1534/genetics.112.145359
6. Wall JD, **Yang MA**, Jay F, Kim SK, Durand EY, Stevison LS, Gignoux C, Woerner A, Hammer MF, and Slatkin M. 2013. "Higher levels of Neanderthal ancestry in East Asians than in Europeans." *Genetics*. 194(1). doi:10.1534/genetics.112.148213
7. **Yang MA**, Sapfo-Malaspinas A, Durand E, and Slatkin M. 2012. "Ancient structure in Africa unlikely to explain Neanderthal and non-African genetic similarity." *Mol Biol Evol*. 29(10). doi:10.1093/molbev/mss117

Undergraduate Journal Publication (Competition Submission)

**Yang MA**. 2007. "The Effect of Society on the Development and Categorization of Mental Health and Illness." *Penn Bioethics Journal*. 4(1). <http://hdl.handle.net/10822/967780>

## **FELLOWSHIPS/GRANTS**

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- Current**      **International Postdoctoral Research Fellowship Program for China**
- 2012 – 2015**    **National Science Foundation (NSF) Graduate Research Fellow**
- Sum 2013**      **NSF East Asia Pacific Summer Institute Fellow**  
Host: Professor Hui Zhou at the Ancient DNA Lab at Jilin University  
Learned lab skills to extract ancient DNA from bones. Formed international ties with lab mates and other collaborators. Met US and Chinese NSF diplomats at US embassy events. Attended closing ceremony at the NSF Young Scientists Forum in Beijing (Aug 2013) and presented my research to participating American and Chinese scholars.
- Sum 2013**      **Dept. of Integrative Biology (IB) Summer Research Grant (\$3000)**
- Spring 2013**    **Sigma Xi Grants in Aid of Research (\$1000)**
- 2010 – 2012**    **National Institutes of Health Genomics Training Grant**
- Sum 2009**      **Howard Hughes Medical Institute Summer Grant (Swarthmore College)**

## **OUTREACH**

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- 2014 – 2015**    **Elementary Algebra at the Prison University Project**  
Instructor, San Quentin Penitentiary, 4 semesters  
Taught algebra (lead instructor Fall 2014 and Spring 2015), created study skills seminar Summer 2015. Made lesson plans, lectured 1x/week, coordinated weekly communication with co-instructors, graded homework, created and graded quizzes/tests. Study skills sem.: Taught methods to improve studying (note-taking, math drills, etc).
- 2014 - 2016**    **Expanding Your Horizons, UC Berkeley**  
Workshop Leader, UC Berkeley, Annually in March  
Adapted lesson plan on fossil formation for 6-8<sup>th</sup> grade girls, lectured and discussed fossils and their importance, assisted students during activities.
- 2013 - 2015**    **Nielsen Lab Science Outreach**  
Instructor, TA, Organizer, Berkeley High School, Annually in February and March  
Assisted teaching lesson on forensic genetics, adapted lesson on coalescence I created for undergraduates to teach 9<sup>th</sup> graders, coordinated visits for all volunteers.
- 2012 – 2015**    **Bay Area Scientists in Schools**  
Scientist, 2<sup>nd</sup> grade classrooms in Alameda County, California, 4-5 times/semester  
Visited Alameda County public schools to teach lesson on fossils. Created lesson plan:  
[http://www.crscience.org/lessonplans/2-Fossil\\_Formation-Alice\\_Mel\\_11-12.pdf](http://www.crscience.org/lessonplans/2-Fossil_Formation-Alice_Mel_11-12.pdf)

## **PROFESSIONAL ACTIVITIES**

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### **Mentorship:**

**2017: Worked with NSF EAPSI fellow, Jacob Gardner, from Montana State University**

Developed research project to work with graduate student. Trained him in using Python language. Currently advising through grant-writing process for graduate fellowships.

**2016-Present: Training IVPP master's student Manyu Ding**

Trained in using Python language. Guided discussion of scholarly articles.

**2015: Mentored students from BCCB**

Interviewed academic advisors from multiple departments, developed info sheets on studying computational biology at UC Berkeley as an undergraduate, held one-on-one meetings with all students to discuss courses and career goals, connected and advised students in creating a club (*ALIGN*) for students interested in computational biology.

**2013-2014: Mentored undergraduate Jessica Robbins**

Trained in using Python language. Studied the sensitivity of frequency spectrum-based demographic inference methods to estimates of the time of archaic admixture using simulations.

