

UPCOMING EVENTS

The 2nd MS Symposium (Preliminary Program)

May 1, 2012

Session 1

Moderators: Drs. Kamal Kallab (Lebanon) and Saeed Bohlega (KSA)
 9:10 – 9:45 Immunology of Multiple Sclerosis (Dr. Samia Khoury)
 9:45 – 10:20 Cortical Demyelination Early in the Course of MS:
 Implications for Pathogenesis (Dr. Richard Ransohoff)

Session 2

Moderators: Drs. Asmahan Al Shubaili (Kuwait) and Suhail Jbeili (Lebanon)
 11:30 – 12:15 Diagnostic MRI Criteria (Dr. Ernst Radue)
 12:15 – 12:45 MS Differential Diagnosis (Dr. Nuhad Abu Zeid)

Session 3

Moderators: Drs. Saher Hachem (Egypt) and Naji Riachi (Lebanon)
 14:00 – 14:30 Regenerating the Brain: The Role of Neural Stem Cells
 (Dr. Gianvito Martino)
 14:30 – 15:00 New Oral Therapies in MS (Dr. Bassem Yamout)
 15:00 – 15:30 Searching for Molecular Biomarkers to Explain the Therapeutic
 Effect of Interferon-beta in MS (Dr. Richard Ransohoff)

Session 4: The Middle East Session

Moderators: Drs. Samia Khoury (Lebanon) and Fadi Abou Mrad (Lebanon)
 16:00 – 16:35 Novel Imaging Techniques for MS (Dr. Ernst Radue)
 16:40 – 16:55 Genetics of MS in Saudi Arabia (Dr. Mohamad Jumaa - KSA)
 16:55 – 17:10 Epidemiological Study of MS in Jordan
 (Dr. Khaled Salem - Jordan)
 17:10 – 17:25 Epidemiological Study of MS in UAE (Dr. Jihad Inshasi - UAE)
 17:25 – 17:40 Multiple Sclerosis in Qatar: (Dr. Deleu - Qatar)

For more information, contact the AUB CME Office on 01-350000 ext. 4717 or 4752.

During the Middle East Medical Assembly

Saturday, May 5, 2012

11:30 – 12:15

Wilder Penfield Special Lecture: Epilepsy and Neurodevelopmental Disorders
 Dr. Harry Chugani

12:15 – 13:00

Diana Tamari Sabbagh Memorial Lecture: Deep Brain Stimulation
 Dr. Andres Lozano

15:00 – 15:20

Postpartum Depression
 Dr. Ziad Nahas

For more information, contact
 the AUB CME Office on 01-350000
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Contact Us

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ABU-HAIDAR
NEUROSCIENCE
INSTITUTE

THE INSTITUTE

WELCOME TO THE ABU-HAIDAR NEUROSCIENCE INSTITUTE

The Abu-Haidar Neuroscience Institute (AHNI) is a new organization of the AUB Faculty of Medicine and Medical Center that aims to coordinate and promote clinical services, teaching and research functions of the neurosciences at AUB, and to foster the development of a multidisciplinary approach to treating diseases of the nervous system. It strives to become a leading neuroscience center in the Middle East.

THE MISSION OF THE ABU-HAIDAR NEUROSCIENCE INSTITUTE IS:

- To coordinate the clinical activities at AUBMC to provide the best quality of service to patients with neurological and neuropsychiatric disorders.
- To develop basic and clinical research studies that increase the understanding of the normal and diseased brain.
- To provide a rich intellectual environment that enhances the educational experience in all neuroscience disciplines.
- To raise awareness and educate the community and patients in the prevention, diagnosis and treatment of neuropsychiatric disorders.
- To promote the need for continuous clinical and basic research within Lebanon and the Arab world.

The American University of Beirut Medical Center (AUBMC) is a private, nonprofit medical center. Our mission is to be an academic medical center dedicated to the passionate pursuit of improving the health of the community in Lebanon and the region through the delivery of exceptional and comprehensive quality care to our patients, excellence in education and training, and leadership in innovative research.

