Curriculum Vitae

Apkar Vania Apkarian, Ph.D.
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Personal

Citizenship:	U.S.A.
Health:	Excellent
Marital Status:	Married, Dr. Seema A. Khan
two children:	Salpi and Charents

Education

University of Southern California ***1974***
Los Angeles, California
Bachelor of Science, Electrical Engineering

University of Southern California ***1978***
Los Angeles, California
Master of Science, Biomedical Engineering

SUNY Health Science Center at Syracuse ***1988***
Syracuse, New York
Ph.D. in Neuroscience

Physiologische Institut, Universitat Wurzburg ***1988 - 1989***
Wurzburg, Federal Republic of Germany
Humboldt Post-doctoral Fellow

Professional experience

Northwestern University Medical School
Chicago, Illinois
Professor of Physiology, Surgery,
Anesthesia, Cognitive Brain Mapping Group,
& Neuroscience Institute ***2005 – present***

Northwestern University Medical School
Chicago, Illinois
Associate Professor of Physiology, Surgery,
Anesthesia, Cognitive Brain Mapping Group,
& Neuroscience Institute ***2000 - 2005***

SUNY Upstate Medical University ***1997-2000***
Syracuse, New York
Associate Professor of Neurosurgery & Physiology

Department of Neurosurgery

SUNY Upstate Medical University ***1993-2000***
Syracuse, New York
Director, Neurosurgery Research Laboratories

Syracuse University ***1992-1999***
Syracuse, New York
Assistant Adjunct Professor
Institute for Sensory Research

SUNY Health Science Center at Syracuse ***1991-1999***
Syracuse, New York
Director, Computational Neuroscience Program

SUNY Health Science Center at Syracuse ***1989-1996***
Syracuse, New York
Assistant Professor of Neurosurgery & Physiology
Department of Neurosurgery

SUNY Health Science Center at Syracuse ***1979-1988***
Syracuse, New York
Research Associate
Department of Neurosurgery

Additional professional activities

NIH SCS Study Section (Somatosensory and Chemosensory Systems)	***2004 - 2009***
Ad hoc reviewer for multiple NIH institutes	***2001 - present***
Section Editor for Encyclopedia of Pain	***2003 - 2006***
NIH NCCAM (Alternative Medicine) Strategic planning board	***2004***
NIH NCCAM Study Section	***2001 - 2003***
NIH NINDS SBIR (Small Business Initiatives) Reviews	***2001 - 2003***
NIH Peer Review Panels (Ad Hoc member of mautiple panels)	***1998 - 2001***
NIH PPG Review (Chapel Hill)	***1992, 1996***
NSF Grant Review(s)	***1989 & 1993***

Journal Review(s), incomplete list:

Journal of Neurophysiology
Journal of Neuroscience Methods
Pain
Pain Forum
Cerebral Cortex
Journal of Comparative Neurology
Journal of Neuroscience
Somatosensory and Motor Research
Journal of Anesthesiology
Neuroscience Letters
NeuroImage
Journal of Pain
European Journal of Pain

Behavioral and Cogitive Neuroscience
Brain Research
Human Brain Mapping
The Clinical Journal of Pain
Journal Neurobiology
Anesthesiology
Gastroenterology
Brain
Neuron

Professional memberships
Society for Neuroscience
American Pain Society
International Association for the Study of Pain
North American Cervicogenic Headache Society
International Brain Research Organization
American Physiological Society

Languages: English, French, Arabic, Armenian

Honors and Awards
Alexander Von Humboldt-Stiftung Fellowship
Eta Kappa Nu, Electrical Engineering Honor Society
Armenian General Benevolent Union Scholarship (twice)
Armenian Educational Foundation Scholarship

Grants
2008-2013 U01 co-Principal Investigator, NIH/NIDDK U01 Grant, DK082342-01
Mechanisms of Pelvic Pain - $1,110,329

2008-2013 R01 Principal Investigator, NIH/NINDS R01 NS064091-01
The prefrontal cortex in neuropathic pain - $1,303,547

2008-2013 R01 Principal Investigator, NIH/NINDS NS35115, years 12-17,
Cortical pathophysiology of pain, - $2,500,000

2008-2012 R01 co-Principal Investigator, NIH/NINDS R01 NS043095-07
HIV-1 Infection and the Peripheral Nervous System - $250,988

2007-2012 Principal Investigator. NIH 1R01 Grant, NS057704
Chronic pain and emotional learning and memory - $1,250,000
Score = 126 in November 2007

2006-2008 R21 Principal Investigator, NIH R21 NS053602
Characterizing temporal dynamics of spontaneous pain - $275,000

2006-2007 Principal Investigator, Endo Pharmaceuticals
fMRI study of effects of LidoDerm

2006-2009 Principal Investigator, Endo Pharmaceuticals

Double blind brain imaging of lidoderm therapy vs placebo for chronic back pain (CBP) - $510,000

2007-2009 Principal Investigator. Tikvah
Efficacy and mechanism of action for sarcosine antinociception- $ 100,000

2002-2006. Principal Investigator, NIH 1R01 Grant, NS42660
Cortical Dynamics for Pain Perception in Behaving Rats - $ 1,125,000

2003-2008 Principal Investigator, NINDS 3R01 Grant NS35115
Cortical Pathophysiology of Pain - $1,250,000

2002-2004 Emma Gale Harris fund - $36,000.
Unrestricted cancer pain research funds.

2003-2005 Pfizer. Principal Investigator.
Demonstrating Central Benefits of COX-2 Inhibition in Pain Management - $150,000.

2004-2005 Principal Investigator, Endo Pharmaceuticals
Brain Imaging of Lidoderm therapy for Osteoasthritis - $80,416

2004-2005 Principal Investigator, Endo Pharmaceuticals
Brain Imaging of Lidoderm therapy for Chronic Back Pain - $80,416

2002-2004 Principal Investigator, Endo Pharmaceuticals
Brain Imaging of Lidoderm therapy for Post Herpetic Neuropathy - $102,416

1999-2003 Principal Investigator, NINDS 2R01 Grant NS35115
Cortical Pathophysiology of Pain - $575,803

1996-1999 Principal Investigator, NINDS 1R01 Grant NS35115
Cortical Pathophysiology of Pain - $547,107

1999-2000 Coordinator, PRAXIS/P/SAU/10179/1998, Porto, Portugal.
Nociceptive coding by neuronal ensembles in the spinal cord - $47,000

1995-1998 Principal Investigator, T32MH19736 Grant
1993-1998 NIMH Training Grant in Computational Neuroscience - $906,094

1993-1996 Co-Principal Investigator NIMH 1R01 Grant
Noise and Encoding of Sensory Information - $196,790

1993-1995 Principal Investigator Fogarty NIH Fellowship
Central Processing of Somatic and Visceral Pain - $28,600

1993-1995 Research Grant from Headache Clinic in Toronto, Canada
The Role of the Upper Cervical Spinal Cord in Pain Reception and its Relation to Headaches - $20,000

1989-1990 Principal Investigator Hendricks Grant 2S07RR0540229 - $25,000

1986-1989 Co-Principal Investigator NINCDS Grant NS22891

The Dorsolateral Spinothalamic Tract - $359,146

Advisees

Scott I. Gingold	7/89-6/91	Residency Research Training	Neurosurgeon
Mark W. Jones	7/88-6/90	Residency Research Training	Neurosurgeon
Mark V. Smith	7/89-6/91	Residency Research Training	Neurosurgeon
Robert J. Martin	7/89-6/91	Residency Research Training	Neurosurgeon
R. Anthony Stea	7/92/6/94	Residency Research Training	Neurosurgeon
Johannes Brüggemann	6/91-12/95	Post-doctoral Training	Faculty HSC
Ting Shi	9/90-10/96	Graduate Student	Ph.D.
Michael Fonte	9/96- 8/98	Graduate Student	M.D. Ph.D.
Vasco Galhardo	9/97-10/01	Graduate Student	Ph.D., Faculty Porto Med Sch
Chandra Ivey	6/95-7/97	Graduate Student	M.S.
Patricia Gelnar	7/92-7/97	Graduate Student	M.D. Ph.D.
Reshma Kumar	7/99-*10/00*	Graduate Student	
John Yu	7/99-*10/00*	Graduate Student	
Tara Ramachandran	7/99-*8/00*	Graduate Student	M.D.
Youngsoo Kim	*1/00-8/02*	Graduate Student	
Alex Baria	1/09-present	Graduate Student	
Amelia Mutso	6/09-present	Graduate Student	
Elle Parks	9/09-present	Graduate Student	
Marwan Baliki	6/02-present	Graduate Student, Post-doctoral Training	
Igor Grachev	7/98-7/00	Post-doctoral Training	Industry
Paul Geha	9/03-6/08	Post-doctoral Training	
Mona Lisa Chanda	1/09-present	Post-doctoral Trauinng	
Lejian Huang	5/09-present	Post-doctoral Training	
Javeria Hashmi	2/10-present	Post-doctoral Training	
Seamus Bhatt-Mackin	1/03-04	Medical Student	Residency in psych., Duke
Tiziano Colibazzi	8/04-6/05	Residency in psychiatry	

