Revised: June 9, 2016

CURRICULUM VITAE

NAME: Vijayalakshmi (Viji) Santhakumar

PRESENT TITLE: Associate Professor

OFFICE ADDRESS: MSB H-512, 185 South Orange Ave, Newark, NJ 07103

TELEPHONE NUMBER/E-MAIL ADDRESS: 973-972-2421, santhavi@NJMS.RUTGERS.edu

CITIZENSHIP: US

EDUCATION:

A. Undergraduate Graduate and Professional

B. Graduate and Professional

University or College: University of California at Irvine
City, State: Irvine, CA
Degree (Discipline): PhD (Neuroscience) Date Awarded: Dec, 2003

University or College: Kilpauk Medical College
City, State: Chennai, Tamil Nadu, India
Degree (Discipline): MBBS (Clinical Medicine) Date Awarded: Sep, 1995

POSTGRADUATE TRAINING:

A. Internship and Residencies

Residency
Location: Madras Medical College, Chennai, India
Discipline: Otolaryngology (ENT)
Inclusive Date: Oct, 1995-March, 1997

Internship
Location: Kilpauk Medical College, Chennai, India
Discipline: Internship in Medicine
Inclusive Date: Aug, 1994-Oct, 1995

B. **Research Fellowships**

Location: University of California at Los Angeles, CA.
Discipline: Neuroscience
Inclusive Date: April 2006- Sep. 2008

Location: University of California at Los Angeles, CA.
Discipline: Neurobiology
Inclusive Date: March, 2004- April, 2006

Location: University of California at Irvine, CA.
Discipline: Computational Neuroscience
Inclusive Date: Dec, 2003-Feb, 2004

C. Professional Courses

1. OASIS leadership and professional development program for career development and advancement of academic women in STEM fields, Rutgers, Newark, 2013
2. Summer Course on Imaging Structure & Function in Neuroscience and Development at Cold Spring Harbor Laboratory. 2007
3. Workshop on Computational Methods for Spatially Realistic Microphysiological Simulations (M-Cell), Pittsburgh Supercomputing Center, Pittsburgh. 2006
4. Summer Course on NEURON Simulation Environment, University of California, San Diego, 2003

MILITARY: N/A

ACADEMIC APPOINTMENTS:

Department: Pharmacology, Physiology and Neuroscience
University (School of Medicine): Rutgers, New Jersey Medical School
Title: Associate Professor in tenure track Inclusive Dates: July, 2014 – present

Department: Neurology and Neurosciences
University (School of Medicine): Rutgers, New Jersey Medical School
Title: Assistant Professor Inclusive Dates: July, 2013 – June 2014

Department: Pharmacology and Physiology
University (School of Medicine): Rutgers, New Jersey Medical School
Title: Assistant Professor Inclusive Dates: July, 2013 – June2014

Department: Neurology and Neurosciences
University (School of Medicine): University of Medicine and Dentistry of New Jersey, Newark (New Jersey Medical School)
Title: Assistant Professor Inclusive Dates: Oct, 2008 – June, 2013

Department: Pharmacology and Physiology
University (School of Medicine): University of Medicine and Dentistry of New Jersey, Newark (New Jersey Medical School)
Title: Assistant Professor Inclusive Dates: July, 2009 – July2014

HOSPITAL APPOINTMENTS:

Department: Emergency Care
Hospital Name: Vasanthi Medical Center and Perinatology Research Foundation
Title: Hospitalist Years: Oct, 1995- Apr, 1996

OTHER EMPLOYMENT OR MAJOR VISITNG APPOINTMENTS:

Title: Visiting Associate Professor
Location: Department of Developmental and Cell Biology
University of California at Irvine, Irvine CA Years: July2016-Sep2016

Title: Research Assistant
Location: University of California at Irvine, Irvine CA Years: 1997-1998

Title: Lecturer (part-time)
Location: California State University at Long Beach Years: 2007

PRIVATE PRACTICE: N/A
LICENSURE: N/A
DRUG LICENSURE: N/A

CDS: N/A
DEA: N/A

CERTIFICATION: N/A

MEMBERSHIPS, OFFICES AND COMMITTEE ASSIGNMENTS IN PROFESSIONAL SOCIETIES:

Name of Organization: Society for Neuroscience
Member or other Position: Member
Inclusive Dates: 2000- present

Name of Organization: American Epilepsy Society
Member or other Position: Member
Inclusive Dates: 2000- present

Name of Organization: National Neurotrauma Society
Member or other Position: Member
Inclusive Dates: 2012- 2013

HONORS AND AWARDS:

Title: National Research Service Award for Postdoctoral Training (Institutional).
Awarded By: University of California, Los Angeles Date: 2004-2006

Title: Graduate Fellowship in Molecular Biology, Genetics and Biochemistry.
Awarded By: University of California -Regents Date: 1998

Title: First Certificate in Community Medicine
Awarded By: Kilpauk Medical College Date: 1994

Title: Gold Medal and Scholarship for outstanding performance in Biology.
Awarded By: Department of Biotechnology-Ministry of Science and Technology, Govt. of India.
Date: 1990

Title: Merit Certificate and Prize for outstanding performance in All India Senior School Certificate Examination.
Awarded By: Govt. of India. Date: 1990

BOARDS OF DIRECTORS/TRUSTEES POSITIONS: N/A

SERVICE ON NATIONAL GRANT REVIEW PANELS, STUDY SECTIONS, COMMITTEES:

SERVICE ON MAJOR COMMITTEES:

A. **International**
   a. PhD thesis committee Azam Shirrafiardekani– University of Otago, New Zealand 2015 – Present
   b. Israel Science Foundation- Ad hoc grant reviewer 2012

