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APPOINTMENTS

University of California, San Diego, CA

Assistant Professor, Chemistry and Biochemistry, 2017 - present

Princeton University, Princeton, NJ

Postdoctoral Scholar, Department of Chemistry, 2012 - 2017

EDUCATION

Massachusetts Institute of Technology, Cambridge, MA

Ph.D. in Physical Chemistry, 2011

Colby College, Waterville, ME

B.A. in Chemistry and Mathematics, 2005

RESEARCH PROJECTS

University of California San Diego, 2017 – present

- Structural biology of chromatin and chromatin interacting proteins.
- Phase transitions of neurodegenerative proteins.
- Development of sensitivity-enhanced NMR approaches for structural biology in cells.

Princeton University, Princeton, NJ, 2012 - 2017

Advisor: Tom Muir

Biophysical and chemical biology approaches for elucidating the role of post-translational modifications in the regulation of chromatin structure.

Massachusetts Institute of Technology, Cambridge, MA, 2005 - 2011

Advisor: Robert Griffin

Amyloid fibril structure of peptides and proteins by magic angle spinning NMR spectroscopy and dynamic nuclear polarization.

Colby College, Waterville, ME, 2003 - 2005

Advisor: Thomas Shattuck

Guest-host chemistry of *p*-sulphonatocalix[6]arene and nizatidine.

AWARDS AND HONORS

2022 Lattimer Fellowship UCSD

2020 Hellman Fellowship UCSD

2016 American Chemical Society Salutes to Excellence Award

2012 Raymond Andrew Prize for Outstanding Ph.D. Thesis in Magnetic Resonance
2005 Phi Beta Kappa
2004 Julius Seelye Bixler Scholar and Charles A. Dana Scholar, Colby College
2001 – 2005 Davis United World College Scholar, Colby College

SERVICE AND PROFESSIONAL ACTIVITIES

2023 – 2025 Rocky Mountain Conference on Solid-State NMR, scientific program committee member
2023 Co-Editor, Special Issue: Biological Condensates, Biophysical Journal
2023 Ad hoc member, MSFB Study Section, NIH
2022 Ad hoc member, IMST-J (10) Study Section, NIH
2022 – 2026 Council Member, International Society for Magnetic Resonance
2021 – 2026 Member, National High Field Magnet Lab User Advisory Committee
2021 – 2023 Vice Chair and Chair, Biophysical Subdivision, American Chemical Society
2021 – 2022 Co-Chair, IDP Subgroup Symposium, Biophysical Society
2021 NSF Reviewer
2020 – 2024 Co-Chair, Southern California Users of Magnets Meetings
2020 Early Career Reviewer, MSFC Study Section, NIH
2019 – 2024 Member, UCSD Molecular Biophysics Training Grant Executive Committee
2015 Chair, NMR Topical Group, North Jersey ACS, NJ
2014 Co-Chair, NMR Topical Group, North Jersey ACS, NJ
Member - American Chemical Society, Protein Society, International Society for Magnetic Resonance, Biophysical Society, Ampere Society of Magnetic Resonance

TEACHING

2018 – 2021 CHEM 6C - General Chemistry III, UCSD
2018 – 2024 CHEM 213B - Biophysical Chemistry of Macromolecules, UCSD
2019 CHEM 213A – Structure of Biomolecular Assemblies, UCSD

MENTORING AND OUTREACH

2023 ENLACE bi-national summer program for undergraduate and high school students from the US and Mexico, hosted two high school students for summer research projects in the lab
2022 – 2024 Chemistry International Friendship Group, faculty advisor
2022 Mentor training through the CIMER program, participant
2021 CaliBaja webinar for minority students, presenter
2021 Mentoring workshop for graduate students and their undergraduate student mentees, faculty leader
2021 UC Chemical Symposium Diversity Panel, panelist
2020 STEAM Career Day at Muirlands Junior High School, La Jolla, presenter
2019 – 2020 Future Faces of STEM conference, panelist
2018 BeWise workshop on magnetism with junior high students from the San Diego area, participant
2018 STARS Summer Training Academy for Research Success for underrepresented students, mentor
2017 Cottrell Scholars Collaborative Workshop on active learning techniques in chemistry, participant
2017 – 2024 Society of Women in Graduate Studies in Chemistry and Biochemistry, mentor