High School Students:

Riddhi Patel	10/00-6/01	
Tom Souhlas	10/00-6/01	
Purnima Chennamaneni	10/02-6/03	
Anna E. Gembis	10/02-6/03	
Yugarshi Mondal	6/04-03/05	Participating in Siemens Westinghouse Competition
Ting Wu	8/05-8/06	
Shivam Vedak	8/09-present	

Publications

1. Baliki MN, Geha PY, Fields HL, Apkarian AV. Predicting value of pain and analgesia: Nucleus accumbens response to noxious stimuli changes in the presence of chronic pain. Neuron. 2010 April 15; 66:149-160. PMID: 20399736

2. Centeno MV, Mutso A, Millecamps M, Apkarian AV. Prefrontal cortex and spinal cord mediated anti-neuropathy and analgesia induced by sarcosine, a glycine-T1 transporter inhibitor. Pain. 2009 Sept; 145:176-83. PMID: 19577367

3. Metz AE, Yau HJ, Centeno MV, Apkarian AV, Martina M. Morphological and functional reorganization of rat medial prefrontal cortex in neuropathic pain. PNAS. 2009 Feb 17; 106(7):2423-8. PMID: 19171885

4. Apkarian AV, Baliki MN, Geha PY. Towards a theory of chronic pain. Progress in Neurobiology. 2009 Feb;87:81-97. PMID: 18952143

5. Baliki MN, Geha PY, Apkarian AV. Parsing pain perception between nociceptive representation and magnitude estimation. J Neurophys. 2008 Dec 10;101:875-87. PMID: 19073802

6. Geha PY, Baliki MN, Harden RN, Bauer WR, Parrish TB, Apkarian AV. The brain in chronic CRPS pain: Abnormal gray-white matter interactions in emotional and autonomic regions. Neuron. 2008 Nov 26;60:570-81. PMID: 19038215

7. Baliki MN, Geha PY, Jabakhaji R, Harden N, Schnitzer TJ, Apkarian AV. A preliminary fMRI study of analgesic treatment in chronic back pain and knee osteoarthritis. Molecular Pain. 2008 Oct 25;4(47). PMID: 18950528

8. Geha PY, Baliki MN, Wang X, Harden RN, Paice JA, Apkarian, AV. Brain dynamics for perception of tactile allodynia (touch-induced pain) in posherpetic neuralgia. Pain. 2008 Sept 15;138:641-56. PMID: 18384958

9. Wang X, Bauer W, Chiaia N, Dennis M, Gerken M, Hummel J, Kane J, Kenmuir C, Khuder S, Lane R, Mooney R, Bazeley P, Apkarian A, Wall J. Longitudinal MRI evaluations of human global cortical thickness over minutes to weeks. Neuroscience Letters. 2008 Aug 22;441:145-8. PMID: 18603368

10. Apkarian AV. Pain perception in relation to emotional learning. Curr Opinion in Neurobiology. 2008 Aug;18:464-68. PMID: 18835354

11. Baliki MN, Geha PY, Apkarian AV, Chialvo DR. Beyond feeling: chronic pain hurts the brain, disrupting the default-mode network dynamics. J Neurosci. 2008 Feb 6;28(6):1398-1403. PMID: 18256259

12. Millecamps M, Centeno MV, Berra HH, Rudick CN, Lavarello S, Tkatch T, Apkarian AV. D-cycloserine reduces neuropathic pain behavior through limbic NMDA-mediated circuitry. Pain. 2007 Nov;132:108-123. PMID: 17449176

13. Zhao LR, Berra HH, Duan WM, Singhal S, Apkarian AV, Kessler JA. Beneficial effects of hematopoietic growth factor therapy in chronic ischemic stroke in rats. Stroke. 2007;38:2804-2811. PMID: 17761920

14. Cecchi GA, Rao AR, Centeno MV, Baliki M, Apkarian AV, Chialvo DR. Identifying directed links in large scale functional networks: application to brain fMRI. BMC Cell Biol. 2007 Jul 10;8 Suppl 1:S5. PMID: 17634095

15. Baliki MN, Geha PY, Apkarian AV. Spontaneous pain and brain activity in neuropathic pain: functional MRI and pharmacologic functional MRI studies. Curr Pain Headache Rep. 2007 Jun;11(3):171-7. Review. PMID: 17504643

16. Geha PY, Baliki MN, Chialvo DR, Harden RN, Paice JA, Apkarian AV. Brain activity for spontaneous pain of postherpetic neuralgia and its modulation by lidocaine patch therapy. Pain. 2007 Mar;128(1-2):88-100. Epub 2006 Oct 25. PMID: 17067740

17. Baliki MN, Apkarian AV. Neurological effects of chronic pain. J Pain Palliat Care Pharmacother. 2007;21(1):59-61. PMID: 17430834

18. Millecamps M, Centeno MV, Berra HH, Rudick CN, Lavarello S, Tkatch T, Apkarian AV. (2007) d-Cycloserine reduces neuropathic pain behavior through limbic NMDA-mediated circuitry. Pain. 132(1-2):108-23.

19. Zhao LR, Berra HH, Duan WM, Singhal S, Mehta J, Apkarian AV, Kessler JA. (2007) Beneficial effects of hematopoietic growth factor therapy in chronic ischemic stroke in rats. Stroke. 38(10):2804-11.(17761920)

20. Baliki MN, Chialvo DR, Geha PY, Levy RM, Harden RN, Parrish TB, Apkarian AV. Chronic pain and the emotional brain: specific brain activity associated with spontaneous fluctuations of intensity of chronic back pain. J Neurosci. 2006 Nov 22;26(47):12165-73. PMID: 17122041

21. Apkarian AV, Chialvo DR. The shadows of pain. Pain. 2006 Aug;123(3):221-2. Epub 2006 Jun 5. PMID: 16740363

22. Geha PY, Apkarian AV (2006). Pain and neuroanatomical effects: evidence for cortical reorganization. Psychiatric Times 23:22-24.

23. Apkarian AV, Scholz J. Shared mechanisms between chronic pain and neurodegenerative disease. Drug Discovery Today 2006.

24. Jabakhanji R, Foss JM, Berra HH, Centeno MV, Apkarian AV, Chialvo DR. (2006) Inflammatory and neuropathic pain animals exhibit distinct responses to innocuous thermal and motoric challenges. Molecular Pain 2:1. doi:10.1186/1744-8069-2-1.

25. Apkarian AV, Lavarello S, Randolf A, Berra HH, Chialvo DR, Besedovsky HO, del Rey A. (2006) Expression of IL-1beta in supraspinal brain regions in rats with neuropathic pain. Neuroscience Letters. doi:10.1016/j.neulet.2006.08.034.

26. Foss JM, Apkarian AV, Chialvo DR. Dynamics of pain: fractal dimension of temporal variability of spontaneous pain differentiates between pain States. J Neurophysiol. 2006 Feb;95(2):730-6. Epub 2005 Nov 9. PMID: 16282201

27. Small DM, Apkarian AV. Increased taste intensity perception exhibited by patients with chronic back pain. Pain. 2006 Jan;120(1-2):124-30. Epub 2005 Dec 19. PMID: 16360267

28. Baliki M, Katz J, Chialvo DR, Apkarian AV. Single subject pharmacological-MRI (phMRI) study: modulation of brain activity of psoriatic arthritis pain by cyclooxygenase-2 inhibitor. Mol Pain. 2005 Nov 2;1:32. PMID: 16266429

29. Apkarian AV, Bushnell MC, Treede RD, Zubieta JK. Human brain mechanisms of pain perception and regulation in health and disease. Eur J Pain. 2005 Aug;9(4):463-84. Epub 2005 Jan 21. Review. PMID: 15979027

30. Eguiluz VM, Chialvo DR, Cecchi GA, Baliki M, Apkarian AV. Scale-free brain functional networks. Phys Rev Lett. 2005 Jan 14;94(1):018102. Epub 2005 Jan 6. PMID: 15698136

31. Baliki M, Calvo O, Chialvo DR, Apkarian AV (2005) Spared nerve injury rats exhibit thermal hyperalgesia on an automated operant dynamic thermal escape Task. Molecular Pain. 2005 May 26;1(1):18.

