



NEUROTRANSMISSIONS

DEPARTMENT OF NEUROLOGY ADMINISTRATION

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From the Chair

Welcome to the Spring 2017 issue of *Neurotransmissions*, the UW Department of Neurology's newsletter for colleagues, alumni and friends. I am proud to share the latest exciting developments in our department, including news on research, clinical resources, and education.

In this issue we highlight the clinical expertise of the Regional Epilepsy Center. Originally founded in 1974 with the help of Arthur Ward, MD, Chair of Neurosurgery at that time, the REC formally joined the Department of Neurology in 1996. It has since grown to encompass 15 epilepsy specialists, and is led by **John Miller, MD, PhD**, Professor of Neurology. Their mission is to tackle the most difficult of epilepsy cases—many referred by community neurologists from a multi-state region—with a mixture of inpatient diagnostics, medical management, and the latest in neurosurgical approaches. There may well be refractory epilepsy patients within your patient roster who would benefit from their services.

We also highlight the far-flung adventures of **Joe Zunt, MD, MPH**, Professor of Neurology. Dr. Zunt is a leading practitioner



**Bruce R. Ransom,
MD, PhD**

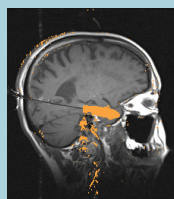
of "global neurology": the export of neurological knowledge and practices to lesser-developed countries, and the import of local practitioners' experience in treating neurologic diseases endemic to their countries.

He currently leads multiple projects based principally in Peru, and in association with numerous UW faculty. His story is anything but typical of the usual academic neurologist career path, and makes for fascinating reading.

Finally, we are sorry to announce the imminent departure of **Sid Gospe Jr., MD, PhD**, as Head of the Pediatric Neurology division.

Sid has been an exemplary leader of the Division for 17 years, growing it into one of the premier child neurology programs in the country. His retirement will be a loss for our Department but we wish him and his wife well as they voyage east to be closer to family. Please turn to page 5 to see our tribute to Sid and his many accomplishments.

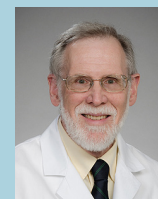
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THE REGIONAL EPILEPSY CENTER:

Taking a multimodal approach to refractory epilepsy

From its beginnings in 1974 as one of the first National Institutes of Health-funded epilepsy centers, the Regional Epilepsy Center (REC) has grown into a nationally accredited center devoted to the treatment of the wide spectrum of adult epilepsy. Epilepsy is one of the commonest neurological disorders, with a prevalence of nearly 1% of the population. For two-thirds of the patients who receive a new diagnosis of epilepsy, treatment with antiepileptic drugs (AEDs) results in long-term control of recurrent seizures. However, for the one-third of patients for whom successive trials of AEDs does not result in seizure freedom, recurrent seizures can mean interrupted education, loss of a job, and inability to hold a driver's license, not to mention the risk of injury. For these patients especially, the 15 REC providers—including neurologists, neurosurgeons, neuropsychologists, and nurse practitioners—are dedicated to optimizing medical therapy or devising neurosurgical approaches to treatment.

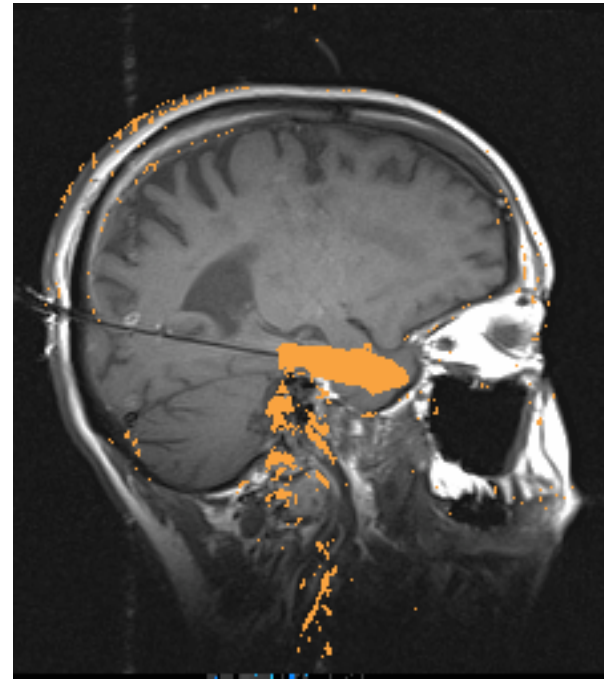
Referrals to the REC come from community neurologists throughout Washington State, as well as the WWAMI region that stretches from Wyoming to Alaska. “There are many epilepsy centers throughout the WWAMI region,” **John Miller, MD, PhD**, Professor of Neurology and Director of the Regional Epilepsy Center, says. “It is fortunate that many patients have access to specialty epilepsy care in their own community. We work in partnership with these centers to make use of the testing performed in community epilepsy

