Curriculum vitæ – Jonathan Ipsaro, Ph.D

Research Investigator – Cold Spring Harbor Laboratory

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Education

2010-Present Cold Spring Harbor Laboratory –Research Investigator (2019-Current); Post-doctoral Fellow (2010-2019)
Primary Project: Structural studies of piRNA silencing machinery
Advisor: Leemor Joshua-Tor

2004-2009 Northwestern University – Ph.D.
Interdepartmental Biological Sciences (IBiS) Program
Department of Biochemistry, Molecular Biology, and Cell Biology
Thesis: Biophysical characterization and structural elucidation of the spectrin-ankyrin interaction
Advisor: Alfonso Mondragón

2000-2004 Case Western Reserve University – B.S., B.A. Magna cum laude
Bachelor of Science in Biochemistry (with Departmental Honors),
Bachelor of Arts in Spanish, Minor in Physics
Research mentors: Morris Burke, Ph.D. (Dept. of Biology);
Irene Lee, Ph.D., and James Burgess, Ph.D. (Dept. of Chemistry)

Technical Training

Molecular biology:	Cloning, protein expression and purification, RNA transcription and purification
Biochemistry:	Nucleic acid labeling and detection, enzymatic activity assays with various readouts (gels, TLC, MS), SHAPE, Next-generation sequencing
Biophysics:	Analytical ultracentrifugation, circular dichroism, surface plasmon resonance, Fluorescence polarization
Structural biology:	X-ray crystallography (expert), cryo-EM (intermediate), NMR (basic)
Computation:	Python, HTML/PHP/SQL/JavaScript, Bash (intermediate), R (basic)

Peer-Reviewed Publications (most recent first)

1. Wilson JP*, **Ipsaro JJ***, Del Giudice SN, Turna NS, Gauss CM, Dusenbury KH, Marquart K, Rivera KD, Pappin DJ. 2020. Tryp-N: A Thermostable Protease for the Production of N-terminal Argininyl and Lysinyl Peptides. *J Proteome Res.* 19(4):1459-1469. PMID: 32141294
2. Stein CB, Genzor P, Mitra S, Elchert AR, **Ipsaro JJ**, Benner L, Sobti S, Su Y, Hammell M, Joshua-Tor L, Haase AD. 2019. Decoding the 5' nucleotide bias of PIWI-interacting RNAs (piRNAs). *Nat. Commun*. 10(1):828. PMCID: PMC6381166
3. **Ipsaro JJ**, Shen C, Arai E, Xu Y, Kinney JB, Joshua-Tor L, Vakoc CR, Shi J. 2017. Rapid generation of drug-resistance alleles at endogenous loci using CRISPR-Cas9 indel mutagenesis. *PLoS One.* 12(2):e0172177. PMCID: PMC5322889
4. Shen C, **Ipsaro JJ**, Shi J, Milazzo JP, Wang E, Roe JS, Suzuki Y, Pappin DJ, Joshua-Tor L, Vakoc CR. 2015. NSD3-Short Is an Adaptor Protein that Couples BRD4 to the CHD8 Chromatin Remodeler. *Mol. Cell.* 60(6):847-59. *Selected for journal cover*. PMCID: PMC4688131
5. **Ipsaro JJ**, Joshua-Tor L. 2015. From guide to target: molecular insights into eukaryotic RNA-interference machinery. *Nat. Struct. Mol. Biol.* 22(1):20-8. PMCID: PMC4450863
6. **Ipsaro JJ***, Haase AD*, Knott SR, Joshua-Tor L, Hannon GJ. 2012. The structural biochemistry of Zucchini implicates it as a nuclease in piRNA biogenesis. *Nature*. 491(7423):279-83. PMCID: PMC3493678
7. Yasunaga M, **Ipsaro** JJ, Mondragón A. 2012. Structurally similar but functionally diverse ZU5 domains in human erythrocyte ankyrin. *J. Mol. Biol.* 417(4):336-50. PMCID: PMC3312341
8. Strauch RC, Mastarone DJ, Sukerkar PA, Song Y, **Ipsaro JJ**, Meade TJ. 2011. Reporter protein-targeted probes for magnetic resonance imaging. *J. Am. Chem. Soc.* 133(41):16346-9. PMCID: PMC3203639
9. **Ipsaro JJ**, Harper SL, Messick TE, Marmorstein R, Mondragón A, and Speicher DW. 2010. Crystal structure and functional interpretation of the erythrocyte spectrin tetramerization domain complex. *Blood*. 115(23):4843-52. *Selected for journal cover*. PMCID: PMC2890174
10. **Ipsaro JJ** and Mondragón A. 2010. Structural basis for spectrin recognition by ankyrin. *Blood*. 115(20):4093-101. *Selected for journal cover***.** PMCID: PMC2875089
11. **Ipsaro JJ**, Huang L, and Mondragón A. 2009. Structures of the spectrin-ankyrin interaction binding domains. *Blood*.

