JAIMIE MARIE STEWART, PH.D.

LSRF Postdoctoral Fellow | California Institute of Technology | 1200 E California Blvd MC 136-93, Pasadena, CA 91125

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EDUCATION & TRAINING

California Institute of Technology August 2018 - Present
Life Sciences Research Foundation Postdoctoral Fellow *Pasadena, CA*
in the Division of Engineering and Applied Science

University of California, Riverside June 2018
Ph.D. in Bioengineering *Riverside, CA*

University of Illinois, Chicago May 2013
B.S. in Bioengineering *Chicago, IL*
Concentration in Cell & Tissue Engineering
Minor in Italian & Italian American Studies

RESEARCH EXPERIENCE

California Institute of Technology August 2018 - Present
Postdoctoral Researcher *Pasadena, CA*
Professor Paul W.K. Rothemund's Laboratory

Statement of work: Design, synthesis, and characterization of DNA and RNA structures for the detection of biomolecules.

Develop DNA origami devices paired with an electronic platform and phase separated RNA condensate systems for the detection of biomolecules such as nucleic acids and proteins. Supervise and mentor undergraduate and graduate students on experimental methods and theoretical framework in the field of nucleic acid nanotechnology. Work collaboratively with faculty and student researchers. Prepare articles and presentations to communicate research.

Highlighted honors and awards:
- Life Sciences Research Foundation Fellowship Sponsored by Merck
- Ford Foundation Postdoctoral Fellowship
- Kavli Nanoscience Institute Prize Postdoctoral Fellowship
- National Science Foundation Alliances for Graduate Education and the Professoriate Postdoctoral Fellowship

University of California, Riverside September 2013 – June 2018
Graduate Student Researcher *Riverside, CA*
Professor Elisa Franco's Laboratory (Now at UCLA)

Dissertation: Design and Synthesis of RNA Nanostructures.

Designed DNA and RNA assemblies using computational programs. Led and guided benchtop experiments. Expertise in atomic force microscope, fluorescence microscope, and transmission electron microscope. Prepared scientific articles and presentations on research. Supervised undergraduate students and collaborated with researchers nationally and internationally.

Highlighted honors and awards:
- GEM Associate Fellowship
- Ernest Propes Fellowship

SELECTED PUBLICATIONS

Stewart J.M., Froehlich K., Klocke M., Franco E., and Rothemund P.W.K. Rationally designed RNA condensates for the sequestration and release of molecules. *In preparation.*

Jeon B.J., Guareschi M.M., **Stewart J.M.**, Arroyo-Currás N., Dauphin-Ducharme P, Lukeman P.S., Plaxco K.W., and Rothemund P.W.K. Modular DNA origami-based electrochemical detection of DNA and proteins. *In preparation.*

Stewart J.M., Subramanian H.K.K., and Franco E. (2021) Assembly of RNA nanostructures from double crossover tiles. *Accepted: Methods in Molecular Biology.*

Stewart J.M., Geary C. and Franco E. (2019) Design and Characterization of RNA Nanotubes. *ACS Nano; 13, 5: 5214–5221.*

Rackley L., **Stewart J.M.**, Salotti J., Krokhotin A., Shah A., Viard M., Juneja R., Smollett J., Roark B.K., Vivero-Escoto J., Johnson P.F., Dobrovolskaia M.A., Dokholyan N.V., Franco E. and Afonin K.A. (2018) RNA Fibers as optimized nanoscaffolds for siRNA coordination and reduced immunological recognition. *Advanced Functional Materials; 28, 48: 1805959.*

Stewart J.M., Subramanian H.K.K. and Franco E. (2017) Self-assembly of multistranded RNA motifs into lattices and tubular structures. *Nucleic Acids Research; 45, 9: 1–9.*

Stewart J.M., Viard M., Subramanian H.K.K., Roark B.K., Afonin K.A. and Franco E. (2016) Programmable micron-scale RNA structures for coordinated delivery of siRNAs. *Nanoscale; 8, 40: 17542–17550.*

Stewart J.M. and Franco E. (2015) Self-assembly of large RNA structures: learning from DNA nanotechnology. *DNA and RNA Nanotechnology; 2, 1: 23–35.*

SELECTED TALKS

Upcoming

Stanford.Berkeley.UCSF Next Generation Faculty Symposium — October 19, 2021
Programmable RNA materials — *Virtual*

Past

DNA Nanotech for Medicine & Biology Webinar Series — March 17, 2021
Programming RNA for nanoscale self-assembly — *Virtual*

KNI at Caltech Special Seminar — February 24, 2021
Synthesis and characterization of RNA condensates — *Virtual*

Virtual Seminars in Biomedical Science — December 3, 2020
Programming RNA for self-assembly and cellular regulation — *Virtual*

AfroBiotech Conference, hosted by the SBE — October 28, 2019
Design, synthesis, and characterization of DNA origami for the detection of biomolecules — *Atlanta, GA*

Conference of Ford Fellows — October 4, 2019
Design, synthesis, and characterization of DNA origami for the detection of biomolecules — *San Juan, PR*

GRS: RNA Nanotechnology — January 21, 2017
Self-Assembly of multi-Stranded RNA motifs into lattices and tubular structures with functional capabilities — *Ventura, CA*

DNA22 — September 7, 2016
Self-assembly of multi-stranded RNA motifs into lattices and tubular Structures — *Munich, DE*

MRS Spring Meeting & Exhibit — April 15, 2015
Co-transcriptional Assembly of RNA Nanostructures — *San Francisco, CA*

TEACHING EXPERIENCE

Mount Saint Mary's University, Los Angeles Fall 2019, Fall 2020
Adjunct Instructor *Los Angeles, CA*
Scientific Concepts (PHS 1)

Taught and lectured class of ∼35 undergraduate students for two full semesters on foundational scientific principles that govern our environment, with an emphasis on chemistry and physics topics. Created syllabus, lecture notes, and other learning materials. Wrote and graded homework, quizzes, and exams.