centers to develop treatments for the most difficult epilepsy problems.”

A typical patient with medically refractory epilepsy has been diagnosed with epilepsy for a number of years, and been exposed to multiple AEDs without achieving the all-important goal of seizure freedom. For these patients, the first intervention is often to undergo long-term video-EEG monitoring.

The REC maintains an inpatient unit of ten monitored beds at Harborview Medical Center. Here patients receive 24/7 EEG monitoring while undergoing withdrawal of AEDs to promote seizure occurrence in a medically supervised setting. This allows precise diagnosis of epilepsy syndrome, and localization of seizure onset zones in the brain; also, diagnosis of epilepsy look-alike syndromes can direct some patients to appropriate treatment pathways. Neuropsychological assessment accompanies many inpatient monitoring studies. “In surgical cases, neuropsychological evaluations can assist with lateralizing and localizing cognitive deficits potentially associated with a patient's epilepsy, as well as assist in determining the risks of postsurgical cognitive and psychological change,” says **Michelle Kim, PhD**, Assistant Professor of Neurology, and a clinical neuropsychologist member of the Center.

For patients undergoing further medical management, REC physicians' experience with the latest in FDA-approved AEDs may yield more optimized treatment regimens that improve effectiveness or reduce drug side effects. Ongoing clinical research at the REC has



MRI scan showing laser thermal ablation of the hippocampus.

identified combinations of existing AEDs that appear to yield improved efficacy, even in highly medically refractory patients who may have been exposed to multiple medications in the past. Trials of investigational antiepileptic medications are also ongoing.

Some patients who have not responded to medical management may be candidates for a neurosurgical procedure. For selected patients, particularly those with temporal lobe epilepsy, neurosurgery can result in seizure freedom rates as high as 60-70%. REC epilepsy specialists work closely with epilepsy neurosurgeons Drs. Jeffrey Ojemann and Andrew Ko to identify those patients likely to benefit from a procedure to resect regions within the temporal lobe or extratemporal cortex

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GLOBAL NEUROLOGY:

Improving the health of populations

By Joe Zunt, MD, MPH, Professor of Neurology

In the 85% of the world's population living in Low and Middle Income Countries (LMIC), brain disorders have received low priority on the public health agenda. The overarching goal of my research is to increase the number of well-trained scientists in LMIC, who will then improve the health of populations with brain disorders, communicable disorders such as HIV and tuberculosis, and non-communicable disorders such as stroke and hypertension.

My global neurology career began in Peru. I had completed my neurology residency at the University of Washington, my Masters degree in Public Health, and a three-year Infectious Diseases fellowship under the mentoring of Drs. King Holmes and **Will Longstreth**, Professor of Neurology. Working with Dr. Silvia Montano, a Peruvian neurologist, we developed a multicenter collaborative hospital-based network to study encephalitis in Peru. With funding from the NIH Fogarty International Center and National Institute for Neurologic Disorders and Stroke, we established a network for encephalitis involving 12 hospitals in five geographic regions of Peru to identify distinct pathogens prevalent in each region, temporal trends, and risk factors for acquiring these infections. During 2009–2012, we enrolled 313 patients in our study, 45 of whom had confirmed herpes simplex virus (HSV) infection. Compared to patients without HSV infection, patients with HSV infection were significantly more likely to present in the summer months and to have nausea and rash. Our research highlighted similarities and differences in the epidemiology and

clinical presentation of HSV encephalitis outside of the northern hemisphere, brought intravenous acyclovir to Peru for effective treatment for HSV, and established a network of neurologists—one that is now being activated via a Centers for Disease Control-funded project to examine the neurologic manifestations of Zika virus infection.

