Curriculum Vitae
(Updated Feb 2023)

Carlos D. Aizenman
Royce Family Professor of
Teaching Excellence in Neuroscience
Dept. of Neuroscience
Carney Institute for Brain Science
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Education:

ScB, magna cum laude, May 1993. Brown University, Providence, RI.
Honors in Neuroscience.
Advisor: Mark F. Bear, PhD

PhD, Neuroscience (2000). Johns Hopkins University
School of Medicine, Baltimore, MD.
Thesis Title: "Long-Term Synaptic Plasticity in the Deep Cerebellar Nucleus (DCN) of the Rat." Advisor: David Linden, PhD

Professional Appointments:

Postdoctoral Fellow. Lab. of Hollis Cline, Cold Spring Harbor Laboratory, Cold Spring
Harbor, NY. January 2000 to May 2004.

Assistant Professor. Department of Neuroscience, Brown University, Providence, RI.
July 2004 to June 2011.

Associate Professor (with tenure). Department of Neuroscience, Brown University, Providence, RI.
July 2011 to June 2017

Professor (with tenure), Department of Neuroscience, Brown University, Providence RI
July 2017 – present

Royce Family Professor of Teaching Excellence in Neuroscience, Dept. Neursocience,
Brown University
July 2022 – present

Academic Appointments:

Co-Director. Brown PREP (Postbaccalaureate Research and Education Program), Brown University.
June 2016 – present

Co-Director. Brown ARC (Advancing Research Careers of Omen and Underrepresented Minorities in Brain Science), Brown University.
June 2016 – present

Director of Undergraduate Studies. Neuroscience, Brown University.

2015 – present
Course Faculty. MBL Neurobiology Course, Woods Hole, MA.
2009-2019 (electrophysiology section leader 2015-2017, lecturer 2021-22)

Academic honors, fellowships, honorary societies, listed chronologically

1993	Sigma Xi, scientific honors society
1995-2000	Howard Hughes Predoctoral Fellowship
1999	David Israel Macht Young Investigator Prize
2001-2002	Epilepsy Foundation research training fellowship
2004-2007	Klingenstein Foundation Fellow
2004-2008	American Heart Association Starter Scholar Award
2006	Keynote Speaker Dutch Endo-Neuro-Psycho Meeting
2008-2014	NSF CAREER Award Recipient
2015	Keynote Speaker, Dynamic Neural Networks Meeting
2016	Brown University Teaching with Technology Award
2018	Dean's Award for Excellence in Graduate and Postdoctoral Teaching and Mentoring in Biological Sciences
2020	Named to 100 Most Inspiring Hispanic/Latinx Scientists
2022	Named Royce Family Professor of Teaching Excellence

Publications and Presentations

Thompson, AC, Aizenman CD. Regulation of Nav1.6-mediated sodium currents underlie the homeostatic control of neuronal intrinsic excitability in the optic tectum of the developing *Xenopus laevis* tadpole. *bioRxiv,* doi.org/10.1101/2021.10.07.463558 *(2021).*

Gore S, James EJ, Huang L-C, Park JJ, Berghella A, Cline HT, Aizenman CD. The role of matrix metalloproteinase-9 (MMP9) in neurodevelopmental deficits and experience-dependent structural plasticity in Xenopus laevis tadpoles. eLife; 10:e62147 DOI: 10.7554/eLife.62147 (2021)

Liu K, Garcia A, Park JJ, Toliver AT, Ramos L, Aizenman CD. Early developmental exposure to Fluoxetine and Citalopram results in different neurodevelopmental outcomes. *Neuroscience,* S0306-4522(21)00272-4 (2021).

Lopez III V, Khakhalin AS, Aizenman CD. Schooling in *Xenopus laevis* tadpoles as a way to assess their neural development. *Cold Spring Harbor Prot. doi:* 10.1101/pdb.prot106906 (2021)

Truszkowski TL, Carrillo OA, Bleier J, Ramirez-Vizcarrondo CM, Felch DL, McQuillan M, Truszkowski CP, Khakhalin AS, Aizenman CD. A cellular mechanism for inverse effectiveness in multisensory integration, *Elife*; 6: e25392 (2017).

Jang EV, Ramirez-Vizcarrondo C, Aizenman CD, Khakhalin AS. Emergence of Selectivity to Looming Stimuli in a Spiking Network Model of the Optic Tectum. *Frontiers in Neural Circuits* 10:95 (2016).

Truszkowski TL, James EJ, Hasan M, Wishard TJ, Liu Z, Pratt KG, Cline HT, Aizenman CD. Fragile X mental retardation protein knockdown in the developing Xenopus tadpole optic tectum results in enhanced feedforward inhibition and behavioral deficits. *Neural Development*, 11(1):14 (2016).

Felch DL, Khakhalin AS, Aizenman CD. Multisensory integration in the developing tectum is constrained by the balance of excitation and inhibition. *eLife*; 4: e15600 (2016)

Liu Z, Ciarleglio CM, Hamodi AS, Aizenman CD, Pratt KG. A population of gap junction coupled neurons drives recurrent network activity in a developing visual circuit. *J Neurophysiol*. Jan 13 115(3):1477-86 (2016)

Truszkowski TL, Aizenman CD. Neurobiology: Setting the Set Point for Neural Homeostasis. *Curr Biol* 25(23): R1132-3. (2015)

Ciarleglio CM, Khakhalin AS, Wang AF, Constantino AC, Yip SP, Aizenman CD. Multivariate analysis of electrophysiological diversity of Xenopus visual neurons during development and plasticity. *eLife Nov 14,* doi: 10.7554/eLife.11351. (2015)

E J James, J Gu, C Ramirez-Vizcarrondo, M Hasan, TLS Truszkowski, Y Tan, P Oupravanh, AS Khakhalin, CD Aizenman. Valproate-induced neurodevelopmental deficits in Xenopus laevis tadpoles. *Journal of Neuroscience,* 35(7):3218-29 (2015).