CONFERENCES AND SEMINAR PRESENTATIONS

2023 University of California, Irvine, PharmSci Seminar Series, Irvine, CA
2023 EPFL Lausanne, Switzerland, Chemical Biology Seminar
2023 Alpine Conference on Solid-State NMR, Chamonix, France
2023 Telluride Workshop on Dynamic Nuclear Polarization, Telluride, CO
2023 Medical College of Wisconsin, Biophysics Seminar, Milwaukee, WI
2023 Texas Tech University, Department of Chemistry and Biochemistry Seminar, Lubbock, TX

2023 Massachusetts Institute of Technology, Physical Chemistry Seminar Series, Cambridge, MA
2023 American Chemical Society Spring 2023 Meeting, Indianapolis, IN
2023 Symposium on Biomolecular Magnetic Resonance, Stowe, VT
2022 Florida State University, Biochemistry Seminar Series, Tallahassee, FL
2022 University of Florida, Center for Structural Biology Seminar Series, Gainesville, FL
2022 Ohio State University, Biophysics Seminar Series, Columbus, OH
2022 UT Southwestern, Biophysics Seminar Series, Dallas, TX
2022 San Diego State University, Physical Chemistry Seminar Series, San Diego, CA
2022 Iowa State University, Physical Chemistry Seminar Series, Ames, IA
2022 Southern California Users of Magnets Meeting, Santa Barbara, CA
2022 International Conference on Magnetic Resonance in Biological Systems, Boston, MA
2022 Rocky Mountain Conference on Magnetic Resonance, Bruker Solid-State NMR Workshop, Copper Mountain, CO
2022 Telluride Workshop on Chromatin Structure and Dynamics, Telluride, CO
2022 Stanford University, Physical Chemistry Seminar Series
2022 Alzheimer's Disease Research Centers Spring Meeting, REC Session, Virtual Presentation
2022 Experimental NMR Conference, Orlando, FL
2022 Brown University, MCB Seminar Series
2022 North Jersey ACS NMR Topical Group, Virtual Seminar Series
2022 University of California, Riverside, Physical Chemistry Seminar
2022 National Magnetic Resonance Society (India), Virtual Conference
2022 Biophysical Society, 62nd Annual Meeting, San Francisco, CA
2021 PacificChem, Virtual Symposium
2021 Network for Advanced NMR Virtual Seminar Series, University of Connecticut, Georgia and Wisconsin
2021 International Society of Magnetic Resonance/Asia-Pacific NMR Symposium, Virtual Meeting
2021 Molecular Bases of Proteinopathies, Virtual Seminar Series
2021 Solid-State NMR Zoominar, Virtual Seminar Series
2021 CaliBaja Webinar, Virtual Seminar Series
2021 Global NMR Discussion Group Tutorial, Virtual Seminar Series
2021 Lewis and Clark Biochemistry Seminar, Virtual Seminar Series
2020 Royal Society NMR Discussion Group, Virtual Meeting
2020 American Chemical Society Fall 2020, Virtual Meeting and Expo
2020 Emerging Topics in Biomolecular Magnetic Resonance, Virtual Seminar Series
2020 Experimental NMR Conference, Baltimore, MD
2020 Biophysical Society, 64th Annual Meeting, San Diego, CA
2019 EPFL Lausanne, Switzerland, Chemical Biology Seminar
2019 ISMAR Online Conversations on Biomolecular Liquid-Liquid Phase Separation
2019 Alpine Conference on Solid-State NMR, Chamonix, France
2019 EuroIsmar, Berlin, Germany
2019 Protein Society Annual Symposium, Seattle, WA
2019 Advanced Isotopic Labeling Methods for Integrated Structural Biology, Grenoble, France
2018 Southern California Users of Magnets Annual Meeting, UC Irvine, CA
2018 Biophysical Society, 62nd Annual Meeting, San Francisco, CA
2017 New Frontiers in Protein Chemistry: A Celebration of Protein Semisynthesis, Princeton University, NJ
2017 Albert Einstein College of Medicine, Department of Biochemistry, Bronx, NY
2017 New York University, Department of Chemistry, New York, NY
2017 Johns Hopkins University, Department of Chemistry, Baltimore, MD
2017 University of Pennsylvania, Department of Chemistry, Philadelphia, PA
2016 The University of Texas at Austin, Department of Chemistry, Austin, TX
2016 University of Delaware, Department of Chemistry and Biochemistry, Newark, DE

