Nicholas Stephanopoulos

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The Biodesign Institute, Room A120B
Arizona State University
1001 S. McAllister Ave., Tempe, AZ 85281
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EMPLOYMENT

Arizona State University, Tempe **2015 - present**

Associate Professor (with tenure): School of Molecular Sciences,
The Biodesign Institute: Center for Molecular Design and Biomimetics
Graduate Faculty: School of Biological and Health Systems Engineering
Graduate Faculty: Chemical Engineering (SEMTE)
Associate Faculty: Center for Sustainable Macromolecular Materials and Manufacturing
Affiliate Faculty: The Biomimicry Center
Affiliate Faculty: The Global Security Initiative (GSI)

Research interests: Protein/peptide-DNA nanomaterials via self-assembly, with applications in biology, medicine, energy, engineering, and nano-robotics

Google Scholar profile: https://scholar.google.com/citations?user=1n9zJi8AAAAJ&hl=en

EDUCATION AND TRAINING

Northwestern University, Chicago **2011 - 2015**

Postdoctoral research
Simpson Querrey Institute for BioNanotechnology (SQI)
Advisor: Prof. Samuel I. Stupp
Research focus: Peptide and peptide-DNA biomaterials

University of California, Berkeley **2005 - 2010**

Ph.D. in Chemistry (2010)
Thesis advisor: Prof. Matthew B. Francis
Dissertation title: “Integrated Nanosystems Templated by Self-assembled Virus Capsids”
GPA: 4.0/4.0

Massachusetts Institute of Technology **2004 - 2005**

Master of Science in Chemical Engineering Practice, MSCEP (2007)
GPA: 3.9/4.0

Harvard University **2000 - 2004**

A.B. in Chemistry, *summa cum laude* (2004)
Research advisor: Prof. Xiaowei Zhuang
GPA: 3.9/4.0

AWARDS AND HONORS

- **2018:** NIH Director’s New Innovator Award
- **2018:** NSF CAREER Award
- **2018:** Selected as Scialog Fellow (Research Corporation for Science Advancement and the Gordon and Betty Moore Foundation)
- **2017:** Elsa U. Pardee Foundation Award for Cancer Research

- **2016:** Air Force Office of Scientific Research (AFOSR) Young Investigator Program Award
- **2012:** NIH Ruth L. Kirschstein NRSA Postdoctoral Fellowship
- **2011:** International Institute for Nanotechnology (IIN) Postdoctoral Fellowship at Northwestern
- **2008:** Teaching Effectiveness Award. One of only seven teaching assistants honored.
- **2008:** Outstanding Graduate Student Instructor Award (awarded to top 10% of GSI's), UC Berkeley
- **2007:** J. Edward Vivian Award for exemplary performance at the MIT Practice School
- **2006-2009:** NIH Applied Bioprocess and Bioengineering Training Grant, UC Berkeley
- **2004:** Graduated *summa cum laude* (top 4% of class) from Harvard University
- **2004:** Elected to the Phi Beta Kappa Society, Harvard University
- **2001-2003:** Earned prizes each year (Detur Book Prize, Harvard College Prize, John Harvard Prize) for being in top 10% of class, Harvard University

PUBLICATIONS

INDEPENDENT CAREER (* = CORRESPONDING AUTHOR):

