



# ISNV

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## Summary of the 10th International Symposium

Lynn Pulliam

Our 10th International Symposium on NeuroVirology and Conference on HIV and the Nervous System in Milan, Italy in October was a tremendous success! We enjoyed a beautiful, historic venue at the University of Milan where our host organizer Dr. Pasquale Ferrante welcomed 226 scientists and students from 16 different countries. The program included 4 days of 12 sessions, 24 plenary speakers, 74 total speakers, 4 Lectureship talks and 2 workshops (Multiple Sclerosis and Substance Abuse). There was also an evening poster session which featured 144 posters. In addition, a Special Workshop was held prior to the meeting which focused on Clinical and Diagnostic Topics on CNS and Inflammation which featured 15 speakers. Finally, a fantastic gala dinner was held at the beautiful

Palazzo dei Giureconsulti overlooking the historic Duomo. During the gala, the 2010 Pioneer Award was given to Dr. Kamel Khalili. In keeping with our goal to support young investigators and foreign scientists, this year we offered a record number 21 travel scholarship awards, an increase from the 8 that were presented last year at the 9th Symposia in Miami. An additional 4 new travel scholarships were given to scientists from resource-limited countries. The scientific program was exciting and all agreed it was a very successful meeting. The ISNV Meeting Subcommittee is already planning for the Spring 2012 Symposium in New York City. Let us know your thoughts. More to come in the next newsletter...



Poster session at the 10th ISNV Symposium held at the University at Milan in Milan, Italy.

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# Science News

## Neurovirology Down Under

### Leslie Marshall

Neurovirology research in Australia was well represented this October at the 10th International Symposium on Neurovirology held in Milan, Italy. The ISNV was proud to host a plenary talk, an investigators-in-training talk, and many posters by faculty, postdoctoral fellows, and students from down under. The work presented represents exciting and important work on the viral pathogenesis in the central nervous system.

### Investigators:

#### Melissa Churchill



Dr. Melissa Churchill co-director of the laboratory for HIV Neuropathogenesis in the Center for Virology at the Burnet Institute in Melbourne Australia with Professor Steve Wesselingh. Dr. Churchill presented a plenary talk in the Brain as a Reservoir for HIV session in Milan. Her laboratory studies HIV-1 infection of astrocytes and how this infection impacts the establishment of HIV-associated dementia (HAD). This work has recently been expanded to include the contribution of infected astrocytes to the viral reservoir of HIV-1 and the regulatory mechanisms unique to astrocytes supporting a latent infection. Her findings, in collaboration with Justin McArthur and Carlos Pardo at Johns Hopkins and Paul Gorry at Burnet, regarding increased levels of astrocyte infection in HAD brains with severe HIV have important implications for the role of the CNS as an important HIV-1 reservoir. Dr. Churchill receives support from the Australian National Health and Medical Research Council (NHMRC) and is an active member of the Australian National Center for HIV Epidemiology and Clinical Research Neurology Working Group. Interestingly, Dr. Churchill also has a law degree and works on a volunteer basis with the Office of the Public Advocate, advocating legal rights for people with acquired brain injury, dementia, and mental illness.

#### Bruce Brew



Professor Bruce Brew is the head of Neurology and Neurosciences at St. Vincent's Hospital at the University of New South Wales in Sydney Australia. His research interests include kynurenine pathways and relevance to pathogenesis of inflammatory neurological diseases, effects of HIV on the brain, use of adult stem cells as treatment for neurological diseases, and the blood brain barrier. He has been active in studying the neurological aspects of HIV disease since the mid '80s and has published particularly on HIV dementia from both clinical and basic science perspectives. In addition, Dr. Brew has designed and conducted three clinical trials on HIV dementia. With over 270 publications, he has written three books on HIV Neurology and has been invited

to give 140 national and international lectures in the last decade. He has been an invited participant in educational courses for the American Academy of Neurology and the World Congress of Neurology for several years. Dr. Brew has received research funding from governmental bodies in Australia (NHMRC) and the USA (NIH) as well as industry. He sits on the editorial board of four journals and the scientific committee for CROI.

