

# Michael Louis Piacentino, PhD

mpiacent@caltech.edu  
(609) 933-8128 (mobile)  
(626) 395-3361 (office)  
Pronouns: he/him

1200 E California Blvd, MC 139-74  
Pasadena, CA 91125  
Twitter: @mikepiacentino  
Publons: <https://bit.ly/345OBHf>

## Research Interests

I am fascinated by how lipid metabolism regulates the biophysical properties of plasma membranes to impact cell signaling during neural crest epithelial-to-mesenchymal transition (EMT) and migration in the developing embryo.

## Education and Training

Postdoctoral Scholar with Dr. Marianne Bronner California Institute of Technology, Pasadena, California	01/2016 – Present
PhD in Molecular Biology, Cell Biology and Biochemistry with Dr. Cynthia Bradham Boston University, Boston, Massachusetts Doctoral Thesis: <i>Three-dimensional skeletal patterning during sea urchin embryogenesis</i>	09/2010 – 01/2016
BSc in Anatomy and Cell Biology McGill University, Montreal, Quebec	09/2006 – 05/2010
Undergraduate Research Volunteer with Dr. Craig Mandato	01/2009-10/2009

## Advanced Courses and Workshops

Career Planning and Networking Workshop for NICHD Developmental Biologists National Institutes of Health, Bethesda, Maryland	03/2019
Zebrafish Development and Genetics Marine Biological Laboratory, Woods Hole, Massachusetts	08/2018
Programming for the Biological Sciences California Institute of Technology, Pasadena, California	06/2018
Embryology: Concepts and Techniques in Modern Developmental Biology Marine Biological Laboratory, Woods Hole, Massachusetts	06/2014-07/2014

## Fellowships and Awards

### Fellowships

NIH NIDCR K99/R00 Pathway to Independence (1K99DE029240)	09/2019-Present
NIH NIDCR Pediatric Research Loan Repayment Program (LRP) Renewal	07/2020-06/2021
NIH NICHD Pediatric Research Loan Repayment Program (LRP)	07/2018-06/2020
NIH NICHD National Research Service Award (NRSA) Postdoctoral Fellowship (F32HD088022)	04/2016-03/2019
Terner Award in Cell and Molecular Biology, Boston University	07/2015-08/2015
Warren McLeod Marine Biology Fellowship, Boston University	05/2014-04/2015

### Travel Awards

Company of Biologists Travelling Fellowship	10/2019-11/2019
Society for Developmental Biology Travel Award	07/2018
Caltech Chen Institute: Center for Cellular and Molecular Neuroscience Travel Award	04/2018
George R. Bertrand, Jr. Travel Award, Boston University	2014
Society for Developmental Biology Travel Award	06/2013
George R. Bertrand, Jr. Travel Award, Boston University	2012
George R. Bertrand, Jr. Travel Award, Boston University	2011

## Publications

### First Author Publications

- Piacentino ML**, Hutchins EJ, Andrews CJ, and Bronner ME (2020). Temporal changes in plasma membrane lipid content induce endocytosis to regulate developmental epithelial-to-mesenchymal transition. *Under review. bioRxiv*. <https://doi.org/10.1101/2020.10.18.344523>
- \*Piacentino ML**, Li Y, and Bronner ME (2020). Epithelial-to-mesenchymal transition and different migration strategies as viewed from the neural crest. *Current Opinion in Cell Biology* 66, 43-50. PMID: 32531659. <https://doi.org/10.1016/j.ceb.2020.05.001>  
\*Invited Review
- Piacentino ML** and Bronner ME (2018). Intracellular attenuation of BMP signaling via CKIP-1/Smurf1 is essential during neural crest induction. *PLoS Biology* 16(6): e2004425. PMID: 29949573. <https://doi.org/10.1371/journal.pbio.2004425>

