

## **1) Personal Information**

- Chrystal Starbird, Ph.D.
- University of North Carolina at Chapel Hill  
Department of Biochemistry and Biophysics  
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## **2) Education**

- Postdoctoral Fellowship, Yale University, Pharmacology/Cancer Biology 8/2017-1/2023
- Ph.D., Vanderbilt University, August 2017, Chemical and Physical Biology 8/2011-8/2017
- B.S., University of North Carolina at Chapel Hill, August 2008, Biology 8/2006-8/2008
- A.S., Central Carolina Community College, May 2006, Science 8/2005-8/2006

## **3) Professional Experience – Employment History**

- University of North Carolina at Chapel Hill, Assistant Professor, 2/2023-current  
Primary Appointment: Department of Biochemistry and Biophysics  
Affiliations: Lineberger Comprehensive Cancer Center  
Program in Pathobiology and Translational Science
- University of North Carolina at Chapel Hill, Adjunct Assistant Professor, 7/2022-1/2023
- Yale University, Instructor, 1/2020-5/2020
- Yale University, Postdoctoral Fellow, 8/2011-8/2017
- Vanderbilt University, Instructor, Fall of 2013, 2014 and 2016
- Vanderbilt University, Graduate Research Assistant, 8/2011-8/2017
- UNC Chapel Hill, Predoctoral Research Scholar, 5/2010-8/2011
- Pfizer, Associate Biochemist, 5/2009-4/2010
- UNC Chapel Hill, Research Technician, 8/2008-5/2009
- UNC Chapel Hill, Undergraduate Research Assistant, 9/2007-8/2008
- UNC Chapel Hill, Lab Assistant, 10/2006-9/2007
- UNC Charlotte, Lab Assistant, 9/2001-5/2003

## **4) Honors**

- FASEB Cares Award Recipient, 2023
- Pair-Up Peer Imaging Cluster Award, American Society for Cell Biology, 2023
- Distinguished Service Award in DEI, Yale University, 2022
- Juneteenth Best Peer to Peer Mentor Postdoctoral Award, Vanderbilt University, 2022
- NIH/MOSAIC K99/R00 Scholar, 2022

- Intersections Science Fellows Symposium, Steering Committee, 2021
- Cell Rising Black Scientist Award, Cell Press, 2021
- Intersections Science Fellows Symposium, Associate, 2021
- Co-Chair, Yale Black Postdoctoral Association, 2020
- Board Member, National Black Postdoctoral Association, 2020
- Ruth L. Kirschstein National Research Service Award (NRSA), Postdoctoral Fellowship from the National Institute of General Medical Sciences
- Poster Judge Travel Award, ABRCMS, 2019
- Travel Grant and Platform Presentation, The Biophysical Society 60th Annual Meeting, 2016
- President, Vanderbilt Women in Science and Engineering, 2015
- Award for best talk, Vanderbilt Chemical and Physical Biology Retreat, 2014
- University Nomination for the Lindau Award, Vanderbilt University, 2014
- National Science Foundation Graduate Research Fellowship (NSF-GRFP), 2013
- Molecular Biophysics Training Grant, NIH T32 GM008320, Vanderbilt University, 2012
- Center for Structural Biology Stipend Award, Vanderbilt University, 2011
- Award for Best Overall Research Talk, PREP Symposium, 2011
- Postbaccalaureate Research Scholar, NIH R25 GM089569, UNC Chapel Hill, 2010
- Integrated Biomedical Research Training Program Scholar, UNC Chapel Hill, May 2007