### Postdoctoral Fellows:

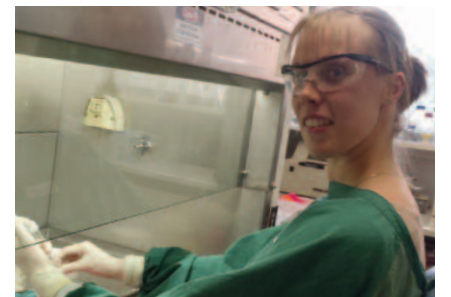
#### Lachlan Gray

Dr. Lachlan Gray is a postdoctoral fellow working in the laboratory of Professor Melissa Churchill at the Burnet Institute. He presented his work entitled "Dissecting the role of Sp transcription factor binding sites on viral transcription in HIV-1 long terminal repeats derived from HIV-1 dementia patients" at the poster session in Milan. Dr. Gray focused on HIV neurovirulence throughout his graduate studies with Dr. Paul Gorry, and his current work aims to elucidate the role of HIV transcription in the restricted infection of astrocytes and the establishment of latency. He is well represented in the field of neurovirology through publications and in 2009 was awarded the highly competitive NHMRC postdoctoral fellowship to continue his research into HIV infection in astrocytes.



#### Julianne Bayliss

Dr. Julianne Bayliss is a research fellow working in the laboratory of Professor Catriona McLean at Monash University in Melbourne Australia. She presented her work entitled "Immuno-suppression increases latent infection of brain by JC polyomavirus" in the Investigators-in-Training session in Milan and was recognized by ISNV with an Investigator-in-Training award. Her research examines the establishment of latent reservoirs of JC virus in the brain, blood, and kidney of healthy human patients. The goals of her research are to determine the cellular sites of JC viral latency during immune-competence, delineate the role of immune suppression in JC viral reactivation prior to the development of progressive multifocal leukoencephalopathy (PML), and to investigate the role of viral genotype in establishing latency and development of PML. This work is supported by the Alfred Research Trust.



## Mineki Saito

Dianne Langford

**D**r. Mineki Saito received an MD in 1991 from the Kagoshima University School of Medicine in Kagoshima Japan followed by a PhD in 1995 from Kagoshima University Graduate School of Medical and Dental Sciences. Dr. Saito completed a residency fellowship in the Department of Neurology at the National Okinawa Hospital, Okinawa and post-doctoral training at the Department of Immunology, Imperial College, London. He returned to the Department of Neurology, Kagoshima University Hospital, in Kagoshima in 2000 and joined the Department of Microbiology, Kanazawa Medical University in Kanazawa, Japan as an Associate Professor in 2006. Currently, Dr. Saito is an Associate Professor in the Department of Immunology, Graduate School of Medicine, University of the Ryukyus, Okinawa, Japan.

Human T-cell leukemia virus type-1 (HTLV-1) is a retrovirus associated with two main types of disease: adult T-cell leukemia (ATL) and a chronic inflammatory CNS disease called HTLV-1 associated myelopathy/tropical spastic paraparesis (HAM/TSP). Main aspects of Dr. Saito's research include the role of the host immune response to HTLV-1 infection in determining the outcome (i.e. whether disease develops or the patient remains asymptomatic for life), and the molecular pathogenic mechanisms of HAM/TSP. Dr. Saito explains the hypothesis for HAM/TSP pathogenesis in his 2010 review in *Interdisciplinary Perspectives on Infectious Disease*: "In patients with HAM/TSP, genetically determined less efficient CTL response against HTLV-1 may lead to a higher proviral load and antigen expression causing activation and expansion of antigen-specific T-cell responses, induction of cytokines and chemokines and development of HAM/TSP." In collaboration with his colleagues, Masao Matsuoka and Fumihiko Matsuda at Kyoto University, Dr. Saito is currently studying the genome-wide identification of disease-associated genes for

