
BIOGRAPHICAL SKETCH

NAME Paul Shapshak, PhD	POSITION TITLE		
eRA COMMONS USER NAME PaulShapshakPhD	Adjunct Professor, University of South Florida, College of Medicine, Division of Infectious Disease and International Medicine, Depts. of Medicine and Psychiatry & Beh Med		
EDUCATION/TRAINING (<i>Begin with baccalaureate or other initial professional education, such as nursing, and include</i>)			
INSTITUTION AND LOCATION	DEGREE	YEAR(s)	FIELD OF STUDY
Harvard College, Cambridge, MA	B.A.	1963	Biochemical Sciences
N.Y. University Medical Center, NYC, NY	-	1963-64	Biochemistry
Princeton University, Princeton, NJ	Ph.D.	1969	Biochemistry
University of Wisconsin, Madison, WI	Post-doctoral	1972-1973	Molecular Virology
NICHHD, NIH, Bethesda, MD	Staff Fellow	1973-1975	Molecular Biology

A. POSITIONS AND HONORS**Positions and Employment**

1969-1971	Res Assoc, Lab. for Planetary Studies, Center for Radiophysics & Space Research, Cornell Univ, Ithaca, NY
1971-1972	Post-doctoral Fellow, Department of Applied Physics, Cornell University, School Engineering, Ithaca, NY
1972-1973	Post-doctoral Fellow, Biophysics Laboratory, University of Wisconsin, Madison WI
1973-1973	Senior Sci, Advanced System Laboratory, Litton Bionetics, Inc. Frederick Cancer Res. Center, Ft. Detrick, MD
1973-1975	Staff Fellow, NICHHD, NIH, Bethesda, MD
1975-1977	Post-doc Scholar, Dept. of Microbiology and Immunol, Pathology, UCLA School of Medicine, Los Angeles, CA
1977-1978	Manager of the R&D Biochemistry Laboratory, Redken Laboratories, Inc. 14721 Califa Street, Van Nuys, CA.
1979-1986	Assistant Professor, Department of Pediatrics, Harbor-UCLA medical Center, Torrance, CA
1986-1988	Associate Professor, Department of Neurology and Pediatrics, UCLA School of Medicine, Los Angeles, CA
1981-1988	Chief, Immunology and Molec Virology, Neurology Research, VAMC Wadsworth Division, Los Angeles, CA
1988-1990	Chief, Molec Viral Pathology, Dept. of Res & Dermatology, Mount Sinai Medical Center, Miami Beach, FL
1988-1990	Adjunct Assoc. Prof, Department of Pathology and Neurology Univ. of Miami School of Medicine, Miami, FL
1990-1992	Res Assoc. Prof, Dept. of Psych, Pathol, & Neurol, Compr Drug Res Center, Univ. of Miami Med School, Miami, FL
1992-2007	Res Prof, Dept. of Psychiatry, Pathol, & Neurol, Compr Drug Res Center, Univ. of Miller School of Med, Miami, FL
2007- Jun 2008	Res Prof, Depts. of Psychiatry & Beh Med, Int. Med. (Div. Infect Dis), USF Health, Tampa, FL
Jul-Nov 2008	Res Prof, Div. Infect Dis, Dept. of Int. Med. and Adj Prof Psychiatry & Beh Med, USF Health, Tampa, FL
2008 Dec- present	Adj Prof, Div. Infect Dis, Dept. of Int. Med. and Adj Prof Psychiatry & Beh Med, USF Health, Tampa, FL