University of California, Riverside January 2017 – March 2017
Teaching Assistant *Riverside, CA*
Biotechnology & Molecular Bioengineering (BIEN 125)

Served as the teaching assistant for ∼110 undergraduate students. This course provided an overview of biochemical processes in cells and their use in developing new products and processes. Prepared teaching materials and held weekly discussion sessions. Created and graded weekly quizzes, and wrote midterm and final examination questions.

SYNERGISTIC ACTIVITIES

RNA Editor June 2021 – Present
The Art of Molecular Programming Society *Pasadena, CA*
Collaborate with executive board, editorial teams, and content specialists to collect the principles of molecular programming of DNA, RNA, and proteins, with a focus on RNA, for the open source grass-roots initiative, the Art of Molecular Programming Textbook. Solicit prospective authors and oversee the review process. Uphold the mission of the Art of Molecular Programming Society and for select manuscripts that provide innovative and impactful contributions to the field.

Program Committee Member April 2020 – August 2020 / April 2021 – August 2021
International Conferences on DNA Computing and Molecular Programming *Pasadena, CA*
(DNA26 & DNA27)
Reviewed papers and posters and actively participated in the discussions to decide which to accept for publication and presentation at the conference.

EAS Diversity, Equity, and Inclusion Committee Member April 2021 – Present
California Institute of Technology *Pasadena, CA*
Division of Engineering and Applied Science
Develop recommendations for useful and actionable measures EAS can undertake to achieve its objectives for diversity, equity, and inclusion, and recommend metrics for measuring success in increasing the diversity of the EAS Division and Caltech community.

Judge April 2021 – May 2021
California State Polytechnic University, Pomona *Pomona, CA*
35th Annual CSU Student Research Competition
Assessed graduate-level research projects on clarity, methodology, and quality of work. Posed questions to evaluate students' knowledge of the scientific discipline and understanding of their work.

Dean Search Committee Member July 2017 – March 2018
University of California, Riverside *Riverside, CA*
Bourns College of Engineering
Served as the graduate student committee member to assist in identifying important characteristics of the next dean and gather recommendations for distinct persons who are exceptional scholars with demonstrated commitment to UCR's College of Engineering educational missions and goals.

Graduate Student Representative September 2016 – June 2018
University of California, Riverside *Riverside, CA*
Chancellor's Advisory Committee on LGBT Students, Faculty & Staff
Represented the graduate student community to ensure that all LGBT students, staff, and faculty enjoy a positive personal and professional experience while members of the UCR community.

GradSuccess Summer Coordinator July 2016 – Sep 2016
University of California, Riverside *Riverside, CA*
GradSuccess
Led and managed the summer GradEdge/JumpStart program overseeing 9 mentors, 43 mentees, and over 40 faculty members. Planned and implemented the Graduate Student Resource Center summer programming with administrative staff and professors.

Graduate Student Peer Mentor July 2015 – Sep 2018
University of California, Riverside *Riverside, CA*
GradSuccess
Mentored first year STEM graduate students in getting adjusted to their labs, interacting with faculty, and helping them transition into graduate study.

Graduate Mentor June 2014 – October 2014
University of California, Riverside *Riverside, CA*
Wyss Institute at Harvard University *Boston, MA*
Trained, mentored, and managed the Franco Lab BIOMOD team, consisting of 5 undergraduate students in nucleic acid research techniques to compete in the international BIOMOD competition. Awarded Gold project award for ranking in the top 50% of teams.

AWARDS & HONORS

Featured in Highlighting the African American Scientist, *Gladstone Institutes*, 2021

LSRF Fellowship sponsored by Merck Research Laboratories, *LSRF*, 2020

100 Inspiring Black Scientists in America, *Cell Mentor*, 2020

Ford Foundation Postdoctoral Fellowship, *NASEM*, 2019

KNI Prize Postdoctoral Fellowship, *Caltech*, 2019

NSF AGEP Scholar, *California Alliance*, 2018

Best Presentation, Startups for Innovators, *UCR*, 2017

Ernest Propes Endowed Graduate Fellowship, *UCR,* 2016

Lambda Graduate Student Award, *UCR*, 2015

Gold Project Award, *Wyss Institute, Harvard University*, 2014

GEM Ph.D. Associate Fellowship, *The GEM Consortium*, 2013

1st place in engineering for poster presentation, *I-LSAMP, Spring Conference*, 2013

1st place in chemistry for oral presentation, *I-LSAMP, Spring Conference*, 2013

REFERENCES

Elisa Franco, Ph.D.
Associate Professor of Mechanical and Aerospace Engineering
UCLA
efranco@seas.ucla.edu
310-206-4317

Kirill A. Afonin, Ph.D.
Professor of Chemistry
UNC Charlotte
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704-687-0685

Paul W.K. Rothemund, Ph.D.
Research Professor of Bioengineering, CMS & CNS
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