- A. Buchberger, C.R. Simmons, **N. Stephanopoulos***, "Self-assembly of hybrid peptide-DNA nanostructures using homotrimeric coiled-coil/nucleic acid building blocks" (*in preparation*)
- F.M. Fumasi, T. MacCulloch, **N. Stephanopoulos***, J.L. Holloway*. "Temporal control of cell adhesion ligands to improve osteogenesis using a reversible in vitro DNA-based hydrogel platform" (*in preparation*)
- R.P. Narayanan‡, J. Procyk‡, P. Nandi, A. Prasad, Y. Xu, E. Poppleton, D. Williams, F. Zhang, H. Yan, P.-L. Chiu*, **N. Stephanopoulos***, P. Sulc,* "Characterization of protein-DNA hybrid nanostructures through experiment and simulation" (*in preparation*; ǂ co-first authors)
- O. Lunov*, A. Frtús, B. Smolková, M. Uzhytchak, M. Lunova, M. Jirsa, S.J.W. Henry, **N. Stephanopoulos**, A. Dejneka, "Interactions of DNA Nanostructures with Cells: A Roadmap for Successful Applications in Biomedicine" (*submitted*)
- T. MacCulloch, **N. Stephanopoulos***, "Proximity-enhanced synthesis of DNA-peptide-DNA triblock molecules" (*in revision*)
- C.R. Simmons‡, T. MacCulloch‡, M. Krepl, M. Matthies, A. Buchberger, I. Crawford, J. Sponer, P. Sulc, Y. Liu, **N. Stephanopoulos***, H. Yan*, "A Comprehensive Structural and Computational Toolbox of Immobile Holliday Junctions for DNA-directed Self-assembly" (*submitted*; ǂ co-first authors)
- A.P. Liu*, E. Appel, P. Ashby, B. Baker, E. Franco, L. Guo, K. Haynes, N. Joshi, A. Kloxin, P. Kouwer, J. Mittal, L. Morsut, V. Noireaux, S. Parekh, R. Schulman, S. Tang, M. Valentine, S. Vega, W. Weber, **N. Stephanopoulos***, O. Chaudhuri*, "The 'living interface': a bridge between synthetic biology and biomaterial" (*in revision*; invited perspective/review for *Nature Materials*)
- A. Buchberger, R.P. Narayanan, J. Bernal-Chanchavac, C.R. Simmons, K. Riker, N.E. Fahmi, R. Freeman, **N. Stephanopoulos***, "Integrating proteins and DNA nanostructures using orthogonal coiled-coil peptides" (*submitted*)
- B.I. Martinez, G. Mousa, K. Fleck, T. MacCulloch, C.W. Diehnelt, **N. Stephanopoulos**, S.E. Stabenfeldt*, "Uncovering temporally sensitive targeting domains for traumatic brain injury via phage display" (*submitted*) pre-print on bioRxiv: https://www.biorxiv.org/content/10.1101/2020.06.16.155325v1
- R.P. Narayanan, A. Buchberger, L. Zou, N.E. Fahmi, H. Yan, F. Zhang M.J. Webber*, **N. Stephanopoulos***, "Supramolecular polymerization of DNA nanostructures using high-affinity host-guest interactions" (*submitted*)
- J. Bernal-Chanchavac‡, M. Al-Amin‡, **N. Stephanopoulos***, "Nanoscale structures and materials from the self-assembly of polypeptides and DNA" (*accepted*; ǂ co-first authors)
- A. Gangrade*, **N. Stephanopoulos**, D. Bhatia*, "Programmable, self-assembled DNA nanodevices for cellular programming and tissue engineering" *Nanoscale*, **2021**, *13*, 16834-16846.
- B. Smolková, T. MacCulloch, T. Rockwood, M. Liu, S.J.W. Henry, A. Frtús, M. Uzhytchak, M. Lunova, M. Hof, P. Jurkiewicz, A. Dejneka, **N. Stephanopoulos***, O. Lunov*, "Effect of the protein corona on endosomal escape of functionalized DNA nanostructures" *ACS Appl. Mater. Interfaces* **2021**, *13*, 46375–46390.