Other Experience and Professional Memberships

1983-1988	Associate Member, UCLA Jonsson Comprehensive Cancer Center
1986	Guest Lecturer, Swedish Neuroscience Society (Sweden) and Medical Offices, SAS Headquarters (Denmark)
1983-present	Health Career Advisory Service, Faculty of Arts and Sciences, Harvard University and Princeton University
1988	Publication archives, Harvard University Widener Library
1999	Invited speaker at NINDS, NIDA, CPDD, NASA-AMES, Chinese Acad Med, Dean's Res. Award, Univ. of Miami Med. School
1989-2006	Member and Chairman, study sections, NIH
1998-present	Reviewer & Mentor for International AIDS Society and Congress
Aug 2006	Managing Editor, Frontiers in Biosciences (NeuroAIDS/Drug Abuse/Infectious Dis). International Post-Genetics Society (Founding Member), Society for Bayesian Analysis (Member). International AIDS Congress (XVI th), Toronto, CN
	Co-Chairman of two sessions: 1. HIV Evolution and Heterogeneity; 2. HIV Immunology. Biological Proc Online Editor Bioinformation; Editorial Board AIDS

Awards and Honors

1959-1963	Harvard Coll. Scholarship
1963-1964	NYU Med. Center Honors Program Scholarship
1964-1969	NIH Predoctoral Fellowship
1965-1969	Resident Fellow, Princeton University
1969	Travel Fellowship from the National Research Council (National Acad Sci), Washington, DC, to attend the Third International Biophysics Congress, MIT, Cambridge, Massachusetts