**2010-2015: Co-wrote recommendation letters** for students.

**Presented research at international conferences/forums (presented talk unless otherwise specified):**

“Early modern humans, through the lens of genomics.”

**Invited Speaker: China Primatology & Anthropology Young Scholars Forum.** 07/2017. Guangzhou, China.

“40,000-year-old individual from Asian provides insight into early population structure in Eurasia.”

**Society of Molecular Biology and Evolution (SMBE).** 07/2017. Austin, TX.

**Invited Speaker: iGEM Seminar Series at Temple University.** 02/2017. Philadelphia, PA.

**International Symposium on Biomolecular Archaeology (ISBA) 7.** 09/2016. Oxford, UK.

“Using projection analysis to explore human demographic history.”

**IVPP Coffee Seminar.** 05/2016. Beijing, China.

**Invited Speaker: MPI of Evolutionary Anthropology.** 08/2014. Leipzig, Germany.

**ISBA 6.** 08/2014. Basel, Switzerland.

**SMBE.** 06/2014. San Juan, Puerto Rico.

**Invited Speaker: Philosophy and Genomics of Race Winter Workshop.** 03/2014. Davis, CA.

“Determining the genetic relationship among Early Bronze Age peoples in the Central Plains of China.”

**NSF EAPSI CSTE Young Scientists Forum in China.** Aug 2013. Beijing, China.

“Different levels of Neanderthal ancestry in humans.”

**ISBA 5.** Aug 2012. Beijing, China.

**Presented Poster: SMBE.** June 2012. Dublin, Ireland.

**Peer-reviewed articles** submitted to *Molecular Biology and Evolution* and *Genetics*

**Moderated international symposium and facilitated discussion** for US and Chinese scholars at the NSF EAPSI CSTE Young Scientists Forum in China. Aug 2017. Beijing, China.

## PROFESSIONAL AFFILIATIONS

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**Winter '15      Berkeley Connect Advisory Committee**

Advised on improving the Berkeley Connect program.

**2014              Computational Biology Student Seminar Co-Chair**

Organized graduate research seminars. Found speakers and moderated talks.

**2013-2014      Cluster on the Philosophy and Genomics of Race**

Participated in workshops between philosophers of science, geneticists, and others.

Guided undergraduate discussion at final conference ‘Genomics and Philosophy of Race’ (04/2014) at UC Santa Cruz.

**2012-2013      Integrative Biology (IB) Graduate Student Association Co-Chair**

- Organized events to support networking and communication between IB students, faculty and staff. Worked with co-chairs to make schedule, find volunteers, and handle finances.
- 2014-2015 “IB Wiki for Graduate Students” Developer**  
Developed site for IB students to find information on academics, deadlines, volunteering and grant opportunities, etc. Site address: <https://sites.google.com/site/ibgsaueb/>
- 2011-2015 IB Women in Science**  
Participated in biweekly discussions, panels and seminars.
- 2012, 2014 Society for Molecular Biology and Evolution, Member**  
**2008, 2013 Sigma Xi, Associate Member**

## **SUCCESSFUL GRANT PROPOSALS (For my PI)**

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Heavily involved in drafting and writing application, and in developing presentation for interview.

**2017 HHMI Early Career Scientist Program Fellowship**, Awarded to PI: Qiaomei Fu

Helped prepare application materials, but not the PI. Am listed in all grants as essential personnel.

**2017 The evolutionary genetics of early modern humans in East Asia**, 41672021, National Natural Science Foundation of China, Main PI: Qiaomei Fu

**Breakthrough Project of Strategic Priority Program of the Chinese Academy of Sciences**, XDB13000000, Main PI: Qiaomei Fu

**National Key R&D Program of China**, Main PI: Qiaomei Fu

**2016 Human evolution, adaptation and disease**, QYZDB-SS W-DQC003, Key Research Program of Frontier Sciences, Main PI: Qiaomei Fu

## **SKILLS**

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### **Computational Skills**

Proficient in *R*, *Python*, *Unix* and *Microsoft Word/Excel/Powerpoint*, moderately familiar with *C++*, statistical and probabilistic background, familiar with large publicly available human genomic datasets, practiced in many types of genomic software

### **Communication Skills**

Lectured in large and small classroom settings, participated in five week seminar series on science communication outside of academia, currently working on review paper on early modern humans with Prof. Qiaomei Fu

### **Other Skills**

DNA extraction and amplification techniques, semi-fluent in Chinese