B. **National**
   a. American Epilepsy Society (AES) - Ad hoc grant reviewer 2016-present
   b. Chair, Investigator Workshop Committee of the American Epilepsy Society 2016-present
   c. Chair, Young Investigator s Workshop Committee of the American Epilepsy Society 2016-present

d. Vice Chair, Investigator Workshop Committee of the American Epilepsy Society 2014-2015
e. Vice Chair, Young Investigator s Workshop Committee of the American Epilepsy Society 2014-2015
f. Member, Scientific Program Committee of the American Epilepsy Society 2013-2015
g. Member, Investigator Workshop Committee of the American Epilepsy Society 2013-present
h. Member, Basic Science Committee of the American Epilepsy Society 2013-2015
i. National Institute of Health (NIH) - National Institute of Neurological Disorders and Stroke (NINDS), Clinical Neuroplasticity and Neurotransmitters (CNNT) study sections- Ad hoc grant reviewer 2012-present
j. Citizens United for Research in Epilepsy (CURE) Foundation- Ad hoc grant reviewer 2006-present

C. **Medical School/University** :

a. Member Klein Endowed Chair Search Committee, Rutgers Brain Health Institute 2016-present
b. Committee for Review of Guidelines for Appointments and Promotions 2015-present

D. **Hospital :** N/A

E. **Department**

a. Director Neuroscience Seminar Series 2012-2014

F. **Editorial Boards:**

a. Contributing Editor, Epilepsy Currents- Journal of the American Epilepsy Society 2015-present

G. **Journal Reviewer:** Ad hoc

a. Nature Medicine
b. Nature Communications
c. Brain
d. Cerebral Cortex
e. Journal of Computational Neuroscience
f. Journal of Neuroscience
g. Neuroscience
h. Hippocampus
i. Neural Computation
j. Journal of Physiology
k. Journal of Neurophysiology
l. Neuropharmacology
m. European Journal of Neuroscience
n. Neuroscience Letters
o. Journal of Neuroscience Research
p. Biological Cybernetics
q. NeuroReport
r. Journal of Comparative Neuroscience
s. Brain Structure and Function
t. PLOS-Computational Neuroscience
u. Epilepsia
v. Developmental Neuroscience
w. Chaos
x. Experimental Neurology

y. Brain Behavior and Immunity
z. Journal of Neuroinflammation
aa. Nature Scientific Reports

SERVICE ON GRADUATE SCHOOL COMMITTEES:

1. Co-Director Biomedical Engineering Track 2015-present
2. MD/PhD Admissions Committee 2014-present
3. CBNP Track Oversight Committee Jan2012-2016

4. Thesis Committee
   a. Doctoral Thesis Committee- External
      i. Ann Mae Lionardi- Drexel University 2009-2012
      ii. Dongwook Kim – New Jersey Institute of Technology, Newark, Math Bio 2010-2011
      iii. Ammar Abdo- New Jersey Institute of Technology, Newark Biomedical Engineering 2011- 2013
      iv. Jonathan Groth - New Jersey Institute of Technology, Newark Biomedical Engineering 2013- 2014
      v. Gokhan Ordek - New Jersey Institute of Technology, Newark Biomedical Engineering 2014

   b. Doctoral Thesis Committee- Internal
      i. Ammy Santiago – Pharmacology and Physiology 2011- 2016
      ii. Radia Abdul_Wahab – Neuroscience/Biomedical Engineering 2011- 2013
      iii. Nolan Skope- Neuroscience/Biomedical Engineering 2011- 2014
      iv. Mat Long- Neuroscience/ Biomedical Engineering 2013- present
      v. Swamini Sinha – MD/PhD program 2013- 2014
      vi. Pelin Avcu – Neuroscience 2013- 2015
      vii. Veronika Khariv- Neurosurgery 2014- present
      viii. Alexandra Pallottie- Neurosurgery 2015- present
      ix. Jill Konowich – Medicine 2015

   c. Masters' Thesis Committee
      i. Suji Sampath- New Jersey Institute of Technology, Newark - Biomedical Engineering
      ii. Millie Swietek- New Jersey Institute of Technology, Newark - Biomedical Engineering
      iii. Mahamaya Bhattacharyya - NJMS

   d. Qualifying Committee
      i. Ammy Santiago – 2011 University of Medicine and Dentistry of New Jersey -Pharmacology and Physiology
      ii. Lihong Hao – 2011 University of Medicine and Dentistry of New Jersey - Pharmacology and Physiology
      iii. Pelin Avcu - 2012 University of Medicine and Dentistry of New Jersey - Neurology and Neurosciences
      iv. Nora Ko - 2012 University of Medicine and Dentistry of New Jersey - Neurology and Neurosciences
      v. Swamini Sinha- 2012 University of Medicine and Dentistry of New Jersey - Neurology and Neurosciences

vi. Charu Garg- 2013 University of Medicine and Dentistry of New Jersey -Pharmacology and Physiology
vii. Stephanie Veerasammy- 2013 University of Medicine and Dentistry of New Jersey - Neurology and Neurosciences
viii. Sian Gok – 2014 NJIT-NJMS, Newark - Biomedical Engineering
ix. Keerthana D. Karunakaran – 2014 NJIT-NJMS, Newark - Biomedical Engineering
x. Ektha Kumari -2014 Rutgers NJMS
xi. Danielle Greggor -2015 Rutgers NJMS
xii. Ferhat Erdogan– 2015 NJIT-NJMS, Newark
xiii. Mathew Kuriakose – 2015 NJIT-NJMS, Newark
xiv. Juan Manuel Inclan Rico – 2016, I3 NJMS Newark
xv. Jessica Ma – 2016, NJIT-NJMS BME, Newark
xvi. Luipa Khander – 2016, CBNP, NJMS, Newark

e. Admissions Committee
i. MD/PhD Admissions committee 2016: 5 candidates
ii. Graduate School of Biomedical Sciences / Biomedical Engineering 2016 Interviews: 5 candidates Graduate School of Biomedical Sciences/Biomedical Engineering 2009 Interviews: 4 candidates
iii. MD/PhD Admissions committee 2015: 5 candidates
iv. Graduate School of Biomedical Sciences / Biomedical Engineering 2015 Interviews: 5 candidates
v. MD/PhD Admissions committee, 2014: 5 candidates
vi. Graduate School of Biomedical Sciences / Biomedical Engineering 2014 Interviews: 3 candidates
vii. Graduate School of Biomedical Sciences / Biomedical Engineering 2012 Interviews: 3 candidates
viii. Graduate School of Biomedical Sciences / Biomedical Engineering 2011 Interviews: 5 candidates
ix. Graduate School of Biomedical Sciences / Biomedical Engineering 2010 Interviews: 3 candidates