HTLV-1 associated diseases (both ATL and HAM/TSP) and the role of the HBZ (HTLV-1 bZIP) gene coded by the minus strand of HTLV-1 genome for HAM/TSP pathogenesis. In a recent study, Saito et al. investigated whether HTLV-1 HBZ mRNA expression was associated with clinical and laboratory markers reported in HAM/TSP patients, including HTLV-1 proviral load, neopterin concentration in CSF and motor disability score (Saito et al., *Retrovirology* 6:19, 2009). Levels of Tax mRNA, a transcription activator that is believed to play important roles in oncogenesis, inflammation and cell immortality, were also investigated in HAM/TSP, ATL and healthy asymptomatic carriers. The HTLV-1 HBZ, but not the Tax mRNA correlated positively with disease severity and with neopterin in the CSF of HAM/TSP. HTLV-1 HBZ mRNA decreased after successful immunomodulatory treatment for HAM/TSP suggesting that HBZ plays a role in HAM/TSP pathogenesis.

In addition to his research, Dr. Saito has a strong commitment to teaching and mentoring undergraduate and graduate students. All of his students have completed their degrees in a timely fashion and have gone on to successful careers in Japan or the US.



## 2010 Investigator-in-Training Awards

Dianne Langford



Pictured are mentors (m) and trainees (t), back row, from left: Joy Hazleton (t), Leslie Marshall (t), Julianne Bayliss (t), Loyda Melendez (m), Kamel Khalili (m), Brian Wigdahl (m), Avi Nath (m); front row from left, Joan Berman (m), Haniah Abdullah (t), Louise Cosby (m), Linda Rivera (t), Evan Noch (t), Sharron Manuel (t), Tori Johnson (t), and Anna Bellizzi (t).

**T**he ISNV congratulates the recipients of the 2010 Investigator-in-Training Awards. Nine applicants were awarded plaques at the Gala dinner in Milan in recognition of their out-

standing research. Each awardee presented their work at a special workshop held at the 2010 ISNV meeting in Milan.

# Brain Disorders in the Developing World: Research Across the Lifespan 2003-2010

**Kathleen Michels**

Through the “Brain Disorders in the Developing World: Research Across the Lifespan” research program, The Fogarty International Center, along with its partners inside and outside of the NIH (\*see below for partners) have sought to address the needs for research and research capacity building in the areas of nervous system function, disease and disorders from around the world, with a focus on developing countries (low- and middle-income countries or LMICs).

Communicable diseases, including HIV/AIDS, along with maternal and perinatal conditions and nutritional deficiencies contribute disproportionately to illness, morbidity and death in LMICs as compared to high-income countries (HICs). This holds true especially in sub-Saharan Africa, where many individuals living with HIV/AIDS are not adequately treated. However, very limited data are available on the epidemiology, natural history and pathogenesis of neurological problems caused by these diseases and associated opportunistic infections and co-morbidities in these settings. Also uncertain are the appropriate treatments/interventions and opportunities for, and barriers to, implementation. The Brain Disorders program grantees have begun to fill in some of these research and data gaps while building and enhancing capacity in the partner LMIC countries to initiate and continue research in collaboration and on their own.

The structure of the program is unique for NIH: The applicants (a LMIC and HIC partner) apply for small R21 grants (2 years at \$100,000 per year) for planning and pilot projects which focus on capacity building, as well as research. The R21 grantees can then submit follow up R01s through the program. Between 2003 and 2010 the program awarded 85 planning/pilot grants (R21s) of which 21 were related to HIV/AIDS. From these have flowed 20 funded R01s (5 related to HIV/AIDS) in years 2006-2010. Over 30 LMIC countries are represented (16 LMIC countries for the HIV/AIDS research grants- heavily focused on Africa as you might expect, with the rest in India and Latin America).

The HIV/AIDS-related grants have focused on areas including neurocognition, neuropathogenesis, viral genetics, neuropsychiatric and psychosocial consequences, comorbidities, and neurodevelopmental studies in the context of HIV infection of the nervous

system in resource limited settings (Please visit [www.isnv.org/pdf/attach/Jan2011Table1.pdf](http://www.isnv.org/pdf/attach/Jan2011Table1.pdf) for a full list of the grants). Over the years, many of the grants have yielded groundbreaking publications. These studies include, findings on neuropathogenesis and neurocognitive studies with HIV clade C in India:

- Mahadevan A, et al. Characterization of human immunodeficiency virus (HIV)-infected cells in infiltrates associated with CNS opportunistic infections in patients with HIV clade C infection. *J Neuropathol Exp Neurol.* 2007, 66:799-808.
- Yepthomi T, et al. Neurocognitive consequences of HIV in southern India: a preliminary study of clade C virus. *J Int Neuropsychol Soc.* 2006, 12:424-30.