B. SELECTED PEER-REVIEWED PUBLICATIONS (from total of 170 publications and 192 abstract/presentations)

1. Stewart RV, **Shapshak P**, et al., Effects of cocaethylene on surface marker expression of HIV-1 infected macrophages isolated from human brain using antibody-coated magnetic beads: a preliminary study, *Vision Res*, 4:66-72, 1997.
2. Segal D, **Shapshak P**, Zhang B, et al., Novel tetrameric tip motifs (APGK and VPGK) in the V3 loop of HIV-1 envelope sequence in blood & brain from two IDUs in Miami, Florida, *AIDS Res and Hum Retrovir*, 13, 1643-1646, 1997.
3. Fujimura RK, **Shapshak P**, Feaster D, Epler M, and Goodkin K. A rapid method for comparative quantitative PCR of HIV-1 proviral DNA extracted from cryopreserved brain tissues, *J of Virol Methods*. 67: 177-187, 1997.
4. Fiala M, Looney DJ, Stins M, Way D, Zhang L, Gan X, Chiappelli F, Schweitzer ES, **Shapshak P**, et al: TNF- α enhancement of HIV paracellular passage across a brain endothelial cell barrier, *Molec Medicine*, 3:553-564, 1997.
5. Delgado S, **Shapshak P**, Stewart RV, Rodriguez de la Vega P, Benjamin S and Bradley W. Heterogeneity of macrophages in the peripheral nervous system in HIV infected individuals. *J of Neuro AIDS*. 5: 79-97, 1998.
6. Goodkin K, **Shapshak P**, et al, Cocaine abuse and HIV-1: *Epidemiol. and Neuropath. Spec. Issue, J. of Neuroimm*, 83:88-101, 1998.
7. Xin KQ, Hamajima K, Sasaki S, Honsho A, Tsuji T, Ishii N, Cao XR, Lu Y, **Shapshak P**, and Okuda K. Intranasal administration of HIV-1 DNA vaccine with IL-2 expression plasmid enhances cell-mediated immunity against HIV, *Immun*, 94, 438-444, 1998.
8. Segal D, Perez M, and **Shapshak P**, Oxandrolone used for the treatment of wasting disease in HIV-1 infected patients does not diminish the antiviral activity of deoxynucleoside analogs in lymphocyte & macrophage cell cultures, *JAIDS*, 20:215-219, 1999.
9. **Shapshak P**, Segal DM, et al, Independent evolution of HIV-1 in different brain regions, *AIDS Res & Hu Retr*, 15:811-820, 1999.
10. Petito CK, Kerza-Kwiatecki AP, Gendelman HE, McCarthy M, Nath A, Podack ER, **Shapshak P** & Wiley CA. Neuronal injury in HIV infection, *J of Neurovirology*, 5:327-341, 1999.
11. **Shapshak P**, Fujimura RK, Page JB, Segal D, Yang J, Shah SM, Chitwood DD, and McCoy CB, HIV-1 RNA load in needle/syringes from shooting galleries in Miami: a preliminary laboratory report, *Drug and Alcohol Dependence*, 58:153-157, 2000.
12. **Shapshak P**, Fujimura RK, Goodkin K: Dementia and the Neurovirulence of HIV-1, *CNS Spectrums. Int. Psych. J*, 5:31-42, 2000.
13. **Shapshak P**, Torres-Munos J, and Petito CK, *Bioinformatics in Neurodegenerative Disease, Proc. Virt. Conf. Genom. and Bioinf.* www.ndsu.edu/virtual-genomics North Dakota State University, USA. October 15-16, 2001.
14. **Shapshak P**, Stewart RV, Rodriguez de la Vega P, Dominguez B, Fujimura R, Segal DM, Petito C. Brain macrophage surface marker expression with HIV-1 infection & drug abuse; a preliminary study, *J. of NeuroAIDS*, 2, 37-50, 2002.
15. Minagar A, **Shapshak P**, Heyes M, Fujimura R, Eisdorfer C, and Ownby R. Microglia and Astrocytes in Neuro-AIDS, Alzheimer's Disease, and Multiple Sclerosis. *J Neurological Sciences*, 202, 13-23, 2002.
16. **Shapshak P** and Stengel R, *Discovering Brain Mechanisms and the rules of Molecular Biology*, 6th World Multiconference on Systemics, Cybernetics and Informatics, www.iis.org/sci2002/ Orlando, FL, July 14-18, 2002.
17. Kuljis RO, **Shapshak P**, Rodriguez P, & Petito C, Increased density of Neurons containing NADPH diaphorase/nitric oxide synthase in the cerebral cortex of patients with HIV-1 infection & drug abuse, *J of NeuroAIDS*, 2, 19-36, 2003.
18. **Shapshak P**, Duncan D, Minagar D, Rodriguez de la Vega P, Stewart R, Petito CK, Elevated expression of IFN- γ in the HIV-1 infected brain, *Frontiers in Bioscience*, 9, 1073-1081, 2004.
19. **Shapshak P**, Duncan R, Torres-Munoz JE, Duran EM, Minagar A, and Petito CK, Analytic approaches to differential Gene Expression in AIDS vs. Control Brains, *Frontiers in Bioscience*, 9, 2935-2946, 2004.
20. Minagar A, **Shapshak P**, Duran EM, Kablinger AS, Alexander JS, and Kazic T, Gene expression in HIV-Associated Dementia, Alzheimer's dis, Multiple Sclerosis, & Schizophrenia, *J Neurological Sciences*, 224, 3-17, 2004.
21. McCoy CB, Metsch LR, Collado-Mesa F, Messiah SE, Katz D, & **P Shapshak**, The prevalence of HIV-1 and HCV among injection drug users who use high risk inner-city locales in Miami, Florida, *Mem Inst Oswaldo Cruz, Rio de Janeiro*, 99, 789-793, 2004.