The Institute is the quarterly publication of the Abu-Haidar Neuroscience Institute.

THE CURRENT SPECIALTIES AT AUBMC

Neurosurgery:

Epilepsy surgery
 Brain tumors
 Brain mapping
 Spinal surgery
 Skull base surgery
 Functional neurosurgery

Neurology:

Epilepsy
 Sleep disorders
 Neuromuscular diseases
 Multiple sclerosis
 Neurodegenerative disorders

Pediatric Neurology:

Neuro-genetics
 Epilepsy

Psychiatry:

Substance abuse
 Psychometric testing
 Individual, couple, family and group psychotherapy
 General psychiatry
 Mood disorders
 Child and adolescent psychiatry
 Neuromodulation
 Sleep disorders

NEW DEPARTMENT OF NEUROLOGY ESTABLISHED AT AUB FACULTY OF MEDICINE AND MEDICAL CENTER

On July 1, 2011, VP/Dean Mohamed Sayegh announced the creation of a new department of neurology at the AUB Faculty of Medicine and Medical Center. Dr. Samir Atweh, Head of the Division of Neurology at the Department of Internal Medicine since 1983, was named as the Founding Chair. In his announcement, Dean Sayegh said:

It gives me great pleasure to announce the appointment of Dr. Samir Atweh as the founding chairperson of the Department of Neurology, a newly created department at the Faculty of Medicine.

Dr. Atweh currently serves as Professor in the Department of Internal Medicine since 1987 and the Head of Neurology Division since 1983. He was appointed Associate Dean for Academic Affairs at FM-AUB (1987-1993), Chair of the Department of Internal Medicine at FM-AUB (1990-1999), Acting Chair of the Department of Psychiatry (2000-2005), and Associate Dean for Medical Education at FM-AUB (2009-present).

Dr. Samir Atweh received the degree of Masters of Science in 1971, and the degree of Doctor of Medicine from the American University of Beirut in 1974, including one year of Internship in Internal Medicine (1973-1974). Following graduation, he did two years as Research Fellow in Pharmacology at Johns Hopkins School of Medicine (1974-1976), and then three years of residency training in Neurology at Massachusetts General Hospital (1976-1979).

Dr. Atweh was appointed as Assistant Professor of Neurology at the Pritzker School of Medicine, Chicago (1979-1983), then he joined AUB as Visiting Associate Professor (1983-1985), and was promoted to Associate Professor in 1985, and then to Full Professor in 1987.

Dr. Samir Atweh is an exceptional physician and a recognized leader with a distinguished record of academic achievement, demonstrated commitment to education and experience in mentoring junior faculty. He is committed to building links with the Abu-Haidar Neuroscience Institute and academic departments throughout the medical school and University.

Under Dr. Atweh's leadership, the Department of Neurology, incorporating six faculty members from the Department of Internal Medicine, will consolidate research and teaching in neurology, an important area of biomedical research.

Please join me in giving our full support to Dr. Atweh. We look forward to the academic, clinical and administrative leadership he will bring to the department.

Neurology was established as a division of the department of Internal Medicine at AUB back in the 1950's by Dr. Fuad Sabra, who led the division through the early 1980's. This was an important milestone where Neurology was recognized as a medical field in Lebanon and the whole area.

Dr. Sabra also established the first Clinical Neurophysiology Lab (EEG) in Lebanon. Dr. Sabra led and maintained the Division during some of the most difficult times of the Lebanese civil war. Upon Dr. Sabra's retirement in 1980, Dr. Adel Afifi, who was the Chair of the Department of Anatomy, directed the division till 1983, when Dr. Atweh assumed the position.

A clinical training program in neurology was established as a fellowship in 1985, and to date, many of its graduates are practicing neurology in Lebanon and the USA. Over the past two decades, the Clinical Neurophysiology Lab has developed into a state-of-the-art service that incorporates all the modern neurophysiological tests.