## **5) Bibliography and products of scholarship**

### **Published Refereed Papers/Articles:**

1. Bagchi, A., Stayrook, S.E., Xenaki, K.T., Starbird, C.A., Doukeridou, S., Khoulati, R., Roovers, R.C., Schmitz, K.R., van Bergen en Henegouwen, P.M., Ferguson, K.M. Structural insights into the role and targeting of EGFRVIII. *Structure*, accepted April 22, 2024
2. Starbird, C.A., Weinberg, Z.Y., Munson, M. Gender Equity: toward redefining values. *Nature Cell Biology* 25 (2024): 11-12
3. Mays, A., Byars-Winston, A., Hinton, A.,...Starbird, C.A.,... Lambert, M.W., Clemons, W.M. Juneteenth in STEMM and the barriers to equitable science. *Cell* 186 (2023): 2510-2517 *Cover article*
4. Fernandez, A.\*, Starbird, C.A.\*, Davis-Reyes, B., Termini, C., Hinton, A.J., McCall, T. Evaluating diversity, equity and inclusion consulting requests. *Trends in Molecular Medicine*, Epub ahead of print <https://doi.org/10.1016/j.molmed.2022.06.006>
5. Davis-Reyes, B.\*, Starbird, C.A.\*, Fernandez, A., McCall, T., Hinton, A.J., Termini, C. Shadow mentoring: a cost-benefit review for reform. *Trends in Cancer* 8 (2022): 620-622
6. Shuler, H., Cazares, V., Marshall, A., Garza-Lopez, E., Hultman, R., Francis, T.K., Rolle, T., Byndloss, M.X., Starbird, C.A., Hicsasmaz, I., AshShareef, S., Neikirk, K., Johnson, P.E.C., Vue, Z.,

Beasley, H.K., Williams, A., Hinton, A.O. Intentional mentoring: maximizing the impact of underrepresented future scientists in the 21st century. *Pathogens and Disease* 79 (2021).

7. Starbird, C.A., Perry, N.A., Chen, Q., Berndt, S., Yamakawa, I., Loukachevitch, L.V., Limbrick, E.M., Bachmann, B.O., Iverson, T.M., McCulloch, K.M. The structure of the bifunctional Everninomicin biosynthetic enzyme EvdMO1 suggests independent activity of the fused methyltransferase-oxidase domains. *Biochemistry* 57 (2018): 6827-6837

8. Starbird, C.A., Tomasiak, T., Singh, P.K., Yankovskaya, V., Maklashina, E., Eisenbach, M., Cecchini, G., Iverson, T.M. New crystal forms of the integral membrane *Escherichia coli* quinol: fumarate reductase suggest that ligands control domain movement. *Journal of Structural Biology* 202 (2018): 100-104

9. Starbird, C.A., Maklashina, E., Sharma, P., Qualls-Histed, S., Cecchini, G., Iverson, T.M. Structural and biochemical analyses reveal insights into covalent flavinylation of the *Escherichia coli* Complex II homolog quinol:fumarate reductase. *Journal of Biological Chemistry* 292 (2017): 12921-12933

10. Maklashina, E., Rajagukguk, S., Starbird, C.A., McDonald, H., Koganitsky, A., Eisenbach, M.S., Iverson, T.M., Cecchini, G. Binding of the covalent flavin assembly factor to the flavoprotein subunit of Complex II. *Journal of Biological Chemistry* 291 (2016): 2904-2916

11. Immormino, R.M., Starbird, C.A., Silversmith, R.E., Bourret, R.B. Probing mechanistic similarities between response regulator signaling proteins and haloacid dehalogenase phosphatases. *Biochemistry* 22 (2015): 3514-3527

12. Starbird, C.A., Maklashina, E., Cecchini, G., Iverson, T.M. Flavoenzymes: covalent versus noncovalent. *Encyclopedia of Life Sciences* (2015): 1-11

13. Birmingham, W.A., Starbird, C.A., Panosian, T.D., Nannemann, D.P., Iverson, T.M., Bachmann, B.O. Bioretrosynthetic evolution of a didanosine biosynthetic pathway. *Nature Chemical Biology* 10 (2014): 392-399

#### **Published Abstracts from Poster and Oral Presentations**

1. Hincapie-Otero, M., Shao, B., Starbird, C.A. Investigating the roles of oligomerization and lipid interaction in TAM receptor activation. *Biophysical Journal* 123 (2024), 36a

2. Starbird, C.A. Insights into Intracellular Bridging via TAM Receptor Structures. *Protein Science* 32 (2023), 12

3. Starbird, C.A. Analysis of structural similarities between TAM receptors and other cell surface molecules. *Journal of Biological Chemistry* 299 (2023): S570

4. Starbird, C.A., Maklashina, E., Rajagukguk, S., Cecchini, G., Iverson, T.M. Mechanisms of Assembly and Covalent Flavinylation in Complex II. *Biophysical Journal* 110 (2016): 191a

### In process papers/Articles

1. Starbird, C.A., Walker, K., Stayrook, S., Ferguson, K. Structure of Mer extracellular domain mimics adhesion molecules. In preparation.