32. Apkarian AV, Sosa Y, Sonty S, Levy RM, Harden RN, Parrish TB, Gitelman DR. Chronic back pain is associated with decreased prefrontal and thalamic gray matter density. J Neurosci. 2004 Nov 17;24(46):10410-5. PMID: 15548656.

33. Apkarian AV, Sosa Y, Krauss BR, Thomas PS, Fredrickson BE, Levy RE, Harden RN, Chialvo DR. Chronic pain patients are impaired on an emotional decision-making task. Pain. 2004 Mar;108(1-2):129-36. PMID: 15109516.

34. Chialvo DR. Critical brain networks. Physica A 340 (2004) 756 – 765.

35. Apkarian AV. Cortical pathophysiology of chronic pain. In: Pathological pain: from molecular to clinical aspects, Ed. Kumazawa, Novartis Publications, 2004, 239-255.

36. Apkarian AV; Sosa Y; Krauss B; Thomas PS; Fredrickson BE; Levy RE; Harden RN; Chialvo DR (2004) Chronic pain patients are impaired on an emotional decision-making task. Pain 108, 129-136.

37. Baliki M; Al-Amin HA; Atweh SF; Jaber M; Hawwa N; Jabbur SJ; Apkarian AV; Saade NE. (2003) Attenuation of neuropathic manifestations by local block of the activities of the ventrolateral orbito-frontal area in the rat. Neuroscience. 120(4):1093-104.

38. Galhardo, V., Apkarian, A.V., Lima, D., Peripheral inflammation increases functional coherency of spinal responses to tactile but not nociceptive stimulation. J. Neurophysiol. (2002) 88: 2096-2103.

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40. Khan, S.A., Apkarian A.V., Mastalgia and breast cancer: A protective association? Cancer Detec. Prev. (2002) 26(3): 192-196.

41. Khan, S.A., Apkarian, A.V., The characteristics of cyclical and non-cyclical mastalgia: a prospective study using a modified McGill Pain Questionnaire. Breast Cancer Res. Treat. (2002) 75(2): 147-157.

42. Grachev, I.D., Fredericksen B.E., and Apkarian, A.V. Brain chemistry reflects dual states of pain and anxiety in chronic low back pain. J. Neural Transmission (2002) 109: 15-33.

43. Apkarian, A.V., Thomas, S., Krauss, B.R. and Szeverenyi, N.M., Prefrontal hyperactivity in sympathetically mediated chronic pain. Neuroscience Letters (2001) 311:193-197.

44. Grachev, I.D. and Apkarian ,A.V., Chemical network of the living human brain. Evidence of reorganization with aging. Cognitive Brain Research (2001) 11:185-197.

45. Apkarian, A.V., Krauss, B.R., Frederickson, B.E. and Szeverenyi, N.M., Imaging the pain of low back pain: Functional MRI in combination with monitoring subjective pain perception allows the study of clinical pain-states. Neurosci. Letters (2001) 299:57-60.

46. Grachev, I.D., Swarnkar A., Szeverenyi, N.M, Ramachandran, T.S., and Apkarian, A.V., Aging alters the multichemical networking profile of the human brain: an in vivo 1H-MRS study of young versus middle-aged subjects. J. of Neurochemistry (2001) 77:292-303.

47. Brüggemann, J., Galhardo, V. and Apkarian, A.V., Immediate reorganization of the rat somatosensory thalamus following peripheral partial nerve ligation. J. of Pain (2001) 2:220-228.

48. Grachev, I.D., Fredrickson, B.E., Apkarian ,A.V., Dissociating anxiety from pain. Mapping neuronal marker N-acetyl-aspartate to perception distinguishes closely interrelated characteristics of chronic pain. Molecular Psychol. (2001) 6:256-260.

49. Grachev, I.D. and Apkarian, A.V., Aging alters regional multichemical profile of the human brain: an in vivo ^{1}H MRS study of young versus middle-aged subjects. J. of Neurochemistry (2001) 76:582-593.

50. Grachev, I.D. and Apkarian, A.V., Chemical heterogeneity of the living human brain: a proton MR spectroscopy study on the effects of sex, age, and brain region, NeuroImage (2000) 11:554-563.

51. Grachev, I.D. and Apkarian, A.V., Chemical mapping of anxiety in the brain of healthy humans: an *in vivo* ^{1}H MRS study on the effects of sex, age and brain region. Human Brain Mapping (2000) 11:261-272.

52. Grachev, I.D. and Apkarian, A.V., Anxiety in healthy humans is associated with orbital frontal chemistry. Molecular Psychiatry (2000) 5:482-488.

53. Apkarian, A.V., Grachev I.D., Krauss, B.R. and Szeverenyi, N.M., New directions for studying human brain pathophysiology of chronic pain states. Disability (2000) 9:17-23.

54. Treede, R.-D., Apkarian, A.V., Bromm, B., Greenspan, J.D., and Lenz, F.A., Cortical representation of pain: functional characterization of nociceptive areas near the lateral sulcus. Pain (2000) 87: 113-119.

55. Apkarian, A.V., Gelnar, P.A., Krauss, B.R. and Szeverenyi, N.M., Cortical responses to thermal pain depend upon stimulus size: an fMRI study. J. Neurophysiology (2000) 83: 3113-22.

56. Bolanowski, S.J., Maxfield, L.M., Gescheider, G.A. and Apkarian, A.V., The effects of stimulus location on the gating of touch by heat- and cold-induced pain, Somatosens. And Motor Res. (2000) 17:195-204.

57. Apkarian A.V., Shi T., Brüggemann J., and L.R. Airapetian, Segregation of nociceptive and non-nociceptive networks in the squirrel monkey somatosensory thalamus, J. Neurophysiology (2000) 84: 484-494.

58. Grachev, I.D., Fredericksen B.E., and Apkarian, A.V. Abnormal brain chemistry in chronic back pain: an *in vivo* proton magnetic resonance spectroscopy study. Pain (2000) 89:7-18.

59. Apkarian, A.V., Functional magnetic resonance of pain consciousness: cortical networks of pain critically depend on what is implied by “pain”. Current Review of Pain (1999) 3:308-315.

60. Apkarian,A.V., In search of pain consciousness or pain and the metaphysics of a Porsche 911. In: Saadé,N.E., Apkarian,A.V. and Jabbur,S.J. (Eds.), “Pain and Neuroimmune Interactions”, Kluwer Academic/Plenum Publishers, New York, 2000, pp. 193-208.

61. Shahverdian, A.Yu. and Apkarian, A.V., On irregular behavior of neuron spike trains, Fractals (1999) 7(1): 93-103.

62. Gelnar, P.A., Krauss, B.R., Sheehe, P.R., Szeverenyi, N.M. And Apkarian, A.V., Comparative fmri study of cortical representation for thermal painful, vibrotactile and motor performance tasks, NeuroImage (1999) 10: 460-482.

63. Apkarian, A.V., Darbar, A., Krauss, B.R., Gelnar, P.A. and Szeverenyi, N.M., Differentiating cortical areas related to pain perception from stimulus identification: temporal analysis of fMRI activity, J.Neurophysiol. (1999) 81:2956-2963.

64. Apkarian, A.V., Functional magnetic resonance imaging of pain consciousness: cortical networks of pain critically depend on what is implied by “pain”, Curr.Rev.Pain (1999) 308-315.

65. Krauss, B. and Apkarian, A.V., Group average activation maps of functional MRI: methodology of identifying group brain areas activated during painful thermal stimuli, motor and vibrotactile tasks in humans, Rivista di Neuroradiologia, (1998) 11(suppl.2): 135-138.

66. Apkarian, A.V. and Brüggemann, J., Visceral and somatic pain: the gift that nobody wants and everybody needs, Pain Forum, (1998) 7(3): 126-128.