SERVICE ON HOSPITAL COMMITTEES: N/A

SERVICE TO THE COMMUNITY:

Summer internship mentor

Undergraduate Students:	Kruthi Kella- May-July, 2016
	Ysah Shah- March 2016-present
	Kruthi Kella- 2015
	Samik Shah- July-Sep, 2011
High School Students:	Arielle Kasnetz – July-Sep, 2015
	Aashna Reddy– July-Aug, 2014
	Vaishali Ravikumar – July-Sep, 2014
	Niyathi Chakrapani – July-Aug, 2014
	Rashika Verma - July-Sep, 2013
	Anagha Prasanna - July-Sep, 2013
	Manindra Rachikonda - July-Sep, 2013
	Kruthi Kella- July-Sep, 2012
	Manny Rachikonda - July-Sep, 2012

Local Scientific Community

Poster Presentation Judge: 2014 Rutgers Annual Postdoctoral Appreciation Day Symposium, RWJMS-Rutgers, Piscataway, NJ
Career Panel 2014 Rutgers Annual Postdoctoral Appreciation Day Symposium, RWJMS-Rutgers, Piscataway, NJ
Poster Presentation Judge: 2012 Annual Postdoctoral Appreciation Day Symposium, RWJMS-Rutgers, Piscataway, NJ

SPONSORSHIP OF CANDIDATES FOR POSTGRADUATE DEGREE:

Masters

Alexander Crane- Neuroscience Masters' Program, Rutgers NJMS-2016
Archana Proddutur, MS New Jersey Institute of Technology – 2010

Doctoral

Akshata Korgaonkar, PhD Rutgers NJMS – 2016
Eric J. Neuberger, PhD Rutgers NJMS – 2016

SPONSORSHIP (Primary Mentorship) OF POSTDOCTORAL FELLOWS:

Visiting researchers: 1. Deepak Subramanian, [PhD] Feb 2016-present
2. Akshay Gupta, MD Feb 2016-present

Post Doctoral Fellows 1. Ying Li, MD, PhD Feb 2012-present

2. Jiandong Yu, PhD March 2010-Feb 2015

- *Awarded a 1 year postdoctoral research fellowship from Epilepsy Foundation 2012 $50,000*
- *Third prize for poster presentation at 2011* University of Medicine and Dentistry of New Jersey -*Rutgers Postdoctoral Research Day*
- Currently Faculty at *Center for Neuropsychiatric Diseases, Institute of Life Science, Nanchang University, Nanchang, China*

3. Akshay Gupta, MD Sep 2009-Feb 2013

- *Awarded a 3 year postdoctoral research fellowship from NJCBIR 2011-2013 $210,000*
- *Outstanding Achievement Award for poster presentation at 2012* University of Medicine and Dentistry of New Jersey *Research Symposium on "Advances in Child Health"*
- *Voted best poster presentation at 2012* University of Medicine and Dentistry of New Jersey-*Rutgers Postdoctoral Research Day*

MAJOR TEACHING EXPERIENCE:

A. Lectures or Course Directorships

MEDICAL SCHOOL

1. Lecture: Gross Brain Lab I
   School: New Jersey Medical School
   Course Name: Mind Brain and Behavior
   Lecture Title: Gross Brain I: Surface Anatomy
   Hours: 3
   Date(s): April 2010, April 2011, April 2012, April 2013, April 2014, May 2015

2. Lecture: Gross Brain Lab II
   School: New Jersey Medical School
   Course Name: Mind Brain and Behavior
   Lecture Title: Gross Brain II: Gray Matter
   Hours: 3
   Date(s): April 2010, April 2011, May 2012, April 2013

3. Lecture: Gross Brain Lab III
   School: New Jersey Medical School

Course Name: Mind Brain and Behavior
Lecture Title: Gross Brain III: Pathways
Date: May 2010, May 2011, May 15, 2012

GRADUATE SCHOOL

1. School: Graduate School of Biomedical Science
   Course Name: Advanced Topics in Immunology
   Lecture Title: Non-Immune functions of Immune mediators
   Date: May 18, 2015

2. School: Graduate School of Biomedical Science
   Course Name: Molecular Physiology of Cell Communication
   Course #: CBNP 5036Q
   Lecture Title: Central Synapses: Physiology and Integration
   Date: Feb 25, 2013; Feb 24, 2014; Feb 23, 2015; Feb 17, 2016

3. School: Graduate School of Biomedical Science
   Course Name: Molecular Physiology of Cell Communication
   Lecture Title: Membranes and Channels: Review of how they function
   Date: Feb 5, 2013

4. School: Graduate School of Biomedical Science
   Course Name: Foundations of Neuroscience II
   Lecture Title: Cerebellum: Motor Coordination and the little brain
   Hours: 2
   Date (s): March 17, 2011; Feb 1, 2012; and March 20, 2013; March 17, 2014; May 19, 2015, May 17, 2016

5. School: Graduate School of Biomedical Science
   Course Name: Behavioral Cognitive and Clinical Neuroscience
   Lecture Title: Epilepsy and Seizure Disorders
   Date (s): April 25, 2012, May 28, 2013

6. School: Graduate School of Biomedical Science
   Course Name: Behavioral Cognitive and Clinical Neuroscience
   Lecture Title: Computational neuroscience
   Date (s): April 10, 2012, May 28, 2013, Dec 10, 2015; June 1, 2016

B. Research Training

Post Doctoral Fellows:

1. Akshata Korgaonkar, PhD	Feb 2016-present
1. Eric Neuberger, PhD	Feb 2016-present
3. Deepak Subramanian, [PhD]	Feb 2016-present
2. Akshay Gupta, MD	Feb 2016-present
4. Ying Li, MD, PhD	Feb 2012-present
5. Jiandong Yu, PhD	March 2010-Feb 2-15

- *Awarded a 1 year postdoctoral research fellowship from Epilepsy Foundation 2012 $50,000*
- *Third prize for poster presentation at 2011* University of Medicine and Dentistry of New Jersey -*Rutgers Postdoctoral Research Day*
- ***Current:*** *Faculty, Center for Neuropsychiatric Diseases, Institute of Life Science, Nanchang University, China*