AS Khakhalin, D Koren, J Gu, H Xu and CD Aizenman. Excitation and inhibition in recurrent networks mediate collision avoidance in Xenopus tadpoles. *European Journal of Neuroscience,* 40(6):2948-62 (2014).

W Dong and CD Aizenman “"A competition-based mechanism mediates developmental refinement of tectal neuron receptive fields” *Journal of Neuroscience*, 32(47):16872-9 (2012).

Khakhalin, AS and Aizenman, CD. GABAergic transmission and chloride equilibrium potential are not modulated by pyruvate in the developing optic tectum of Xenopus laevis tadpoles. PLoS ONE, 7(4):e34446 (2012).

A Spawn and CD Aizenman. Abnormal visual processing and increased seizure susceptibility result from developmental exposure to the biocide methylisothiazolinone. *Neuroscience*, 205:194-20 (2012).

H Xu, AV Nurmikko, CD Aizenman. Visual experience-dependent maturation of correlated neuronal activity patterns in a developing visual system*. J Neurosci*. 31(22):8025-36 (2011).

K. Deeg and CD Aizenman. Modality-specific homeostatic plasticity in the developing tectum. *Nature Neuroscience*, 14(5):548-50. (2011).

MR. Bell, JA Belarde, HF Johnson and C.D. Aizenman. A novel neuroprotective role for polyamines in a *Xenopus* tadpole model of epilepsy. *Nature Neuroscience* 14(4):505-12 (2011)*.*

BA Richards, CD Aizenman, CJ Akerman. In vivo spike-timing dependent plasticity in the optic tectum of *Xenopus laevis*. *Frontiers in Synaptic Neuroscience* 2:7 Online (2010).

RH Lee, EA Mills, MR Bell, KE Deeg, N Marsh-Armstrong, CD Aizenman. “Neurodevelopmental effects of chronic exposure to elevated levels of pro-inflammatory cytokines in a developing visual system”. *Neural Development.* 5:2 Online (2010).

ES Ruthazer, CD Aizenman. "Learning to See: Patterned activity and the development of visual function". *TINS* Apr;33(4):183-92 (2010).

K Deeg, IB Sears and CD Aizenman. Development of multisensory convergence in the Xenopus optic tectum. *Journal of Neurophysiology* 102(6):3392-404 (2009).

KG Pratt and CD Aizenman. Multisensory integration in mesencephalic trigeminal neurons in Xenopus laevis. *Journal of Neurophysiology* 102(1):399-412. (2009).

W. Dong, RH Lee, H Xu, S Yang, KG Pratt, V Cao, YK Song, A Nurmikko, C.D. Aizenman. Visual avoidance is correlated with the maturation of visual responses in the optic tectum. *Journal of Neurophysiology* 101(2):803-15. (2009).

C.D. Aizenman and K.G. Pratt. “There’s more than one way to scale a synapse.” *Neuron* 58(5):651-3. (2008).

K.G. Pratt, W. Dong and C.D. Aizenman. “Development and spike-timing dependent plasticity of recurrent excitation in the Xenopus optic tectum.” *Nature Neuroscience* 11(4):467-75 (2008).

H. Xu*, K.M. Davitt*, W. Dong, Y-K. Song, W.R. Patterson III, C.D. Aizenman, A.V. Nurmikko. “Combining multicore imaging fiber with matrix addressable blue/green LED arrays for spatiotemporal photonic excitation at the cellular level.” *IEEE JSTQE* 14(1):167-70 (2008).

H Xu, KM Davitt, W Dong, Y-K Song, WR Patterson III, AV Nurmikko, CD Aizenman. Integration of a matrix addressable blue/green LED array with multicore imaging fiber for spatiotemporal excitation in endoscopic biomedical applications. *Phys Stat Sol* 5(6), 2299-2302 (2008).

R.C. Ewald, K.R. Van-Keuren-Jensen, C.D. Aizenman and H.T. Cline. “Roles of NR2A and NR2B in the development of dendritic arbor morphology in vivo.” *Journal of Neuroscience,* 28(4):850-61 (2008).

K. G. Pratt and C. D. Aizenman. “Homeostatic regulation of intrinsic excitability and synaptic transmission in a developing visual circuit," *Journal of Neuroscience,* 27(31):8268-77 (2007).

C.D. Aizenman and H.T. Cline. “Enhanced Visual Activity in vivo Forms Nascent Synapses in the Developing Retinotectal Projection.” *Journal of Neurophysiology,* 97(4):2949-57 (2007).

C. D. Aizenman, C. J. Akerman, K.R. Jensen and H.T. Cline. “Visually driven regulation of intrinsic neuronal excitability improves stimulus detection *in vivo*.” *Neuron*, 39: 831-842 (2003).

C.D Aizenman, E.J. Huang, D.J. Linden. "Morphological Correlates of Intrinsic Electrical Excitability in Neurons of the Deep Cerebellar Nuclei" *Journal of Neurophysiology,* 89(4):1738-1747 (2003).

C.D. Aizenman, G. Muñoz-Elias and H.T. Cline. “Visually driven modulation of glutamatergic synaptic transmission is mediated by the regulation of intracellular polyamines.” *Neuron*, 34(4):623-634 (2002).

Z. Li, C.D. Aizenman, H.T. Cline. “Regulation of rho GTPases by crosstalk and neuronal activity in vivo.” *Neuron* , 33(5):741-750 (2002).

C.D. Aizenman and D.J. Linden. "Rapid, Synaptically-Driven Increases in the Intrinsic Excitability of Cerebellar Deep Nuclear Neurons." *Nature Neuroscience ,* 3:109-111 (2000).