67. Ivey, C., Apkarian, A.V. and Chialvo, D.R., Noise-induced tuning curve changes in mechanoreceptors, J. Neurophysiol., (1998) 79: 1879-1890.

68. Brüggemann, J., Shi, T. and Apkarian, A.V., Viscerosomatic interactions in the thalamic ventral posterolateral nucleus (VPL) of the squirrel monkey, Brain Res., (1998) 787: 269-276.

69. Gelnar, P.A., Krauss, B.R., Szeverenyi, N.M. and Apkarian, A.V., Fingertip representation in the human somatosensory cortex: an fMRI study, NeuroImage (1998) 7:261-283.

70. Brüggemann, J., Shi, T. and Apkarian, A.V., Viscero-somatic neurons in the primary somatosensory cortex (SI) of the squirrel monkey, Brain Res. 756 (1997) 297-300.

71. Newman, H.M., Stevens, R.T. and Apkarian, A.V., Direct spinal projections to limbic and striatal areas: anterograde transport studies from the upper cervical spinal cord and the cervical enlargement in squirrel monkey and rat, J.Comp.Neurol. 365 (1996) 640-658.

72. Apkarian, A.V., Primary somatosensory cortex and pain, Pain Forum 5 (1996) 188-191.

73. Shi, T. and Apkarian, A.V., Morphology of thalamocortical neurons projecting to the primary somatosensory cortex and their relationship to spinothalamic terminals in the squirrel monkey, J.Comp.Neurol. 361 (1995) 1-24.

74. Apkarian, A.V., Functional imaging of pain: new insights regarding the role of the cerebral cortex in human pain perception, Sem.Neurosci. 7 (1995) 279-293.

75. Apkarian, A.V. and Shi, T., Squirrel monkey lateral thalamus: I. Somatic nociresponsive neurons and their relation to spinothalamic terminals, J.Neurosci.(1994) 14:6779-6795.

76. Brüggemann, J., Shi, T. and Apkarian, A.V., Squirrel monkey lateral thalamus: II. Viscero-somatic convergent representation of urinary bladder, colon, and esophagus, J.Neurosci. (1994) 14:6796-6814.

77. Apkarian, A.V., Stea, R.A. and Bolanowski, S.J., Heat-induced pain diminishes vibrotactile perception: a touch gate, Somatosen.Motor Res.(1994)11:259-267.

78. Stevens, R.T., London, S.M. and Apkarian, A.V., Spinothalamocortical projections to the secondary somatosensory cortex (SII) in squirrel monkey, Brain Res. 631 (1993) 241-246.

79. Shi,T., Stevens, R.T., Tessier, J. and Apkarian, A.V., Spinothalamocortical inputs nonpreferentially innervate the superficial and deep cortical layers of SI, Neurosci.Lett. 160 (1993) 209-213.

80. Chialvo, D.R. and Apkarian, A.V., Modulated noisy biological dynamics: three examples, J.Stat.Physics 70 (1993) 375-391.

81. Krauss, B.R., Serog, B.J., Chialvo, D.R. and Apkarian, A.V., Dendritic complexity and the evolution of cerebellar Purkinje cells, Fractals, (1993) 95-102.

82. Stea, R.A. and Apkarian, A.V., Letter to the Editor, TINS, 15 (1992) 250-251.

83. Brandt, H.M. and Apkarian, A.V., Biotin-dextran: a sensitive anterograde tracer for neuroanatomic studies in rat and monkey, J.Neurosci.Meth. 45 (1992) 35-40.

84. Apkarian, A.V., Stea, R.A., Manglos, S.H., Szeverenyi, N.M., King, R.B. and Thomas, F.D., Persistent pain inhibits contralateral somatosensory cortical activity in humans, Neurosci.Lett. 140 (1992) 141-147.

85. Gingold, S.I., Greenspan, J.D. and Apkarian, A.V., Anatomic evidence of nociceptive inputs to primary somatosensory cortex: relationship between spinothalamic terminals and thalamocortical cells in squirrel monkeys, J.Comp.Neurol. 308 (1991) 467-490.

86. Smith, M.V., Apkarian, A.V. and Hodge, C.J.,Jr., Somatosensory response properties of contralaterally projecting spinothalamic and non-spinothalamic neurons in the second cervical segment of the cat, J.Neurophysiol. 66 (1991) 83-102.

87. Smith, M.V. and Apkarian, A.V., Thalamically projecting cells of the lateral cervical nucleus in monkey, Brain Res. 555 (1991) 10-18.

88. Stevens, R.T., Apkarian, A.V. and Hodge, C.J.,Jr., The location of spinothalamic axons within spinal cord white matter in cat and squirrel monkey, Somatosen.Motor Res. 8 (1991) 97-102.

89. Martin, R.J., Apkarian, A.V. and Hodge, C.J.,Jr., Ventrolateral and dorsolateral ascending spinal cord pathway influence on thalamic nociception in cat, J.Neurophysiol. 64 (1990) 1400-1412.

90. Hodge, C.J.,Jr. and Apkarian, A.V., The spinothalamic tract, Crit.Rev Neurobiol. 5 (1990) 363-397.

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94. Apkarian, A.V., Jyväsjärvi, E., Kniffki, K-D., Mengel, M.K.C. and Stieffenhofer, A., Activation of carotid sinus baroreceptors reduces pain sensations evoked by electrical and cold stimulation of human teeth, Proc.Finn.Dent.Soc. 85 (1989) 409-413.

95. Apkarian, A.V., Hodge, C.J.,Jr., Martin, R.J. and Stevens, R.T., A cryogenic device for reversibly blocking transmission through small regions of the spinal cord white matter, J.Neurosci.Meth. 29 (1989)93-106.

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97. Stevens, R.T., Hodge, C.J.,Jr. and Apkarian, A.V., Medial, intralaminar and lateral terminations of lumbar spinothalamic tract neurons: a fluorescent double-label study, Somatosen.Motor Res. 6 (1989) 285-308.

98. Apkarian, A.V., The primate spinothalamic pathways: cells of origin and terminations of the dorsolateral and ventral spinothalamic pathways in New World and Old World monkeys, (1988) Ph.D. Dissertation.

99. Jones, M.W., Apkarian, A.V., Stevens, R.T. and Hodge, C.J.,Jr., The spinothalamic tract: an examination of the cells of origin of the dorsolateral and ventral spinothalamic pathways in cat and squirrel monkey, J.Comp.Neurol. 260 (1987) 349-361.

100. Hodge, C.J.,Jr., Apkarian, A.V. and Stevens, R.T., Inhibition of dorsal horn cells by stimulation of Kölliker-Fuse nucleus, J.Neurosurg. 65 (1986) 825-833.

101. Stevens, R.T., Apkarian, A.V. and Hodge, C.J.,Jr., Sources of catecholaminergic innervation of the trigeminal nucleus caudalis in cat, Exp.Neurol. 90 (1985) 215-223.

102. Stevens, R.T., Apkarian, A.V. and Hodge, C.J., Funicular course of catecholamine fibers innervating the lumbar spinal cord of the cat, Brain Res. 336 (1985) 243-251.

103. Jones, M.W., Hodge, C.J.,Jr., Apkarian, A.V. and Stevens, R.T., A dorsolateral spinothalamic pathway in cat, Brain Res. 335 (1985) 188-193.

104. Apkarian, A.V., Stevens, R.T. and Hodge, C.J., Funicular location of ascending axons of lamina I cells, Brain Res. 334 (1985) 160-164.

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113. Apkarian, A.V., A mathematical model to determine threshold in implantable electrodes, Master's Thesis, University of Southern California, 1978.

Journal Covers

1. The Journal of Comparative Neurology, October 9, 1995. Volume 361, Number 1.
2. Pain, May/June 1996. Volume 65, Numbers 1-2,3
3. NeuroImage, May 1998. Volume 7, Number 4.
4. Pain, 2004.

Books

1. Pain Mechanisms and Management, S.N. Ayrapetyan and A.V. Apkarian (Eds.), IOS Press, Amsterdam, The Netherlands, 1998, ISBN: 90 5199 306 4.

2. Pain and NeuroImmune Interactions, N.E. Saadé, A.V. Apkarian and S.J. Jabbur (Eds.), Kluwer Academic/Plenum Publishers, New York, 1999.