In addition, studies on dementia related to subtype D in Uganda were the first to show that HIV subtype may affect a person's risk for developing HIV-associated dementia (Sacktor et al., HIV subtype D is associated with dementia, compared with subtype A, in immuno-suppressed individuals at risk for cognitive impairment in Kampala, Uganda. *Clin Infect Dis.* 2009, 49:780-786). Studies by Kanmogne’s group suggested that similar to findings in Western cohorts, HIV infection in Cameroon, particularly in advanced stages, is associated with worse performance on standardized, Western neurocognitive tests (Kanmogne et al. HIV-associated neurocognitive disorders in sub-Saharan Africa: a pilot study in Cameroon *BMC Neurol.* 2010, 10:6).

The Brain Disorders in the Developing World program has been renewed for once per year competitions in 2011, 2012 and 2013 for both R21 and R01 applications. Since the program has been successful in catalyzing productive and even ground-breaking research in both neuro-AIDS and non-AIDS fields throughout the developing world, consideration will be given to how we may build on the network of researchers and expand upon the research capacity building aspect under the program. This focus will ensure the whole continues to be more than the sum of the individual grants.

**\*PARTNERS:**

- National Institute on Aging (NIA)
- National Institute on Alcohol Abuse and Alcoholism (NIAAA)
- Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)
- National Institute on Drug Abuse (NIDA)
- National Institute of Environmental Health Sciences (NIEHS)
- National Institute of Mental Health (NIMH)
- National Institute of Neurological Disorders and Stroke (NINDS)
- Office of Dietary Supplements (ODS)



# The Drexel University College of Medicine and Freedom Foundation initiatives in HIV-1 treatment and research in India

**Brian Wigdahl**

One of the major ongoing efforts in the Center for Molecular Virology and Translational Neuroscience within the Drexel University College of Medicine Institute for Molecular Medicine and Infectious Disease under the direction of Dr. Brian Wigdahl has focused on the molecular mechanisms involved in regulating the expression of HIV-1 subtype B gene expression in cells of the monocyte-macrophage lineage and its role in the genesis of neurologic disease in subtype B-infected patients as well as the impact of genetic variation and range of physiologic factors on these processes. In conjunction with our efforts in the Division of Infectious Disease and HIV Medicine at the Drexel University College of Medicine (DM) under the direction of Dr. Jeffrey Jacobson, we have expanded our basic science, translational research, and clinical patient care activities to HIV-1 subtype C-infected patients cared for by the Freedom Foundation based in Bangalore, India. The Freedom Foundation (FF) is a non-governmental organization (NGO) founded in 1993 by Dr. Ashok Rao (President and CEO), working in the areas of substance abuse and HIV/AIDS.

The substance abuse initiative started in 1993 and centers on the rehabilitation of people with chemical dependency. The HIV/AIDS initiatives began in 1996 by providing shelter and some basic medical care for those disowned by their families due to the stigma associated with HIV. With time, the medical care at the center has evolved and now is geared to provide opportunistic infection management and anti-retroviral therapy (ART). From 2002 to 2009, a period of rapid scale up of HIV/AIDS clinical care activities occurred with funding provided by the National AIDS Control Organization (NACO) and the Global Fund for AIDS, Tuberculosis and Malaria. During this time period, the Foundation set up care and support centers across ten high prevalence districts in Southern India spread across 4 states. As a result of this funding, the Foundation was able to set up ART facilities in two of the metropolitan cities (Bangalore and Hyderabad). These facilities now provide ART at a considerable discount to patients who for various reasons are not able to or are not willing to enroll in the public health program. Through 2010, the FF has provided medical services to over 50,000 people living with HIV/AIDS (PLHIV). It has also provided ART to about 3,000 PLHIV and has achieved an 86% follow-up rate. FF also provides HIV services for prevention of mother to child transmission (PMTCT) for pregnant women found to be HIV-positive during screening. These services are provided

through an initial grant from the Elizabeth Glaser Pediatric AIDS Foundation and have prevented over 1,000 babies from being born with HIV. However, in December 2009, the two major Global Fund grants to the Foundation came to an end. As a result, the Foundation is now working towards the development of sustainable models for HIV/AIDS care.