22. Sakharkar Meena K., Vincent T. K. Chow, Kingshuk Ghosh, Iti Chaturvedi, Pern Chern Lee, Sundara Perumal Bagavathi, Paul **Shapshak**, Subramanian Subbiah, and Pandjassaram Kanguane, Computational Prediction of seg (single exon gene) function in humans, *Frontiers in Bioscience* 10, 1382-1395 May 1, 2005.
23. Pandjassaram Kanguane, Meena Kishore Sakharkar, Ganapathy Rajaseger, Subhashini Bolisetty, Balasubramanian Sivasekari, Bing Zhao, Manickam Ravichandran, Paul **Shapshak**, and Subramanian Subbiah, A Framework To Sub-Type HLA Supertypes, *Frontiers in Bioscience*, 10, 879-886, January 1, 2005.
24. **Shapshak** P, Alireza Minagar, Elda M. Duran, Fabiana Ziegler, Wade Davis, Raman Seth, and Toni Kazic, Gene Expression in HIV Associated Dementia, In: *Inflammatory Disorders Of The Nervous System, Clinical Aspects, Pathogenesis, and Management*, Edited by: Alireza Minagar, MD and J. Steven Alexander, PhD, Published by: Humana Press, Totowa, NJ, 2005, pp. 305-318.
25. Minagar, Alireza, Paul **Shapshak**, and J. Steven Alexander, Pathogenesis of HIV associated Dementia and Multiple Sclerosis: role of microglia and astrocytes, in *The Role of Glia in neurotoxicity*, 2nd Edition, Edited by Michael Aschner and Lucio G. Costa, CRC Press (Boca Raton, Florida), 2005, Chapter 16, pp. 263-278.
26. Li L, Gunasekaran K, Gan JG, **Shapshak**, P, Sakharkar MK, and Kanguane P, Structural features differentiate the mechanism between 2S (s state) and S (3 state) folding of homodimers, *Bioinformatics*, 1, 42-49, 2005.
27. Fujimura Robert K, Imad Khamis, Paul **Shapshak**, and Karl Goodkin. Regional quantitative comparison of Multispliced to Unspliced ratios of HIV-1 RNA copy number in infected human brain. *Journal of NeuroAIDS*, 2, 45-60, 2005.
28. **Shapshak** P, Duncan R, McCoy CB, Page JB, Real Time Reverse Transcriptase PCR Method for Quantification of HIV gag RNA, *Frontiers in Bioscience*, 10, 135-142, 2005.
29. Duran, Elda M, Paul **Shapshak**, Jason Worley, Fabiana Ziegler, Shannon Haliko, Irina Moleon-Borodowsky, and Patrick Haslett, Presenilin-1 Detection In Brain Neurons And Foxp3 In Peripheral Blood Mononuclear Cells: Normalizer Gene Selection For Real Time Reverse Transcriptase PCR Using The $\Delta\Delta C_t$ Method, *Frontiers in Biosciences*, *Frontiers in Bioscience*, 10, 2955-2965, September 1, 2005.
30. Minagar, Alireza and Paul **Shapshak**, HIV associated Dementia: Clinical features and pathogenesis, in *NEURO-AIDS*, Edited by Alireza Minagar & Paul **Shapshak**, Nova Science Publ (Hauppauge, New York), 2006.
31. **Shapshak** Paul, Robert Duncan, Avindra Nath, Jadwiga Turchan, Pandjassaram Kanguane, Hector Rodriguez, E. Margarita Duran, Fabiana Ziegler, Eric Amaro, Apple Lewis, Alejandro Rodriguez, Alireza Minagar, Wade Davis, Raman Seth, Francesco Chiappelli, and Toni Kazic, Gene Chromosomal Organization and Expression in Cultured Human Neurons Exposed to Cocaine and HIV-1 proteins gp120 and tat: Drug Abuse and NeuroAIDS, *Frontiers in Biosciences*, 11, 1774-1793, 2006.