Book Chapters

1. Robinson JP, Apkarian AV. Low back pain. In: Functional Pain Syndromes: Presentation and Pathophysiology, Ed. Emeran A. Mayer and M. Catherine Bushnell. pp23-53, 2009. IASP Press.

2. Apkarian, AV. Pain and Brain changes. In: Practical Management of Pain, Ed. P. Prithvi Raj. 2007.

3. Treede RD, Apkarian AV. Nociceptive processing in the cerebral cortex. In The Senses: A Comprehensive Reference. 2007, Elsevier.

4. Bushnell MC, Apkarian AV. Representation of pain in the brain. In: 5th edition of Wall and Melzack's Textbook of Pain, Eds. McMahon and Kotzenburg. pp107-124, 2006. London: Elsevier

5. Apkarian AV. Thalamus, clinical pain, human imaging. Encyclopedia of Pain. Eds. Robert F. Schmidt and William D. Willis. 3:2440-2441, 2005.

6. Apkarian AV. Thalamus, visceral representation. Encyclopedia of Pain. Eds. Robert F. Schmidt and William D. Willis. 3:2457-2460, 2005.

7. Apkarian AV. Nociceptive processing in the thalamus. Encyclopedia of Pain. Eds. Robert F. Schmidt and William D. Willis. 2:1389-1399, 2005.

8. Apkarian, A.V., Editor for Thalamus section for encyclopedia of pain. Wiley, 2005.

9. Geha PY, Apkarian AV. Brain imaging findings in neuropathic pain. Curr Pain Headache Rep. 2005 Jun;9(3):184-8. Review.

10. Apkarian AV. Cortical pathophysiology of chronic pain. Novartis Found Symp. 2004;261:239-45; discussion 245-61. PMID: 15469054.

11. Apkarian A.V., Cortical pathophysiology of chronic pain. In: Pathological pain: from molecular to clinical aspects, Ed. Kumazawa, Novartis Publications, 2004, 239-255.

12. Apkarian, A.V. Cortical pathophysiology of neuropathic pain: Human brain imaging studies and theories of neuropathic pain. In: Spinal Cord Injury Pain, ed. R. Yezierski, IASP Press 2002, 266-281.

13. Apkarian A.V., Grachev, I.D., Krauss B.R., and Szeverenyi N.M., Methods in imaging human brain pathophysiology of chronic pain. In: Methods in Pain Research, ed. L. Kruger, CRC press, 241-262, 2001.

14. Apkarian A.V., Grachev, I.D., Krauss B.R., and Szeverenyi N.M. Imaging brain pathophysiology of chronic CRPS pain. In: Complex Regional Pain Syndrome, ed. Harden, Janig, Baron, IASP Press 2001, 194-209.

15. Apkarian, A.V. and Shi, T., Thalamocortical connections of the cingulate and insula in relation to nociceptive inputs to the cortex. In: S.N. Ayrapetyan and A.V. Apkarian (Eds.) Pain Mechanisms and Management, IOS Press, Amsterdam, The Netherlands, 1998, pp. 212-220.

16. Apkarian, A.V., Pain perception and the role of thalamocortical inhibitory networks across organizational scales. In: S.N. Ayrapetyan and A.V. Apkarian (Eds.) Pain Mechanisms and Management, IOS Press, Amsterdam, The Netherlands, 1998, pp. 228-236.

17. Apkarian, A.V., Thalamic anatomy and physiology of pain perception: connectivity, somato-visceral convergence and spatio-temporal dynamics of nociceptive information coding. In: J.M. Besson, G. Guilbaud and H. Ollat (Eds.), Forebrain Areas Involved in Pain Processing, John Libbey Eurotext, Paris, France, 1995, Chap. 7, pp. 93-118.

18. Apkarian, A.V., Brüggemann, J., Shi, T. and Airapetian, L.R., A Thalamic model for true and referred visceral pain. In: G.F. Gebhart (Ed.), Visceral Pain, IASP Press, 1995, Seattle, Chap. 10, pp. 217-259.

19. Hodge, C.J., Jr., Apkarian, A.V., Martini, S. and Martin, R.J., Lateral thalamic nociception: the effects of interruption of transmission through the ventrolateral and the dorsolateral spinothalamic tracts. In: L. Pubols and B.J. Sessle (Eds.), Effects of Injury on Trigeminal and Spinal Somatosensory Systems, Alan R. Liss, Inc., New York, 1987, pp. 313-320.

Patents

"Apparatus and method for pain measurement" , by A.V. Apkarian.and D.R. Chialvo. U.S. Patent Application No. 10/906,125 Filing Date February 3, 2005.

"Method and compositions for treatment of chronic neuropathic pain" by A.V. Apkarian.
U.S. Patent Application No. 60/555,264 Filing Date March 22, 2004.
U.S. Patent Application No. 10/907,149 Filing Date March 22, 2005.
International Patent Application No. PCT/IB2005/050983, Filing Date March 22, 2005.
European Patent Application No. ep 05 718 544.9, Filing Date March 22, 2005 .

"D-cycloserine a new analgesic for chronic neuropathic pain", by A.V. Apkarian. Patent filed at USPTO. March 2005.

"Scale-invariant objective measure of presence and level of pain: AlgoScope", by A.V.Apkarian, and D.R. Chialvo. Patent filed at USPTO. February 2005.

"Algotrack: a novel thermal algesia assessment tool", by A.V. Apkarian, D.R. Chialvo, O. Calvo. Filed at USPTO as a provisional patent. December 2003.

"Interface for sound processing for cochlear implants in humans", by D.R. Chialvo and A.V. Apkarian. On file at the SUNY office of Technology Transfer, Albany, New York. 1992.

"Pain determination device", By A.V. Apkarian and N.M. Szeverenyi. Patent awarded in July 1999, licensed in 2003. Pat R1219-211.

Organized Symposia

Society for Neuroscience Meeting, San Diego, November 2007
"The Brain in Chronic Pain"

Organization of Human Brain Mapping, Toronto, June 2005.

Neurofest '98 with R. Barlow, June 13, 1998.
"Imaging the Brain", Syracuse, New York.

Computational Neuroscience Symposium with S. Bolanowski, April 1997.
"What Does the Brain Compute?", Syracuse, New York.

Society for Promotion of Science and Technology in Karabagh, September, 1996.
"International Symposium on the Application of the Theory of Metabolic Regulation to Pain", Karabagh, Armenia

Neurofest '96, Poster Session, April 1996.

"Implantation or Ablation? New Surgical Treatments for Parkinson's Disease", Syracuse, New York.

Computational Neuroscience Symposium with S. Bolanowski, March 1996.
"Imaging Pain: Science & Technology" Syracuse, New York

Computational Neuroscience Symposium with D. Pelli, February, 1995.
"Multineuronal Dynamics" Syracuse, New York

Computational Neuroscience Symposium with D. Pelli, August, 1994.
"Computing with Noisy Neurons", Syracuse, New York

Neurofest '94, Poster Session, April 1994. Syracuse, New York

Computational Neuroscience Symposium with D. Pelli, April, 1994.
"Object Recognition", Syracuse, New York

Neurofest '93, April 1993.
"Functional Neuroimaging of the Human Brain", Syracuse, New York

Computational Neuroscience Symposium with D. Pelli, November, 1992.
"Power Laws, Noise & Neural Code", Syracuse, New York

Invited Talks

1. Brain imaging of pain. Siena Pain Course, June 1, Italy, 2010.

2. Specificity and plasticity of the brain in chronic pain. Turkish Pain Society Meeting, Istanbul, May 26 2010.

3. fMRI in frequency space. Physiology seminars, May 12, Chicago, 2010.

4. Pain mechanisms: from the classical to the current view. Asrta-Zeneca meeting, April, Chicago, 2010.

5. Specificity and plasticity of the brain in chronic pain. Tokyo, March 2010.

6. Acute and chronic pain: specificity and plasticity. Gainsville, February 2010.

7. Classifying chronic pains by brain markers. Lilly, February, 2010.

8. Specificity and plasticity of the brain in chronic pain. Beirut, December 2009.

9. Specificity and plasticity of the brain in chronic pain. Medtronic, Minneapolis, November 2009.

10. Specificity and plasticity of the brain in chronic pain. IHC, Philadelphia, September 2009.

11. Le cerveau et la douleur chronique. Antal'j, May 15, 2009.

12. The brain in chronic back pain. NIH NCCAM workshop, May 2009.

13. Translating human brain imaging results to drug development for chronic pain: The D-cycloserine story. APS, Tampa, 2008.