Through a separate research training grant awarded by the Fogarty International Center to me, **David Tirschwell, MD**, Professor of Neurology, and Hugo Garcia, MD, PhD, Professor at the Universidad Peruana Cayetano Heredia, we bring Peruvian neurologists to the UW to acquire the research skills necessary to study stroke epidemiology throughout Peru (www.ictusperu.org). One fellow's accomplishment that will likely have a lasting impact in Peru is the

development of a stroke training program at the Instituto Nacional de Ciencias Neurológicas, the only reference center for neurologic disorders in Peru. We have also held a series of workshops in Lima with colleagues in rehabilitation medicine and palliative care to advance post-stroke care and to integrate palliative care into the skillset of Peruvian neurologists.

Our largest research training grant, the NIH Fogarty Global Health Fellows Program, just entered its sixth year and has thus far supported 117 postdoctoral and doctoral trainees in seven countries (Peru, Kenya, Uganda, Ghana, Cameroon, Thailand and China). Each research trainee designed and completed a mentored 11-month research project in one of these countries (www.fogartyfellows.org). Our US-based partners include the Universities

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Visiting the community in the Cono Norte of Lima, Peru where landscape architecture is improving the environment. From left to right: Coco Alarcón, Joe Zunt, Myat-Htoo Razak and Jose Viñoles



NEUROLOGY RESIDENCY NEWS

Arielle Davis, MD and Patricia Oakes, MD, JD,
Co-Directors of the Neurology Residency

James Owens, MD,
Director of Pediatric Neurology Residency

Congratulations to our upcoming 2017 graduates of the residency programs!

We will miss this incredibly talented group of clinicians. But fortunately for us, some of them are not going far.

Here are our graduates and their post-graduation plans:

Makeda Agonafer, MD:
practice in the Seattle area.

Haley Anderson, MD:
Neurophysiology Fellowship, University of Washington

Matthew Preston, MD:
Neuromuscular Medicine Fellowship,
University of Washington

Kass Roberts, MD:
Movement Disorders Fellowship, University
of Washington

Akanksha Sharma, MD:
Neuro-oncology Fellowship, Mayo Clinic,
Arizona

Jenny Siv, MD:
Vascular Neurology Fellowship, University
of Washington

Juliane Gust, MD, PhD:
Faculty, Research/Clinical Appointment,
Seattle Children's Hospital (tentative)

Sarah Bauer-Huang, MD, PhD:
Neonatal Fellowship, Washington
University



*Top back row: Juliane Gust, Sarah Bauer-Huang
Middle row: Makeda Agonafer, Haley Anderson, Matt Preston
Bottom front row: Kass Roberts, Akanksha Sharma, Jenny Siv*

Continued from page 2

where seizures originate.

A recent advance in epilepsy neurosurgery is selective hippocampal laser ablation for temporal lobe epilepsy. Instead of a traditional open craniotomy and resection of mesial temporal lobe structures, a stereotactically-guided laser probe is advanced to ablate just the hippocampus, sparing surrounding temporal cortex. This occurs with real-time monitoring of the ablation in the MRI machine to ensure precise localization and lesion size. In ongoing studies conducted at the REC and other centers, this procedure appears to yield nearly the success rate of open resection, while decreasing adverse cognitive consequences of surgery. A significant side benefit is the much shorter recovery time from laser ablation: patients usually leave the hospital the following day, instead of the multiple day recovery time following open resections. The REC is conducting NIH and industry sponsored studies of the efficacy and safety of this new procedure.

The REC is also studying the effectiveness of a novel device, the Responsive Neural Stimulator for refractory epilepsy. For selected patients with highly refractory epilepsy who are not candidates for resective neurosurgery, this FDA-approved device may improve seizure frequency. The Center is also highly experienced in implantation of the vagal nerve stimulator (VNS), an older neurostimulator that can be useful in selected patients. Epilepsy is a frequently changing field, and REC physicians are constantly evaluating the latest in epilepsy treatment modalities, and looking to offer them to their patients who might benefit.