32. **Shapshak** Paul, Robert Duncan, Jadwiga Turchan, Avindra Nath, Alireza Minagar, Pandjassaram Kanguane, Wade Davis, Francesco Chiappelli, Fatten Elkomy, Raman Seth, Toni Kazic' *Bioinformatics Models In Drug Abuse And NeuroAIDS: Using And Developing Databases*, *BIOINFORMATION*, 1 (3), 86-88, 2006.
33. Goodkin K, O'Mellan S, Lee D, Asthana D, Molina R, **Shapshak** P, Zheng W, Khamis I, Frasca A, Complicated bereavement: disease state or state of being? *Omega: Journal of Death & Dying*, 52, 21-36, 2006.
34. Chiappelli F, **Shapshak** P, McCoy C, Bryan Page, Paolo Prolo, Cellular immunopathology in alcohol/cocaine co-abusing HIV-1 seropositive African American Women, *Frontiers in Biosciences*, 11, 2434-2441, 2006.
35. Duncan, R, P **Shapshak**, JB Page, F Chiappelli, SE Messiah, and CB McCoy, Crack Cocaine: Effect modifier of RNA viral load and CD4 count in HIV infected African American women, *Frontiers in Biosciences*, 12, 1488-1495, 2006.
36. Weatherby Norman L., Minsoo Kang, Paul **Shapshak**, Clyde B. McCoy, Francesco Chiappelli, Screening women for Human Immunodeficiency Virus (HIV) infection using self-reported symptoms: A classification tree analysis, *The Korean Journal of Measurement and Evaluation in Physical Education and Sports Science*, Vol. 8, No 1, 1-15. July 2006.
37. Minagar A and P **Shapshak**, HIV associated Dementia: Clinical features and pathogenesis, in *NEURO-AIDS*, Edited by Alireza Minagar & Paul **Shapshak**, Nova Science Publ (Hauppauge, New York), 2006.
38. Ríos-Olivares Eddy, Luis M. Vilá, Juan C. Reyes, José W. Rodríguez, J., Héctor M. Colón, Nat O. Pagán, Amalia Marrero, Zilka M. Ríos-Orraca, Nawal M. Boukli, Paul **Shapshak**, Rafaela R. Robles, Impaired cytokine production and suppressed lymphocyte proliferation activity in HCV-infected cocaine and heroin ("speedball") users, *Drug & Alcohol Dependence*, 85, 236-243, 2006.
39. Page J. Bryan, Paul **Shapshak**, E. Margarita Duran, Gaelle Even, Irina Moleon-Borodowski, Renee Llanusa-Cestero, Detection of HIV-1 in Injection Paraphernalia: Risk In An Era Of Heightened Awareness, *AIDS Patient Care and STDs*, 20 (8), 576-585, 2006.
40. Balaji S, Kalpana R, and **Shapshak** P, Hypothesis. Paradigm development: Comparative 3D modeling of HIV-1 Vif, *Bioinformatics*, 1, 290-309, 2006.
41. Goodkin K, B Vitiello, W Lyman, D Asthana, J Atkinson, P Heseltine, R Molina, W Zheng, I Khamis, F Wilkie, and P **Shapshak**, CSF and Peripheral HIV Type1 Load in a Multi-Site, Randomized, Double Blind, Placebo-Controlled Trial of D-Ala1-Peptide T-Amide (DAPTA) for Associated Cognitive-Motor Impairment, *J of Neurovirol*, 12, 178-189, 2006.