The interactions between Freedom Foundation (FF) and Drexel Medicine (DM) began in February of 2007 when Drs. Wigdahl and Rajagopalan (the Medical Director of the Bangalore FF site) met at an International Conference held at the University of Hyderabad, India. After several subsequent teleconferences and exchange visits between Philadelphia and Bangalore/Hyderabad, a Memorandum of Understanding was signed between FF and DM to develop a collaborative program focused on capacity building in the areas of HIV-1 subtype C clinical care, education, and basic/translational/clinical research.

The Bangalore FF/DM Out-patient HIV/AIDS Care and Support Center caters to out-patients who require HAART and is located on the ground floor with the FF/DM Clinical and Translational Research Center

located on the second floor. The clinic currently treats 20-30 patients per day with approximately 1500 patients registered in total. All patients who require admission are sent to the FF In-patient HIV/AIDS Clinical Care Facility, which is located about 5 km from the Center. The FF/DM In-patient HIV/AIDS Clinical Care Facility consists of a three-story building with renovated patient care facilities totaling 17,000 sq. ft. This facility is equipped with 25 patient beds and has a 90% average occupancy. There are two physicians on staff, six nurses who provide round the clock nursing care, three counselors, and three social workers. The third floor of the Facility serves as a residential facility for 24 HIV-positive orphaned children and also serves as staff quarters. The facility also has a laboratory that is involved in clinical sample collection for transport to the clinical diagnostic laboratory located at the FF Out-patient HIV/AIDS Care and Support Center and FF/DM Clinical and Translational Research Center. The FF/DM HIV Clinical and Translational Research Center is located directly above the Out-Patient Center and includes patient waiting, documentation, and sample collection areas, molecular biology and biochemistry laboratories, flow cytometry and microscopy laboratory, basic infectious disease diagnostic laboratory, tissue culture laboratory, specimen storage center, and small conference room and office for the Director of the Research Center.



Top left: Freedom Foundation (FF) out-patient clinic and FF/Drexel College of Medicine (DM) Translational Research Center in Bangalore. Top right: Drs. Wigdahl, Jacobson, and Khan from DM visit the out-patient facility and FF/DM Translational Research Center in Bangalore. Center left: Drs. Wigdahl and Rao sign memorandum of understanding between FF and Drexel. Center right: FF out-patient clinic in Hyderabad. Bottom left: FF in-patient Facility in Bangalore. Bottom right: DM Infectious Disease Chief Jeffrey Jacobson performs rounds at the FF in-patient facility.

*Continued on page 8*

# 2011 Upcoming Conferences

## February

International Meeting on Emerging Diseases and Surveillance (IMED): February 4-7, Vienna, Austria

Conference on Retroviruses and Opportunistic Infections (CROI): February 27-March 2, Boston, Massachusetts

## March

EORTC-EANO Conference 2011: Trends in Central Nervous System Malignancies, March 25-26, Bucharest, Romania

## April

Society on NeuroImmune Pharmacology: April 6-10, Clearwater Beach, Florida

American Academy of Neurology: April 9-16, Honolulu, Hawaii

## May

American Academy for Microbiology: May 21-24, New Orleans, Louisiana

## June

18th Annual Meeting of the Psychoneuroimmunology Research Society: June 8-11, Chicago, Illinois

4th Congress of the European Microbiologists: June 26-30, Geneva, Switzerland

## July

American Society for Virology: July 16-20, Minneapolis, Minnesota

International AIDS Society: July 17-20, Rome Italy

## September

Interscience Conference on antimicrobial agents and chemotherapy (ICAAC): September 18-21, Chicago, Illinois

## October

Infectious Diseases Society of America (IDSA): October 20-23, Boston, Massachusetts

## November

Society for Neuroscience: November 12-16, Washington, DC

# Committee Reports

## A Brief Report on the International Interests Committee of ISNV

**Mahendra Kumar**

The ISNV International Interest Committee was formed in 2006 to raise awareness about research activities in the international arena (particularly in resource limited countries) and to encourage our international colleagues to join ISNV. I was nominated as Chair and by 2007 we had formed a small subcommittee and initiated efforts to outline objectives. Immediately after its formation, the Committee arranged to hold an "International Update on NeuroAIDS" seminar at every ISNV conference.