UPDATE FROM THE DIVISION OF PEDIATRIC NEUROLOGY

A tribute to Sid Gospe, Jr, MD, PhD

At the end of June, **Sidney Gospe, Jr., MD, PhD**, Herman and Faye Sarkowsky Endowed Chair, Professor of Neurology and Pediatrics, and Head of the Division of Pediatric Neurology, will retire. After 17 years of service to the Department, he and his wife Mary will leave Seattle for Durham, North Carolina to be closer to their son, his wife, and first grandchild. Here, *Neurotransmissions* pays tribute to one of our most distinguished faculty members.

Dr. Gospe grew up in San Francisco, was educated at Stanford University, obtained his MD/PhD from Duke, and then did his training in Pediatrics and Pediatric Neurology at Baylor. His first faculty opportunity came at Albany Medical College; at heart however, Sid knew he was a West Coaster, and after just more than a year in Albany, took a junior faculty position at University of California, Davis. While at Davis he quickly rose through the academic ranks, achieving the position of Professor of Neurology and Pediatrics and Director of the Child Neurology Program. When the opportunity arose to direct the Pediatric Neurology division at the University of Washington, he seized it: a prime attraction was the chance to work in an environment where pediatric neurology was part of a highly respected children's hospital, instead of being folded into a general hospital.

Since arriving at Children's, Dr. Gospe has grown the number of pediatric neurology faculty from five to 22. Perhaps just as important, if not more so, has been the growth of the

pediatric neurology residency program. "Training the next generation of child neurologists has always been one of my most important goals. The quality of the residents that we have been able to attract has been absolutely phenomenal," he says. When Dr. Gospe arrived, the program trained just one resident a year; now it is three. "Watching these young trainees develop into skilled clinicians is very satisfying," he added. **Rusty Novotny, MD**, Professor of Neurology and Head of the Epilepsy Program at Children's had nothing but praise for Gospe's achievements: "Sid is a 'ninja bulldog' known for his stealthily deployed, magnanimous and dogged support of the faculty, staff and trainees of the Child Neurology division at UW/Seattle Children's Hospital," he said.

As a doctoral student, Dr. Gospe seemed destined for the life of a dual clinician/bench scientist, having

developed an animal model of toluene toxicity and demonstrated the effects of prenatal exposure to this solvent on the developing brain.

A later research focus developed in pyridoxine-dependent epilepsy, a potentially devastating but treatable form of early infantile epilepsy. He has published dozens of papers on the diagnosis and genetic basis of this syndrome. And even though the demands of running a division with nearly two dozen faculty occupy the majority of his time, Sid managed to publish over 80 original research studies, and win several grants funding his work. The "secret to success", he says, "is collaborating with other people. I knew early on that I could not be a clinician, administrator, and run a big research program at the same time. So research collaboration is key."

Very shortly, however, this full triple-

The secret to success is collaborating with other people.

studied mechanisms of dopaminergic inhibition of neuronal burst firing in the marine invertebrate *Aplysia californica* for his PhD thesis. As a resident and fellow, however, his interests gravitated to more clinical topics. Having seen the horrific consequences of inhaled solvent abuse while training in Houston, he embarked on a research program in the neurological effects of toluene abuse. With support from the NIH, he

threat academic life will morph into something completely different: that of a parent and grandparent more involved with the family of their son and daughter-in-law, both academic physicians at Duke. No gradual academic phase out for Dr. Gospe. "Aside from collaborating on some ongoing research projects, I am reviving my interests in music and music theory. I am also learning to play the guitar—very slowly."