42. Vitiello B, K Goodkin, D Asthana, P **Shapshak**, J Atkinson, P Heseltine, E Eaton, R Heaton, F Wilkie, and W Lyman, Viral Load and Cognitive Performance Among HIV-Positive Persons with Cognitive-Motor Impairment, *AIDS*, 21, 1415–1422, 2007.
43. Z´arate S, SL Kosakovsky-Pond, P **Shapshak**, SDW Frost, A comparative study of methods for detecting sequence compartmentalization in HIV-1, *Journal of Virology*, 61, 6643–6651, 2007.
44. Kanguene Pandjassarame, Meena Kishore Sakharkar, Francesco Chiappelli, Paul **Shapshak**, Designing HIV Peptide Vaccines: Rhetoric or Reality for NeuroAIDS, Chapter for: “The Spectrum of NeuroAIDS Disorders: Pathophysiology, Diagnosis, and Treatment” (Editors, K Goodkin MD PhD, A Verma MD, and P **Shapshak** PhD), ASM Press, 2008.
45. **Shapshak** Paul, Alireza Minagar, Pandjassarame Kanguene, Simon Frost, Sergei L. Kosakovsky Pond, Selene Zarate, Elyse Singer, Deborah Commins, Anne De Groot, Miguel Quinones-Mateu, Ernest Terwilliger, Blood and Brain HIV Strain Variation, Chapter for: “The Spectrum of NeuroAIDS Disorders: Pathophysiology, Diagnosis, and Treatment” (Editors, K Goodkin MD PhD, A Verma MD, and P **Shapshak** PhD), ASM Press, 2008.
46. Minagar Alireza, Deborah Commins, J. Steven Alexander, Romy Hoque, Francesco Chiappelli, Elyse J. Singer, Behrooz Nikbin, Paul **Shapshak**, Diagnostics for NeuroAIDS: Present and Future, *Molecular Diagnosis and Therapy*, 12, 25-43, 2008.
47. **Shapshak** Paul, Hector E. Rodriguez, Rajarathinam Kayathri, Andrew Levine, Francesco Chiappelli, Alireza Minagar, ALZHEIMER’S DISEASE AND HIV ASSOCIATED DEMENTIA RELATED GENES. I. LOCATION AND FUNCTION, *Bioinformatics*, 2(8): 348-357, 2008.
48. Chiappelli F, P **Shapshak**, D Commins, E Singer, A Minagar, O Oluwadara, P Prolo, AJ Pellionisz, Molecular Epigenetics, Chromatin, and NeuroAIDS/HIV. I. Immunopathological Implications, *Bioinformatics*, 3 (1), 47-52, 2008.
49. **Shapshak** P, F Chiappelli, D Commins, E Singer, AJ Levine, C Somboonwit, A Minagar, and AJ Pellionisz, Molecular Epigenetics, Chromatin, and NeuroAIDS/HIV. II. Translational Implications, *Bioinformatics*, 3 (1), 53-57, 2008.
50. Alireza Minagar, Deborah Commins, J. Steven Alexander, Romy Hoque, Francesco Chiappelli, Elyse J. Singer, Behrooz Nikbin, Paul **Shapshak**, NEUROAIDS CHARACTERISTICS AND DIAGNOSIS, *Mol Diag & Ther*, 12, 25-43, 2008.
51. Giunta Brian, Charurut Somboonwit, Tim Tellinghuisen, William K. Scott, Robert Duncan, Clyde McCoy, J Bryan Page, Jun Tan, Francisco Fernandez, and Paul **Shapshak**, Psychiatric Aspects of Hepatitis-C Infection, *Critical Reviews in Neurobiology*, 19, 79-118, 2009.
52. Fernandez F, Minagar A, Alekseeva N, and P **Shapshak**, Neuropsychiatric aspects of prion disease, in *Comprehensive Textbook of Psychiatry* ed. by Sadock, Sadock, and Ruiz, p. 541-558, 2009.
53. Levine AJ, Singer EJ, P **Shapshak**, The role of host genetics in the susceptibility for HIV-associated neurocognitive disorders, *AIDS Behav, AIDS & Behavior*, 13, 118–132, 2009.
54. **Shapshak Paul** PhD, Charurut Somboonwit MD, Lydia N. Drumright PhD, MPH, Simon D.W. Frost, DPhil, Deborah Commins MD PhD, Timothy L. Tellinghuisen PhD, William K. Scott PhD, Robert Duncan PhD, Clyde McCoy PhD, J Bryan Page PhD, Brian Giunta MD, Francisco Fernandez MD, Elyse Singer MD, Andrew Levine PhD, Alireza Minagar MD, Oluwadayo Oluwadara DDS MS, Taiwo Kotila MBBS FMCPath, Francesco Chiappelli, PhD, and John T. Sinnott MD, MOLECULAR AND CONTEXTUAL MARKERS OF HCV AND DRUG ABUSE, *Mol Diag & Ther*, 13, (3), 153-179, 2009.
55. Levine, AJ, Singer, EJ, Sinsheimer, JS, Hinkin, CH, Papp, J, Dandekar, S, Giovanelli, A, and **Shapshak, P**. Host genetic, behavioral, and demographic factors in HIV-associated dementia. *Neurobehavioral HIV Medicine, In Press*, 2010.
56. Mohanapriya A, Nandagond S, **Shapshak P**, Kanguene U, Kanguene P. An HLA-DRB supertype chart with potential overlapping peptide binding function. *Bioinformatics* 2010; 4(7): 300-309.