C.D. Aizenman, D.J. Linden. "Regulation of the Rebound Depolarization and Spontaneous Firing Patterns of Deep Nuclear Neurons in Slices of Rat Cerebellum ." *Journal of Neurophysiology* , 82: 1697-1709 (1999).

C.D. Aizenman, E.J. Huang, P.B. Manis, D.J. Linden. "Use-Dependent Changes in Synaptic Strength at the Purkinje Cell to Deep Nuclear Synapse." in Cerebellar Modules, N. Gerrits (Ed.), *Progress in Brain Research* 124:257-273, Elsevier (2000).

C.D. Aizenman, P.B. Manis, D.J. Linden. "Polarity of long-term synaptic gain change is related to postsynaptic spike firing at a cerebellar inhibitory synapse." *Neuron* 21: 827-835 (1998).

R-R. Ji, T.E. Schlaepfer, C.D. Aizenman, C.M. Epstein, D. Qiu, J.C. Huang, F. Rupp. "Repetitive transcranial magnetic stimulation activates specific regions in rat brain." *Proceedings of the National Academy of Sciences, USA* 95: 15635-15640 (1998).

C.D. Aizenman, A. Kirkwood, M.F. Bear. "A current source density analysis of evoked responses in slices of adult rat visual cortex: Implications for the regulation of long-term potentiation." *Cerebral Cortex* 6: 751-758 (1996).

G. Hess, C. D. Aizenman, J.P. Donoghue. "Conditions for the induction of long-term potentiation in layer II/III horizontal connections of rat motor cortex." *Journal of Neurophysiology* 75/5: 1765-1778 (1996).

A. Kirkwood, S. M. Dudek, J. T. Gold, C. D. Aizenman, M. F. Bear. "Common forms of synaptic plasticity in the hippocampus and neocortex in vitro." *Science* 260: 1518-1521 (1993).

Book Chapters

C.D. Aizenman, E.J. Huang, P.B. Manis, D.J. Linden. "Use-Dependent Changes in Synaptic Strength at the Purkinje Cell to Deep Nuclear Synapse." in Cerebellar Modules, N. Gerrits (Ed.), *Progress in Brain Research* 124:257-273, Elsevier (2000).

Abstracts and Conference Presentations

AC Thompson, CD Aizenman. Intrinsic excitability of neurons of the xenopus laevis optic tectum is regulated by changes in sodium currents during retinotectal circuit development. *Soc. for Neuroscience Abstract Viewer/Itinerary Planner* (2019). Online.

S. GORE[1], A. DELGADO CARRION[1], L.-C. HUANG[2], E. JAMES[1], A. BERGHELLA[1], H. CLINE[2], C. AIZENMAN. Role of matrix metalloproteinase-9 (MMP9) in pathophysiology of neurodevelopmental disorders in *Xenopus laevis* tadpoles. *Soc. for Neuroscience Abstract Viewer/Itinerary Planner* (2019). Online.

C. D. AIZENMAN, A. C. THOMPSON, K. M. KEARY, III. Resurgent sodium current in neurons of the xenopus laevis optic tectum as a modulator of intrinsic excitability during retinotectal circuit development. *Soc. for Neuroscience Abstract Viewer/Itinerary Planner* (2018). Online.

AS Khakhalin, CD Aizenman. Functional neural connectivity during looming stimulus detection in midbrain tectal networks. *Soc. for Neuroscience Abstract Viewer/Itinerary Planner* (2017). Online.

TL Truszkowski, OA Carrillo, JL Bleier, S Cohen, CD Aizenman. Network properties of multisensory integration in the developing optic tectum. *Soc. for Neuroscience Abstract Viewer/Itinerary Planner* (2017). Online.

EJ James, CD Aizenman. Matrix metalloproteinase 9 overexpression recapitulates neurophysiological changes induced by early exposure to valproic acid in a Xenopus tadpole model for neurodevelopmental disorders, *Soc. for Neuroscience Abstract Viewer/Itinerary Planner* (2016). Online.

TL Truszkowski, Carrillo O, Ramirez-Vizcarrondo C, Bleier J Aizenman CD. Behavioral manifestations and intracellular correlates of multisensory integration in the developing optic tectum, *Soc. for Neuroscience Abstract Viewer/Itinerary Planner* (2016). Online.

TL Truszkowski, Carrillo O, Ramirez-Vizcarrondo C, Aizenman CD. Investigating multisensory integration properties in the neural network of *Xenopus laevis* tadpoles
Cold Spring Harbor Meeting on Neural Circuits (2016).

O Carrillo, TL Truszkowski, C Ramirez-Vizcarrondo, CD Aizenman. Cellular mechanisms of multisensory integration in the developing visual system. *Experimental Biology Meeting* (2016).

CD Aizenman; Cellular Mechanisms underlying temporal tuning of multisensory integration, Soc For Neuroscience Meeting (2015) – Invited talk for a Symposium.

EJ James, CD Aizenman; Matrix metalloproteinase 9 inhibition may counteract neurodevelopmental abnormalities in a Xenopus tadpole model for VPA-induced neurodevelopmental disorders. *Soc. for Neuroscience Abstract Viewer/Itinerary Planner* (2015). Online.

Z Liu, CM Ciarleglio, CD Aizenman, KG Pratt; Gap junctions shape recurrent activity in the tadpole optic tectum. *Soc. for Neuroscience Abstract Viewer/Itinerary Planner* (2015). Online.

Ramirez C, Aizenman CD; Novel Behavioral Assays to Model Neurodevelopmental Disorders in the Xenopus laevis Tadpole. *FASEB Experimental Biology Meeting (2015)*

E. J. JAMES, C. RAMIREZ, M. HASAN, A. KHAKHALIN, C. AIZENMAN; Valproic acid-induced neurodevelopmental deficits are linked to its histone deacetylase inhibitor activity *Soc. for Neuroscience Abstract Viewer/Itinerary Planner* (2014). Online.