Several of the members of the subcommittee, including Drs. Gene Major and Avi Nath arranged an HIV-related meeting in Ethiopia, which was highly successful. At the 2010 ISNV meeting held in Milan, it was decided to reorganize the sub-

committee to include representatives from various countries. This process is now underway. We also decided to explore possibilities of holding regional or satellite meetings in various countries. Attempts will also be made to restructure membership fees for scientists from resource-limited countries. At the Milan meeting, two scientists from India, one a neurologist and the other a neurovirologist, were sponsored by the ISNV. These scientists are now in correspondence with ISNV to discuss possibilities of holding a future meeting in India. Two Ethiopian neurology fellows were co-sponsored by ISNV to attend the meeting, as well.

The subcommittee welcomes any suggestions from all interested members of ISNV.

## An update from the ISNV Membership Committee

**Alan Jackson**

The total ISNV membership for 2010 was 261 individuals which included 68 new members. Of our total membership, close to 50% are from institutions outside of the US which truly makes ISNV an 'International' Organization. One of our many goals has been to increase members from countries abroad and we will maintain this focus throughout 2011. We are also

very excited to announce that we have recently entered into an agreement with Springer Publications that has enabled us to LOWER our membership and JNV subscription rates for 2011. For more details and to renew your membership or to become a first time member, please visit our online shop, [www.isnv.org/shop](http://www.isnv.org/shop).

### International Interests Committee

Mahendra Kumar (Chair)  
Igor Grant  
Eugene O. Major  
Avindra Nath  
Brian Wigdahl

### Membership Committee

Alan Jackson (Chair)  
Bruce Brew  
Antonina Dolei  
Mineki Saito  
Israel Steiner

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(Continued from page 5, Drexel/Freedom Foundation HIV-1 initiatives) To date this collaboration has resulted in the presentation of numerous posters at several international meetings and the publication of two collaborative papers in the American Journal of Infectious Disease. The collaboration will continue with a new Memorandum of Understanding to be signed in the early Spring of 2011.

The FF/DM Clinical and Translational Research Center and associated In- and Out-patient facilities will also serve as an International HIV Medicine Research Center to bridge basic, translational, and clinical research concerning the neurologic consequences of HIV-1 subtype C infection between Freedom Foundation, Drexel University College of Medicine and Temple University.

# Classifieds

## HIV pathogenesis:

Two post-doctoral positions in the laboratory of Dr. Lena Al-Harhi in the Department of Immunology/Microbiology at Rush University Medical Center (RUMC), Chicago, IL are available. Research projects will focus on NIH-funded studies to evaluate the role of Wnt/ $\beta$ -catenin signaling pathway in HIV immuno- and neuro-pathogenesis. For recent publications, see Kumar et al., J Virol. 2008 Mar;82(6):2813-20; Carroll-Anzinger et al., J. Virol. 2007 Jun;81(11):5864-71). Applicants should have a PhD degree in a relevant field (e.g. virology, neurobiology, molecular biology, and/or immunology). Experience in HIV research and/or working with primary neurons/astrocytes is highly desired. Interested applicants should send their curriculum vitae to Lena\_Al-Harhi@rush.edu. RUMC is an equal opportunity employer.