6. Akshay Gupta, MD Sep 2009-Feb 2013

- *Awarded a 3 year postdoctoral research fellowship from NJCBIR 2011-2013 $210,000*
- *Outstanding Achievement Award for poster presentation at 2012* University of Medicine and Dentistry of New Jersey *Research Symposium on "Advances in Child Health"*
- *Voted best poster presentation at 2012* University of Medicine and Dentistry of New Jersey-*Rutgers Postdoctoral Research Day*

Pre Doctoral Students:

PhD Candidates: 1. Milad Afrasiabi-Rutgers Graduate School of Biomedical Science 2014-current

2. Archana Proddutur MS. Graduate School of Biomedical Science-University of Medicine and Dentistry of New Jersey 2012-current

- *Nominated by Rutgers to submit a competitive pre-doctoral research proposal to HHMI for the 2014 grant cycle*
- *Recipient: 2015 Dean Morris Schaffer Award*
- *2015 Kirby Fellow*

3. Eric J. Neuberger – Interdisciplinary Program 2011-2016

4. Akshata Korgaonkar – Biomedical Engineering Program
Role: Advisor 2011-2016

- *Awarded a 3 year predoctoral research fellowship from NJCBIR 2015-2018 $100,500*

Rotation:

1. Lucas Corrubia- Rutgers GSBS 2016
2. Ersilia Mirabelli- Rutgers GSBS 2016
3. Millie Swietek – Biomedical Engineering 2012-2013
4. Milad Afrasiabi-Rutgers GSBS 2014
5. Gokhan Ordek - Biomedical Engineering 2014
6. Matt Long – Biomedical Engineering 2012-2013
7. Akshata Korgaonkar – Biomedical Engineering Program 2011-2012
8. Matt Gielow- Graduate School of Biomedical Science 2011
9. Kurt Fakira – Graduate School of Biomedical Science- University of Medicine and Dentistry of New Jersey 2009

Masters Students:

1. Alexander Crane- Neuroscience Masters' Program, May 2014-2016
2. Ogechukwu Chika-Nwosuh- Neuroscience Masters' Program,
Currently an MD candidate at St. George's, Granada 2013
3. Archana Jayakumar- Neuroscience Masters' Program
Currently an MD candidate 2011-2012
4. Archana Proddutur (MS) New Jersey Institute of Technology 2010
Currently a PhD candidate at University of Medicine and Dentistry of New Jersey

Research Assistants: 1. Jenieve Guevarra, BS, Columbia 2014-current

2. Millie Swietek, MS, New Jersey Institute of Technology 2012-2014
Current: PhD candidate at NJIT

3. Fatima S. Elgammal BS, New Jersey Institute of Technology 2011-2014
Current: MD candidate at St. George's, Granada

4. Archana Proddutur, MS New Jersey Institute of Technology 2010-2011
Current: PhD candidate at NJIT

5. Takahiro Ito, MS Rutgers 2009-2010
Current: PhD candidate at Brown University

CLINICAL RESPONSIBILITIES: N/A

GRANT SUPPORT:

A. Principal Investigator (PI and CO-PI)

1. Funding Organization: National Institute of Health (NIH) - National Institute of Neurological Disorders and Stroke (NINDS)
PI: Santhakumar Role: PI
Award Type: R01
Title: Contribution of innate immune receptors to neurological dysfunction after traumatic brain injury: Mechanisms and therapeutic implications
Grant Number: R01NS097750
Inclusive Dates: July 1, 2016-June 30, 2021
Award Amount: $1,740,809
Effort: 25%

2. Funding Organization: NJCBIR
PI: Santhakumar Role: PI
Award Type: Individual Research Grant
Title: Contribution of early exuberant post-traumatic neurogenesis to long-term functional deficits after concussive brain injury
Grant Number: CBIR16IRG017
Inclusive Dates: June 1, 2016-May 31, 2019
Award Amount: $553,000
Effort: 10%

3.
Funding Organization: Rutgers Brain Health Initiative
PI: Santhakumar Role: Co-PI
Award Type: Pilot Grant
Title: Role of Semaphorin-Neuropilin signaling in interneuronal dysfunction in epilepsy
Grant Number: NA
Inclusive Dates: Dec 2015-Nov 2016
Award Amount: $40,000
Effort: 0%

4. Funding Organization: Kirby Foundation
   PI: Townes-Anderson Role: Co-PI
   Title: Synaptic and network plasticity following neurological insults
   Award Number: N/A
   Inclusive Dates: June 2016-May, 2017
   Award Amount: $50,000
   Effort: 0%

5. Funding Organization: New Jersey Commission on Brain Injury Research
   PI: Santhakumar, Role: PI
   Title: Role of Toll-Like Receptors in Neuronal Dysfunction after Brain Injury: Mechanisms and Translational Potential
   Grant Number: CBIR14IRG024
   Inclusive Dates: June 2014-May 2017
   Award Amount: $534,981
   Effort: 10%

6. Funding Organization: Kirby Foundation
   PI: Townes-Anderson Role: Co-PI
   Title: Synaptic and network plasticity following neurological insults
   Award Number: N/A
   Inclusive Dates: June 2015-May, 2016
   Award Amount: $25,000 for Santhakumar Subproject
   Effort: 0%

7. Funding Organization: Kirby Foundation
   PI: Townes-Anderson Role: Co-PI
   Title: Synaptic and network plasticity following neurological insults
   Award Number: N/A
   Inclusive Dates: June 2013-May, 2014
   Award Amount: $37,500 for Santhakumar Subproject
   Effort: 0%

8. Funding Organization: National Institute of Health (NIH) - National Institute of Neurological Disorders and Stroke (NINDS)
   PI: Santhakumar Role: PI
   Title: Inhibitor Network Plasticity in Neurological Disease
   Award Number: R01 NS069861
   Inclusive Dates: Oct 2011- NCE until Jul2017
   Award Amount: $1,218,000 in Direct Cost
   Effort: 50%