14. The human brain in pain. Judicial seminar in emerging issues in Neuroscience, ABA. May 6, Chicago, 2008.

15. The human brain in chronic pain. AANS, April 20, Chicago, 2008.

16. The human brain in acute and chronic pain. Salpetrier, Paris, March 17, 2008.

17. The brain in chronic pain. Merck, Jan 25, 2008.

18. What is chronic back pain? Baylor, Dec 5, 2007.

19. The Brain in Chronic Pain. . New Jersey, Merck Nov 16, 2007

20. Brain imaging pathophysiology of Pain. New York University Current Review of pain Medicine, New York. November 8th, 2007.

21. Back Pain and Post-Herpetic Neuralgia. Symposium organizer and speaker. 2007 Neuroscience Meeting, San Diego. November 2nd, 2007.

22. The Brain in Pain: Specificity and plasticity. Frontiers in Pain Research Lecture Series 2007-2008. McGill Center for Research on Pain, Montreal, Canada. October 17th, 2007.

23. The Brain in Chronic Back Pain. . 4th World Congress. World Institue of Pain. WIP. Budapest, Hungary. September 2007.

24. The Role of the Brain in Acute & Chronic Pain. 2007 Research Summit. Westin Hotel, Rosemont, IL. . May 16-17, 2007.

25. The Role of the Brain in Chronic Pain. Asian Muscoloskeletal Society, Taipei (Taiwan). March 18th, 2007.

26. The Role of the Brain in Chronic Pain. Cancer Prevention & Control Seminar. Northwestern University, Chicago (USA). March 12th, 2007.

27. What is chronic pain?. DataBlitz, Northwestern University, Chicago. March 7th, 2007.

28. The Brain in Chronic Pain. South American Pain Consortium. Iguazu (Brazil). December 2nd, 2006.

29. Mechanisms of Neuropathic Pain. Cancer Center, Northwestern University, Chicago. October 31st, 2006.

30. Impact of Chronic Pain on the Brain. University of Main, Physiology Department, Frankfurt (Germany). October 26th, 2006.

31. Impact of chronic pain on the cortex. Pfizer FACTS, Frankfurt (Germany). October 26th, 2006.

32. Learning & memory deficits in chronic pain. 1st International Conference Synapses – Memory - Drug Addiction – Pain, Toronto. October 18th, 2006.

33. Pain & the Brain Pain & the Brain. Faculdade de Medicina da Universidade do Porto, Porto. October 2nd, 2006.

34. Impact of chronic pain on the cortex. Pain in Europe V. 5th Congress of the European Federation of IASP Chapters (EFIC). International Association for the Study of Pain (IASP). Istambul. September 13th, 2006.

35. Chronic Pain: The Brain View. 48th Annual Scientific Meeting of the American Headache Society, Los Angeles, California. June 24th, 2006.

36. The Brain in Chronic Pain: The view from within the brain. Medical University of Ohio Neuroscience Lecture. Toledo. May 24th, 2006.

37. The Brain in Chronic Pain: The view from within the brain. Grand Rounds Lutheran General Hospital, Physiology Department. May 17th, 2006.

38. Dynamics of spontaneous pain: A unique identifier of chronic pain conditions. Neuropathic Group, Northwestern University, Chicago. May 2nd, 2006.

39. The Brain in Chronic Pain. Lilly, Indianapolis . April 20th, 2006.

40. Mechanism based therapies for CIPN in breast cancer .Cancer Center, Northwestern University. Chicago. January 6th, 2006.

41. Translating human brain imaging to drug development for relief of chronic pain: The D-cycloserine story. Pain Lecture at University College London. London. November 7th, 2005.

42. Translating human brain imaging to drug development for relief of chronic pain: The D-cycloserine story. Lilly, Indianapolis. October 26th, 2005.

43. Translating human brain imaging to drug development for relief of chronic pain: The D-cycloserine story. Neuroscience Lecture at University of Chicago. Chicago. October 24th, 2005.

44. Role of the cortex in chronic pain. Rheumathology Grand Rounds. Northwestern University. Chicago. October 20th, 2005.

45. Translating human brain imaging to drug development for relief of chronic pain: The D-cycloserine story. Pain lecture. University of California, San Francisco. October 6th, 2005.

46. Translating human brain imaging to drug development for relief of chronic pain: The D-cycloserine story. Physiology Grand Rounds. Northwestern University. Chicago. September 14th, 2005.

47. What is chronic back pain? The brain imaging point of view. Midwest Pain Society Meeting. Chicago. September 9th, 2005.

48. What is chronic back pain? The brain imaging point of view. Neurosurgery Society Meeting. Standford. May 22nd, 2005.

49. Translating human brain imaging to drug development for relief of chronic pain. Northwestern University, Chicago. May 20th, 2005.

50. Translating human brain imaging to drug development for relief of chronic pain: The D-cycloserine story. Department of Pharmacology, University of Iowa, Iowa. May 3rd, 2005.

51. Translating human brain imaging to drug development for relief of chronic pain: The D-cycloserine story. Department of Pharmacology, University of Arizona. Tucson, Arizona. April 28th, 2005.

52. Translating human brain imaging to drug development for relief of chronic pain: The D-cycloserine story. Physiology Grand Rounds. Northwestern University. Chicago. April 5th, 2005.

53. Cartography of human brain in pain & Chronic Back Pain:The cortical viewpoint. Rehabilitation Institute of Chicago, Chicago. January 27th, 2005.

54. Chronic Back Pain: The cortical viewpoint. Winter Conference Brain Research, Colorado. January 23rd, 2005.

55. Translating brain imaging studies to drug development. Imperial College London, UK, June 2005.

56. Analgesic effects of D-cycloserine. U of Iowa, Iowa, May 2005.

57. Pain Hurts the brain: Multi-modal imaging of the brain in chronic pain. Pain Lecture at Harvard McLean Hospital. November 9th, 2004.

58. International Pain and Plasticity Research Group. Rome, Italy. November 20th, 2004.

59. Pain Hurts the brain: Multi-modal imaging of the brain in chronic pain. Yale University, New Heaven. November 8th, 2004.

60. Dynamics WIP Dynamics of Pain as Biomarker: Fractal properties of pain ratings. 3rd World Congress. World Institute of Pain, Barcelona (Spain). September 4th, 2004.

61. Human brain imaging, clinical interpretation & opportunity to develop new classof analgesics. 3rd World Congress. World Institute of Pain, Barcelona (Spain). September 4th, 2004.

62. Manifestations of pain at the supraspinal level: Chronic Back Pain. 3rd World Congress. World Institute of Pain, Barcelona (Spain). September 4th, 2004.

63. New strategies for pain drug development: Human brain imaging studies leading to a new class of analgesics ?. Northwestern University, Chicago. August 18th, 2004.

64. New strategies for pain drug development: Human brain imaging studies leading to a new class of analgesics?. Northwestern University, Chicago. July 23rd, 2004.

65. Brain mechanisms of chronic pain: Pain hurts the brain. Rheumatology Meeting. The European League Against rheumatism (EULAR), Berlin (Germany). June 9th, 2004.

66. Pain hurts the brain: Multi-modal brain imaging insights into the pathophysiology of chronic pain. Neurology Department, University of Wisconsin. Wisconsin. April 23rd, 2004.

67. Pain hurts the brain: Multi-modal brain imaging insights into the pathophysiology of chronic pain. International Association for the Study of Pain (IASP). March 4th, 2004.

68. Pain hurts the brain: Multi-modal brain imaging insights into the pathophysiology of chronic pain. Northwestern University, Chicago. February 5th, 2004

69. Pain hurts the brain: Brain gray matter atrophy in chronic back pain. International Rheumatology Meeting. The European League Against rheumatism (EULAR), Lisbon. December 14th, 2003.

70. Pain hurts the brain: Brain gray matter atrophy in chronic back pain.

71. Animal models of human pain conditions. Pfizer, London. December 12th, 2003.

72. Imaging brain pathophysiology of chronic pain. Novartis Pain Meeting, Tokyo (Japan). October 2nd, 2003.

73. Brain responses to Lidoderm therapy: fMRI study of PHN pain. Endo, San Francisco. September 21st, 2003.

74. Mechanisms of Neuropathic Pain: the cortical viewpoint. Midwest Pain Society Lecture. Chicago. September 19th, 2003.

75. Pain hurts the brain: brain gray- matter atrophy in chronic back pain.September 17th, 2003.

76. Multi-modal imaging of the human brain in pain. Medical School, American University of Beirut. Beirut (Libano). July 8th, 2003.