The new department is poised to make new leaps in conjunction with the Abu-Haidar Neuroscience Institute. Within months, a new inpatient floor will be dedicated to neurology and neurosurgery patients, new outpatient clinics and a new epilepsy-sleep monitoring unit will be established. The neuro-intensive care and the Multiple Sclerosis Center are already functional. The new facilities will make it possible to establish new centers of excellence in the neurosciences including: epilepsy, movement disorders, brain tumors, stroke service and spine diseases, to mention a few. The centers of excellence will also make it possible to expand the research abilities of the new department, the members of which are already involved in several clinical trials in the fields of multiple sclerosis, epilepsy and Alzheimer's disease.

Two new faculty members have already joined the department since its establishment in July 2011, and several others are in the pipeline.

The Neurology Fellowship will commence as an independent three-year residency training program in July 2012, with the possibility of continuing sub-specialization in the fields of epilepsy and clinical neurophysiology, multiple sclerosis and others.



From left to right:

Dr. Fuad Ziyadeh (Chairman of Internal Medicine), Dr. Ahmad Baydoun (Neurology), Dr. Bassem Yamout (Neurology), Dr. Samia Khoury (Director of the Abu-Haidar Neuroscience Institute and Multiple Sclerosis Center-Neurology), Dr. Mohamed Sayegh (Dean of Faculty of Medicine), Dr. Samir Atweh (Founding Chair of Neurology Department), Dr. Riyad Khalifeh (Neurology), Dr. Jean Rebeiz (Neurology-Neuropathology), Dr. Raja Sawaya (Neurology)

THE AHNI HAS THE HONOR OF INTRODUCING THE ADVISORY BOARD MEMBERS:



ADEL AFIFI, MD

Dr. Afifi is a Professor of Pediatrics, Emeritus (University of Iowa). He received his BA from the American University of Beirut in 1951 and then his MD in 1957. He finished his MS from the University of Iowa in 1965. He completed his post-graduate degree in Internal Medicine at the American University of Beirut, and his Neurology Residency and Neuroanatomy Fellowship at the University of Iowa, in addition to a visiting Neurology Fellowship at the New York Neurological Institute, and an Electron Microscopy Fellowship at the Johns Hopkins School of Medicine. His clinical interests focused on child neurology, particularly neuromuscular disorders. His research interests were about human and experimental neuromyopathies. Dr. Afifi has published extensively and authored several books including a classic textbook: Functional Neuroanatomy.

Dr. Akil is the Co-Director of the University of Michigan's Molecular & Behavioral Neuroscience Institute and Gardner C. Quarton Distinguished Professor of Neurosciences in the Department of Psychiatry at the University of Michigan Medical School. She has been elected member of the National Academy of Sciences, one of the highest honors attainable by an American scientist. Dr. Akil's research is aimed at understanding mechanisms of our emotions, including the brain biology of pain, stress, substance abuse and depression. She demonstrated that the brain has an intrinsic ability to actively block pain and was the first to implicate endorphins in the process. Early on, she translated this knowledge to practical applications, demonstrating that deep brain stimulation relieves intractable pain in humans by releasing endorphins. She and her colleagues elaborated the role of endorphins and related neuropeptides in brain function using a combination of molecular, anatomical and behavioral tools. Dr. Akil received a PhD in Psychobiology from the University of California, Los Angeles, and pursued her postdoctoral training at Stanford University. She also holds a master's degree in Psycholinguistics from the American University of Beirut. Her current research investigates the genetic, molecular and neural mechanisms underlying stress, addiction and mood disorders. Along with Stanley J. Watson, MD, PhD, she co-directs the University of Michigan node of the Pritzker Neuropsychiatric Research Consortium. This consortium is engaged in large-scale studies to discover new genes and proteins that cause vulnerability to major depression, bipolar illness and schizophrenia.