- T. Yuan, Y. Shao, X. Zhou, Q. Liu, Z. Zhu, B. Zhou, Y. Dong, **N. Stephanopoulos**, S. Gui*, H. Yan*, D. Liu*, "Highly permeable DNA supramolecular hydrogel promotes neurogenesis and functional recovery after completely transected spinal cord injury" *Adv. Mater.* **2021**, *33*, 2102428.
- S.J.W. Henry, **N Stephanopoulos***, "Functionalizing DNA nanostructures for therapeutic applications" *Wiley Interdiscip. Rev. Nanomed. Nanobiotechnol.* **2021**, *13,* e1729
- A. Buchberger‡, H. Saini‡, K.R. Eliato‡, R. Merkley, Y. Xu, A. Zare, J. Bernal, R. Ros*, M. Nikkhah*, **N. Stephanopoulos***, "Reversible control of gelatin hydrogel stiffness using DNA crosslinkers" *ChemBioChem* **2021**, *22*, 1755-1760 (‡ co-first authors; selected as a "Very Important Paper" by the journal)
- **N. Stephanopoulos***, P. Sulc, "DNA nanodevices as mechanical probes of protein structure and function" *Appl. Sci.* **2021**, *11*, 2802.
- C.R. Simmons‡, T. MacCulloch‡, F. Zhang, Y. Liu, **N. Stephanopoulos***, H. Yan*, "Self-Assembly of a DNA Crystal Scaffold Containing Modular Cavities for the Precise Arrangement of Macromolecules" *Angew. Chem. Int. Ed.* **2020**, *59*, 18619-18626. (‡co-first authors)
- F.M. Fumasi, **N. Stephanopoulos**, J.L. Holloway*, "Reversible Control of Biomaterial Properties for Dynamically Tuning Cell Behavior" *J. Appl. Polym. Sci.* **2020**, *137*, e49058.
- **N. Stephanopoulos***, "Hybrid nanostructures from the self-assembly of proteins and DNA" *Chem* **2020**, *6*, 364-405.
- A. Buchberger, C.R. Simmons, N.E. Fahmi, R. Freeman, **N. Stephanopoulos***, "Hierarchical assembly of nucleic acid/coiled-coil peptide nanostructures" *J. Am. Chem. Soc.* **2020**, *142*, 1406-1416. (selected as "ACS Editor's Choice" article)
- T. Mahatmanto*, I. Azizah, A, Buchberger, **N. Stephanopoulos**, "Progress toward sourcing plants for new bioconjugation tools: a screening evaluation of a model peptide ligase using a synthetic precursor" *3 Biotech* **2019**, *9*, 442.
- **N. Stephanopoulos***, "Peptide-DNA hybrid molecules for bioactive nanomaterials" *Bioconjugate Chem.* **2019**, *30*, 1915-1922. (selected as "ACS Editor's Choice" article)
- **N. Stephanopoulos***, "Strategies for stabilizing DNA nanostructures to biological conditions" *ChemBioChem* **2019**, *20*, 2191-2197.
- Y. Xu, S. Jiang, C. Simmons, R.P. Narayanan, F. Zhang, A.-M. Aziz, H. Yan, **N. Stephanopoulos***, "Tunable nanoscale cages from self-assembling DNA and protein building blocks" *ACS Nano* **2019**, *13*, 3545–3554.
- A. Stelson, M. Liu, C. Little, C. Long, N. Orloff, **N. Stephanopoulos***, J. Booth*, "Label-free detection of conformational changes in switchable DNA nanostructures with microwave microfluidics" *Nat. Commun.* **2019**, *10*, 1174.
- T. MacCulloch‡, A. Buchberger‡, **N. Stephanopoulos***, "Emerging applications of peptide-oligonucleotide conjugates: bioactive scaffolds, self-assembling systems, and hybrid nanomaterials" *Org. Biomol. Chem.* **2019**, *17*, 1668-1682. (‡ co-first authors)
- M. Liu, S. Jiang, O. Loza, N.E. Fahmi, P. Šulc, **N. Stephanopoulos***, "Rapid photo-actuation of a DNA nanostructure using an internal photocaged trigger strand" *Angew. Chem. Int. Ed.* **2018**, *57*, 9341-9345. (selected as paper for Wiley's Joint Special Collection on Biopolymers, for the Murray Goodman Award Symposium at the 2019 ACS Spring Meeting: bit.ly/wileybiopolymers19)
- **N. Stephanopoulos***, R. Freeman*, "DNA-based materials as self-assembling scaffolds for interfacing with cells" (*invited book chapter*), "Self-Assembling Biomaterials: Molecular Design, Characterization and Application in Biology and Medicine, 1st Edition" **2018**, pp. 157-175. (Elsevier)
- L. Avolio, D. Sipes, **N. Stephanopoulos**, S. Sur*, "Recreating stem-cell niches using self-assembling biomaterials" (*invited book chapter*), "Self-Assembling Biomaterials: Molecular Design, Characterization and Application in Biology and Medicine, 1st Edition" **2018**, pp. 421-454. (Elsevier)
- C. Simmons, F. Zhang, T. MacCulloch, N.E. Fahmi, **N. Stephanopoulos**, Y. Liu, N. Seeman, H. Yan*, "Tuning the Cavity Size and Chirality of Self-Assembling 3D DNA Crystals" *J. Am. Chem. Soc.* **2017**, *139*, 11254-11260.
- D. Varun, G.R. Srinivaan, Y.-H. Tsai, H.-J. Kim, J. Cutts, F. Petty, R. Merkley, **N. Stephanopoulos**, D. Dolezalova, M. Marsala, D.A. Brafman*, "A Robust Vintronectin-Derived Peptide for the Scalable Long-term

Expansion and Neuronal Differentiation of Human Pluripotent Stem Cell (hPSC)-derived Neural Progenitor Cells (hNPCs)" *Acta Biomater.* **2017**, *48*, 120-130.