4. **Piacentino ML**, Chung O, Ramachandran J, Zuch DT, Hameeduddin H, Reyna A, Yu J, and Bradham CA (2016). Zygotic LvBMP5-8 is required for skeletal patterning and for left-right but not dorsal-ventral specification in the sea urchin embryo. *Developmental Biology* 412 (1): 44-56. PMID: 26905309. <https://doi.org/10.1016/j.ydbio.2016.02.015>
5. **Piacentino ML**, Zuch DT, Fishman J, Rose S, Speranza EE, Li C, Yu J, Chung O, Ramachandran J, Ferrell P, Patel V, Reyna A, Hameeduddin H, Chaves J, Hewitt FB, Bardot E, Lee D, Core AB, Hogan JD, Keenan JL, Luo L, Coulombe-Huntington J, Blute TA, Oleinik E, Ibn-Salem J, Poustka AJ, and Bradham CA (2016). RNA-Seq identifies SPGs as a ventral skeletal patterning cue in sea urchins. *Development* 143 (4): 703-714. PMID: 26755701. <https://doi.org/10.1242/dev.129312>
6. **Piacentino ML**, Ramachandran J, and Bradham CA (2015). Late Alk4/5/7 signaling is required for anterior skeletal patterning in sea urchin embryos. *Development* 142 (5): 943-952. PMID: 25633352. <https://doi.org/10.1242/dev.114322>

#### Co-authored Publications

7. Hutchins EJ, **Piacentino ML**, and Bronner ME (2020). P-bodies are sites of rapid RNA decay required for the neural crest epithelial-mesenchymal transition. *Under revision*. *bioRxiv*: <https://doi.org/10.1101/2020.07.31.231860>
8. Gandhi S, Li Y, **Piacentino ML**, Christensen JB, Tang W, Urrutia HA, Lauinger A, Vieceli FM, and Bronner ME (2020). A combinatorial approach for genome editing and lineage tracing in chick embryos using replication-incompetent avian retroviruses. *Under revision*.
9. Hutchins EH, **Piacentino ML**, and Bronner ME (2020). Transcriptomic identification of Draxin responsive targets during cranial neural crest EMT. *Resubmitted*.
10. Hogan JD, Keenan JL, Luo L, Ibn-Salem J, Lambda A, Schatzberg D, **Piacentino ML**, Zuch DT, Core AB, Blumberg C, Timmermann B, Grau JH, Speranza E, Andrade M, Irie N, Poustka AJ, and Bradham CA (2020). The developmental transcriptome for *Lytechinus variegatus* exhibits temporally punctuated gene expression changes. *Developmental Biology* 460 (2): 139-154. PMID: 31816285. <https://doi.org/10.1016/j.ydbio.2019.12.002>
11. Soldatov R, Kaucka M, Kastri ME, Petersen J, Chontorotzea T, Englmaier L, Akkuratova N, Yang Y, Haring M, Dyachuk V, Bock C, Farlik M, **Piacentino ML**, Boismoreau F, Hilscher MM, Yokota C, Qian X, Milsson M, Bronner ME, Croci L, Hsiao WY, Cuertin D, Brunet JF, Consalez GG, Enfors P, Fried K, Kharchenko PV, and Adameyko I (2019). Spatio-temporal structure of cell fate decisions in neural crest. *Science* 364(6444). pii: eaas9536. PMID: 31171666. <https://doi.org/10.1126/science.aas9536>
12. Cohen KL, **Piacentino ML**, and Warkentin KM (2019). Two types of hatching gland cells facilitate escape-hatching at different developmental stages in red-eyed treefrogs, *Agalychnis callidryas* (Anura: Phyllomedusidae). *Biological Journal of the Linnean Society* 21: 24-40. <https://doi.org/10.1093/biolinnean/bly214>
13. Hutchins EJ, Kunttas E, **Piacentino ML**, Bronner ME, and Uribe R (2018). Migration and diversification of the vagal neural crest. *Developmental Biology* 444. S98-S109. PMID: 29981692. <https://doi.org/10.1016/j.ydbio.2018.07.004>
14. Cohen KL, **Piacentino ML**, and Warkentin KM (2018). The hatching process and mechanisms of adaptive hatching acceleration in hourglass treefrogs. *Comparative Biochemistry and Physiology Part A: Molecular and Integrative Physiology* 217: 63-74. PMID: 29056480. <https://doi.org/10.1016/j.cbpa.2017.10.020>
15. Gandhi S, **Piacentino ML**, Vieceli FM and Bronner ME (2017). Optimization of CRISPR-Cas9 genome editing for loss-of-function in the early chick embryo. *Developmental Biology* 432(1): 86-97. PMID: 29150011. <https://doi.org/10.1016/j.ydbio.2017.08.036>

#### Publications in Preparation

1. **Piacentino ML**, Sezgin E, Sauka-Spengler T, and Bronner ME. Membrane fluidity induced during epithelial-to-mesenchymal transition are required for directional migration.
2. Zuch D, Hawkins D, Huth J, Rose S, Lamba A, Dionne K, Li C, Murray I, **Piacentino ML**, and Bradham C. Lipoxygenase activity is required for normal skeletal patterning in sea urchin embryos.