HUDA AKIL, PHD



GABRIEL HADDAD, MD

Dr. Haddad is the Chair of the University of California in San Diego's Department of Pediatrics and Physician-in-Chief and Chief Scientific Officer at Rady Children's Hospital, San Diego. Prior to joining UCSD and Rady Children's, he was Professor of Pediatrics and Neuroscience and Chair of Pediatrics at the Albert Einstein College of Medicine in New York. Dr. Haddad received his medical degree from the American University of Beirut in Lebanon. He completed a residency in pediatrics at the University of Texas Medical Center and a pediatric pulmonary fellowship at Columbia University, College of Physicians and Surgeons. His many honors include an Edward Livingston Trudeau Award from the American Lung Association, an Established Investigator Award from the American Heart Association, an Award for Excellence in Pediatric Research from the American Academy of Pediatrics, and election to the Association of American Physicians. Dr. Haddad has published extensively in highly regarded journals and has authored numerous medical texts. Dr. Haddad sits on numerous national committees in basic and clinical research and is a member of 17 distinguished medical societies. He has held numerous editorial appointments and is a reviewer for all of the top-tier medical journals.

Dr. Lozano is a professor in the Department of Surgery, and inaugural Chair Holder of the Ron Tasker Chair in Stereotactic and Functional Neurosurgery at the University Health Network. He also holds a Tier I Canada Research Chair in Neuroscience. His main research and clinical interests lie in the field of the neurosurgical treatment of movement disorders and micro-electrode recordings of the human brain. Dr. Lozano is a graduate of the University of Ottawa, Faculty of Medicine in 1983. Dr. Lozano underwent Neurosurgical Training at McGill University. He became a Fellow of the Royal College of Physicians and Surgeons of Canada in 1990. During his residency in Montreal, Dr. Lozano earned his PhD in Experimental Medicine in 1989. He joined the Neurosurgical Staff at the Toronto Western Hospital in 1991. Dr. Lozano has published extensively in highly regarded journals, sits on numerous committees in basic and clinical research, and is a member of many distinguished medical societies.



ANDRES LOZANO, MD, PHD



RONALD MCKAY, PHD

Dr. McKay is a senior investigator and the chief of the Laboratory of Molecular Biology at the National Institute of Neurological Disorders and Stroke. His laboratory is studying stem cell differentiation. He received a BSc in 1971 and a PhD in 1974 from the University of Edinburgh, where he studied under the tutelage of Edwin Southern, examining DNA organization and chromosome structure. He received his postdoctoral training at the University of Oxford, where he worked with Walter Bodmer on examining restriction fragment length polymorphism (RFLPs). In 1978, he became a senior staff investigator at the Cold Spring Harbor Laboratory, concentrating on two areas: the interaction of SV40 T-antigen with the specific binding site at the viral origin of replication and the molecular organization of the nervous system. Having joined the MIT faculty in 1984, Dr. McKay continues to examine different aspects of neuronal organization in the nervous system.

NEWS FROM THE BENCH

In October 2011, three graduate students defended their master's thesis successfully and earned their Masters of Science with topics in neuroscience.

FROM THE DEPARTMENT OF ANATOMY, CELL BIOLOGY AND PHYSIOLOGY:

DANIA AL ASSADI

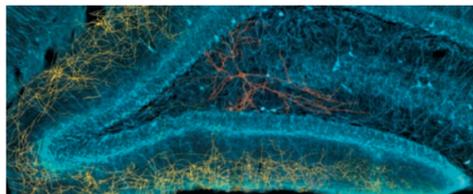
Thesis Title: Role of the intestinal innervation in the negative feedback control of glucose absorption

MARIANNE EL HAGE, DDS

Thesis Title: The effect of capsaicin sensory primary afferents on the eruption rate of rat's mandibular incisors

AMMAR KASSAB, DDS

Thesis Title: The effect of sympathetic neural supply on the eruption rate of rat's mandibular incisors