E. V. JANG, *A. S. KHAKHALIN, C. M. CIARLEGLIO, C. D. AIZENMAN; A computational model of collision detection in the optic tectum in Xenopus tadpoles *Soc. for Neuroscience Abstract Viewer/Itinerary Planner* (2014). Online.

A. S. HAMODI, C. M. CIARLEGLIO, C. D. AIZENMAN, K. G. PRATT; A novel class of fast spiking neurons identified in the Xenopus tadpole optic tectum *Soc. for Neuroscience Abstract Viewer/Itinerary Planner* (2014). Online.

E. J. James, J. Gu, C. Ramirez, A. S. Khakhalin, C. D. Aizenman; xenopus tadpole model for valproate-induced neurodevelopmental disorders. *Soc. for Neuroscience Abstract Viewer/Itinerary Planner* (2013). Online.

A. S. Khakhalin[1], H. Xu[2,4], C. D. Aizenman[3], C. Ramirez[3]; network mechanisms underlying looming stimuli detection in the optic tectum, and their maturation during development. *Soc. for Neuroscience Abstract Viewer/Itinerary Planner* (2013). Online.

C. M. Ciarleglio, A. S. Khakhalin, C. D. Aizenman; a census of tectal neuron electrophysiological properties and their modulation across development and as a result of plasticity. *Soc. for Neuroscience Abstract Viewer/Itinerary Planner* (2013). Online.

AS Khakhalin and CD Aizenman. Recurrent excitation and inhibition in the developing optic tectum enable detection of looming stimuli. CSHL Meeting *Synapses* (2013)

CD Aizenman and W Dong. A competition-based mechanism mediates visual receptive field maturation of developing Xenopus tectal neurons. CSHL Meeting *Synapses* (2013)*

*Invited talk and session chair

AS Khakhalin, D Koren and CD Aizenman. Information processing in the retina and the optic tectum mediates collision avoidance behavior in the Xenopus laevis tadpole. *Soc. for Neuroscience Abstract Viewer/Itinerary Planner* (2012). Online.

DL Felch and CD Aizenman. Multisensory interactions in single neurons of the Xenopus tadpole optic tectum. *Soc. for Neuroscience Abstract Viewer/Itinerary Planner* (2011). Online.

W Dong, CD Aizenman. A competition-based mechanism mediates developmental refinement of tectal neuron receptive fields. *Soc. for Neuroscience Abstract Viewer/Itinerary Planner*, (2010). Online.

CD Aizenman. Polyamine regulation of seizure threshold. *Gordon Conference on Mechanisms of Epilepsy and Neuronal Synchronization*, (2010).

MR Bell, CD Aizenman. Anti-seizure effects of polyamines are mediated by putrescine to GABA conversion. *Soc. for Neuroscience Abstract Viewer/Itinerary Planner*, (2009). Online.

W Dong, CD Aizenman. Normal postsynaptic excitability is required for visual receptive field maturation of developing Xenopus tectal neurons. *Soc. for Neuroscience Abstract Viewer/Itinerary Planner*, (2009). Online.

H Xu, Y-K Song, AV Nurmikko, CD Aizenman. Development of neural synchrony in the Xenopus tadpole optic tectum revealed by calcium imaging of large neuronal populations. *Soc. for Neuroscience Abstract Viewer/Itinerary Planner*, (2009). Online.

K Deeg, CD Aizenman. Sensory modality-specific homeostatic synaptic plasticity in the developing optic tectum. *Soc. for Neuroscience Abstract Viewer/Itinerary Planner*, (2009). Online.

CD Aizenman. Homeostatic regulation of synaptic and intrinsic neuronal properties in the developing retinotectal circuit. *Soc. for Neuroscience Abstract Viewer/Itinerary Planner*, (2008). Online.*

* This presentation was part of a minisymposium on homeostatic plasticity that I organized for the Society for Neuroscience Annual Meeting. The symposium was selected competitively among several proposals and was attended by several hundred meeting attendees.

MR Bell and CD Aizenman. A protective role for polyamines in seizure susceptibility. *Soc. for Neuroscience Abstract Viewer/Itinerary Planner*, (2008). Online.

H. Xu, K. M. Davitt, W. Dong, Y-K. Song, W. R. Patterson, III, C. D. Aizenman, A. V. Nurmikko. Micro-LED array based endoscopic image projection device to study of Xenopus laevis tadpole's visual system development. *Soc. for Neuroscience Abstract Viewer/Itinerary Planner*, (2008). Online.

W Dong, RH Lee, X Hu, Y-K Song, A Nurmikko and CD Aizenman. Neuronal mediators of visually-guided behavior in the developing Xenopus tadpole. *Soc. for Neuroscience Abstract Viewer/Itinerary Planner*, (2008). Online.

Heng Xu, Kristina Davitt, Wei Dong, Yoo-Kyu Song, Carlos Aizenman, and A.V. Nurmikko. Microarrays of Blue-Green LEDs and Imaging Fibers for Vertebrate Visual System Development Studies. *International Symposium on Semiconductor Light Emitting Devices (ISSLED)* (2008).

Heng Xu, Kristina Davitt, Wei Dong, Yoo-Kyu Song, Carlos Aizenman, and A.V. Nurmikko . Microscale Flexible Image Projection Device for Spatiotemporal Excitation in the Research of Visual System Development. *The Conference on Lasers and Electro-Optics (CLEO)* 2008.

CD Aizenman. Spike-timing dependent plasticity of recurrent excitation in a developing visual circuit. *Soc. for Neuroscience Abstract Viewer/Itinerary Planner*, (2007). Online.