2016 Boston College, Department of Chemistry, Chestnut Hill, MA
 2016 University of Michigan, Department of Chemistry, Ann Arbor, MI
 2015 GRAAM Meeting, Rockefeller University, New York, NY
 2014 Eastern Analytical Symposium, Somerset, NJ
 2012 EUROMAR Conference, Dublin, Ireland
 2011 Biological Chemistry Seminar Series, MIT, Cambridge, MA
 2010 Bruker Solid-State NMR Workshop, Rocky Mountain Conference, Analytical Chemistry, Snowmass, CO

PUBLICATIONS

1. **The Immune-Evasive Proline 283 Substitution in Influenza Nucleoprotein Increases Aggregation Propensity Without Altering the Native Structure**
 Yoon J, Zhang YM, Her C, Grant RA, Ponomarenko AM, Ackermann BE, Debelouchina GT, Shoulders MD*
BioRxiv 2023.09.08.556894 (2023)
2. **Phosphorylation Regulates Tau's Phase Separation Behavior and Interactions with Chromatin**
 Abasi LS, Elathram N, Movva M[#], Deep A, Corbett KD & Debelouchina GT*
BioRxiv 2023.12.21.572911 (2023)
[#] Undergraduate co-author
3. **Interplay between Charge Distribution and DNA in Shaping HP1 Paralog Phase Separation and Localization**
 Phan TM, Kim YC, Debelouchina GT* & Mittal J*
eLife, 12:RP90820, reviewed preprint posted online (2023)
BioRxiv 2023.05.28.542535 (2023)
4. **Phosphorylated HP1 α -Nucleosome Interactions in Phase Separated Environments**
 Elathram N, Ackermann BE, Clark ET[#], Dunn SR[#] & Debelouchina GT*
Journal of the American Chemical Society, 145(44), 23994-24004 (2023)
[#] Undergraduate co-author
5. **Dynamic Nuclear Polarization Illuminates Key Protein-Lipid Interactions in the Native Bacterial Cell Envelope**
 Kent JE, Ackermann BE, Debelouchina GT* & Marassi FM*
Biochemistry, 62(15), 2252-2256 (2023)
6. **Chemical tools for study and modulation of biomolecular phase transitions**
 Berkeley RF & Debelouchina GT*
Chemical Science, 13(48), 14226-14245 (2022)
7. **Molecular interactions underlying the phase separation of HP1 α : Role of phosphorylation, ligand and nucleic acid binding**
 Her C, Phan TM, Jovic N, Kapoor U, Ackermann BE, Rizuan A, Kim Y, Mittal J* & Debelouchina GT*
Nucleic Acids Research, 50(22), 12702-12722 (2022)
8. **A Comparative Study of Nitroxide-Based Biradicals for Dynamic Nuclear Polarization in Cellular Environments**
 Ackermann BE, Lim BJ, Elathram N, Narayanan S & Debelouchina GT*

ChemBioChem, 23(24), e202200577 (2022)

Part of the special collection ChemBioTalents2022.