SWANSON'S HISTORY OF NEUROLOGY

The Bronze Age of UW Neurology: Part 2. 1963-1967

By Phillip D. Swanson, MD, PhD,
Professor of Neurology

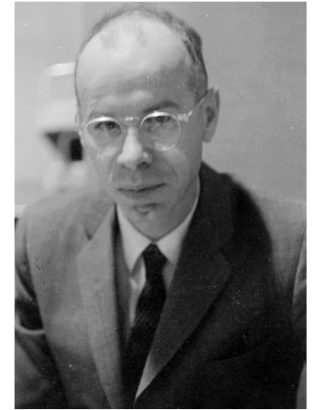
In 1963, a year after the departure of Dr. Fred Plum for Cornell, Charles N. Luttrell, MD became Division Head. Dr. Luttrell was a graduate of the University of Rochester School of Medicine, had received training in neuro-virology in the laboratory of Frederick Bang, and published studies in which he produced myoclonus in cats and monkeys after injecting Newcastle Disease virus into the CNS. He was a member of the Johns Hopkins faculty when he was recruited to Seattle to replace Dr. Plum. When Dr. Luttrell came to Seattle, he arranged for Dr. S. Mark Sumi, who had just completed his neurology residency at Hopkins, to come to Seattle to begin fellowship training in neuropathology under Dr. E. C. Alvord Jr. In Seattle, Luttrell formulated plans for Neurology space in the newly-built RR wing. He actively recruited new resident trainees into the program. However, Dr. Luttrell died unexpectedly on May 16, 1964. A memorial statement by Dr. David B. Clark published in the *Transactions of the American Neurological Association*, praised his demonstration of the use of the Newcastle Disease virus as a tool for the physiologist as having “the quality of genius that was Charles Luttrell at his very best.”

I had known Dr. Luttrell when I was a medical student and later a neurology resident at Hopkins. While I was doing research training in England, I received a job offer from him. I was working towards a PhD in neurochemistry under Henry McIlwain, at the Institute of Psychiatry located at the Maudsley Hospital in South London. I learned of Dr. Luttrell's death through a telegram sent by Dr.

Sumi. What should I do? Did a job still exist for me in Seattle? I did have a wife and 4 young children to think about. Dr. William Kirby, Acting Chairman of the UW Department of Medicine, flew to England to talk August G. Swanson, MD (no relation to me) into returning to Seattle. Swanson was doing a sabbatical year in Oxford and had planned to join Fred Plum at Cornell. Dr. Kirby also met with me at the Waldorf Hotel in London and suggested I meet with Dr. Swanson. I then travelled to Oxford and met Gus for the first time. He said it was okay for me to come along if I wished. I applied for and obtained an R01 grant from the NIH, and then joined the Division in the fall of 1964 upon completion of my PhD.

In 1964 August Swanson became Head of the Division of Neurology. Gus was a graduate of the Harvard School of Medicine. He had been Fred Plum's first neurology resident. He did research on the effects of acid-base metabolism on the CNS, and published two seminal papers on the features of congenital insensitivity to pain with anhydrosis. Initially there was some minor confusion with two Swansons in the same unit. (“Do you want to speak to the Dr. Swanson with or without the beard?”) On one occasion when I was giving Grand Rounds in the Department of Medicine, August Swanson was asked if the two Swansons were related. The reply: “He's my illegitimate son.” The rejoinder from Dr. Bud Evans, head of Medicine at the VA at that time: “He seems like a bright bastard.”

Swanson recruited Coldevin Carlson, MD, a pediatric neurologist trained at Columbia, to join the Division as Head



Dr. Charles Luttrell, ca. 1962.
Photo courtesy Dr. Philip Swanson.

of Pediatric Neurology. Swanson joined Dr. Arthur Ward, Chairman of Neurological Surgery, to develop plans for a Regional Epilepsy Center. A locally-trained neurologist, Dr. John R. Green, had developed an interest in epilepsy, and became Director of the Epilepsy Clinic, which was then located at the University Hospital.

In 1967, August Swanson joined the Office of the Dean as Associate Dean for Academic Affairs. He later had an important role in the creation of WWAMI, the regionalization of the UW School of Medicine. After August Swanson joined the Office of the Dean, another recruitment process commenced. Two outside candidates for Neurology Chief visited Seattle: Dr. Maurice Victor of Victor and Adams textbook fame, and Dr. Lewis Rowland, then Neurology Chair at the University of Pennsylvania. Both candidates insisted on departmental status for Neurology. The School was not ready for this change, so I—the only internal prospect—was offered the position. At the tender age of 34, I was comfortable being a member of a strong Department of Medicine. In 1967, the Division consisted of myself, Gus Swanson, Coldevin Carlson, John Green, Henry Leffman at the VA, and John Chapman at Children's. At HMC there were no full-time faculty members in Neurology. In the next installment, I'll describe the development of a full-time faculty presence at HMC and the VA.