9. Funding Organization: New Jersey Commission on Brain Injury Research (Multi-Investigator Award)
   PI: Pfister, New Jersey Institute of Technology Role: Co-PI
   Title: Effect of mild, high rate and repetitive brain injury on hippocampal circuits
   Award Number: CBIR11PJT003
   Inclusive Dates: June 2011-May 2014, NCE until Dec 2015
   Award Amount: $1,639,522 total $450,000 (direct cost for Santhakumar sub-project)
   Effort: 10%

10. Funding Organization: Citizens United for Research in Epilepsy (CURE) Foundation
    PI: Santhakumar Role: PI
    Title: Modulation of toll-like receptors to decrease post-traumatic epileptogenicity
    Award Number: CF 259051

Inclusive Dates: July 2011-May 2014 NCE until May 2015
Award Amount: $250,000
Effort: 10%

11. Funding Organization: Epilepsy Foundation
PI: Santhakumar Role: PI
Title: Proton Modulation of Perisomatic Interneurons in Epilepsy
Award Number: N/A
Inclusive Dates: Jan 2010-Dec2010
Award Amount: $50,000
Effort: 10%

12. Funding Organization: New Jersey Commission on Brain Injury Research
PI: Santhakumar Role: PI
Title: Tonic GABAergic Inhibition after Traumatic Brain Injury: Role in Epileptogenicity
Award Number: 09-003-BIR1
Inclusive Dates: June 2009-May 2013
Award Amount: $451,124
Effort: 10%

B. Co-Investigator

1. Funding Organization: Rutgers IMRT
PI: Haesun Kim Role: Co-I
Award Type: Seed Grant
Title: Molecular mechanism of myelin damage after mild brain injury
Inclusive Dates: July 1, 2016-June 30, 2018
Award Amount: $160,000
Requested Effort: 0%

2. Funding Organization: New Jersey Commission on Brain Injury Research Grant
PI: Chitravanshi, Neurology-New Jersey Medical School
Title: Traumatic Brain Injury: Functional Alterations in the Brain Cardiovascular Regulatory Areas
Award Number: in process
Inclusive Dates: June 2015-May 2018
Award Amount: $ 540,000
Effort: 0%

3. Funding Organization: New Jersey Commission on Brain Injury Research Grant
PI: Kannurpatti, Radiology-New Jersey Medical School
Title: Mitochondrial Facilitation Treatment in Mild Traumatic Brain Injury and its Integrated Translatable Monitoring
Award Number: in process
Inclusive Dates: June 2015-May 2018
Award Amount: $ 514,057
Effort: 4%

4. Funding Organization: New Jersey Commission on Brain Injury Research Grant
PI: Calderon, Neurology and Neurosciences, New Jersey Medical School
Title: Enhancement of Neural Stem Cell Survival and Transplantation Efficacy by Docosahexaenoic Acid and its Derivative NPD1 in Traumatic Brain Injury
Award Number: CBIR13IRG015
Inclusive Dates: June 2013-May 2016
Award Amount: $539,733

5. Funding Organization: New Jersey Commission on Brain Injury Research, Pilot Project,
   PI: Kannurpatti, Radiology-New Jersey Medical School
   Title: Mitochondrial function and translational markers of reorganization in Traumatic Brain Injury
   Award Number: CBIR12PIL028
   Inclusive Dates: June 2012-May 2014 NCE May 2015
   Award Amount: $180,000

Mentor on Extramural Grants Awards

1. Funding Organization: New Jersey Commission on Brain Injury Research, Pre-doctoral Fellowship
   PI: Korgaonkar Role: Mentor
   Title: Differential toll-like receptor 4 modulation of dentate excitability in the normal and injured brain
   Inclusive Dates: June 2015-May 2018
   Award Amount: $100,500

2. Funding Organization: Epilepsy Foundation, Postdoctoral Fellowship
   PI: Jiandong Yu, Role: Mentor
   Title: Plasticity of perisomatic interneurons in Epilepsy
   Award Number: N/A
   Inclusive Dates: Jan 2012-Dec2012
   Award Amount: $50,000

3. Funding Organization: New Jersey Commission on Brain Injury Research, Postdoctoral Fellowship
   PI: Akshay Gupta, Role: Mentor
   Title: Role of Semilunar Granule Cells in Post-traumatic Hyperexcitability
   Award Number: 11-3223-BIR-E-O
   Inclusive Dates: June 2011-May 2013
   Award Amount: $209,808

C. **Pending**

1. Funding Organization: NIH / NINDS (Scored **12%** July 2016-Awaiting Council)
   PI: Haesun Kim Role: Co-I
   Award Type: R15
   Title: Molecular mechanism of myelin damage after TBI
   Requested Effort: 0%

2. Funding Organization: NIH / NINDS
   PI: Santhakumar Role: Co-PI
   Award Type: R21
   Title: Novel model targeting Semaphorin-Neuropilin Signaling in Inhibitory Circuit Development to examine mechanisms of Pediatric Epilepsy-Autism Comorbidity
   Requested Effort: 10%

ADMINISTRATIVE RESPONSIBILITIES:

- Management and maintenance of the Neuroscience Departmental Imaging Core Neurolucida/Streoinvestigator System

PUBLICATIONS:

A. Refereed Original Article in Journal

1. **Santhakumar V**, Bender R, Frotscher M, Ross ST, Hollrigel GS, Toth Z, Soltesz I (2000) Granule cell hyperexcitability in the early post-traumatic rat dentate gyrus: the 'irritable mossy cell' hypothesis. *Journal of Physiology* (London) 524 Pt 1: 117-134. Citations: 114

2. **Santhakumar V**[#], Ratzliff AD, Jeng J, Toth K, Soltesz I (2001) Long-term hyperexcitability in the hippocampus after experimental head trauma. *Annals of Neurology* 50: 708-717. [#]*Corresponding Author*. ***Published with an editorial focus.*** Citations: 166

3. Aradi I, **Santhakumar V**, Chen K, Soltesz I (2002) Postsynaptic effects of GABAergic synaptic diversity: regulation of neuronal excitability by changes in IPSC variance. *Neuropharmacology* 43: 511-522. Citations: 34