38 YEARS OF NEUROSCIENCE AT AUB AND STILL GROWING! A BRIEF HISTORICAL BACKGROUND OF THE INTERFACULTY GRADUATE NEUROSCIENCE PROGRAM

It continues to be argued today, as it did appear to a group of AUB professors during the early 1970s, that no field in biology can lend itself to a multidisciplinary integrated approach in both teaching and research better than the field of neuroscience. Furthermore, nowhere can this integrated approach be done better than in a university setting. During the early 70s, a critical mass of neuroscientists was reached at AUB and culminated in the initiation of an Interfaculty Graduate Neuroscience Program (IGNP) which was officially launched in October of 1974.

This collaborative effort involved several departments in the Faculty of Medicine as well as the Department of Psychology (and later the Department of Biology was added) in the Faculty of Arts and Sciences and the Department of Electrical Engineering in the Faculty of Engineering and Architecture. The program is administered by the Neuroscience Coordination Committee in collaboration with the Graduate Committees of the three Faculties concerned.

The Faculty of Medicine continues to serve as the main backbone of the program which involves basic and clinical scientists in various fields of neuroscience. The basic fields include neuroanatomy, neurophysiology, neurobiophysics, neurochemistry, neuropharmacology, and neuropathology and the clinical fields include neurology, neurosurgery, anesthesiology and psychiatry. Despite the overwhelming negative impact of the civil upheavals which started in 1975 on all life in Lebanon, including AUB, the program continued to attract graduate students. The heavily concreted basic science (Diana Tamari Sabbagh) building to which we moved in 1975 served not only for teaching and research but also as accommodation to our graduate and medical students and research assistants.

The addition of this to the severe restrictions on our social life, and our living on campus, boosted the research productivity of the neuroscience program and contributed significantly to its survival during the war when other programs experienced periodic stoppage during this period.

One of the first neuroscience graduates was Dr. Samir F. Atweh who took a year off during his medical studies to complete a masters program in neuroscience, before completing his MD program, with a specialization in the field of neurology, and returning to his alma mater and ultimately chairing the newly created Department of Neurology at AUB. Just after the launching of the IGNP in 1974, the responsible faculty for initiating the program also applied to the government of Kuwait for a 10-year grant to support the Brain Research Unit at AUB. This application was initially approved but later deferred indefinitely due to the Lebanese civil war. Listed alphabetically are the initiating faculty included: Dr. Adel K. Affi (Anatomy) Dr. Fuad T. Antun (Psychiatry) Dr. Anis S. Baraka (Anesthesiology) Dr. Sami Harik (Internal Medicine) Dr. Mohamad Z. Ibrahim (Anatomy) Dr. Suhayl J. Jabbur (Physiology) Dr. Kanaan A. Kano (Electrical Engineering) Dr. Nassir H. Sabbah (Electrical Engineering) Dr. George Tomey (Mechanical Engineering) Dr. Jean J. Rebeiz (Pathology)



From left to right:

Sitting: Dr. Fuad Antoun (head of Psychiatry), Dr. Fuad Sabra (head of Neurology), Dr. Maria Salam (visiting Pediatric Neurology), Dr. Raymond D. Adams (Visiting Chairman of Neurology, The Massachusetts General Hospital), Dr. Fuad Sami Haddad (head of Neurosurgery), Dr. Jean Rebeiz (Neurology-Neuropathology)
Standing: Zuhayr Habbal (Biochemistry PhD Student), Dr. Riyadh Khalifeh (Neurology), Dr. Amin Fares (Neurology), Dr. Edmond Rahmeh (Neurology), Dr. Adel Afifi (Neurology-Neuroanatomy, Chair of Anatomy), Dr. Sami Harik (Neurology), Dr. Sami Nassar (Neurosurgery), Dr. Suhayl Jabbur (Basic Neurophysiology), Mr. Butros Saade (Neuro-Rehabilitation), Dr. Naim Atallah (Neuro-Radiology)

Dr. Ziad Nahas joined the AUB community in the summer of 2011 as Professor and Chair of the Department of Psychiatry. Dr. Nahas received his Medical Degree from Saint Joseph University in Lebanon.

