

NICOLE M. MARTINEZ

Department of Molecular Biophysics and Biochemistry
Yale University
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EDUCATION

Massachusetts Institute of Technology and Yale University, New Haven, CT

Postdoctoral Research Fellow, November 2015 – Present

Advisor: Wendy V. Gilbert

Project: Determining the landscape and function of pseudouridines in pre-mRNA

University of Pennsylvania, Philadelphia, PA

PhD in Biochemistry and Molecular Biophysics, September 2015

Advisor: Kristen W. Lynch

Thesis: Interplay Between Signaling and Splicing During T cell Activation: MKK7 as a Case Study

University of Puerto Rico, Mayaguez, PR

BS in Industrial Biotechnology, June 2009

magna cum laude

HONORS AND AWARDS

12/2020	Selected as Intersections Science Fellows Symposium Fellow
10/2020	Selected for Next Generation Faculty – Stanford.Berkley.UCSF Symposium
8/2020 – 8/2025	NIH Pathway to Independence Award (K99/R00)
5/2020	Selected for NextProf Science 2020, University of Michigan
2018	Elected chair of the GRS on Post-Transcriptional Gene Regulation
1/2017 – 12/2019	Jane Coffin Childs Memorial Fund Postdoctoral Fellow
2/2013 – 10/2015	Ruth L. Kirschstein National Research Service Award Pre-doctoral Fellow (F31)
8/2011 – 2012	NIH Research Supplement to Promote Diversity in Health-Related Research
2009 – 2015	HHMI Med into Grad Scholar
6/2009	Graduated magna cum laude, University of Puerto Rico Mayaguez
2008 – 2009	MARC U*STAR Program Fellow
2006 – 2007	Puerto Rico Louis Stokes Alliance for Minority Participation (PR-LSAMP) Mentored Undergraduate Research Program Fellow
2004 – 2009	Dean's List College of Arts and Sciences University of Puerto Rico

RESEARCH EXPERIENCE

November 2015 – Present	Post-doctoral Fellow Yale University, Department of Molecular Biophysics and Biochemistry Laboratory of Dr. Wendy V. Gilbert Determining the landscape and function of pseudouridines in pre-mRNA
June 2010 – October 2015	PhD student University of Pennsylvania, Biochemistry and Molecular Biophysics Laboratory of Dr. Kristen W. Lynch Mechanisms and functional consequences of regulated MKK7 splicing in T cell

activation

- August 2008 – May 2009 Undergraduate Research
University of Puerto Rico - Mayaguez, Chemistry
Department, Undergraduate Research
Laboratory of Dr. Belinda Pastrana, PhD
Expression and purification of centrin protein family members
- Summer 2008 Undergraduate Summer Research
The Broad Institute of Harvard and MIT, Summer
Research Program in Genomics (SRPG), Laboratories of Drs. Angela Koehler
and Levi Garraway
Identification of Small Molecule ETS Transcription Factor Binders
- Summer 2007 Undergraduate Summer Research
The Broad Institute of Harvard and MIT, Summer
Research Program in Genomics (SRPG), Laboratory of Dr. Angela Kohler
Unbiased ligand discovery for Histone Deacetylases
- 2006 – 2007 Undergraduate Research
University of Puerto Rico - Mayaguez, Chemistry
Department, Undergraduate Research
Laboratory of Dr. Elsie Pares
FAP1: protein structure, function and dynamics

TEACHING, MENTORING AND OUTREACH

- 2020 Yale University Department of Molecular Biophysics and Biochemistry Climate and Diversity Committee Member
- 2016 – 2019 Mentored three rotation, two undergraduates and one postbac student at MIT and Yale
- 2017, 2018 Guest Lecturer in Advanced Eukaryotic Molecular Biology at Yale University
- 2017 Volunteer lecturer for Health Professionals Recruitment and Exposure Program (HPREP)
- 2015, 2016 Career Panel Underrepresented Minorities/Women in STEM Broad Institute Summer Research Program
- 2014 Diversity initiative for recruiting minority graduate student representing the University of Pennsylvania at the Annual Biomedical Research Conference for Minority Students
- 2011 – 2014 Lecturer for Penn Upward Bound Math and Science Summer Program
Developed lectures and hands-on lab activities
- Spring 2014 BIOL 402 - Biochemistry Teaching Assistant
Held recitations, review sessions, discussion groups, office hours and graded exams
- Summer 2014, 2013 Mentor to Penn Summer Undergraduate Internship Program: Student from UPR
- Summer 2012 Mentor to Undergraduate Summer Student from UPenn (Summer 2012)
Rotation Students