2. Arango, M.C., Hincapie-Otero, M., Hardeman, K., Shao, B., Starbird, C. Special considerations for the use of AI tools by PEERs as a learning communication aid. *Journal of Cellular Physiology*. Invited manuscript, currently under review.

### Unpublished Oral Presentations

May 2024	Panelist, NIH Career Symposium hosted by the Office of Intramural Training and Education, ( <i>virtual</i> )
April 2024	Panelist, NSF PREPP Session co-hosted by North Carolina State University and the University of North Carolina at Chapel Hill, ( <i>virtual</i> )
April 2024	Seminar Speaker, Department of Physiology and Cellular Biophysics, Columbia University, New York, NY
March 2024	Invited Speaker, Special Session at the American Chemical Society Annual Meeting, New Orleans, LA
March 2024	Seminar Speaker, Vanderbilt University, Department of Molecular Physiology and Biophysics, Nashville, TN
February 2024	Panelist, Lab to Table Series: Picturing Progress, Representation in Scientific Art, International Broadcast ( <i>virtual</i> )
February 2024	Invited Speaker, The Biophysical Society Annual Meeting, Philadelphia, PA
December 2023	Panelist, SciMom Chats, Mothers in Science, International Broadcast ( <i>virtual</i> )
December 2023	Panelist in Two Sessions, The American Society for Cell Biology Annual Meeting, Boston, MA
November 2023	Seminar Speaker, University of North Carolina at Asheville, Department of Biochemistry, Asheville, NC
September 2023	Panelist, MOSAIC Applicant Webinar, NIGMS, ( <i>virtual</i> )
July 2023	Invited Speaker, The Protein Society Annual Meeting, Boston, MA
June 2023	Invited Speaker, Protein Phosphorylation Meeting, FASEB, Steamboat Springs, CO
June 2023	Keynote Speaker, UNC Chapel Hill Postbaccalaureate Research Experience Program (PREP) Annual Symposium, Chapel Hill, NC
March 2023	Panelist, University of Washington, Reimagining Mentoring, HHMI Gilliam Series, Seattle, WA
March 2023	Selected Speaker, Annual Meeting of American Society for Biochemistry and Molecular Biology (ASBMB), Seattle, WA
March 2023	Selected Participant/Speaker, PAIR-UP Annual Conference, Tucson, AZ

March 2023	Invited Speaker, Cell Signaling Technologies, Boston, MA
March 2023	Invited Speaker, UMass Chan Medical School, Department of Biochemistry and Molecular Biotechnology, Worcester, MA
February 2023	Seminar Speaker, University of North Carolina at Chapel Hill, Chemical Biology Seminar Series, Chapel Hill, NC
January 2023	Seminar Speaker, University of North Carolina at Chapel Hill, Department of Microbiology and Immunology, Chapel Hill, NC
December 2022	Panelist, American Society of Cell Biology Annual Meeting, Washington, DC
June 2022	Seminar Speaker, University of North Carolina at Chapel Hill, Lineberger Comprehensive Cancer Center, Chapel Hill, NC
June 2022	Keynote Speaker, Yale Undergraduate Research Symposium, New Haven, CT
January 2022	Invited Speaker, University of Texas Southwestern, PROVIDES Seminar Series ( <i>virtual</i> )
November 2021	Panelist, Yale University, Yale Ciencia Academy, ( <i>virtual</i> )
November 2021	Featured Speaker and Panelist, Northwestern University, 12 <sup>th</sup> Annual Northwestern Biophysics Symposium, ( <i>virtual</i> )
October 2021	Invited Speaker, Vanderbilt University, Discovery Science Emerging Scholars Lecture, ( <i>virtual</i> )
September 2021	Invited speaker, Research Triangle High School, Durham, NC, ( <i>virtual</i> )
February 2021	Invited speaker, University of North Carolina at Chapel Hill, Department of Biochemistry and Biophysics, ( <i>virtual</i> )
January 2021	Panelist, Cell/Elsevier, Reflections on “Picture A Scientist”, ( <i>virtual</i> )
December 2020	Panelist, Yale School of Medicine, Office of Diversity, Equity and Inclusion, ( <i>virtual</i> )
January 2020	Panelist, Yale University, Department of Molecular Biophysics and Biochemistry, New Haven, CT
2014	Invited speaker and Panelist, University of North Carolina at Chapel Hill, Mid-Atlantic IMSD/Prep Research Symposium, Chapel Hill, NC