## Assistant/Associate/Professor in Immunology:

Florida International University (FIU) is a multi-campus public research university located in Miami, a vibrant, international city. FIU offers more than 180 baccalaureate, masters, professional, and doctoral degree programs to over 42,000 students. As one of South Florida's anchor institutions, FIU is worlds ahead in its local and global engagement and is committed to finding solutions to the most challenging problems of our times. Florida's newly accredited College of Medicine at FIU is seeking candidates with PhD, MD, MD/PhD degrees for tenure track/tenured Assistant /Associate or Full Professorial positions in the Immunology Department. Selected candidates will also have a joint appointment with the Institute for NeuroImmune Pharmacology, and are expected to work closely with Center Directors. Applicants must bring or show evidence of mobility and have significant external funding for their independent research. Candidates with significant expertise in Molecular Immunology, Neuro-Immune Pharmacology, Nanotechnology and Drug Targeting in Drugs Abuse Research areas and HIV infections are preferred. For more information or to apply, please visit us on-line at <http://www.fiujobs.org> and reference position number 42296/42295. Qualified applicants must submit a letter of interest accompanying their curriculum vitae with names and addresses of three professional references. FIU is a member of the State University System of Florida and is an Equal Opportunity, Equal Access Affirmative Action Employer.

## The PharmacoNeuroImmunology (PNI) program:

The PharmacoNeuroImmunology (PNI) program at the University of Minnesota is now accepting applications from post-doctoral fellows seeking laboratory-based research training in neuroimmune interactions or neurobehavior in addition in a NIH/NIDA funded training program. The program is specifically looking for recent doctoral degree recipients (within the past 4 years) interested in areas that intersect four disciplines: Pharmacology, Psychology/Psychiatry, Neuroscience, and Microbiology/Immunology. Since this is a federally funded program, only U.S. citizens and those foreign nationals who possess a permanent residency visa (green card) may be supported. Individuals from underrepresented groups are encouraged to apply. Salary will be based on NIH NRSA stipend rates for postdoctoral trainees. Contact Ms. Yorie Smart (smart006@umn.edu), Veterinary Population Medicine, University of Minnesota, to request an application form or to ask further questions.

## PhD position in Viral Neuroimmunology, Institut Pasteur Paris:

Viruses are obligate cellular parasites, which have selected exquisitely robust devices to subvert cellular machinery to their own profit. This is the case for the neurotropic rabies virus, the pathogenicity of which relies on its ability to sneak through host defences, not only through rising stealth against the immune response but also through its unique capacity to enforce the infected neurons to survive. Our group has made important insight in the knowledge of the rabies virus strategies (Lafon et al, 2008, Menager et al, 2009 Plos Pathogens; Prehaud et al, 2010, Science Signaling) by identifying the molecules and survival signaling pathways allowing the virus to escape the host cell defenses. Our project is now analyzing the mechanisms by which one mutation in the envelope gene of the virus triggers the commitment of the infected neurons toward survival and the protection against the cytotoxic T cells. The laboratory of Dr. Monique Lafon is located at Institut Pasteur, in the center of Paris, France. The candidates will apply for a three-year stipend provided by the Pasteur Foundation in early 2011. <http://www.pasteurfoundation.org/fellowships.shtml>. The first step is to identify a candidate interested to join our team. The ideal candidate is a US citizen (Pasteur Foundation supports US citizens only) with a high background in biochemistry and molecular biology having a special interest in neurovirology / neuroimmunology. Fluency in French is not essential. Candidates should send their curriculum vitae with names of two references to Dr Monique Lafon (Monique.lafon@pasteur.fr)

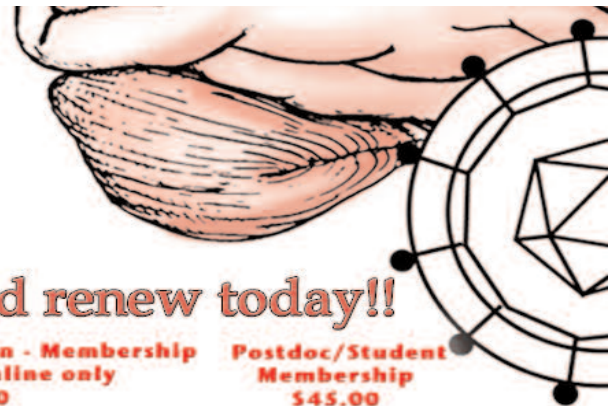
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