He then completed an internship in Psychiatry at L'Institut Paul Silvadon and Hopital Charles Foix in Paris, France.

Dr. Nahas moved to Houston, Texas, in 1993 as a resident in Psychiatry at Baylor College of Medicine. He also attended the Houston-Galveston Psychoanalytic Institute's psychodynamic psychotherapy course. In 1997, he joined the Medical University of South Carolina (MUSC) where he completed a research fellowship in Functional Neuroimaging and Psychopharmacology and later a Master of Science in Clinical Research.

Dr. Nahas held the title of a Tenured Associate Professor of Psychiatry and Behavioral Sciences with an adjunct appointment in the Department of Physiology and Neuroscience until his recent move to Beirut.

His scientific interest lies in translational neuropsychiatric research in mood dysregulation and depressive disorders. His current studies cover the full spectrum from clinical research and functional neuroimaging to basic science including mathematical modeling of long-term antidepressant outcomes.

He is also actively involved in bridging psychoanalytical concepts and affective neurosciences. Dr. Nahas is a renowned expert in brain stimulation therapies.

He is primarily focused on investigating Transcranial Magnetic Stimulation, Electroconvulsive Therapy, Vagus Nerve Stimulation, Deep Brain Stimulation and Epidural Cortical Stimulation.

He has received funding from various sources, notably the National Institute of Mental Health (NIMH), the National Alliance for Research in Schizophrenia and Depression (NARSAD) and the Hope for Depression Research Foundation (HDRF).

He has chaired continuing medical education courses on brain stimulation at the American Psychiatric Association annual meetings for the past eight years and chaired the Neuroimaging Committee of a large multicenter NIMH funded clinical trial in TMS and depression.

He has received several awards including the NARSAD Independent Investigator Award and the Developing Scholar Award at MUSC. He is also a full member of the American College of Neuropsychopharmacology.

His recent studies have demonstrated the feasibility, safety and possible efficacy of bilateral epidural cortical stimulation for TRD.

The first patient to be implanted in the world following this methodology was recorded in February 2008.

Results were published in Biological Psychiatry as a Priority Communication and his research on the topic was listed in the Top 10 research developments for the year 2009 by NARSAD.

MEET THE NEUROSCIENTIST



ZIAD NAHAS, MD, MSCR

Dr. Nahas' recent studies also focused on understanding the homeostasis of depression to explore interventions that facilitate contextual treatment.

Given the importance of social relatedness in depression, Dr. Nahas focused on studying the role of oxytocin and brain functions. He has shown that depressed patients tend to process mental attribution of affective states with the same intensity as simple gender identification, whereas normal control shows complementary but distinct functional neuronal activity to both tasks.

This may help better define the functional role of oxytocin in contextual attention to others and lead to possible therapeutic applications in depression in general and post-partum depression in particular.

Dr. Nahas developed a Markov model to simulate 12-month long double blind placebo conditions, which are important in planning future studies with implantable devices.

Over the next five years, Dr. Nahas' goal is to grow the AUBMC Department of Psychiatry, enrich its multidisciplinary collaborations, bring innovative brain stimulation and various psychiatric subspecialties to Lebanon and the region while continuing his translational and clinical research to develop a solid understanding of the pathophysiology of chronic depression and investigating new treatments for relapse prevention.

HE ALSO INTENDS TO
BE A STRONG ADVOCATE
FOR THE PARITY OF
MENTAL HEALTH CARE
COVERAGE IN LEBANON.