POSTDOCTORAL AND GRADUATE RESEARCH (* = CO-FIRST AUTHOR):

- R. Freeman, M. Han, Z. Álvarez, J.A. Lewis, J.R. Wester, **N. Stephanopoulos**, M.T. McClendon, C. Lynsky, J.M. Godbe, H. Sangji, E. Luijten, S.I. Stupp, "Reversible self-assembly of superstructured networks" *Science* **2018**, *362*, 808-813.
- J.J. Greene, M.T. McClendon, **N. Stephanopoulos**, Z. Alvarez, S.I. Stupp, C.-P. Richter, "Electrophysiological Assessment of a Peptide Amphiphile Nanofiber Nerve Graft for Facial Nerve Repair" *J. Tissue Eng. Regen. Med.* **2018**, *12*, 1389–1401.
- A.J. Matsuoka , Z.A. Sayed, **Nicholas Stephanopoulos**, E.J. Berns, A.R. Wadhwani, Z.D. Morrissey, D.M. Chadly, S. Kobayashi, A.N. Edelbrock, T. Mashimo, C.A. Miller, T.L. McGuire, S.I. Stupp, J.A. Kessler "Creating a stem cell niche in the inner ear using self-assembling peptide amphiphiles" *PLoS ONE* **2017**, *12*, e0190150.
- R. Freeman*, **N. Stephanopoulos***, Z. Álvarez, J.A. Lewis, S. Sur, C.M. Serrano, J. Boekhoven, S.S. Lee, S.I. Stupp, "Instructing cells with programmable DNA-peptide hybrids" *Nat. Commun.* **2017**, *8*, 15982.
- C. Rubert-Perez, **N. Stephanopoulos**, S.S. Lee, S. C. Newcomb, Sur, S.I. Stupp, "The Powerful Functions of Peptide-Based Bioactive Matrices for Regenerative Medicine" (invited review) *Ann. Biomed. Eng.* **2015**, *43*, 501-514.
- **N. Stephanopoulos**, R. Freeman, H.N. Scheler, S. Sur, S. Jeong, F. Tantakitti, J.A. Kessler, S.I. Stupp, "Bioactive DNA-Peptide Nanotubes Enhance the Differentiation of Neural Stem Cells Into Neurons" *Nano Lett.* **2015**, *15*, 603-609.
- A. Li, A. Hokugo, A. Yalom, E.J. Berns, **N. Stephanopoulos**, M.T. McClendon, L.A. Segovia, I. Spigelman, S.I. Stupp, R. Jarrahy., "A bioengineered peripheral nerve construct using aligned peptide amphiphile nanofibers" *Biomaterials* **2014**, *35*, 8780-8790.
- J. Sack, **N. Stephanopoulos**, D.C. Austin, M.B. Francis, J.S. Trimmer, "Antibody-guided photoablation of voltage-gated potassium channels" *J. Gen. Physiol.* **2013**, *142*, 315-324.
- **N. Stephanopoulos**, J.H. Ortony, S.I. Stupp, "Self-Assembly for the Synthesis of Functional Biomaterials" (invited review) *Acta Materialia* (special Diamond Jubilee Issue), **2013**, *61*, 912-930.
- **N. Stephanopoulos**, M.B. Francis, "Making New Materials from Viral Capsids" (invited book chapter) "Polymer Science: A Comprehensive Reference, 1st Edition" **2012**, Vol. 9, pp. 247-266. (Elsevier)
- **N. Stephanopoulos**, M.B. Francis, "Choosing an Effective Protein Bioconjugation Strategy" (invited review) *Nat. Chem. Biol.* **2011**, *7*, 876-884.
- P.G. Holder, D.T. Finley, **N. Stephanopoulos**, R. Walton, D.S. Clark, M.B. Francis, "Dramatic Thermal Stability of Virus-Polymer Conjugates in Hydrophobic Solvents" *Langmuir* **2010**, *26*, 17383–17388.
- **N. Stephanopoulos**, G.J. Tong, S.C. Hsiao, M.B. Francis, "Dual-Surface Modified Virus Capsids for Targeted Delivery of Photodynamic Agents to Cancer Cells" *ACS Nano*, **2010**, *4*, 6014-6020.
- **N. Stephanopoulos***, M. Liu*, G.J. Tong, Z. Li, Y. Liu, H. Yan, M.B. Francis, "Immobilization and One-Dimensional Arrangement of Virus Capsids with Nanoscale Precision Using DNA Origami" *Nano Lett.* **2010**, *10*, 2714-2720.
- R.A. Miller, **N. Stephanopoulos**, J.M. McFarland, A.S. Rosko, P.L. Geissler, M.B. Francis, "The Impact of Assembly State on the Defect Tolerance of TMV-based Light Harvesting Arrays" *J. Am. Chem. Soc.* **2010**, *132*, 6068-6074.
- **N. Stephanopoulos**, Z.M. Carrico, M.B. Francis, "Nanoscale Integration of Sensitizing Chromophores and Porphyrins Using Bacteriophage MS2" *Angew. Chem. Int. Ed.* **2009**, *121*, 9662-9666.
- **N. Stephanopoulos**, E.O.P. Solis, G. Stephanopoulos, "Nanoscale process systems engineering: Toward molecular factories, synthetic cells, and adaptive devices" (invited perspective) *AIChE J.* **2005**, *51*, 1858-1869.

