

Curriculum vitae – Jonathan Ipsaro, Ph.D

Research Investigator – HHMI / Cold Spring Harbor Laboratory

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Current Position

2019-Current Cold Spring Harbor Laboratory / HHMI – Research Investigator – Joshua-Tor Lab

Education & Training

- 2010-2019** Cold Spring Harbor Laboratory – Post-doctoral Fellow
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, cryo-EM, NMR
Computation: Python, Web development HTML/PHP/SQL/JavaScript, Bash, R

Publications (most recent first; 10 first author)

1. **Ipsaro JJ[†]**, Joshua-Tor L. Developmental Roles and Molecular Mechanisms of Asterix/Gtsf1. *WIREs RNA*. Accepted, In Production. **[†]Corresponding author**
2. **Ipsaro JJ**, O'Brien PA, Bhattacharya S, Palmer AG 3rd, Joshua-Tor L. 2021. Asterix/Gtsf1 links tRNAs and piRNA silencing of retrotransposons. *Cell Reports*. 34(13):108914. PMID: 33789107
3. 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 Argininy and Lysiny Peptides. *J Proteome Res*. 19(4):1459-1469. PMCID: PMC7842235
4. 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
5. **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
6. 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*. PMID: PMC4688131

7. **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. PMID: PMC4450863
8. **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. PMID: PMC3493678
9. 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. PMID: PMC3312341
10. 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. PMID: PMC3203639
11. **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*. PMID: PMC2890174
12. **Ipsaro JJ** and Mondragón A. 2010. Structural basis for spectrin recognition by ankyrin. *Blood*. 115(20):4093-101. *Selected for journal cover*. PMID: PMC2875089
13. **Ipsaro JJ**, Huang L, and Mondragón A. 2009. Structures of the spectrin-ankyrin interaction binding domains. *Blood*. 113(22):5385-93. PMID: PMC2689041
14. **Ipsaro JJ***, Huang L*, Gutierrez L, and MacDonald RI. 2008. Molecular Epitopes of the Ankyrin-Spectrin Interaction. *Biochemistry*. 47(28):7452-64. PMID: PMC3280509
15. 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

Pending Publications (Submitted / In Press / In Preparation as noted)

1. Wu XS, Huang Y, **Ipsaro JJ**, He X, Preall JB, Ng D, Shue YT, Sage J, Egeblad M, Joshua-Tor L, and Vakoc CR. C11orf53/OCA-T is a tuft cell-specific coactivator of OCT11. Revisions underway.
2. Gao Y, He X, Wu XS, Huang Y, Toneyan S, **Ipsaro JJ**, Ha T, Koo PK, Egeblad M, Joshua-Tor L. ETV6 dependency in Ewing sarcoma by antagonism of EWS-FLI1-mediated enhancer activation. Revisions underway.
3. Lee SC*, **Ipsaro JJ***, Adams DW*, Berube B*, Major V, LeBlanc C, Bhattacharjee S, Grimanelli D, Jacob Y, Voigt P, Joshua-Tor L, Martienssen RA. DECREASE in DNA METHYLATION 1 (DDM1) controls epigenetic inheritance by remodeling histone H3 variants. In preparation.

Patents

Pappin DJ, Wilson JP, **Ipsaro JJ**. 2017. Proteases for the production of N-terminal argininy- 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.

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	Rapaport Fellow, Northwestern University, Evanston IL

Teaching & Mentoring Experience

2018-Present	Adobe Illustrator and Graphic Design Workshop Instructor for Faculty, Students, and Post-docs at CSHL
2017-2020	Private Tutor – High school biology and chemistry, Cold Spring Harbor High School
2010-2020	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.
Graduate 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, CSHL <i>Peer-elected group of post-docs chosen to facilitate interactions between post-docs and administrators.</i>
2011-2014	Demystifying Science, founding member <i>Demystifying Science at CSHL was founded to allow post-docs could to improve their presentation skills while simultaneously educating the Laboratory support staff.</i>

Recent Invited Talks

<i>Nov. 2020</i>	<i>RNA Interest Group – Student Invited Speaker – University of Utah, UT</i>
<i>May 2020</i>	<i>Regulatory and Non-Coding RNAs Meeting – Cold Spring Harbor Laboratory, NY</i>
<i>Aug. 2019</i>	<i>New York Structural Biology Discussion Group – New York City, NY</i>

Other Skills

Languages:	English (native), Spanish (working fluency), French (basic), Mandarin (beginner)
Hobbies:	Web development, Graphic design, Swing dancing (instructor 2004-2018), Music (piano, winds), Sailboat racing