PUBLICATIONS

- Martinez N. M.** and Gilbert W. V. Investigating pseudouridylation mechanisms by high-throughput *in vitro* RNA pseudouridylation and sequencing (2021). *Methods Mol. Biol* in press.
- Martinez N. M.**, Su A., Nussbacher J.K., Burns M.C., Sathe S., Yeo G.W. and Gilbert W.V. (2020) Pseudouridine synthases modify human pre-mRNA co-transcriptionally and affect splicing. *bioRxiv* doi: <https://doi.org/10.1101/2020.08.29.273565>.
- Borchardt E.K.*, **Martinez N. M.***, Gilbert W. V. (2020) Regulation and Function of RNA Pseudouridylation in Human Cells. *Annu. Rev. Genet.* 54:14.1–14.28. * denotes equal contribution.
- Carlile T.M., **Martinez N.M.**, Schaening C., Su A., Bell T.A., Zinshteyn B. and Gilbert W.V. (2019) mRNA structure determines modification by pseudouridine synthase 1. *Nat Chem Bio* 15, 966–974.
- Martinez, N.M.** & Gilbert, W.V. Pre-mRNA modifications and their role in nuclear processing. *Quant Biol* (2018) 6: 210
- Ajith S., Gazzara M.R., Cole B.S., Shankarling G., **Martinez N.M.**, Mallory M.J., Lynch K.W. (2016) Position-dependent activity of CELF2 in the regulation of splicing and implications for signal-responsive regulation in T cells. *RNA Biol.* 2016 Jun 2;13(6):569-81.
- Boskovic Z.V., Kemp M.M., Freedy A.M., Viswanathan V.S., Pop M.S., Fuller J.H., **Martinez N.M.**, Figueroa Lazú S.O., Hong J.A., Lewis T.A., Calarese D., Love J.D., Vetere A., Almo S.C., Schreiber S.L., Koehler A.N. (2016) Inhibition of Zinc-Dependent Histone Deacetylases with a Chemically Triggered Electrophile. *ACS Chem Biol.* 2016 Jul 15;11(7):1844-51.
- Sotillo E., Barrett D.M., Black K.L., Bagashev A., Oldridge D., Wu G., Sussman R., Lanauze C., Ruella M., Gazzara M.R., **Martinez N.M.**, Harrington C.T., Chung E.Y., Perazzelli J., Hofmann T.J., Maude S.L., Raman P., Barrera A., Gill S., Lacey S.F., Melenhorst J.J., Allman D., Jacoby E., Fry T., Mackall C., Barash Y., Lynch K.W., Maris J.M., Grupp S.A., Thomas-Tikhonenko A. (2015) Convergence of Acquired Mutations and Alternative Splicing of CD19 Enables Resistance to CART-19 Immunotherapy. *Cancer Discov.* 5(12):1282-95.
- Martinez N.M.**, Agosto L., Qiu J., Mallory M.J., Gazzara M.R., Barash Y., Fu X.D., Lynch K.W. (2015) Widespread JNK-dependent Alternative Splicing Induces a Positive Feedback Loop through CELF2-mediated regulation of MKK7 during T Cell Activation. *Genes Dev*, 29 (19), 2054-2066.
- Mallory M.J., Allon S.J., Qiu J., Gazzara M.R., Tapescu I., **Martinez N.M.**, Fu X.D. and Lynch K.W. (2015) Induced transcription and stability of CELF2 mRNA drives widespread alternative splicing during T cell signaling. *PNAS* 122(17):E2139-48.
- Martinez, N.M.**, and Lynch, K.W. (2013). Control of alternative splicing in immune responses: many regulators, many predictions, much still to learn. *Immunol. Rev.* 253, 216–236.
- Martinez, N.M.**, Pan, Q., Cole, B.S., Yarosh, C.A., Babcock, G.A., Heyd, F., Zhu, W., Ajith, S., Blencowe, B.J., and Lynch, K.W. (2012). Alternative splicing networks regulated by signaling in human T cells. *RNA* 18, 1029–1040.
- Kemp M.M., Wang Q., Fuller J.H., West N., **Martinez N.M.**, Morse E.M., Weïwer M., Schreiber S.L., Bradner J.E. and Koehler A.N. (2011). A Novel HDAC Inhibitor with a Hydroxy-Pyrimidine Scaffold. *Bioorg. Med. Chem. Lett.* 21(14):4164-9.

ORAL PRESENTATIONS AND KEY POSTERS

October 2020: Selected talk at Stanford.Berkley.UCSF Next Generation Faculty Symposium, Virtual.

October 2020: Selected talk at Complex Life of RNA EMBL Meeting, Virtual.

May 2020: Selected talk at 25th Annual Meeting of the RNA Society, Virtual.

April 2019: Talk at Annual Jane Coffin Childs Symposium, New Haven, CT.

August 2019: Selected talk at CSHL Eukaryotic mRNA Processing Meeting. Cold Spring Harbor, NY.

July 2018: Selected talk at Post-Transcriptional Gene Regulation Gordon Research Seminar. Newry, ME.

July 2018: Poster at Post-Transcriptional Gene Regulation Gordon Research Conference. Newry, ME.

August 2017: Selected talk at CSHL Eukaryotic mRNA Processing Meeting. Cold Spring Harbor, NY.

September 2016: Poster at Abcam RNA modifications and Epitranscriptomics Conference. Chicago, IL.

May 2015: Poster at 20th Annual Meeting of the RNA Society. Madison, WI.

November 2014: Talk at Dr. George W Raiziss 31st Annual Retreat of B&B department Upenn, Skytop, PA.

May 2014: Selected talk at 19th Annual Meeting of the RNA Society Quebec., CA.

June 2013: Poster at HHMI Med into Grad Symposium Yale University. New Haven, CT.

May 2013: Poster at CSHL Eukaryotic mRNA Processing Meeting. Cold Spring Harbor, NY.

June 2012: Poster at Med into Grad Symposium Columbia University. New York, NY.

August 2011: Poster at CSHL Eukaryotic mRNA Processing Meeting. Cold Spring Harbor, NY.

September 2010: Poster at From the RNA World to the Clinic, HHMI conference, Janelia Farm, Ashburn, VA.

PROFESSIONAL AFFILIATIONS

Member of the RNA Society

American Association for the Advancement of Science (AAAS) membership

OTHER ACTIVITIES

2014 Student organizer for the HHMI Med Into Grad Annual Symposium Annual Symposium at Penn