INVITED CONFERENCE PRESENTATIONS AND SEMINARS

- "Hybrid self-assembled nanomaterials from proteins, peptides, and DNA" U. Michigan; Jan. 7, 2022
- "Hybrid self-assembled nanomaterials from proteins, peptides, and DNA" U. Mass Amherst; Oct. 7, 2021
- "Hybrid self-assembled nanomaterials from proteins, peptides, and DNA" Frontiers in Global Science Seminar, Royal Scientific Society of Jordan; August 10, 2021 (*via Zoom due to Covid-19 pandemic*)
- "Supramolecular polymerization of DNA origami nanostructures with peptides, proteins, and small molecules" ACS National Meeting; April 9, 2021 (*online due to Covid-19 pandemic*)
- "Hybrid nanomaterials from proteins, peptides, and DNA" Institute of Physical Chemistry at University of Hamburg, Hamburg, Germany; January 26, 2021 (*via Zoom due to Covid-19 pandemic*)
- "Hybrid self-assembled nanomaterials from proteins, peptides, and DNA" Max Planck Institute for Polymer Research, Mainz, Germany; August 4, 2020 (*via Zoom due to Covid-19 pandemic*)
- "Protein-DNA nanotechnology" Institute for Protein Design, Seattle WA; March 12, 2020 (*via Zoom due to Covid-19 pandemic*)
- "Hybrid self-assembled nanomaterials from proteins, peptides, and DNA" California Institute of Technology, Pasadena CA; March 9, 2020
- "Rapid photo-actuation of a DNA nanostructure using an internal photocaged trigger strand" APS National Meeting, Denver CO; March 2, 2020 (*online due to Covid-19*)
- Hybrid self-assembled nanomaterials from proteins, peptides, and DNA" Technische Universität München (Technical University of Munich), Munich, Germany; January 10, 2020
- Hybrid self-assembled nanomaterials from proteins, peptides, and DNA" Fyzikální Ústav AV ČR, (FZU; Institute of Physics of the Czech Academy of Sciences), Prague, Czech Republic; January 7, 2020
- "Hybrid self-assembled nanomaterials from proteins, peptides, and DNA" Wyss Institute (Harvard University), Cambridge MA; December 2, 2019
- "Hybrid self-assembled nanomaterials from proteins, peptides, and DNA" Memorial Sloan-Kettering Cancer Center, New York NY; November 26, 2019
- "Hybrid self-assembled nanomaterials from proteins, peptides, and DNA" Johns Hopkins University, Baltimore MD; October 31, 2019
- "Hybrid self-assembled nanomaterials from proteins, peptides, and DNA" University of California, San Diego, San Diego CA; October 28, 2019
- "Hybrid self-assembled nanomaterials from proteins, peptides, and DNA" University of North Carolina at Chapel Hill, Chapel Hill NC; October 22, 2019
- "Hybrid self-assembled nanomaterials from proteins, peptides, and DNA" Institute for Molecular Engineering, Chicago IL; October 18, 2019
- "Hybrid self-assembled nanomaterials from proteins, peptides, and DNA" McGill University, Montreal Canada; October 1, 2019
- "Hybrid self-assembled nanomaterials from proteins, peptides, and DNA" The Ohio State University, Columbus OH; September 20, 2019
- "Hybrid self-assembled nanomaterials from proteins, peptides, and DNA" Department of Chemical Engineering, Massachusetts Institute of Technology, Cambridge MA; September 13, 2019
- "Hybrid self-assembled nanomaterials from proteins, peptides, and DNA" Macromolecules Innovation Institute, Virginia Tech, Blacksburg VA; September 11, 2019
- "Hybrid peptide/protein-DNA nanomaterials for medicine and biology" 10th International Nanomedicine Conference, Sydney, Australia; June 24, 2019
- "Hybrid nanomaterials through the self-assembly of coiled-coil peptides and DNA nanostructures" ACS National Meeting, Orlando, FL; April 3, 2019
- "DNA nanoscaffolds for molecular machines, structures, and biomaterials," ASU BME Seminar, Tempe AZ; October 12, 2018
- "Light-triggered self-assembly and actuation of DNA nanostructures using photocaged nucleotides," ACS National Meeting, San Francisco CA; April 5, 2017