### Refereed other products of scholarship

1. Feature, Heidt, A., ‘Without these tools, I’d be lost’: how generative AI aids in accessibility. *Nature* 628 (2024): 462-463
2. Feature, Langlin, K. NIH boosts pay for postdocs and graduate students. *Science Careers* (2024), doi 10.1126/science.zocj8i7
3. Feature, Langlin, K. NIH advisory group recommends \$14,000 boost in postdoc pay. *Science Careers* (2023), doi: 10.1126/science.zkkbgkb
4. Starbird, C.A. Transforming myself and academia for good. *Cell* 184 (2021): 851-853

5. Feature, Arnold, C., Woolston, C. Uncertainty plagues junior researchers from underprivileged backgrounds amid pandemic. Nature 588 (2020): 355-357. <https://www.nature.com/articles/d41586-020-03465-0>
6. Feature, Woolston, C. Uncertain prospects for postdoctoral researchers. Nature 588 (2020): 181-184. <https://www.nature.com/articles/d41586-020-03381-3>
7. Highlight, 1000 Inspiring Black Scientists in America, Cell Mentor. <http://crosstalk.cell.com/blog/1000-inspiring-black-scientists-in-america>

### **Digital and other novel forms of scholarship**

1. Podcast: From where does it STEM? Podcast, episode aired January 2, 2024
2. Podcast: STEAM'D: The Podcast, episode aired December 20, 2023
3. Highlight, The Biophysical Society Newsletter and Website, September 2023, <https://www.biophysics.org/profiles/chrystal-starbird>
4. Feature, Mothers in Science Website Highlights, <https://www.mothersinscience.com/journeys/chrystalstarbird>
5. Podcast: NerDRx Podcast from Barkha Yadav-Samudrala, episode aired April 25, 2023
6. Podcast: STEM Tea Podcast from Biotechniques, episode aired December 9, 2022
7. Highlight, Jones, A. From nature lover to structural biologist: A scientist's journey. The Scientist Magazine (2021), <https://www.the-scientist.com/from-nature-lover-to-structural-biologist-a-scientists-journey-68493>

### **6) Teaching Activities**

1. BBSP 902 Seminar in Biological and Biomedical Sciences, First Year Group, 20-25 students per session, year-long course (Fall and Spring) that meets weekly, joined 10 sessions as a faculty mentor and completed required advising sessions with assigned mentees outside of class
2. Lecture, Discussion section leader for 21 undergraduate students for Genes and Development course (Biol 103), Department of Genetics, Yale University, Spring 2020
3. Lecture, Graduate Teaching Assistant for 25 graduate students in Introduction to Structural Biology course (BCHMGS 8300), Department of Biochemistry, Vanderbilt University, Spring 2016
4. Continuing Education Lecture, led GRE course for 21-30 undergraduates from underrepresented groups interested in STEM sponsored by the School of Engineering and

funded by Tennessee Louis Stokes Alliance for Minority Participation (TLSAMP), Vanderbilt University, annually 2013-2016