CD Aizenman. Spike-timing dependent modification of recurrent excitation in a developing visual circuit. *Gordon Research Conference on Neural Circuits* (2007)

Heng Xu, Kristina Davitt, Yoo-Kyu Song, Carlos Aizenman, and A.V. Nurmikko. Integration of a Matrix Addressable Blue/Green LED Array with Multicore Imaging Fiber for Spatiotemporal Excitation in *Endoscopic Biomedical Application*s,. *7 th Int'l Conference of Nitride Semiconductors (ICNS-7) Conference* (2007)

CD Aizenman. Spike-timing dependent modification of recurrent excitation in the developing visual system. *Cold Spring Harbor Meeting: Synapses* (2007).

KG Pratt, CD Aizenman. Homeostatic regulation of neuronal input-output properties during development of the Xenopus visual system. *Soc. for Neuroscience Abstract Viewer/Itinerary Planner*, (2006). Online.

K.G. Pratt, C.D. Aizenman. Coordinated changes in intrinsic and synaptic properties of optic tectal neuron during development of the *Xenopus* tadpole visual system. *Cold Spring Harbor Meeting: Receptors, Channels and Synapses* (2006).

C.D. Aizenman, K.G. Pratt. Regulation of intrinsic and synaptic properties of optic tectal neurons during development of the Xenopus tadpole visual system. *Dutch Endo-Neuro-Psycho Meeting, Doorwerth, NL (2006).*

K.G. Pratt, C.D. Aizenman. Development of synaptic and intrinsic properties in the visual system. *Soc. for Neuroscience Abstract Viewer/Itinerary Planner*, (2005). Online.

C.D. Aizenman. Regulation of neural excitability in the developing visual system. *Gordon Conference, Neural Circuits and Plasticity (2005).*

C.D. Aizenman, H.T. Cline. Effects of enhanced visual stimulation on the maturation of glutamatergic synapses in the developing visual system. *Soc. for Neuroscience Abstract Viewer/Itinerary Planner*, 37.16 (2003). Online.

C.D. Aizenman, C. J. Akerman, K. R. Jensen and H.T. Cline. Homeostatic regulation of intrinsic excitability in the retinotectal system by *in vivo* visual stimulation. *Gordon Conference, Neural Circuits and Plasticity (2003).*
C.D. Aizenman, H.T. Cline. "Homeostatic regulation of synaptic properties and intrinsic excitability of developing optic tectal neurons after 4 hrs of enhanced visual stimulation." *Cold Spring Harbor Meeting: Axon Guidance and Synaptic Plasticity Abstracts* (2002).

C.D. Aizenman, H.T. Cline. “Homeostatic regulation of synaptic properties and intrinsic excitability after enhanced visual stimulation.” *Soc. for Neuroscience Abstract Viewer/Itinerary Planner*, 445.17 (2002). Online.

C.D. Aizenman, G. Muñoz, H.T. Cline. “Visually driven modulation of glutamatergic synaptic transmission by intracellular polyamines.” *Soc. for Neuroscience Abstract Viewer/Itinerary Planner*, 918.6 (2001). Online.

C.D. Aizenman, P.B. Manis, D.J. Linden. "Polarity of long-term synaptic gain change is related to postsynaptic spike firing at a cerebellar inhibitory synapse." *Soc. for Neuroscience Abstracts* 24: 620.5 (1998).

C.D. Aizenman and D.J. Linden. "Long-term potentiation and depression of the inhibitory synapse between Purkinje cells and the deep cerebellar nuclei of the rat." *Soc. for Neuroscience Abstracts* 23: 469.8 (1997).

C.D. Aizenman, A. Kirkwood, E. Sklar, M. Paradiso, M.F. Bear. "Current source density analysis of white matter and layer IV evoked field potentials: Implications for plasticity." *Soc. for Neuroscience Abstracts* 20: 302.19 (1994).

J.P. Donoghue, C.D. Aizenman, G. Hess. "Is adult cortical plasticity mediated by inhibitory gating of long-term potentiation in horizontal pathways?" Soc*. for Neuroscience Abstracts* 20: 551.13 (1994).

A. Kirkwood, C.D. Aizenman, M.F. Bear. "Common forms of synaptic plasticity in hippocampus and neocortex *in vitro.* "*Soc. for Neuroscience Abstracts* 18 (1992).

Invited Lectures

Dec 10, 2002 UCSD, Department of Neuroscience. “Effects of enhanced sensory experience on the developing *Xenopus* visual system”.

Feb 28, 2003 Harvard University Medical School, Department of Neuroscience. “Effects of enhanced sensory experience on the developing *Xenopus* visual system”.

Apr. 26, 2006 Johns Hopkins University School of Medicine, Dept. of Neuroscience. “Regulation of neural excitability in the developing visual system”.

Jun 8, 2006 Dutch Endo-Neuro-Psycho Meeting, Doorwerth, NL. “Regulation of intrinsic and synaptic properties of optic tectal neurons during development of the Xenopus tadpole visual system.”

April 22, 2007 Cold Spring Harbor Laboratory “Synapses” Meeting. Invited talk: “Spike-timing dependent modification of recurrent excitation in the developing visual system.”.

March 28, 2008 University of Maryland College Park, College Park, MD. Title: "Functional regulation of a developing visual circuit".

November 5, 2008 Albert Einstein College of Medicine, Bronx, NY. Title: "Functional regulation of a developing visual circuit".

December 2, 2008 University of Pittsburgh, Pittsburgh, PA. Title: "Functional regulation of a developing visual circuit".

December 18, 2008 Northeastern University, Boston, MA. Title: "Regulation of neural excitability by polyamines in the developing Xenopus brain"

April 1, 2009 McGill University, Montreal, Canada. Title: "Functional regulation of a developing visual circuit".

April 28, 2009 Brandeis University, Waltham, MA. Title: "Functional regulation of a developing visual circuit".

November 12, 2009 Emory University, Atlanta, GA. Title: “Development of a visual circuit”.

August, 2010 Gordon Conference on “Mechanisms of Epilepsy and Neuronal Synchronization”. Invited speaker: “Polyamine-mediated regulation of seizure threshold in a developmental model of epilepsy”.