9. **DNP-Enhanced Solid-State NMR of Chromatin Polymers**
Elathram N, Ackermann BE & Debelouchina GT*
Journal of Magnetic Resonance Open, 10-11, 100057 (2022)

10. **In Situ Assembly of Transmembrane Proteins from Expressed and Synthetic Components in Giant Unilamellar Vesicles**
Podolsky KA, Masubuchi T, Debelouchina GT, Hui E*, Devaraj NK*
ACS Chemical Biology, 17, 1015-1021 (2022)

11. **A Chemical Biology Primer for NMR Spectroscopists**
Clark ET[#], Sievers EE[#] & Debelouchina GT*
Journal of Magnetic Resonance Open, 10-11, 100044 (2022)
[#] Undergraduate co-author

12. **Emerging Contributions of Solid-State NMR Spectroscopy to Chromatin Structural Biology**
Ackermann BE & Debelouchina GT*
Frontiers in Molecular Biosciences, 8, 741581 (2021)

13. **Real-Time Observation of Structure and Dynamics during the Liquid-to-Solid Transition of FUS LC**
Berkeley RF, Kashefi M & Debelouchina GT*
Biophysical Journal, 120, 1276-1287 (2021)

14. **Fused Split Inteins: Tools for Introducing Multiple Protein Modifications**
Lim BJ, Berkeley RF & Debelouchina GT*
Methods in Molecular Biology, 2133, 163-181 (2020)

15. **Targetable Tetrazine-Based Dynamic Nuclear Polarization Agents for Biological Systems**
Lim BJ, Ackermann BE & Debelouchina GT*
Chembiochem, 21(9), 1315-1319 (2020)

16. **Heterochromatin Protein HP1 α Gelation Dynamics Revealed by Solid-State NMR Spectroscopy**
Ackermann BE & Debelouchina GT*
Angewandte Chemie, Int. Ed., 131, 6366 (2019)

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17. **Identification of a DNA N6-Adenine Methyltransferase Complex and Its Impact on Chromatin Organization**
Beh LY, Debelouchina GT, Clay DM, Thompson RE, Lindblad KA, Hutton ER, Bracht JR, Sebra RP, Muir TW & Landweber LF
Cell, 177, 1781 (2019)

18. **The Structure of a β 2-Microglobulin Fibril Suggests a Molecular Basis for Its Amyloid Polymorphism**
Iadanza MG, Silvers R, Boardman J, Smith HI, Karamanos TK, Debelouchina GT, Su Y, Griffin RG, Ranson NA & Radford SE

Nature Communications, 9, 4517 (2018)

19. Functional Crosstalk between Histone H2B Ubiquitylation and H2A Modifications and Variants

Wojcik F, Dann GP, Beh LY, Debelouchina GT, Hofmann R & Muir TW

Nature Communications, 9, 1394 (2018)

20. A Molecular Engineering Toolbox for the Structural Biologist

Debelouchina GT & Muir TW

Quarterly Reviews of Biophysics 50, e7 (2017)

21. Combining DNP NMR with Segmental and Specific Labeling to Study a Yeast Prion Protein Strain that is not Parallel in-Register

Frederick KK, Michaelis VK, Caporini MA, Andreas LB, Debelouchina GT, Griffin RG, Lindquist S.

Proceedings of the National Academy of the United States of America 114, 3642 (2017)

22. Ubiquitin Utilizes an Acidic Surface Patch to Alter Chromatin Structure

Debelouchina GT, Gerecht K, Muir TW

Nature Chemical Biology, 13, 105 (2017)

23. Increasing AIP Macrocycle Size Reveals Key Features of *agr* Activation in *Staphylococcus aureus*

Johnson JG, Wang B, Debelouchina GT, Novick RP, Muir TW

ChemBioChem, 16, 1093 (2015)

24. Structure of the Branched Intermediate in Protein Splicing

Liu Z, Frutos S, Bick MJ, Vila-Perello M, Debelouchina GT, Darst SA, Muir TW

Proceedings of the National Academy of the United States of America, 111, 8422 (2014)

25. Secondary Structure in the Core of Amyloid Fibrils Formed from Human β 2m and Its Truncated Variant Δ N6

Su Y, Sarell CJ, Eddy ET, Debelouchina GT, Andreas LB, Pashley CL, Radford SE, Griffin RG