FACULTY NEWS

Selected recent publications from Neurology faculty

Compiled by Nadine Waldmann,
Budget/fiscal analyst lead

Etminan M, Procyshyn RM, **Samii A**, Carleton BC. Risk of extrapyramidal adverse events with aripiprazole. *J Clin Psychopharm*. 2016.

Won D, Kim W, Chaovalitwongse WA, **Tsai JJ**. Altered visual contrast gain control is sensitive for idiopathic generalized epilepsies. *Clin Neurophysiol*. 2016

Wang LH, Elliott MA, Henson LJ, Gerena-Maldonado E, Strom S, Downing S, Vetrovs J, Kayihan P, Paul P, Kennedy K, Benditt JO, **Weiss MD**. Death with dignity in Washington patients with amyotrophic lateral sclerosis. *Neurology* 2016.

This article by Leo Wang and Michael Weiss was selected by Neurology Today as the leading publication in neuroethics for 2016.

Beatty CW, **Wrede JE**, **Blume HK**. Diagnosis, treatment, and outcomes of infantile spasms in the Trisomy 21 population. *Seizure* 2016.

Watson NF, Buchwald D, Delrow JJ, Altemeier WA, Vitiello MV, Pack AI, Bamshad M, Noonan C, Gharib SA. Transcriptional signatures of sleep duration discordance in monozygotic twins. *Sleep* 2017.

This article from Nate Watson received a lot of media coverage: the story was mentioned in 67 media outlets in six countries (United States, UK, Ireland, South Africa, Iran, India).

Mata IF, **Davis MY**, Lopez AN, Dorschner MO, Martinez E, Yearout D, Cholerton BA, **Hu S-C**, Edwards KL, **Bird TD**, **Zabetian CP**. The discovery of LRRK2 p.R1441S, a novel mutation for Parkinson's Disease, adds to the complexity of a mutational hotspot. *Am J Med Genet B Neuropsychiatr* 2017.

Wundes A, Bowen JD, Kraft GH, Maravilla KR, McLaughlin B, **von Geldern G**, Georges G, Nash RA, Lu JQ. Brain pathology of a patient 7 years after autologous hematopoietic stem cell transplantation for multiple sclerosis. *J Neurol Sci*. 2017.

Tai TY, Warner LN, Jones TD, Jung S, Concepcion FA, Skyrud DW, Fender J, Liu Y, Williams AD, Neumaier JF, D'Ambrosio R, **Poolos NP**. Antiepileptic action of c-Jun N-terminal kinase (JNK) inhibition in an animal model of temporal lobe epilepsy. *Neuroscience* 2017.

Schutz RE, Coats HL, Engelberg RA, Curtis JR, **Creutzfeldt CJ**. Is there hope? Is she there? How families and clinicians experience severe acute brain injury. *J Palliat Med*. 2017.

Nash RA, Hutton GJ, Racke MK, Popat U, Devine SM, Steinmiller KC, Griffith LM, Muraro PA, Openshaw H, Sayre PH, Stuve O, Arnold DL, Wener MH, Georges GE, **Wundes A**, Kraft GH, Bowen JD. High-dose immunosuppressive therapy and autologous HCT for relapsing-remitting MS. *Neurology* 2017.

Selected New Grants to Neurology Faculty

PI	PROJECT	SPONSOR
Wang	Clinical study to determine whether MRI can be used as a non-invasive measure of the immune response and T-cell infiltration in FSHD muscle	PACIFIC NORTHWEST FRIENDS OF FSH RESEARCH
Weinstein	Senior Fellow Ashley McDonough's F32: Interferon Signaling in Microglia Mediates Neuroprotection in Stroke	NIH
Domoto-Reilly	IDEAS STUDY: Imaging Dementia—Evidence for Amyloid Scanning (IDEAS) Study: A Coverage With Evidence Development Longitudinal Cohort Study	AMERICAN COLLEGE OF RADIOLOGY IMAGING NETWORK
Garden	Proliferation and differentiation of adult microglia progenitor cells (R21)	NIH
Wundes	A Phase 3 Study to Evaluate the Long-term Safety and Tolerability of Monomethyl Fumarate (ALKS 8700) in Adults with Relapsing Remitting Multiple Sclerosis (MS-EVOLVE 301)	ALKERMES