- "Peptide-DNA Hybrids for Dynamic, Programmable Control of Biomaterials," ASU Molecular, Cellular, and Tissue Bioengineering (MCTB) Symposium, Tempe AZ; April 2, 2016
- "Instructing cells with programmable peptide-DNA extracellular matrices," University of Science and Technology of China (USTC), Hefei, China; December 7, 2015

PRESS COVERAGE AND ARTICLES

- **Press release for AFOSR Young Investigator Award:** https://biodesign.asu.edu/news/asu-top-recipient-prestigious-air-force-young-investigator-awards
- **ASU press release highlighting work in regenerative medicine:** https://biodesign.asu.edu/news/restoring-loss-bio-inspired-materials-boost-regenerative-medicine
- **Biodesign Institute article about publication and NSF CAREER Award:** https://biodesign.asu.edu/news/useful-pinch-nanoscale-tweezers-are-triggered-light
- **School of Molecular Sciences article about NSF CAREER Award:** https://asunow.asu.edu/20180719-asu-molecular-sciences-professor-receives-nsf-career-award
- **ASU article about NIH New Innovator Award:** https://asunow.asu.edu/20181002-two-asu-professors-receive-2018-nih-new-innovator-award-0
- **SMS article about research program:** https://asunow.asu.edu/20190108-asu-assistant-professor-exemplifies-cutting-edge-molecular-science-research
- **Biodesign article about tweezer sensor:** https://biodesign.asu.edu/news/plucky-science-researchers%E2%80%99-nanotweezers-used-detection-conformational-changes
- **ASU article about protein-DNA nano-cages:** https://asunow.asu.edu/20190319-programmable-legos-dna-and-protein-building-blocks-create-novel-3d-cages
- **Podcast with "Common Science" to explain work to non-scientists:** https://www.youtube.com/watch?v=zGdhXp4nDFA
- **Personal and research profiles on ASU's "Ask A Biologist" website:** https://askabiologist.asu.edu/explore/building-nanoscale https://askabiologist.asu.edu/explore/nanobiotechnology
- **SMS article on faculty tenure in 2021:** https://news.asu.edu/20210528-faculty-promotions-announced-school-molecular-sciences