4. **Santhakumar V**[#], Voipio J, Kaila K, Soltesz I (2003) Post-traumatic hyperexcitability is not caused by impaired buffering of extracellular potassium. *Journal of Neuroscience* 23(13):5865-76. [#]*Corresponding Author.* Citations: 21

5. Ratzliff AH, Howard A, **Santhakumar V**, Osapay I, Soltesz I (2004) Rapid Deletion of Mossy Cells Does Not Result in a Hyperexcitable Dentate Gyrus: Implications for Epileptogenesis. *Journal of Neuroscience* 24(9):2259 –2269. Citations: 64

6. Aradi I*, **Santhakumar V***[#], Soltesz I (2004) Simple Rules Govern the Impact of Heterogeneous Perisomatic IPSC Populations on Pyramidal Cell Firing Rates. *Journal of Neurophysiology* 91: 2849–2858. * *Equal Contribution* [#]*Corresponding Author.* Citations: 19

7. **Santhakumar V**[#], Aradi I, Soltesz I (2005) Role of Mossy Fiber Sprouting and Mossy Cell Loss in Hyperexcitability: A Network Model of the Dentate Gyrus Incorporating Cell Types and Axonal Topography. *Journal of Neurophysiology* 93(1):437-53. [#]*Corresponding Author.* Citations: 151

8. **Santhakumar V**, Hanchar HJ, Wallner M, Olsen RW & Otis TS (2006) Contributions of the $GABA_A$ Receptor Subunit $\alpha 6$ to Phasic and Tonic Inhibition Revealed by a Naturally Occurring Polymorphism in the $\alpha 6$ Gene. *Journal of Neuroscience* 26(12):3357 –3364. Citations: 71

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B. Books, Monographs and Chapters

1. Morgan R, **Santhakumar V,** Soltesz I (2007), Modeling the Dentate Gyrus In: The Dentate Gyrus edited by Scharfman H. Elsevier press. *Progress in Brain Research* 163C:639-658. Citations: 27

2. **Santhakumar V** (2008), Modeling mossy cell loss and mossy fiber sprouting in epilepsy In: Computational Neuroscience in Epilepsy edited by Soltesz I and Staley K.J. *Academic Press*. 89-111. Citations: 1

C. Patents Held: N/A

D. Other Articles:

1. Ratzliff AH, **Santhakumar V**, Howard A, Soltesz I (2002) Mossy cells in epilepsy: rigor mortis or vigor mortis? *Trends in Neuroscience* 25: 140-144. Citations: 109

2. Chen K, Aradi I, **Santhakumar V**, Soltesz I (2002) H-channels in epilepsy: new targets for seizure control? *Trends in Pharmacological Sciences* 23: 552-557. Citations: 46

3. **Santhakumar V** and Soltesz I (2004) Heterogeneity on the Move: Plasticity of Interneuronal Species Diversity and Parameter Variance in Neurological Diseases. *Trends in Neuroscience* 27(8):504-10. Citations: 36