77. fMRI analysis of the brain as a massively connected network. DataBlitz, Northwestern University, Chicago. June 3rd, 2003.

78. Evaluating Pain at the Supraspinal Level: State of the art address. Euroanaesthesia 2003 in Glasgow. June 2nd, 2003.

79. Cortical Pathophysiology of Chronic Pain. Chicagoland Symposium. Functional MRI of the Brain in health Desease. Chicago. April 4th, 2003.

80. Acute and chronic pain: Single or multiple networks. American Pain Society, 22nd Annual Scientific Meeting, Chicago. March 22nd, 2003.

81. Cortical Plasticity Relevant to Chronic Pain?. American Pain Society, 22nd Annual Scientific Meeting, Chicago. March 20th, 2003.

82. Pain Specialist Mechanisms and Management of Acute and Chronic Pain.. American Pain Society, 22nd Annual Scientific Meeting, Chicago. March 12th, 2003

83. Framework for SupraSpinal Central Sensitization. Third International Pain & Plasticity Research Group Meeting, Miami. February 21st, 2003

84. Cortical pathophysiology of chronic pain. Japanese Pain Society Meeting, Tokyo, Japan, 2003.

85. Pain and cortical plasticity. Symposium organizer and speaker. 22nd American Pain Society Meeting 2003.

86. Arthiritis pain and COX2 inhibitors. International Pain & Plasticity Research Group. Miami 2003.

87. Cortical mechanisms of chronic pain. International Pain & Plasticity Research Group. Dublin 2002.

88. A cortical theory for chronic pain. University of western Ontario, London, Ontario, Canada, March 2002.

89. Non-Invasive brain imaging of chronic pain. Chicago Neuroscience Society, March 2001.

90. Brain imaging of chronic pain. Rehabilitation Institute of Chicago, September 2001.

91. Chronic neuropathic pain and brain imaging. Dor 2000, Porto, Portugal, September 2000.

92. Brain imaging of chronic pain. BioMedical Engineering, Northwestern University June 2001.

93. Brain imaging of chronic pain, Cognitive Neurology and Alzheimer's Disease Center, Northwestern University, October 2001.

94. Brain imaging of chronic neuropathic pain conditions. International Association for the Study of Pain Symposium on Spinal Cord Injury, Phoenix, Arizona, March 2001.

95. Chronic pain and cortical dysfunction. German Pain Society Meeting, Hamburg, Germany, October 2000.

96. Prefrontal abnormalities in CRPS patients. International Association for the Study of Pain Symposium on CRPS, Cardiff Wales, October, 2000.

97. Prefrontal abnormalities in chronic pain. Symposium on Cortex and Pain. Second Spring Conference on Pain. Grand Cayman, BWI, May 2000.

98. Thalamocortical dynamics of interactions between the senses of touch and pain. Winter Conference on Brain Research, January 2000.

99. Current advances in diagnostic brain imaging tools for pain. The World Foundation for Pain Relief and Research, Inc. Current Concepts in Acute, Chronic, and Cancer Pain Management, New York, New York, December 1999.

100. Imaging pain consciousness. Neurology/Neurosurgery Grand Rounds, SUNY Health Science Center at Syracuse, September 1999.

101. The role of secondary somatosensory cortex in pain. 9th World Congress on Pain, Vienna, Austria, August, 1999.

102. Psychophysical, electrophysiological, and human brain imaging techniques exploring central representation for pain. Orbeli Institute of Physiology, Yerevan, Armenia, June 1999.

103. Functional imaging of clinical pains. Yerevan State University, Yerevan, Armenia, June 1999.

104. Stochastic Resonance and Touch Perception. Physics Institute of Yerevan, Armenia, June 1999.

105. Imaging Pain Consciousness. First International Neuroscience Meeting in Beirut, Lebanon, May 1999.

106. Dynamics of thalamic coding of noxious inputs. Pain Symposium, NIH, November, 1998.

107. Imaging the Brain in Pain with fMRI. Funktionelle Bildgebung bei Schmerz, Munich, Germany, September, 1998.

108. Technical issued regarding fMRI studies of pain. Johannes Gutenberg University, Mainz, Germany, September 1998.

109. Imaging the Brain in Pain. University of Minnesota, Minneapolis, Minnesota, July, 1998.

110. Stochastic Resonance and Mechanoreceptor Tuning Curves. First International Conference on Stochastic Resonance in Biological Systems, Arcidosso, Italy, May, 1998.

111. Cortical Pathophysiology of Pain: Functional Brain Imaging Studies. Chinese Association for the Study of Pain, Taipai, Taiwan, March 1997.

112. Dynamics of Nociceptive Information Transmission in the Thalamus. Neurology/Neurosurgery Grand Rounds, SUNY Health Science Center at Syracuse, February 1997.

113. Thalamocortical neural networks involved in pain perception: fMRI and electrophysiology. Neuroscience Seminar to College of Graduate Studies, SUNY Health Science Center at Syracuse, January 1997.

114. Representation of noxious stimuli and Pain in Thalamocortical Circuits: Electrophysiologic and Functional Imaging Studies. 3rd Meeting of the Portuguese Neuroscience Society, Porto, Portugal, December, 1996.

115. Symposium: Imaging Pain: Science & Technology, March, 1996. Syracuse, New York.

116. Symposium: Brain imaging of chronic pain, November, 1995. American Pain Society 14th Annual Scientific Meeting, Los Angeles, California.

117. Physiology and anatomy of cervicotrigeminal relay, September, 1995. North American Cervicogenic Headache Conference, Toronto, Canada.

118. Thalamic and cortical mechanisms of pain, human brain imaging and multielectrode studies, August, 1995. Department of Psychology & Beckman Institute, University of Illinois, Urbana, Illinois.

119. Brain imaging of pain, July, 1995. Biophysics Center of the Armenian National Academy of Science, Yerevan, Armenia.

120. Reciprocal reversal of frontal and parietal cortical pain activations by blocking chronic RSD pain: an fMRI study, June, 1995. 1st International Conference on Functional Mapping of the Human Brain, Paris, France.

121. Dynamics of somatovisceral coding in thalamus, June, 1995. Physiologisches Institut der Universitat Wurzburg, Wurzburg, Germany.

122. Thalamocortical circuits involved in pain perception: physiologic and functional MRI studies, May, 1995. Dinard, France.

123. Thalamocortical circuits of pain, January, 1993. Hammersmith Hospital Cyclotron Unit, London, England.

124. Thalamocortical pain circuits and computational models of information processing in the brain, January, 1993. Armenian Academy of Science, Yerevan, Armenia.

125. Workshop: Physiologic and psychophysical measures of noise modulated signal, May, 1992. First Experimental CHAOS Conference, sponsored by the Office of Naval Research, West Palm Beach, Florida.

126. Symposium: Role of the upper cervical spinal cord in nociception, October, 1992. American Pain Society Meeting, San Diego, California.

127. Symposium: Thalamic mechanisms of nociception, October, 1992. Society for Neuroscience Meeting in Anaheim, California.

128. Workshop: The primate posterior somatosensory thalamus in relation to pain, February, 1992. Winter Conference on Brain Research (WCBR), Steamboat Springs, Colorado.

129. Thalamocortical pain pathways, April 1991. Institute for Sensory Research, Syracuse University, Syracuse, New York.

130. Changes in cortical regional blood flow following painful stimulation using SPECT and MRI, January, 1991. Radiology Research Seminar, SUNY Health Science Center, Syracuse, New York.

131. Function of ascending DLF fibers, March, 1990. International Association for the Study of Pain (IASP), Adelaide, Australia.

132. Primate spinothalamic tracts: cells of origin, thalamic terminations and cortical connectivity, October, 1989. The American Pain Society, Phoenix, Arizona.

133. Primate spinothalamic pathways, February, 1989. University of Erlangen, Erlangen, Federal Republic of Germany.

134. The dorsolateral spinothalamic pathway in cat and monkey, February, 1989. Physiologische Institut, University of Wurzburg, Wurzburg, Federal Republic of Germany.