CURRENT AND PAST FUNDING

- **DOD-AFOSR –** "3D Nano-printing of protein nanostructures using DNA molds" (PI: N. Stephanopoulos): $$596,691 (7/1/2021 – 6/30/2024)
- **NIH DP2 (New Innovator Award) –** "Chemical synthesis of G protein-coupled receptors using sequential DNA-templated reactions" (PI: N. Stephanopoulos): $2,230,906 (9/30/2018 – 5/31/2023)
- **DOD-AFOSR (Young Investigator Program) –** "Peptide-DNA Tiles as Building Blocks for the Synthesis of Complex Nanostructures" (PI: N. Stephanopoulos): $359,541 (12/1/2016 – 11/30/2019)
- **NSF CAREER –** "Hybrid protein-DNA nanostructures and devices" (PI: N. Stephanopoulos): $539,785 (7/1/2018 – 6/30/2023)
- **NIH R21 –** "DNA Hyaluronic Acid Platform for Spatiotemporally Probing the Role of Adhesion Ligands and Growth Factors" (Co-PIs: J. Holloway, N. Stephanopoulos): $347,738 (4/1/2019 - 1/31/2021)
- **NSF BMAT** – "Rational design of self-assembled, three-dimensional DNA crystals" (PIs: H. Yan; Co-PIs: N. Stephanopoulos, P. Sulc): $450,000 (5/1/2020 - 4/30/2023)

- **NSF Elements –** "Models and tools for on-line design And simulations for DNA and RNA Nanotechnology" (PI: P. Sulc; Co-PIs: H. Yan, N. Stephanopoulos): $436,407 (10/1/2019 - 9/30/2022)
- **Elsa U. Pardee Foundation –** "Synthetic Peptide-DNA Antibodies for Targeting Cancer Cells" (PI: N. Stephanopoulos): $186,374 (1/1/2018 – 12/31/2018)
- **DOD-NAVY-ONR (DURIP instrument grant) –** "Mass Spectrometry Instrument for Mass Determination of Protein and Nucleic Acid Conjugates" (PI: H. Yan; Co-PIs: N. Stephanopoulos, J. Mills): $300,000 (8/15/2016 - 8/14/2017)

POSTDOCTORAL SCHOLARS & RESEARCH SCIENTISTS

- Dr. Minghui Liu (co-advised with Prof. Hao Yan; recently promoted to Research Assistant Professor)
- Dr. Yang Xu
- Dr. Nour Eddine Fahmi (co-advised with Prof. Hao Yan)

GRADUATE STUDENTS MENTORED

- Tara MacCulloch (PhD, currently at Palamedrix: https://www.palamedrix.com/)
- Alex Buchberger (PhD, currently at Nimble Therapeutics: https://nimbletherapeutics.com/)
- Raghu Pradeep Narayanan (PhD; co-advised with Prof. Hao Yan, currently postdoc at UCSF)
- Kirstie Swingle (6th year; co-advised with Profs. Neal Woodbury, Alexander Green)
- Julio Bernal (4rd year)
- Md Al-Amin (4rd year)
- Jonah Procyk (4rd year; co-advised with Prof. Petr Šulc)
- Skyler Henry (3rd year)
- Alexandra Novacek (2nd year)
- Paul Workinger (2nd year; joint PhD program with Caris Life Sciences)

MASTERS STUDENTS MENTORED

- Ryan Merkley (graduated 2016)
- Ann-Marie Aziz (graduated 2017)
- Timothy Griswold (graduated 2018)
- Omar Loza (graduated 2018)
- Brittany Torczynski (graduated 2019)
- Tyler Rockwood (graduated 2020)

UNDERGRADUATE STUDENTS MENTORED

- Brittany Torczynski (stayed in lab for Masters)
- Will Tuli
- Matthew Nam
- Omar Loza (stayed in lab for Masters)
- Jonah Procyk (stayed in lab for PhD)
- Ilyssa Farmer
- Tyler Rockwood (stayed in lab for Masters)
- Rifat Adam Akkad
- Grant Severson
- Colton Seever
- Jessica Guido
- Anna Hostal
- Brooke Lovell
- Yash Gamoth
- Kaityln Cribbs
- Leif Lindberg