C. RESEARCH SUPPORT

- | | |
|---|----------------------|
| Shapshak P, PhD Consultant. Singer E, MD (PI)
Consultant to the NNAB at UCLA School of Medicine. | 2008-present |
| Shapshak P, PhD Consultant. Sinnott J, MD (PI)
Consultant to the Division of Infectious Disease and International Medicine at USF School of Medicine. | 2008-present |
| Shapshak P (PI), Xu W (Co-PI)
siRNA HIV-1B Silencing in NeuroAIDS Patients . Pilot Grant from the Allergy, Immunology & Infectious Disease Signature Program, USF Health. | 2008 |
| Paul Shapshak, PhD, PI (Sub-contract) [PI: Dr. T. Kazic]
[2RO1 GM056529] Bioinformatics in Neurodegenerative disease . This subcontract develops new methodologies for the analysis of gene expression networks in the brain. The parent grant PI is Dr. T. Kazic, Dept. of Computer Engineering and Computer Science, Univ. of Missouri, Columbia. Community Deposit and Review of Biochemical Databases . This grant develops databases and software systems for Biochemical networks. | 09/1/2003-08/31/2006 |
| Colón, HM Ph.D. (PI), Shapshak P (Consultant) | 08/15/2005-11/1/2006 |

[1 R21 DA018600] **Drug Preparation Materials to Reduce HIV/HCV Transmission.** This grant studied the use of interventions to reduce HIV/HCV transmission.

Eddy Rios-Olivares, Ph.D., MPH. (PI), Shapshak P (Consultant) 08/01/2004-11/01/2006

[2G12RR03035] **HIV and Substances of Abuse.** To develop a research infrastructure that will provide specialized clinical laboratory support in the immunovirology of HIV/AIDS and substances of abuse.

D. Segal, PhD (PI), P. Shapshak (Co-Inv) 7/1/2006 to 6/30/2007

HIV Sequence & CTL Epitope Evolution in the Brain. Source: University of Central Florida, Office of Research & Commercialization. This grant continued to analyze HIV brain sequences and set up CTL assays in preparation for HIV vaccine work.

Paul Shapshak, PhD (PI) 9/1/2001-9/30/05

[1 R21 DA 14533] **Gene expression in HIV Encephalitis brain.** This grant studied gene expression in the brain with HIV infection.

Page JB (PI) and Shapshak P (Co-PI) 7/1/00 - 9/30/04

[NIDA RO1 DA12580] **HIV Infection Potential in IDU-related injection materials.** This study quantifies HIV-1 risk in paraphernalia from shooting galleries in Miami using Real Time PCR technology.

Petito C (PI), Shapshak P (Co-Inv) 9/1/99-8/31/04

[RO1, NS39177-01] **HIV Brain Sanctuary.** This grant studied the brain as a reservoir for HIV infection.

Karl Goodkin, M.D., Ph.D. (PI), Shapshak, PhD (Co-Inv) 04/01/98 - 08/31/04

[2R01. MH58532] **HIV, Aging, and Cognition: A Synergism.** This proposal studied the occurrence and progression of HIV/AIDS disease in aging patients (English & Spanish).

M. Kumar, PhD (PI), P. Shapshak, PhD (10% Co-Inv) 9/1/2001-1/31/2003

[1 RO1 NS 41205] **HIV-1/2 co-infection in neurological disease.** Dr. Shapshak's component was to advise in methods of detection of HIV-1 and HIV-2 each alone, as co-infections, in AIDS patients.

Paul Shapshak, PhD (PI) 10/01/01-9/30/03

[RO3 AG 19952] **Ribozyme-AAV Targeted PS-1 Reduction in Neurons.** The purpose of this project was to produce Ribozymes specific for cleavage of Presenilin-1 inserted into Adeno Associated Virus vectors.