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E. Abstracts

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2. **Santhakumar. V** and Soltesz. I; The irritable mossy cell hypothesis of posttraumatic hyperexcitability (Society for Neuroscience), 2000, Abstract: 69.10
3. **Santhakumar. V** , Voipio, J Kaila, K and Soltesz. I; Testing the potassium buffering hypothesis of post-traumatic hyperexcitability (Society for Neuroscience), 2001, Abstract: 558.16
4. **Santhakumar. V** , Voipio, J Kaila, K and Soltesz. I; Does impaired potassium clearance cause post-traumatic hyperexcitability? (American Epilepsy Society), 2002, Epilepsia 43 Suppl. 7 :258
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9. **Santhakumar. V**, Aradi, I and Soltesz. I Factors contributing to post-traumatic dentate hyperexcitability: A network model incorporating topographic connectivity patterns (American Epilepsy Society), 2004, Epilepsia 45 Suppl. 7 :24
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11. **Santhakumar. V**, Aradi, I and Soltesz. I; Analysis of factors contributing to post-traumatic dentate hyperexcitability in a topographically constrained network model. (Society for Neuroscience), 2004, Abstract:228.19
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18. **Santhakumar, V.,** Mody, I. Developmental regulation and neuroprotective effects of striatal tonic inhibition. (Society for Neuroscience), 2008, Abstract: 424.6
19. Wahab R.A, **Santhakumar. V**, Pfister, B.J. Novel devices to study pathophysiology of brain injury resulting from blast-like pressure waves in rodents. (Society for Neuroscience), 2011, Abstract: 561.03
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22. Gupta A, Proddutur A, Elgammal F, Ito T, **Santhakumar V.** Decreased Tonic GABAergic Inhibition and Enhanced Excitability of Dentate Semilunar Granule Cells after Traumatic Brain Injury (American Epilepsy Society), 2011, Abstract: 2.048
23. Yu J, Proddutur A, Elgammal F, Ito T, Bhatt S, **Santhakumar V**, Enhanced Tonic GABA currents in Dentate Fast-Spiking Basket Cells after Status Epilepticus. (American Epilepsy Society), 2011, Abstract: 2.049
24. Abdul-Wahab R, **Santhakumar V**, Pfister BJ. Novel devices to study pathophysiology of brain injury resulting from blast-like pressure waves in rodents. (National Neurotrauma Society), 2012, *Journal of Neurotrauma*: 29 (10), A155-A156
25. **Santhakumar V.** Gupta A, Proddutur A, Elgammal F. Post-traumatic inhibitory plasticity augments excitability of atypical dentate glutamatergic projection neurons. (National Neurotrauma Society), 2012, *Journal of Neurotrauma*: 29 (10), A112-A112
26. Swietek B, **Santhakumar V,** Pfister BJ, A Novel Shock Tube to Induce a Blast Related Traumatic Brain Injury in Rodents (National Neurotrauma Society), 2012, *Journal of Neurotrauma*: 29 (10), A204-A205
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28. Sinha SP, Roland JJ, Korgaonkar AA, Long MT, Kalata S, **Santhakumar V**, Pfister BJ, Servatius RJ, Pang KCH, Characterization of axonal damage in an animal model of traumatic brain injury (Society for Neuroscience), 2012, Abstract: 554.10
29. Korgaonkar A, Li Y, Wang J, Townes-Anderson E, Elkabes, S, **Santhakumar V**, Early enhancement of toll-like receptor expression in the hippocampus following concussive brain injury: Innate immune response to neurotrauma. (Society for Neuroscience), 2012, Abstract: 769.13
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32. Neuberger EJ, Abdul-Wahab R, Jayakumar A, Elgammal FS, Pfister BJ, **Santhakumar V**. Similar enhancement in dentate network excitability despite marked differences in early cellular injury following fast- and standard rate concussive brain trauma. (Society for Neuroscience), 2012, Abstract: 864.19
33. Yu J, Proddutur A, Elgammal F, **Santhakumar V**, Pilocarpine-Induced Status Epilepticus Modifies Inhibitory and Electrical Synapse to Dentate Fast-Spiking Basket Cells (American Epilepsy Society), 2012, Abstract: 3.101
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35. Proddutur A, Yu J, Elgammal FS, **Santhakumar V.** Seizure-induced plasticity of fast-spiking basket cell GABA currents modulates frequency and coherence of gamma oscillation in network simulations (Frontiers in Applied and Computational Mathematics), 2013
36. Elgammal FS, Gupta A, Proddutur A, Chika-Nwosuh O, Swietek B, Kruthi Kella, **Santhakumar V**. Morphologically distinctive dentate projection neurons show unique developmental profile and post-traumatic plasticity. (NeuroMorpho Conference), 2013
37. Sinha SP, Roland JJ, Avcu P, **Santhakumar V**, Pfister BJ, Marx C, Servatius RJ, Pang KCH, Differentiating Mild TBI from PTSD using Acoustic Sensory Reactivity in a Rodent Model. (Society for Neuroscience), 2013, Abstract: 811.07
38. Yu J, Proddutur A, Swietek B, Elgammal F, **Santhakumar V**, Decrease in Heterogeneous Inhibitory Inputs to Dentate Fast-Spiking Basket Cells Augments Inhibitory Network Homogeneity following Pilocarpine-Induced Status Epilepticus. (Society for Neuroscience), 2013, Abstract: 627.15
39. Proddutur A, Yu J, Elgammal FS, **Santhakumar V.** Seizure-induced plasticity of fast-spiking basket cell GABA currents modulates frequency and coherence of gamma oscillation in network simulations (Frontiers in Applied and Computational Mathematics), 2013, Abstract: 132.21.
40. Elgammal FS, Gupta A, Proddutur A, Chika-Nwosuh O, Swietek B, Santhakumar V. Structural differences between granule cells and semilunar granule cells: role in differential post-traumatic plasticity of synaptic inputs. (American Epilepsy Society), 2013
41. Li Y, Korgaonkar A, **Santhakumar V**, Toll-like receptor 4 signaling contributes to early increase in dentate excitability after concussive brain injury by NMDA receptor independent mechanisms. (American Epilepsy Society), 2013
42. Proddutur A, Yu J, Elgammal FS, **Santhakumar V.** Experimental Epilepsy Reduces Heterosynaptic Inhibitory Inputs to Dentate Fast Spiking Basket Cells and compromises theta modulation of gamma oscillations (Gordon Research Conference on Epilepsy and Neuronal Synchronization) 2013
43. Korgaonkar A, Li Y, **Santhakumar V**, Differential Toll-like receptor 4 modulation of dentate excitability in normal and injured brain. (American Epilepsy Society), 2013
44. Elgammal FS, Gupta A, Proddutur A, Swietek B, Santhakumar V. Structural differences between granule cells and semilunar granule cells. (Society for Neuroscience), 2014, Abstract: 607.15
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47. Li Y, **Santhakumar V**, Toll-like receptor 4 signaling increases calcium-permeable AMPA currents in the dentate gyrus after brain injury. (American Epilepsy Society), 2015, Abst. 3.055
48. Proddutur A, Yu J, Swietek B, **Santhakumar V.** Functional reduction in heterotypic inhibition of dentate basket cells in epilepsy: Impact on network rhythms. (American Epilepsy Society), 2015, Abst. 3.025
49. **Santhakumar V**, Effect of Experimental Epilepsy on Inhibition of GABAergic Interneurons: Implications for Co-morbidities and Therapeutic Failures. International Conference on Epilepsy and Treatment, Baltimore, USA. 2015
50. **Santhakumar V**, Proddutur A, Swietek B, Yu J Dentate Cannabinoid-Sensitive Interneurons Develop Selective Strengthening of Mutual Synaptic Inhibition in Experimental Epilepsy. (Society for Neuroscience), 2015, Abstract: 492.12
51. Long M, Fitzsimmons AM, Pang KCH, **Santhakumar V**, Pfister BJ. Establishment and characterization of a rodent model of repetitive subconcussive traumatic brain injury. (Society for Neuroscience), 2015, Abstract: 688.16
52. Neuberger EJ, Swietek B, Prasanna A, **Santhakumar V.** Distinct Temporal Changes in Post-Traumatic Hippocampal Neurogenesis. Neurogenesis 2016, Cancun, Mexico
53. Neuberger EJ, Swietek B, Prasanna A, **Santhakumar V.** Early increase in neurogenesis after brain injury precipitates long-term decline in neurogenic potential. National Neurotrauma Society, 2016 – *Selected for DataBlitz Presentation*
54. **Santhakumar V**, S07.02 - Viji Santhakumar, PhD, Rutgers New Jersey Medical School, Role of neuro-immune plasticity in posttraumatic epilepsy. National Neurotrauma Society, 2016
55. Long M, Arvind A Chandra N, Pang KCH, **Santhakumar V**, Pfister BJ Characterization of cumulative subconcussive exposures of blunt and blast injury. National Neurotrauma Society, 2016
56. Long M, Arvind A Chandra N, Pang KCH, **Santhakumar V**, Pfister BJ Characterization of cumulative subconcussive exposures of blunt and blast injury. Biomedical Engineering Society, 2016
57. Proddutur A, Guevarra J, **Santhakumar V.** Dentate Parvalbumin Expressing Chandelier Cells Show Early Reduction in Excitability in Experimental Epilepsy (Society for Neuroscience), 2016
58. Korgaonkar AA, Guevarra J, Pang KCH, **Santhakumar V**, Distinct Signaling Pathways Underlie Neurophysiological Effects of Toll-Like Receptor 4 Signaling in the Normal and Injured Brain. (Society for Neuroscience), 2016
59. Gupta A, Swietek B, Guevarra J, Shah Y, **Santhakumar V.** Developmental characterization of intrinsic physiology and inhibitory regulation of Dentate Semilunar Granule Cells. (Society for Neuroscience), 2016
60. Afrasiabi M, **Santhakumar V**, Distinct Inhibitory Regulation of Dentate Granule Cells and Semilunar Granule Cells. (American Epilepsy Society), 2016
61. Li Y, Korgaonkar AA, Kasnetz A, **Santhakumar V.** Toll-like Receptor 4 signaling contributes to excitotoxic injury of dentate somatostatin interneurons after brain injury. (American Epilepsy Society), 2016