Oct 28, 2010 University of North Carolina Chapel Hill, Chapel Hill, NC. Title: “Development of a visual circuit”.

Nov 7, 2011 Children’s Hospital, Harvard Medical School, Boston, MA. Title: "Regulation of seizures by polyamines in a novel animal model of epilepsy".

Dec 10, 2013 Dartmouth Medical School, Dartmouth, NH. Title: “Development of visual circuits”.

Oct 28, 2014 Georgetown University. “A Xenopus model for autism”.

Oct 16, 2015 Dynamic Neural Networks Meeting, Keynote Speaker: “Regulation of Intrinsic Properties in Developing Optic Tectal Neurons”

Oct 18, 2015 Symposium on Multisensory Integration, SfN annual meeting, “Cellular Mechanisms underlying temporal tuning of multisensory integration”

November 2016, SfN Annual Meeting, “Workshop on: Creating, Sustaining, and Enhancing Undergraduate Neuroscience Programs”

November 2016, Brown University NSGP Seminar Series, “Development and Cellular Mechanisms of Multisensory Integration”

March 2019, Northwest Developmental Biology Meeting, Plenary Speaker, “Role of Matrix Metalloproteases in Neurodevelopmental Disorders”

April 2019, William and Mary, “Role of Matrix Metalloproteases in Neurodevelopmental Disorders”

December 2019, Johns Hopkins University Department of Neuroscience, “Role of Matrix Metalloproteases in Neurodevelopmental Disorders”

July 2020 NeuroZoom International Seminar Series “Role of Matrix Metalloproteases in Neurodevelopmental Disorders”

July 2020 Metal Biology Seminar Series, University of Pittsburgh “Role of Matrix Metalloproteases in Neurodevelopmental Disorders”

September 2020 Seminario de Eilepsia, Facultad de Medicina, Universidad de Chile “Las Metaloproteinasas de Matriz en Trastornos del Desarrollo Neuronal”. (in Spanish)

September 2020, BP-ENDURE Virtual Seminar Series “Role of Matrix Metalloproteases in Neurodevelopmental Disorders”

October 2020, University of Florida “Role of Matrix Metalloproteases in Neurodevelopmental Disorders”

April 2021, Brandeis University, M.R. Bauer Colloquium. Role of Matrix Metalloproteases in Neurodevelopmental Disorders”

April 2021, Johns Hopkins, panel member, “Hopkins Neural Networking Initiative”.

January 2022, UCSD. “Understanding Neurodevelopmental Disorders with Model Organisms”.

Work in Review/Preparation

Lopez III V, Rust A, Aizenman CD. Effects of early exposure to chloropyrifos on the developing CNS – *in preparation*

Gore S, Torres J, Aizenman CD. Characterization of Dlx expressing neurons in the developing Xenopus optic tectum – *in preparation*

Ho J, Bleier J, Aizenman CD. Early temporally congruent multisensory experience shapes the temporal tuning properties of tectal neurons to multisensory stimuli. – *in preparation.*

Research Grants:

Current Grants (including those as mentor)

NIH – NINDS R56 NS 123565
Dysregulation of developing neural circuits during epileptogenesis
9/2022 – 9/2023
Role: PI

NIH – NIGMS R25 GM125500 12/2017 – 12/2028
Brown University Postbaccalaureate Research Education Program
Role: co-PI (contact PI)

NIH – NINDS R25 NS124530 3/2022 – 3/2027
Advancing the Research Careers of Women and PEERs in Brain Science
Role: co-PI

Completed Grants (included those as mentor)

Carney Innovation Award 1/2021 – 12/2022
Elucidating the contribution of newly born neurons to epileptogenesis using novel voltage probes.
Role: co-PI (with Ahmed Abdelfattah)

NIH – NEI R01 EY027380 7/2017 – 8/2022
Cellular mechanisms of multisensory integration in the developing midbrain
Role: PI

HHMI Gilliam Fellowship 7/01/20 – 3/31/21
Graduate fellowship for Alexis Tolliver
Role: Mentor

NSF - GRFP 7/01/18 – 6/31/20
GRFP for Alexis Tolliver
Role: Mentor

NSF — IOS-1353044 7/2014- 6/2018
Cellular mechanisms underlying the development of visually-guided behavior
Role: PI

Brown University OVPR Seed Award 2018
Role: PI

Carney Institute Rhode Island Neuroscience New Frontiers Award 2018
Role: PI

NIH – NINDS F31 NS093790-01 9/2016 – 8/2019
NRSA for Torrey Truszkowski
Role: Mentor

Brown University Center for Vision Research – Pilot Award 1/2016 – 2/2017
Cellular Mechanisms of Multisensory Integration
Role: PI

NSF - GRFP 7/01/13 – 6/31/16
GRFP for Eric James
Role: Mentor

Brown University OVPR – Grant Resubmission Award 10/2015 – 10/2016
Development of Multisensory Integration in the Optic Tectum
Role: PI

NSF – IOS-0746558 4/01/08 – 3/31/14
CAREER Award
CAREER: Cellular determinants of visual system function and development,
Role: PI

NIH – 1R01EY019578-01A1 1/01/2010 – 12/31/2013
Cellular basis of visually-guided behavior during development
Role: PI

Whitehall Foundation 7/01/08 – 6/31/12
Research Grant
A developmental role for the regulation of neuronal excitability in the Xenopus visual system.
Role: PI

NSF – 2007059474 9/01/07 – 8/31/10
GRFP for Mark Bell
Role: Mentor

Brown University – Dean of the College 9/2008 – 9/2009
Curricular Development Grant
Role: PI

American Heart Association – National Chapter 9/01/04 - 7/01/08
Starter Scholar Award
Physiological regulation of polyamine synthesis by neural activity: a novel neuroprotective mechanism?
Role: PI