AUBMC INAUGURATES THE FIRST MULTIPLE SCLEROSIS CENTER IN MENA

Under the patronage of the Minister of Public Health, Ali Hassan Khalil, represented by Dr. Nizar Bitar, and in the presence of members of the university board of trustees and President Peter Dorman, the first Multiple Sclerosis (MS) Center in the region was inaugurated on October 4, 2011 in a ceremony attended by world renowned physicians, various experts in MS, and the President of the Syndicate for Private Hospitals, Dr. Suleiman Haroun. The ceremony took place at the AUBMC MS Center located on John Kennedy Street in the Abou-Khater Building of AUBMC.

In his speech, Bitar stated that the Multiple Sclerosis Center is a "major national need" as the Ministry of Public Health takes patients with MS and their needs most seriously. In June 2010, the Minister of Health issued instructions for using magnetic cards that organize the provision of medication to MS patients, while identifying a suitable mechanism for this provision: five regional centers for bi-monthly medicine distribution in Saida, Nabatiyeh, Zahleh, Beiteddine and Tripoli. According to Bitar, the number of MS patients benefitting from the Chronic Diseases Program exceeds 700 (5% of beneficiaries of the medication system).

The total cost of providing medication for MS patients, according to Bitar, is estimated at LBP 14.3 billion, which is equivalent to contract budgets with 5 public hospitals, or 13% of the total budget of the Ministry of Health Program designated for chronic diseases. Bitar expressed hope that the center would contribute – through scientific and clinical research, as well as available advanced diagnostic tools such as MRI – to the advancement of knowledge on the causes of illnesses, their development, and their diverse symptoms that affect the nerve, muscular, digestive, and respiratory systems, and could lead to extreme vulnerability and paralysis.

The ceremony was initiated by the Founding Chairman of the Department of Neurology at AUB, Dr. Samir Atweh, who highlighted the importance of founding an MS center, as it strengthens the role of AUB in the field of neurology and offers expertise to its graduates. This center comes three months after the launch of the first academic

department for neurological diseases in the University.

Atweh noted that "AUB has been taking the lead in neurology and neurological medicine since as early as the 1950s." He added, "a wing for neurology and neurosurgery with a unit specialized in epilepsy will be inaugurated in three months, along with a unit for monitoring epileptic and sleep disorders.



Another initiative is also in the horizon for opening outpatient clinics for brain disorders." Atweh commended the capabilities of the new staff, naming the Director of the Abu-Haidar Neuroscience Institute and the Multiple Sclerosis Center, Dr. Samia Khoury, the Director of Clinical Research at the center, Dr. Bassem Yamout, and MS expert Dr. Nuhad Abou Zeid. Khoury considered the establishment of the MS Center "another milestone within AUB's long history of achievement and leadership, both on the national and regional levels." Khoury added that "the establishment of specialized centers falls within the main lines of AUBMC's 2020 Vision in attempting to fulfill health needs within Lebanon and the wider Arab region." This center "joins other specialized centers within AUBMC and is the start of a series of future projects." Khoury underlined the fact that "this center will be the first center of its kind within the Arab region in both treatment and medical research." She added that there was a need to establish the center due to the fast development of the disease and its possible means of treatment. AUBMC's strategy over the years, aligned with its vision for the future, AUBMC 2020, is based on the provision of the highest standards of quality patient-centered care. Khoury stressed that "the MS center will be providing comprehensive health care to all patients, regardless of their mobility and physical capabilities." This is important considering the debilitating effects the disease can have on patients. "The provision of comprehensive care requires developed capabilities and high quality technology that not only contributes to the treatment of the disease and its symptoms, but also improves the quality of patients' lives. The center aims to provide social, physical, and psychological support to the patients and their families," Khoury explained.

"THIS CENTER WILL BE THE FIRST CENTER OF ITS KIND WITHIN THE ARAB REGION IN BOTH TREATMENT AND MEDICAL RESEARCH."

