# *Curriculum vitæ – Jonathan Ipsaro, Ph.D*

Cold Spring Harbor Laboratory

1 Bungtown Road
Cold Spring Harbor, NY 11724
Phone: (440) 915-7166
Email: jipsaro@cshl.edu
h-index: 10 i10-index: 10

## *Education*

**2010-Present** 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 anisotropy |
| Structural biology: | X-ray crystallography (expert), cryo-EM (intermediate), NMR (basic) |
| Computation: | Python, HTML/PHP/SQL/JavaScript, UNIX command line (intermediate), R (basic) |

## *Peer-Reviewed Publications (most recent first)*

1. 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*. [Accepted; In press]
2. **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
3. 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
4. **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
5. **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
6. 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
7. 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
8. **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
9. **Ipsaro JJ** and Mondragón A. 2010. Structural basis for spectrin recognition by ankyrin. *Blood*. 115(20):4093-101. *Selected for journal cover***.** PMCID: PMC2875089
10. **Ipsaro JJ**, Huang L, and Mondragón A. 2009. Structures of the spectrin-ankyrin interaction binding domains. *Blood*. 113(22):5385-93. PMCID: PMC2689041
11. **Ipsaro JJ**, Huang L, Gutierrez L, and MacDonald RI. 2008. Molecular Epitopes of the Ankyrin-Spectrin Interaction. *Biochemistry*. 47(28):7452-64. PMCID: PMC3280509

12. 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 in Preparation & Ongoing Projects*

1. Proteases for the production of N-terminal argininyl- and lysinyl-peptides and methods of use in protein analysis. Collaboration with the lab of Darryl Pappin (CSHL). [In preparation.]
2. Structural basis of piRNA silencing via Gtsf1/asterix. Collaboration with the labs of Greg Hannon (Cancer Research UK) and Art Palmer (Columbia University). [Ongoing.]

### *Academic Honors & Funding*

| | |
|---|---|
| **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<br>*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<br>*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 graphic design |