NIH - 5F32EY016939-02 7/01/06 – 6/30/08
NRSA for Kara Pratt

Role: Mentor

Klingenstein Foundation 7/01/04 – 7/01/08
Klingenstein Fellow
Visual activity-driven regulation of intrinsic excitability in the developing visual system
Role: PI

Brown University BSP 3/01/06 – 4/01/07
Pilot Project Grant
Development of microscale optical probes to study development of the visual system *in vivo*.
Role: Co-PI

Rhode Island Foundation 1/01/07 – 12/31/07
Medical Research Grant
Experience-dependent development of a neural circuit.
Role: PI

Service: (i) to the University, (ii) to the profession and (iii) to the community

(i)

Departmental:

2008-2011 and 2015 – ongoing	Chair of the Neuroscience Undergraduate Curriculum Committee* *Director of Undergraduate Studies, Responsible for overseeing the undergraduate neuroscience concentration (major)
2018 – 2021	Chair of Neuroscience Diversity and Inclusion Committee
2018 – present	Member of Neuro DDIAP Committee
2016/17	Member of the senior molecular neuroscience faculty search
2017, 2019, 2021	Promotions Committee Member for Alex Fleischman, Alex Jaworski, Gilad Barnea
2006-2017	Chair of NSGP seminar series.
2009-10,16-21	Neuroscience Graduate Program Admissions Committee Member
Spring 2006	Member of the Neuroscience Faculty Search
2005-2007	Organized the Neuroscience In-house Seminar Series

2006 – ongoing Member of Neuroscience Undergraduate Curriculum Committee

University:

2012 Member of university committee to search for an Associate Provost for Institutional Diversity

2013-2014 Served in university committee: Committee on the Events of October 29.

2013-2014 Faculty liaison for Brown's chapter of SACNAS

2014 – Ongoing Advising Member of CATALYST program, and CATALYST TEAM member for best advising practices

2016 – ongoing Co-Director, Brown PREP, postbaccalaureate program for URM students

2014 – ongoing First year student advisor

2016 – 2019 Brown University Grievance Committee

2015 and 2016 Panelist for Teaching with Technology Workshop

2017 - 2021 Title IX Council, faculty member

2017 – 2020 Member Conflict of Interest Review Board

2021 – ongoing Member of the university Tenure, Promotions and Appointments Committee (TPAC), vice-chair of TPAC in 2022-23AY

(ii)

• I have been a reviewer for articles submitted to peer-reviewed journals, including the Journal of Neurophysiology, Journal of Neuroscience, Journal of Physiology, Neural Plasticity, Neuron Glia Biology, Frontiers in Neuroscience, Neuron, Nature Neuroscience, PLoS One, European Journal of Pharmacology, Current Biology, Science, eLife.

• I have also reviewed grant proposals as an ad-hoc reviewer and panel member for the NSF, NIH, Burroughs-Wellcome Fund and the Biotechnology and Biological Sciences Research Council, UK.

• I have organized a major session in a national meeting of the Society for Neuroscience. This was a minisymposium entitled "Homeostatic Plasticity in Intact Neural Circuits" and it was selective after a competitive application process. The session featured a variety of speakers prominent in this field.

• During the Summers of 2009-2019 I have been invited to be an instructor in the Neurobiology Course at the MBL in Woods Hole. My role was to be one of the primary faculty during the intensive three-week electrophysiology section of the course. This involved setting up a *Xenopus* electrophysiology rig and training students in current electrophysiology techniques. In 2015 - 2017 I headed the electrophysiology section of the course.

• Was invited faculty member for the Ricardo Miledi advanced neuroscience course, in Buenos Aires, Argentina in 2012.

• Member of the Neuroscience Training Committee for the Society for Neuroscience 2017 - 2020

(iii)

Currently I am co-Director of Brown PREP, an NIH-funded post-baccalaureate program for underrepresented students interested in STEM fields. The inaugural class began during summer 2016, and the program received NIH funding in 2018. Currently also co-director of Brown ARC another NIH-funded R25 to support advancing the careers of women and underrepresented faculty and postdocs in brain science.

As part of my NSF-funded CAREER award, during the summers of 2008, 2009, 2010, 2012, 2013 and 2015 I mentored in the lab 2 high-school students per year from public school districts serving primarily underrepresented minority students. Students came to Brown for a 3 week session in which they participate in a course and perform lab work in my lab. This is also a great training opportunity for students in my lab who help mentor the high-school students. The program is intended to continue through 2017.

I have done numerous outreach activities, including participating in a project from Fall River, MA schools to develop a project to send Xenopus tadpoles to the International Space Station in 2017 and organizing the Neuroscience exhibit at the Providence Water Fire Science Fair in 2018.

Teaching: chronologically, for the last three years. Include in addition to regular courses (and enrollment figures for each): GISPs and Independent Studies by number, and the number of Honors, Master's and Ph.D. theses directed, including academic advising, as well as the number of students advised.

Spring 2018

Instructor, Neuro 1020 "Principles of Neurobiology" (~120 Students)
Independent Study Advisor Neuro 197.

Summer 2018

Taught an Online summer precollege Neuroscience class via Brown SPS.
MBL Neurobiology Course Faculty – Lecturer

Fall 2018

Independent Study Advisor Neuro 197
Guest Lecture, Neuro 0010 "The Brain: Introduction to Neuroscience"
Lead Instructors: John Stein and Michael Paradiso
Co-instructor (with Anne Hart) for graduate-level course Neuro 2030 "Advanced Molecular and Cellular Neurobiology I"
Mentor for Brown PREP student.

Spring 2019

Instructor, Neuro 1020 "Principles of Neurobiology" (~120 Students)
Independent Study Advisor Neuro 197.