PROMOTIONS & TRANSITIONS



Lynne Taylor, MD, Professor of Neurology, has recently joined the neuro-oncology division in the Department. She obtained her MD at Washington University, in St Louis, Missouri, followed by neurology residency at the University of Pennsylvania in Philadelphia, and neuro-oncology fellowship at Memorial Sloan-Kettering Cancer Center in New York City. Most will know her from her previous tenure at Virginia Mason Medical Center here in Seattle. Below she shares her thoughts about joining the Department.

After my fellowship, I had the opportunity to join Virginia Mason Clinic in Seattle. Jerry Posner, MD, my mentor, trained (as many of you may

know) at the University of Washington. When Fred Plum left UW to become Chairman of Neurology at Cornell, he took Jerry Posner with him to MSKCC and it was then that he (along with colleagues at other institutions) realized that we needed the specialty of neuro-oncology. I wanted, at that time, to work at either Virginia Mason or the UW but settled in at VMMC as the Director of Neuro-Oncology in Neurology where I practiced for 20 years focusing on the care of patients with malignant brain tumors, running clinical trials, and teaching the residents. During those years I also did general neurology, even carrying the stroke pager and working as a neurohospitalist for the last few years before I left Seattle.

In 2011, my longstanding colleague, Dr. John Ravits, left Virginia Mason to go to UCSD to continue his research on ALS. Ever competitive, I uploaded my CV to the Society of Neuro-oncology website that very week and soon found myself with an opportunity to both run the brain tumor program at Tufts Medical

School in Boston and also create the first palliative care program at Tufts Medical School. I stayed at Tufts for three years, but my husband didn't like the snow, and the neurosurgeons at VMMC kept asking me to come back. So, in 2014 I returned to Virginia Mason, now in the Cancer Center with a position in Hematology-Oncology.

I took this opportunity to come to the UW because 1) that had been my goal from the beginning; 2) I wanted to honor the memory of **Dr. Alex Spence** and build a program that would make him proud; 3) working in a "medical home" for brain tumor patients and creating a multi-disciplinary experience; 4) having the opportunity to hire the next generation of neuro-oncologists and seeing the program grow; and 5) creating a neuro-oncology fellowship and having the opportunity to work with neurology residents. Finally, taking care of patients with complications of cancer in the nervous system is one of the most complex, yet rewarding, parts of neurology.

Continued from page 3

of Washington, Michigan, Minnesota and Hawaii. The overarching goal of our consortium is to provide outstanding training in global health research to prepare our trainees for careers as funded investigators in academia, as well as governmental and non-governmental organizations.

A new and evolving research focus is to improve the health of people through improvements in the landscape and built environments. Initially developed by Benjamin Spencer, Assistant Professor of Landscape Architecture, and Susan Bolton, Professor Emeritus in the School

of Environmental and Forest Sciences, we have worked with students and faculty from multiple disciplines to create green space in the Puente Piedra slum in the northern cone of Lima, Peru—the fourth largest slum in the world (www.iuci.be.washington.edu). Located in Puente Piedra is the Pitágoras School, with more than 1,600 primary and secondary students. Many of the students live in makeshift homes of plywood and corrugated metal; the wall of one home was made of plastic soda bottles filled with sand; another home was little more than stacks of tires. Through a participatory design process with the community, in

just over two weeks, a park within the school grounds was constructed, and over 200 plants, trees and shrubs, from geraniums to African tulip trees, were planted. The park, which connects the upper and lower parts of the school, now serves as a gathering place for students and as an "ecological learning landscape".

My career as a global neurologist has combined a focus on specific neurologic infections, as well as broad collaborations designed to build research capacity in Peru and other LMIC. I am hopeful our efforts will result in healthier brains and bodies in Peru and many other countries.