Journal of the American Chemical Society, 136, 6313 (2014)

26. Distinct Prion Strains Are Defined by Amyloid Core Structure and Chaperone Binding Site Dynamics

Frederick KK, Debelouchina GT, Kayatekin C, Dorminy T, Jacavone AC, Griffin RG, Lindquist S

Chemistry & Biology, 21, 1 (2014)

27. Higher Order Amyloid Fibril Structure by MAS NMR and DNP Spectroscopy

Debelouchina GT, Bayro MJ, Fitzpatrick AWP, Ladizhansky V, Colvin MT, Caporini MA, Jaroniec CP,

Bajaj VS, Rosay M, MacPhee C, Vendruscolo M, Maas WE, Dobson CM, Griffin RG

Journal of the American Chemical Society, 135, 19237 (2013)

28. Atomic Structure and Hierarchical Assembly of a Cross- β Amyloid Fibril

Fitzpatrick AWP, Debelouchina GT, Bayro MJ, Clare DK, Caporini MA, Bajaj VS, Jaroniec CP, Wang

LC, Ladizhansky V, Muller SA, MacPhee CE, Waudby CA, Mott HR, De Simone A, Knowles TPJ,

Saibil HR, Vendruscolo M, Orlova EV, Griffin RG, Dobson CM

Proceedings of the National Academy of the United States of America, 110, 5468 (2013)

29. Expanding the Repertoire of Amyloid Polymorphs by Co-polymerization of Related Protein Precursors

Sarell CJ, Woods LA, Su YC, Debelouchina GT, Ashcroft AE, Griffin RG, Stockley PG, Radford SE
Journal of Biological Chemistry, 288, 7327 (2013)

30. **Intermolecular Structure Determination of Amyloid Fibrils by Magic-Angle Spinning NMR Spectroscopy and Dynamic Nuclear Polarization**
Bayro MJ, Debelouchina GT, Eddy MT, Birkett, NR, Rosay M, Maas WE, Dobson CM, Griffin RG
Journal of the American Chemical Society, 133, 13967 (2011)
31. **Quantum Mechanical Theory of Dynamic Nuclear Polarization in Solid Dielectrics**
Hu KN, Debelouchina GT, Smith AA, Griffin RG
The Journal of Chemical Physics, 134, 125105 (2011)
32. **Intermolecular Alignment in β_2 -Microglobulin Amyloid Fibrils**
Debelouchina GT, Platt GW, Bayro MJ, Radford SE, Griffin RG
Journal of the American Chemical Society, 132, 17077 (2010)
33. **Magic Angle Spinning NMR Analysis of β_2 -Microglobulin Amyloid Fibrils in Two Distinct Morphologies**
Debelouchina GT, Platt GW, Bayro MJ, Radford SE, Griffin RG
Journal of the American Chemical Society, 132, 10414 (2010)
34. **Dynamic Nuclear Polarization Enhanced Solid-State NMR Spectroscopy of GNNQQNY Crystals and Amyloid Fibrils**
Debelouchina GT, Bayro MJ, van der Wel PCA, Caporini MA, Barnes AB, Rosay M, Maas WE, Griffin RG
Physical Chemistry Chemical Physics, 12, 5911 (2010)
35. **Z-Selective and Syndioselective Ring-Opening Metathesis Polymerization (ROMP) Initiated by Monoaryloxidepyrrolide (MAP) Catalysts**
Flook MM, Gerber LCH, Debelouchina GT, Schrock R
Macromolecules 43, 7515 (2010)
36. **Synthesis of a BDPA-TEMPO Biradical**
Dane EL, Maly T, Debelouchina GT, Griffin RG, Swager TM
Organic Letters, 11, 1871 (2009)
37. **Dynamic Nuclear Polarization at High Magnetic Fields**
Maly T, Debelouchina GT, Bajaj VS, Hu KN, Joo CG, Mak-Jurkauskas ML, Sirigiri JR, van der Wel PCA, Herzfeld J, Temkin RJ, Griffin RG
Journal of Chemical Physics, 128, 052211 (2008)