Summer 2019

MBL Neurobiology Course Faculty – Electrophysiology Section

Fall 2019

Independent Study Advisor Neuro 197
Guest Lecture, Neuro 0010 “The Brain: Introduction to Neuroscience”
Lead Instructors: John Stein and Michael Paradiso
Co-instructor (with Kate O’Connor Giles) for graduate-level course Neuro 2030 “Advanced Molecular and Cellular Neurobiology I”

Spring 2020

Instructor, Neuro 1020 “Principles of Neurobiology” (~120 Students)
Independent Study Advisor Neuro 197, Bio 195

Summer 2020

Taught an Online summer precollege Neuroscience class via Brown SPS.

Fall 2020

Independent Study Advisor Neuro 197
Guest Lecture, Neuro 0010 “The Brain: Introduction to Neuroscience”
Lead Instructors: John Stein and Michael Paradiso
Co-instructor (with Anne Hart) for graduate-level course Neuro 2030 “Advanced Molecular and Cellular Neurobiology I”

Spring 2021

Instructor, Neuro 1020 “Principles of Neurobiology” (~90 Students)
Independent Study Advisor Neuro 197, Bio 195

Summer 2021

MBL Neurobiology Course Faculty – Electrophysiology Section (Lecturer)

Fall 2021

Guest Lecture, Neuro 0010 “The Brain: Introduction to Neuroscience”
Lead Instructors: John Stein and Michael Paradiso
Co-instructor (with Anne Hart) for graduate-level course Neuro 2030 “Advanced Molecular and Cellular Neurobiology I”
Mentor for Brown PREP student

Spring 2022

Instructor, Neuro 1020 “Principles of Neurobiology” (~130 Students)

Fall 2022

Guest Lecture, Neuro 0010 “The Brain: Introduction to Neuroscience”
Lead Instructors: John Stein and Michael Paradiso
Co-instructor (with Anne Hart) for graduate-level course Neuro 2030 “Advanced Molecular and Cellular Neurobiology I”

Spring 2023

Instructor, Neuro 1020 “Principles of Neurobiology” (~130 Students)

Summer 2023

MBL Neurobiology Course Faculty – Electrophysiology Section

Advising

Member of PhD Thesis committee Tariq Brown, Dept. of Neuroscience
Member of PhD Thesis committee Scott Susi, Dept. of Neuroscience
Member of PhD Thesis committee for Kevin Keary, Dept. of Neuroscience
Member of PhD Thesis committee for Audrey Medeiros, Dept. of Neuroscience
Member of PhD Thesis committee for Jocelyn Lippman, Dept. of Neuroscience
Member of PhD Thesis committee for Manjari Murali, Dept. of Pharmacology
Member of PhD Thesis committee for Julia Najera, Dept. of Neuroscience
Member of PhD Thesis committee for Tim Zolnik, Dept. of Neuroscience
Member of PhD Thesis committee for Erika Alexander, Dept. of Psychology

PhD Advisor for Carlos Toro, PhD Student, Dept. of Neuroscience.
PhD Advisor for Alexis Tolliver, PhD Student, Dept. of Neuroscience. (currently Liu lab)
Rotation advisor for NSGP PhD student Audrey Medeiros.
PhD Advisor for Torrey Truszkowski, PhD Student, Dept. of Neuroscience, PhD 2018
PhD Advisor for Eric James, PhD Student, Dept. of Neuroscience., PhD 2016
PhD Advisor for Daniel Felch, PhD Student, Dept. of Neuroscience., PhD 2014
PhD Advisor for Mark Bell, PhD student, Dept. of Neuroscience. PhD 2011
PhD Co-Advisor for Heng Xu, PhD student, Dept of Physics. PhD 2010
Advisor for Katherine Heyland (formerly Deeg), ScM student, Dept Neuroscience. ScM 2010

PREP@Brown Advisor for Oscar Carrillo
PREP@Brown Advisor for Ambar Delgado Carrion (2018)
PREP@Brown Advisor for Mauricio García

Mentored 35+ undergraduates who have worked or currently work in the lab. Undergraduates have received a combined total of 27 UTRAs (Undergraduate Teaching and Research Awards), 1 Galkin Neuroscience Fellowship, 5 Siravo

Epilepsy Fellowship 2 RI Space Grant Undergraduate Award, and 2 NSF IOSP and 2 UGSRF Fellowships from the American Physiological Society, 1 Caleel Fellowship, all to perform work in my lab. Eighteen students have graduated with Honors. Currently 7 undergraduates are pursuing honors.

Various students have presented in local, regional and national conferences and received awards for outstanding presentations as well as travel awards to attend these meetings: Jenny Gu (Brown Research Symposium), Eric James (SACNAS and NESS), Carolina Ramirez (SACNAS, Experimental Biology), Eric Jang (FUN - SfN), Oscar Carrillo (SACNAS, Experimental Biology). Karine Liu (Experimental Biology 2017, 2018), Talia Fernandez (SACNAS, ABRCMS, 2022).

I have trained 5 postdoctroal fellows: Kara Pratt, Wei Dong, Heng Xu, Arseny Khakhalin, Chris Ciarleglio, Sayali Gore. Currently Adrian Thompson is a postdoc in my lab.

Kara Pratt is an Associate Professor at U. of Wyoming
Arseny Khakhalin was an Assistant Professor at Bard College, currently in Berlin.
Heng Xu is an Associate Professor at Shanghai Jiao Tong University
Wei Dong is a Principal Investigator in the Southwest Medical University in China

Concentration advisor for Neuroscience undergrads since 2004, with an average of about 12 per year. Also, currently First Year and Sophomore advisor.

Teaching and Other Workshops Attended

2015 Teaching with Technology, ITG Brown University
2016 Workshop on “Flipping your course”, Sheridan Center, Brown University
2019 HHMI Gilliam Mentor Training
2020 Anchor Workshop for Online Teaching, Sheridan Center, Brown University
2021 Building Knowledge and Making Changes: DEI STEMM Faculty Seminar
2021-22 Equitable Learning Inquiry Program, Brown