

## 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)

1. **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
2. 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 Arginyl and Lysyl Peptides. *J Proteome Res*. 19(4):1459-1469. PMID: PMC7842235
3. 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. PMID: PMC6381166
4. **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. PMID: PMC5322889
5. 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
6. **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
7. **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
8. 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
9. 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
10. **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

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

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

#### Teaching & Mentoring Experience

<b>2018-Present</b>	Adobe Illustrator and Graphic Design Workshop Instructor for Faculty, Students, and Post-docs at CSHL
<b>2017-2020</b>	Private Tutor – High school biology and chemistry, Cold Spring Harbor High School
<b>2010-2020</b>	Graduate Biology Tutor – Watson School of Biological Sciences, Cold Spring Harbor Laboratory, Dean Alex Gann, Ph.D.
<b>2008-2009</b>	Graduate Teaching Certificate Program – Searle Center for Teaching Excellence, N.U.
<b>2007-2008</b>	Graduate Biology Tutor – Dept. of Biochemistry, Molecular Biology, and Cell Biology, N.U.
<b>2007</b>	Teaching Assistant Fellow, Northwestern University
<b>2007</b>	Private Tutor – Accelerated Undergraduate Biology Courses, Northwestern University
<b>2006</b>	Molecular Biology Lecture Teaching Assistant – Dept. of Biochemistry, Molecular Biology, and Cell Biology, Northwestern University, Richard Morimoto, Ph.D.
<b>2006</b>	Molecular Biology Lab Teaching Assistant – Dept. of Biochemistry, Molecular Biology, and Cell Biology, Northwestern University, John Mordacq, Ph.D.
<b>2002-2004</b>	Biology Lab Teaching Assistant – Dept. of Biology, Case Western Reserve University, Jens Cavallius, Ph.D. & Jane Petschek, Ph.D.
<b>Graduate Students</b>	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)
<b>Undergrad Students</b>	Ed Twomey (CSHL 2012), Michael Jacobs (CSHL 2013)
<b>High School Students</b>	Kevin Miranda (CSHL 2011), Cody Brady (CSHL 2016)

#### Organizations

<b>2012-2015</b>	Post-doc Liaison Committee, CSHL <i>Peer-elected group of post-docs chosen to facilitate interactions between post-docs and administrators.</i>
<b>2011-2014</b>	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>

#### 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