135. Symposium on anatomical and functional characteristics of the spinothalamic tract, January, 1989. Winter Conference on Brain Research, Utah.

136. Workshop: Is the notion of specific pathways conveying specific functions moribund in the field of nociception? or, how to squeeze five functions into a dozen pathways, January, 1989. Winter conference on Brain Research, Utah.

137. Contemplating pain, February, 1988. Neurosurgery Department, SUNY Health Science Center, Syracuse, New York.

138. The primate spinothalamic pathway, December, 1988. INSERM, Paris, France.

139. Spinothalamic pathways in the primate, November, 1987. Neuroscience Meeting, New Orleans, Louisiana.

140. The dorsolateral spinothalamic tract: a new model for nociception, May, 1987. Neurobiology and Anesthesiology Branch of National Institutes of Health, Bethesda, Maryland.

141. The dorsolateral spinothalamic tract: a new model for nociception, May, 1987. Marine Biomedical Institute, University of Texas, Medical Branch, Galveston, Texas.

142. Symposium on nociceptive pathways, January, 1987. Winter Conference on Brain Research, Colorado.

Teaching

2005-2007: Fundamentals of Neuroscience Graduate course in NUIN, lectures: on somatosensation, pain, addiction, energy regulation.

2005, 2007: Neurobiology of pain Graduate course in NUIN.

2001-2004:

1. Biological Imaging: Principles and Applications Course Director: Philip Hockberger (IGP-415 or BME 495).
2. Topics in Cognitive Neuroscience Course Director: Jim Houk (NUIN 499).
3. Cognitive Neurology Seminar Course Director: Dana Small.
4. Neuroscience for Medical Students CourseDirector: Jim Baker.

1989-2000:

1. Lectures in experimental methods for medical students.
2. Course on pain mechanisms
3. Course on computational neuroscience

Abstracts over 150 published, available upon request

1. Baria AT, Baliki MN, Parks EL, Apkarian AV. A wiring rule for the insula based on DTI. 39th Annual Meeting Society for Neuroscience, Chicago IL, USA Oct 17-21, 2009. Society for Neuroscience Abstracts 790.4

2. Mutso AA, Radulovic J, Apkarian AV. Neuropathic pain modulates hippocampus mediated emotional behavior. 39th Annual Meeting Society for Neuroscience, Chicago IL, USA Oct 17-21, 2009. Society for Neuroscience Abstracts 857.6

3. Parks EL, Baria AT, Baliki MN, Apkarian AV. Chronic pain and the perceived value of monetary reward. 39th Annual Meeting Society for Neuroscience, Chicago IL, USA Oct 17-21, 2009. Society for Neuroscience Abstracts 653

4. Chanda ML, Parks EL, Baria AT, Geha PY, Baliki MN, Schnitzer TJ, Apkarian AV. A double-blind placebo-controlled study of the effects of lidocaine patch therapy on brain activity for spontaneous pain. 39th Annual Meeting Society for Neuroscience, Chicago IL, USA Oct 17-21, 2009. Society for Neuroscience Abstracts 358.13

5. Baliki MN, Fields HL, Apkarian AV. Nucleus accumbens responses to painful aversive and rewarding stimuli change in chronic pain. 39th Annual Meeting Society for Neuroscience, Chicago IL, USA Oct 17-21, 2009. Society for Neuroscience Abstracts 74.15

6. Parks EL, Geha PY, Baliki MN, Apkarian AV. Pressure-induced pain perception in knee osteoarthritis: psychophysics and related brain activity. Organization for Human Brain Mapping Annual Meeting, San Francisco CA, 2009

7. Baliki MN, Parks EL, Apkarian AV. Different clinical chronic pain conditions activate the cortex in unique patterns. Organization for Human Brain Mapping Annual Meeting, San Francisco CA, 2009
8. Baliki MN, Apkarian AV. Interaction between chronic and acute pain: down-regulation of motivational value for relief from acute pain. Organization for Human Brain Mapping Annual Meeting, San Francisco CA, 2009

9. Geha PY, Baliki MN, Harden NR, Parrish TB, Bauer WR, Apkarian AV. The brain in chronic CRPS pain: Abnormal gray-white matter interactions in emotional and autonomic areas. 38th Annual Meeting Society for Neuroscience, Washington, DC. USA Nov 15-19, 2008. Society for Neuroscience Abstracts 175.25

10. Baliki MN, Geha PY, Chialvo DR, Apkarian AV. Central cortical module for magnitude estimation in the human brain. 38th Annual Meeting Society for Neuroscience, Washington, DC. USA Nov 15-19, 2008. Society for Neuroscience Abstracts 175.2

11. Parks EL, Geha PY, Baliki MN, Apkarian AV. The relationship between pain and pressure in knee osteoarthritis. 38th Annual Meeting Society for Neuroscience, Washington, DC. USA Nov 15-19, 2008. Society for Neuroscience Abstracts 175.18

12. Centeno MV, Apkarian AV. Sarcosine, a glycine reuptake inhibitor acts as an analgesic in an animal model for neuropathic pain. 38th Annual Meeting Society for Neuroscience, Washington, DC. USA Nov 15-19, 2008. Society for Neuroscience Abstracts 569.10

13. Montoyal P, Geha P, Baliki M, Apkarian AV, Chialvo DR. Differences in the temporal dynamics of daily activity between chronic pain patients and healthy controls. 37th Annual Meeting Society for Neuroscience, San Diego CA. USA Nov3-7, 2007. Society for Neuroscience Abstracts 70.11

14. Baliki MN, Geha PY, Apkarian AV, Chialvo DR. Beyond feeling: chronic pain hurts the brain disrupting the default-mode network dynamics. 37th Annual Meeting Society for Neuroscience, San Diego CA. USA Nov 3-7, 2007. Society for Neuroscience Abstracts 825.2.

15. Geha PY, M. Baliki MN, Wang X, Harden RN, Paice JA, Apkarian AV. Brain dynamics for perception of tactile allodynia (touch-induced pain) in postherpetic neuralgia. 37th Annual Meeting Society for Neuroscience, San Diego CA. USA Nov 3-7, 2007. Society for Neuroscience Abstracts 70.17.

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17. Baliki MN, Geha PY, Harden NR, Apkarian AV. Modulation of brain activity in chronic back pain but not in osteoarthritis patients by Lidocaine treatment. 37th Annual Meeting Society for Neuroscience, San Diego CA. USA Nov 3-7, 2007. Society for Neuroscience Abstracts 825.15.

18. Geha PY, Baliki MN, Bauer W, Harden RN, Chialvo DR, Apkarian AV. Fractional anisotropy of white matter tract contrasted between complex regional pain syndrome and normal controls. Organization for Human Brain Mapping Annual Meeting, Chicago, 2007.

19. Geha PY, Chialvo DR, Apkarian AV. Dissociating nociception from magnitude rating in the human brain, Marwan N. Baliki . Organization for Human Brain Mapping Annual Meeting, Chicago, 2007.

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25. Baliki MN, Chialvo DR, and Apkarian AV. Brain Activity Differences Between Back Pain Patients And Healthy Subjects For Acute Thermal Pain. 35th. Annual Meeting Society for Neuroscience Washington, DC. USA 2005. Society for Neuroscience Abstracts 53.8

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29. Geha PY, Katz JA, Jabakhanji RJ, Chialvo DR, Apkarian AV. Brain activity for osteoarthritis pain: an fMRI pharmacological study. 11th Annual Meeting of the Organization for Human Brain Mapping Toronto, Ontario. Canada 12-16 Jun, 2005 Human Brain Mapping Abstracts.

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44. Baliki MN, Calvo O, Chialvo DR, and Apkarian AV. Temporal Dynamics of Acute Pain Perception. Society for Neuroscience Annual Meeting, New Orleans, 2003.

45. Bhatt-Mackin SM; Small DM, Calder AJ, Apkarian AV. Changes in taste perception and emotional face recognition in chronic back pain. Society for Neuroscience Annual Meeting, New Orleans, 2003.

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61. J. Brueggemann, Y. Kim, D.R. Chialvo, A.V. Apkarian. Cortical population dynamics for pain. Soc. Neurosci. (2001).

62. N.E. Saade, C. El Khoury, A.V. Apkarian, N. Hawwa, S.F. Atweh, S.J. Jabbur. Immediate and long-term effects of dorsal column (DC) lesion on allodynia in mononeuropathic rats. Soc. Neurosci. (2001).

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