F. Reports N/A

INVITED SPEAKER:

A. Scientific:

2016 *Invitation* as Discussion Leader for session on Pathological Circuit Function in Epilepsy, Gordon Conference on Epilepsy and Neuronal Synchronization , Girona, Spain

2016 Inhibitory and neuro-immune plasticity in acquired epilepsies, UCI EpiCenter Symposium, University of California, Irvine, CA

2016 Altered Neuro-Immune and Inhibitory Signaling after Brain Injury: Role in Acquired Epilepsies, University of California, Riverside, CA

2016 *Grand Rounds Speaker,* Role of inhibition and inflammation in dentate network dysfunction in injury and epilepsy, Cedars-Sinai Hospital, Los Angeles, CA

2016 *Invited Presentation* Role of neuroimmune plasticity in posttraumatic epilepsy, National Neurotrauma Conference, Lexington, KY

2016 *DataBlitz* ,Early increase in neurogenesis after brain injury precipitates long-term decline in neurogenic potential, National Neurotrauma Conference, Taormina, Lexington, KY

2016 Role of inhibition and inflammation in dentate network dysfunction in injury and epilepsy. Western University of Health Sciences, Pomona, CA

2016 Inhibition and Inflammation in epileptogenesis, Rutgers University Women in Neuroscience Seminar Series, Rutgers University, New Brunswick, NJ

2015 Moderator, Investigator Workshop on Immune and Non-canonical roles of inflammatory mediators in epilepsy, American Epilepsy Society Meeting, Philadelphia, PA

2015 Invitation to present at Spring Hippocampal Research Conference, Taormina, Sicily (*Invited Speaker at International Conference*)

2015 Rutgers University, Federated Department of Biology, Newark, NJ

2014 Basic Mechanisms Special Interest Group, American Epilepsy Society, Seattle

2014 Gordon Conference on Epilepsy and Neuronal Synchronization (*Invited Speaker at International Conference*).

2014 College of Staten Island, CUNY. Department of Neuroscience.

2013 Spring Hippocampal Research Conference, Taormina, Sicily (*Invited Speaker at International Conference*)

2013 Digital Reconstruction of Neuronal Morphology: Recognizing the Breakthroughs. George Mason University, Krasnow Institute, Fairfax, VA (*Invited Speaker at International Conference*)

2013 Epilepsy Center of Excellence and Neurology Service, VA Puget Sound, University of Washington, WA

2012 University of Medicine and Dentistry of New Jersey, MD-PhD Program, Newark, NJ

2012 New Jersey Institute of Technology, Department of Biomedical Engineering, Newark, NJ

2011 Tufts University Neuroscience Seminar Series, Tufts University, Boston, MA

2010 University of Medicine and Dentistry of New Jersey, Department of Pharmacology and Physiology, Newark NJ.

2009 Drexel University College of Medicine, Department of Neurobiology and Anatomy, Philadelphia PA.

2009 New Jersey Institute of Technology, Department of Mathematical Biology, Newark, NJ.

2008 Texas A&M University, Department of Neuroscience and Experimental Therapeutics, College Station, TX

2007 George Mason University, Krasnow Institute, Fairfax, VA.

2007 University of Connecticut, Department of Physiology and Neurobiology, Storrs, CT.

2007 Basic Mechanisms Special Interest Group, American Epilepsy Society, Philadelphia

2007 Epilepsy Grand Rounds, Cleveland Clinical Foundation, Cleveland, OH

2006 Gordon Conference on Epilepsy and Neuronal Synchronization.

2005 Guest Lecturer, National Institute of Mental Health and Neurosciences, India, Invited by the Association of Physiologists and Pharmacologists of India.

2004 Speaker, Finnish Graduate School of Neuroscience and the Graduate School in Computational Methods of Information Technology, University of Helsinki Finland.

2001 Platform Presentation at the American Epilepsy Society Annual Meeting. Philadelphia.

B. Professional :

2014 Career Panel 2014 Rutgers Annual Postdoctoral Appreciation Day Symposium, RWJMS-Rutgers, Piscataway, NJ

2011 Postdoctoral Association University of Medicine and Dentistry of New Jersey - New Jersey Medical School, Newark

2009 Career Development Forum, MGPA, Office for Research Career Development, Massachusetts General Hospital, Boston MA

Vijayalakshmi Santhakumar

From: em.jove.493a.4d15e8.b9ba40ab@editorialmanager.com on behalf of Jaydev Upponi <em@editorialmanager.com>
Sent: Tuesday, August 09, 2016 12:31 PM
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CC: ronald.myers@jove.com, swietebo@rutgers.edu, akshay.gupta@rutgers.edu, ap269@njit.edu

Dear Dr Santhakumar,

Thank you for your submission to the Journal of Visualized Experiments (JoVE).

I am pleased to tell you that your manuscript, JoVE54880R2 "Immunostaining of biocytin-filled and processed sections for neurochemical markers" has been accepted. This paper is now considered to be **In-Press**. Your manuscript may have been modified. Please download the current version of the manuscript attached here and save it for your records.

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Regards,

Jaydev Upponi, Ph.D.
Science Editor
JoVE
1 Alewife Center, Suite 200, Cambridge, MA 02140
tel: 617-674-1888