113(22):5385-93. PMCID: PMC2689041

12. **Ipsaro JJ***, Huang L*, Gutierrez L, and MacDonald RI. 2008. Molecular Epitopes of the Ankyrin-Spectrin Interaction. *Biochemistry*. 47(28):7452-64. PMCID: PMC3280509
13. Wuchty S, **Ipsaro JJ**. 2007. A draft of protein interactions in the malaria parasite *P. falciparum*. *J. Proteome Res.* 6(4):1461-70. PMID: 1730018

Patents

Pappin DJ, Wilson JP, **Ipsaro JJ**. 2017. Proteases for the production of N-terminal argininyl- and lysinyl-peptides and methods of use in protein analysis. U.S. Patent 9,719,078. Filed June 15, 2014 and issued August 01, 2017.

Manuscripts Under Review

1. **Ipsaro JJ**, O'Brien PA, Bhattacharya S, Palmer AG 3rd, Joshua-Tor L. Asterix/Gtsf1 links tRNAs and piRNA silencing of retrotransposons. Collaboration with the lab of Art Palmer (Columbia University). [Submitted.]

Funding & Academic Honors

2011-2013	NIH Ruth L. Kirschstein National Research Service Award
2010	Harvey L. Karp Discovery Award, Cold Spring Harbor Laboratory
2008	Northwestern University Graduate School Conference Travel Award
2006-2009	Cellular and Molecular Basis of Disease NIH Training Grant (NIH 5 T32 GM008061-24), Northwestern University, Evanston IL
2005-2006	Neil Welker Interdepartmental Biological Sciences Teaching Assistant Award, Northwestern University, Evanston IL
2004-2005	Rappaport Fellow, Northwestern University, Evanston IL

Teaching & Mentoring Experience

2017-Present	Private Tutor – High school biology and chemistry, Cold Spring Harbor High School
2010-Present	Graduate Biology Tutor – Watson School of Biological Sciences, Cold Spring Harbor Laboratory, Dean Alex Gann, Ph.D.
2008-2009	Graduate Teaching Certificate Program – Searle Center for Teaching Excellence, N.U.
2007-2008	Graduate Biology Tutor – Dept. of Biochemistry, Molecular Biology, and Cell Biology, N.U.
2007	Teaching Assistant Fellow, Northwestern University
2007	Private Tutor – Accelerated Undergraduate Biology Courses, Northwestern University
2006	Molecular Biology Lecture Teaching Assistant – Dept. of Biochemistry, Molecular Biology, and Cell Biology, Northwestern University, Richard Morimoto, Ph.D.
2006	Molecular Biology Lab Teaching Assistant – Dept. of Biochemistry, Molecular Biology, and Cell Biology, Northwestern University, John Mordacq, Ph.D.
2002-2004	Biology Lab Teaching Assistant – Dept. of Biology, Case Western Reserve University, Jens Cavallius, Ph.D. & Jane Petschek, Ph.D.

Rotation Students	Amanda Lewis, Ph.D. (NU 2008), Austin Rice, Ph.D. (NU 2009), Mai Yasunaga, Ph.D., (NU 2009), Annabel Romero-Hernandez, Ph.D. (CSHL 2013), Dexter Adams (CSHL 2018-2019)
Undergrad Students	Ed Twomey (CSHL 2012), Michael Jacobs (CSHL 2013)
High School Students	Kevin Miranda (CSHL 2011), Cody Brady (CSHL 2016)

Organizations

2012-2015	Post-doc Liaison Committee *The CSHL Postdoc Liaison Committee is a peer-elected group of post-docs chosen to facilitate interactions between post-docs and the CSHL administrators.*
2011-2014	Demystifying Science, founding member *The Demystifying Science group at CSHL was founded so that resident post-docs could both improve their presentation skills while simultaneously educating the Laboratory support staff.*

Other Skills

Languages:	English (native), Spanish (professional working fluency), French (basic), Mandarin (beginner)
Hobbies:	Swing dancing (instructor since 2004), Music (piano, winds), Sailboat racing, Freelance web/graphic design