#### Research Presentations

##### Invited presentations

Center for Molecular and Cellular Medicine Seminar Series, Caltech, Pasadena, California; <i>talk (virtual)</i>	05/2020
Career Planning Workshop for NICHD Developmental Biologists, Bethesda, Maryland; <i>flash talk and poster</i>	03/2019
Caltech Biology and Biological Engineering Department Retreat, Long Beach, California; <i>talk</i>	09/2018
Annual Warren-McLeod Fellowship Symposium, Boston University, Boston, Massachusetts; <i>talk</i>	04/2014

**Talks selected from abstracts**

CellBio Virtual 2020, American Society for Cell Biology/EMBO Annual Meeting; <i>virtual</i>	12/2020
42 <sup>nd</sup> Society for Craniofacial Genetics and Developmental Biology Annual Meeting; <i>virtual</i>	10/2020
Society for Developmental Biology Postdoctoral Seminar Series, inaugural session; <i>virtual</i>	10/2020
Recording available: <a href="https://bit.ly/3dmd8L8">https://bit.ly/3dmd8L8</a>	
53 <sup>rd</sup> Northwest Developmental Biology Conference; <i>virtual flash talk</i>	09/2020
Gordon Research Conference: Neural Crest & Cranial Placodes, Barga, Italy; <i>flash talk and poster</i>	04/2019
Developmental Biology of the Sea Urchin XXIII, Woods Hole, Massachusetts	10/2015
Developmental Biology of the Sea Urchin XXII, Woods Hole, Massachusetts	04/2014
Developmental Biology of the Sea Urchin XXI, Woods Hole, Massachusetts	10/2012
Annual Boston University Biology Graduate Student Symposium, Boston, Massachusetts	05/2012

**Poster presentations**

Society for Developmental Biology 77 <sup>th</sup> Annual Meeting, Portland, Oregon	07/2018
West Coast Society for Developmental Biology, Yosemite, California	05/2017
Gordon Research Conference: Neural Crest & Cranial Placodes, Ventura, California	02/2017
*Annual Boston University Biology Graduate Student Symposium, Boston, Massachusetts	01/2015
<i>*best poster prize, 2<sup>nd</sup> place</i>	
International Congress of Developmental Biology 17 <sup>th</sup> Conference, Cancún, Mexico	06/2013
Developmental Biology of the Sea Urchin XX, Woods Hole, Massachusetts	04/2011
McGill University Faculty of Science Undergraduate Research Conference, Montreal, Quebec	10/2009

**Professional Memberships**

Society for Developmental Biology (SDB)	01/2011-Present
American Society for Cell Biology (ASCB)	01/2018-Present
American Society for Biochemistry and Molecular Biology (ASBMB)	04/2019-Present
Lipid Research Division	
American Association for Anatomy (AAA)	08/2020-Present
Society for Craniofacial Genetics and Developmental Biology (SCGDB) Affiliation	
oSTEM (Out in Science, Technology, Engineering, and Mathematics)	07/2020-Present
Toastmasters International: Caltech Tech Talks Club (#07412341)	04/2019-Present
President, Secretary, Charter Member, IP3	
Biology Graduate Student Association (BGSA) Executive Committee, Boston University	2011-2013

**Service**

<i>Peer Reviewer</i>	
<i>eLife</i> (n=1)	
<i>Developmental Biology</i> (n=3, Outstanding Reviewer)	
<i>Mechanisms of Development</i> (n=1)	
<i>Moderator</i>	
Society for Developmental Biology Postdoctoral Seminar Series, second session; <i>virtual</i>	11/2020

**Media Coverage**

<i>Company of Biologists</i> preLights: <a href="https://bit.ly/2Wk51H9">https://bit.ly/2Wk51H9</a>	12/15/2020
Discussion of Piacentino et al., 2020, <i>bioRxiv</i> post: Temporal changes in plasma membrane lipid content induce endocytosis to regulate developmental epithelial-to-mesenchymal transition	