### **Lab or Research Teaching Mentorships**

#### **\*Current Lab Members**

#### Undergraduate Students:

2023: Owen Escobar\*

2023: Lesley Alessandra Canseco\*

2023: Bryanna Shao, Summer Intern from Vanderbilt University

#### Graduate Students:

2024: Maria Camila Arango\*

2023: Johnna Bingham\*

2023: Skylar Grimsley\*

2023: Drew Elliot Toomer

#### Postdoctoral Fellows:

2023-present: Dr. Keisha Hardeman\*

#### Research Technicians:

2023: Nicole Fournier\*

2023: Maria Hincapie-Otero

#### Graduate Student Thesis Committees

Dillon Sloan, UNC Biochemistry and Biophysics Curriculum, Rick Baker Lab, 2023-present

## **7) Grants**

### Active Grants

The structural basis of TAM receptor oligomerization and co-receptor interactions, MOSAIC R00, NIH/NIGMS R00GM144683

Role: PI, 40% effort

02/01/2023-01/31/2026

Total costs: \$739,986.00

This study aims to investigate TAM receptor self-association, or oligomerization, and association with co-receptors to better understand how these clinically important and mechanistically understudied receptors are activated.

### Completed Grants

The structural basis of TAM receptor oligomerization and co-receptor interactions, MOSAIC K99 (mentored portion of postdoctoral fellowship), NIH/NIGMS K99

Role: PI, 75% effort

02/01/2022-1/31/2023

Total costs: \$96,662.00

This study aims to investigate TAM receptor self-association, or oligomerization, and association with co-receptors to better understand how these clinically important and mechanistically understudied receptors are activated in the mentored portion of this project.

Effects of phosphatidylserine and oligomerization on activation mechanisms of TAM receptors, F32 NRSA Postdoctoral Fellowship, NIH/NIGMS F32GM131460

Role: PI, 100% effort

01/01/2020-12/31/2021

Total costs: \$130,172.00

This study aims to understand the role of the membrane lipid, phosphatidylserine, and ligand-independent oligomerization in TAM receptor activation mechanisms.

Mechanisms of Assembly and Covalent Flavinylation in Complex II, National Science Foundation Graduate Research Fellowship, NSF DGE:0909667

Role: PI, 100% effort

04/2013-03/2016

Total costs: \$135,500.00

This study aims to understand the assembly and covalent modification of the respiratory enzyme Complex II through studies of its flavinylation by an assembly factor.

## **8) Professional Service**

### To Discipline

2022-present Member, Minority Affairs Committee, American Society for Cell Biology

2023-present Member, NIH Advisory Committee to the Director Working Group on Re-envisioning NIH- Supported Postdoctoral Training

2023-present Co-Chair, Outreach and Communications Committee, American Society for Cell Biology

2023-present, Board of Directors, JEDI Awards, Life Science Editors

April 2024 Reviewed paper for *The Journal of Cellular Physiology*

March 2024 Reviewed paper for *BMC Supplements*

March 2024 Reviewed paper for *Acta Crystallographica Section F*

Dec. 2023 FRED Program Review Panel, ASCB, Boston, MA

August 2023 Reviewed paper for *Aging Cell*

March 2023 Reviewed paper for *Advanced Biology*

### Within UNC Chapel Hill

2024-present Internal Steering Committee, Carolina Cancer Nanotechnology Training Program

2023-present Faculty Mentor, Students in Training, Academia, Health & Research (STAHR) Mentorship Program

2023-present Faculty Mentor, BBSP First Year Group



2022-present Member, Advisory Committee, UNC PREP Program

2022-present Advisor, DEI Committee, Department of Biochemistry and Biophysics

2023-2024 Consultant, Faculty Search Committee, Department of Biochemistry and Biophysics

2023 Member, SCPS Admission Committee, UNC BBSP Program

2023 Advisor, UNC Postdoc Discussion Group, Department of Postdoctoral Affairs

Professional Society Memberships

Member, American Association for the Advancement of Science

Member, American Society for Cell Biology

Member, Biophysical Society

Member, Janeway Society

Member, The Protein Society

Member, The American Society for Biochemistry and Molecular Biology