TMS FOR TREATING DEPRESSION: A NEW TREATMENT FOR PATIENTS IN THE ARAB REGION

The use of somatic interventions to control or treat mental symptoms dates back to ancient times^(1,2). Between 1917 and 1937, four methods for producing physiological shock were discovered, tested and used in psychiatric practice for treating psychosis: fever, insulin-induced coma, medication-induced convulsions, and electrically induced convulsions (electroconvulsive therapy). In 1937, Cerletti and Bini applied transcranial electroconvulsive shock therapy (ECT) to induce seizures safely and reliably⁽³⁾. It was received with great enthusiasm given the remarkable therapeutic effects (in patients who now would most likely be classified as psychotically depressed) and the technical ease of administration compared to insulin or metrazol shock. Since then, ECT became the method of choice for convulsive therapy⁽⁴⁾. It is currently reserved to treatment-resistant depression or special patient populations like the elderly. Over 60 years of experience have significantly improved this technique and made it safer to administer. It is, however, associated



with certain cognitive side effects.

TMS is another form of somatic therapy and refers to a technique by which electrodeless stimulation of the cells is produced by a rapid oscillation in electrical and then magnetic energy. If activated over the skull, it allows access to a network of anatomically and functionally related brain regions through local non-invasive stimulation of the cortex. It influences deeper brain structures through neuronal conduction. TMS in itself is not a new idea. In 1896, the French engineer Arsenne d'Arsonval applied TMS over the retina and induced phosphenes (white dots you see when you close your eyes after looking at the source of a bright light). Interestingly, even then, and in a communication of the French Society, he also noted "other psychological effects that should be studied further"⁽⁵⁾. In 1910, A. Pollacsek and B. Beer filed a patent in Vienna to use magnetic stimulation for the treatment of depression. However, it wasn't until the 1990's that the technology became sufficiently developed to allow induced

electromagnetic fields that caused cortical neuron depolarization.

With a growing knowledge of the distributed neuronal networks involved in various neuropsychiatric phenomena, work with TMS has quickly expanded from early investigations of motor electrophysiology to using it as a tool to modulate (and possibly regulate) dysfunctional brain regions. TMS applications are designed to be sub-convulsive in nature, hence differ substantially from ECT and do not require general anesthesia. TMS is relatively easy to administer in alert and awake subjects under medical supervision.

There is mounting evidence that prefrontal TMS, repeated over several weeks, has a clinically meaningful acute antidepressant effect. The clinical benefits are as good, and in some circumstances better than antidepressant drug therapy. TMS does not have the usual side effects associated with drug therapy like weight gain, gastro-intestinal disturbance and sexual dysfunctions. Few studies explored long-term maintenance regimens. Anecdotal reports suggest a specific decrease in suicidal ideations. Recent data imply that a higher number of stimuli per session and longer treatment courses are more effective.

In 2008, 15 years after its first modern application in humans, the US Food and Drug Administration approved TMS for moderate treatment-resistant unipolar depression in adults. Many researchers, including our team in the US and at the American University of Beirut, are exploring new indications and ways to improve the efficacy of this treatment. Because it increases the risk of seizures, it is unlikely that TMS machines will be used without medical supervision in the way that light boxes are now used. However, more research is still needed before TMS can be seen as an integral part of the clinical armamentarium against depression.

References:

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2. Kalinowsky LB. History of convulsive therapy. *AnnNYAcadSci.* 1986;462:1-4.
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4. Fink M. Theories of the antidepressant efficacy of convulsive therapy (ECT). In: Post RM, Ballenger JC, editors. *Neurobiology of mood disorders.* Baltimore: Williams and Wilkins; 1984. p. 721-30.
5. d'Arsonval A. Dispositifs pour la mesure des courants alternatifs de toutes frequences. *CR Societe Biologique (Paris).* 1896;May 2:450-1.

PREFRONTAL TMS, REPEATED OVER SEVERAL WEEKS, HAS A CLINICALLY MEANINGFUL ACUTE ANTIDEPRESSANT EFFECT. THE CLINICAL BENEFITS ARE AS GOOD, AND IN SOME CIRCUMSTANCES, BETTER THAN ANTIDEPRESSANT DRUG THERAPY.