- Jonathan Chapman
- Javier Sayles
- Eva Chen

MEMBER OF PHD OR ORALS THESIS COMMITTEE

- Abhishek Debnath
- Swarup Dey
- Patrick Gleason
- Lan Zhu
- Soma Chaudhary
- Sanchari Saha
- Pritha Bisarad
- Subhadeep Dutta
- Towshif Rabbani
- Chang Liu
- Mahasish Shome
- Zina Al-Sahouri
- Roslyn Dermody (School of Life Sciences)
- Zaoqing Yan
- Justus Nwachukwu
- Thai Pham
- Fallon Fumasi (SEMTE, Chemical Engineering)
- Raymond Tindell (SEMTE, Chemical Engineering)
- Mikayla Carlson (SMS, Masters)
- Griffin McCutcheon
- Leeza Abraham
- Xiaoyu Chen
- Thai Pham
- Justus Nwachuku
- Brandon Neff
- Lu Yu
- Liangxiao Chen
- David Prieto (SBHSE, Biomedical Engineering)
- Yue Tang
- Erik Poppleton (Biological Design Program, SBHSE)

SERVICE AND OUTREACH ACTIVITIES

- Have served as reviewer for the following journals: *Nature Communications*, *Journal of the American Chemical Society*, *Biomacromolecules*, *Acta Biomaterialia*, *Nano Research*, *ACS Applied Materials & Interfaces*, *Nucleic Acids Research*, *Trends in Biochemical Sciences*, *Science Advances*, *Chem*, *Accounts of Chemical Research*, *Angewandte Chemie*, *International Journal of Molecular Sciences*, *Chemical Communications*, *Bioconjugate Chemistry*, *Scientific Reports*, *ACS Nano*, *ChemBioChem*, *Advanced Materials*; served as reviewer for an Elsevier textbook proposal on self-assembled materials and a book chapter for the Karty organic chemistry textbook.
- Chaired the “Molecular, Cellular, and Tissue Bioengineering Symposium”, a meeting at ASU covering various aspects of bioengineering, with speakers from both within and outside the university. My co-chair (Prof. Julianne Holloway) and I expanded the symposium from one day to two, and had ~100 students, postdocs, and faculty attendees
- Served on Committee for Undergraduate Education and Awards (since Fall 2016)
- Traveled to China for two weeks (Dec. 2015) to recruit talented students from top universities for the SMS PhD program. Made 20 offers, 5 of which were accepted

- Participated in Association of College and University Educators (ACUE) pilot program (Fall 2016) for more effective teaching techniques; one of two SMS representatives (and only junior faculty) chosen to evaluate the effectiveness of this program for future SMS participation
- Served on Served on Goldwater Scholarship selection committee (Fall 2018)
- Served on departmental search committees for ASU:
  - Junior faculty candidate for bioengineering (SBHSE); Spring 2018
  - Junior faculty candidate in Chemical Engineering for SEMTE; Spring 2018
  - Senior faculty candidate for Director for the School of Molecular Sciences; Spring 2020
- Initiated outreach with Kyrene del Pueblo Middle School (Chandler) and taught basic concepts of DNA nanotechnology to 8th grade science class
- Working with Ask A Biologist initiative at ASU (https://askabiologist.asu.edu/) to develop an interactive game for K-12 students on DNA self-assembly, with concomitant teacher training workshop
- Volunteered as judge for the Intel Science and Engineering Fair (ISEF) in Phoenix (May 2016)
- Served as School of Molecular Sciences liaison to Regenerative Medicine Core at ASU (2020-2021)
- Served on grant review panels and forward-looking workshops:
  - NSF FDA panel (July 2018)
  - Ad hoc review for NSF FDA (July 2019)
  - NSF Square Table 2 workshop on the interface between synthetic biology and biomaterials science (Oct. 2019)
  - ARPA-E workshop (Dec. 2019)
  - Reviewed proposal for AFOSR Young Investigator Program (Aug. 2020)
  - Reviewed for DOE Biomolecular Materials Program (Feb. 2021)
  - Reviewed for the NSF DMR Biomaterials (BMAT) Program (March 2022)
- Served as member of ASU's Biological Design Graduate Program Steering Committee (from Fall 2020)
- Served as faculty advisor for HOSA – Future Health Professionals (from Fall 2020)
- Served as External Examiner for McGill Chemistry PhD thesis defense
- Served as External Examiner for FZU (Institute of Physics of the Czech Academy of Sciences) PhD thesis
- Guest Editor for special issue of *ACS Applied Bio Materials* (co-editor: Prof. Ronit Freeman), focusing on self-assembled peptide, protein, and DNA biomaterials
- Served as a reviewer on the NSF BMAT panel (March, 2022)