**Mentoring****California Institute of Technology**

Alexis Camacho-Avila, Research Technician	10/2019-Present
Cecelia Andrews, Caltech Undergraduate Student	10/2016-04/2020
Summer Undergraduate Research Fellowship (SURF) recipient 2017, 2018; Best Presentation Semifinalist 2017	
Gabriel da Silva Pescador, Research Technician	10/2018-06/2019
Lynne Kim, Eagle Rock High School Student (11 <sup>th</sup> grade)	02/2018-08/2018
Semekidus Shiferawe, Eastern Kentucky University Undergraduate Student	05/2017-07/2017
Samantha Khalsa, Westridge High School Student (11 <sup>th</sup> -12 <sup>th</sup> grade)	08/2016-05/2017

**Boston University**

Boston University Undergraduate students including BA/MA, UROP and SURF researchers:	2010-2015
Aziz K, Billingsley A, Chaves J, Chung O, Ellis A, Ferme J, Ferrell P, Fishman J, Kitchloo S, Kondratiev N, Murray I, Nizhnik A, Patel V, Ramachandran J, Rose S, Shaw S, Tse M, Yu J	

Carolyn Blumberg, 11th grade student, RISE participant	Summer 2015
An Zhou, Marian High School Student (11th grade), Framingham MA	December 2014
Ryan Keser, 7th and 8th grade science teacher, Amos A. Lawrence School, Brookline MA	Summer 2013
Research Experience for Teachers (RET) participant	

## Teaching

<i>Upcoming</i> : Invited Guest Lecture, Developmental Biology (Bi 117), California Institute of Technology	Spring 2021
Lecture title: <i>Mechanobiology during embryonic development</i>	
<i>Upcoming</i> : Invited Guest Lecture, Methods of Modern Microscopy (Bi 227), California Institute of Technology	Spring 2021
Lecture title: <i>Spectral imaging to solve biological problems</i>	
Teaching Fellow, Systems Physiology (BI315), Boston University, lab section	Fall 2015
Teaching Fellow, Systems Physiology (BI315), Boston University, lab section	Summer 2015
Night Supervisor, Systems Physiology (BI315), Boston University	Spring 2014
Teaching Fellow, Cell Biology (BI203/BI281), Boston University, discussion section	Fall 2013
Teaching Fellow, Systems Physiology (BI315), Boston University, lab section	Fall 2012
Teaching Fellow, Systems Physiology (BI315), Boston University, lab section	Summer 2012
Teaching Fellow, Biology II (BI108/BI118), Boston University, lab section	Summer 2012
Teaching Fellow, Systems Physiology (BI315), Boston University, lab section	Spring 2012
Teaching Fellow, Systems Physiology (BI315), Boston University, lab section	Fall 2011
Teaching Fellow, Biology II (BI108/BI118), Boston University, lab section	Summer 2011
Teaching Fellow, Biology II (BI108/BI118), Boston University, lab section	Spring 2011
Teaching Fellow, Human Physiology (BI211), Boston University, lab section	Fall 2010

## Outreach

American Association of University Women (AAUW) Tech Savvy Pasadena, Pasadena City College, Pasadena, California	04/2018
6 <sup>th</sup> -8 <sup>th</sup> Grad Student Hands-On Workshop; <i>Not everybody poops: what the fish gut can tell us about human health</i>	
Science for March, California Institute of Technology, Pasadena, California	03/2018
<i>Classifying Caltech Critters</i> , booth teaching fundamentals of microscopy and illuminating the microscopic world	
American Association of University Women (AAUW) Tech Savvy Pasadena, Pasadena City College, Pasadena, California	04/2017
6 <sup>th</sup> -8 <sup>th</sup> Grad Student Hands-On Workshop; <i>Effects of caffeine on chick embryo heart rate</i>	
ScienceEngineeringTechnology (SET) in the City, Boston University	04/2014
Amos A. Lawrence School, Brookline, Massachusetts	03/2014
Visit and teach embryonic development to three 7 <sup>th</sup> /8 <sup>th</sup> -grade classes	
ScienceEngineeringTechnology (SET) in the City, Boston University	04/2012
BIOBUGS Outreach Program, Boston University	12/2011
Pathways to Independence, Boston University	07/2011
BIOBUGS Outreach Program, Boston University	12/2010