APT CENTER
WE BUILD TRANSLATION

TRANSLATION BUILDER

This newsletter is designed to provide a place for members of the APTC to share news, collaborate and network, and discover each other and the services we offer.

APRIL 2017

Investigator's Corner

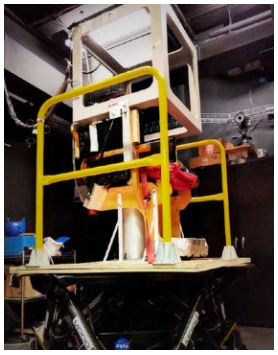
Mark Walker, M.D.,

Staff Neurologist, Director of the Daroff-Dell'Osso Ocular Motility Laboratory at LSCVAMC
Associate Professor of Neurology, Case Western Reserve University
APTC Research Area: Neural Interfaces

Aasef Shaikh, M.D., Ph.D.

Staff Neurologist, Investigator in the Daroff-Dell'Osso Ocular Motility Laboratory at LSCVAMC
Assistant Professor of Neurology, University Hospitals Cleveland Medical Center
APTC Research Area: Neural Interfaces

THE DAROFF-DELL'OSSO OCULAR MOTILITY LABORATORY



Drs. Mark Walker and Aasef Shaikh are Principal Investigators in the Daroff-Dell'Osso Ocular Motility Laboratory. The laboratory was **founded in 1980** by Dr. Robert Daroff and Dr. Louis Dell'Osso. Under their leadership and that of Dr. John Leigh, the lab established itself as a **premier institution for the study of eye movements** and for training new investigators. A number of former trainees have themselves become successful investigators and clinicians. A strength of the laboratory is **state-of-art data acquisition systems for capturing movements of the eyes, head, limbs, and trunk**. The laboratory is also equipped with a six-degree of freedom motion platform (a MOOG hexapod, *see photo on right*) and a three-dimensional turn-table for whole body rotation (Epley chair) that are used **to assess eye movements, vestibular function, and balance** in a wide variety of neurological conditions. Dr. Walker is the current director of the laboratory, whose staff also includes Drs. Shaikh, John Stahl, Alessandro Serra, and Jonathan Jacobs. Click here to see the history of the Lab.

NEW DEVELOPMENTS

Dr. Walker's recent research focuses on the **neurovestibular control of equilibrium** and its relationship to disorders of balance in various conditions, such as ataxia, traumatic brain injury, multiple sclerosis, inner ear diseases, and normal aging. He is also **investigating new approaches to the rehabilitation of vestibular disorders**.

Dr. Shaikh's current work on cervical dystonia, which presented a **new unifying theory of the pathogenesis of cervical dystonia**, was **published last year in Brain**. In this paper, he presents "a novel conceptual framework that emphasizes the role of abnormal feedback to the midbrain head neural integrator." The authors hypothesize that dystonia could be treated by modulating feedback, thereby changing the activity, in an impaired head neural integrator via deep brain stimulation to potentially novel stimulation targets. Click here to read the full article.

RECENT ACCOMPLISHMENTS

Dr. Walker is the recipient of the most recent **APTC Steven Garverick Innovation Incentive Program award**. With this funding, he will initiate the development of a virtual-reality game-based approach to provide a new and innovative tool for vestibular rehabilitation. In addition to being a physician at LSCVAMC, he has co-/authored over 45 peer-reviewed journal articles and has reviewed grants for the NIH, VA, and Swiss NSF, as well as manuscripts for a number of scientific journals. Locally at the LSCVAMC, he serves as a **Vice Chair of the Research and Development Committee**.

Although early in his career as a researcher, Dr. Shaikh was awarded the prestigious Grass Foundation – American Neurological Association Award in Neuroscience in 2016, The American Academy of Neurology Alliance Award - Founders in 2015, and received a **Career Development Award from the Dystonia Coalition**. He was one of only three clinician-researchers to receive this annual award and is using the grant to study the physiology of head tremor in cervical dystonia. Dr. Shaikh is a section editor for the journal Cerebellum, review editor for Frontiers in Neurology (Neurotology), and guest associate editor for the Frontiers in Neurology (Neuro-ophthalmology). He has also co-/authored 82 peer-reviewed journal articles to date and reviews grants for NIH and manuscripts for over 20 scientific journals, while also finding time to be a physician at LSCVAMC.

LAB TEAM

In addition to Drs. Shaikh and Walker, the Ocular Motility Lab consists of **John Stahl, MD, PhD** (Professor of Neurology at CWRU, Staff Neurologist at LSCVAMC), **Alessandro Serra, MD, PhD** (Assistant Professor of Neurology at CWRU, Staff Neurologist at LSCVAMC), and **Jonathan Jacobs, PhD** (Adjunct Instructor of Neurology at CWRU) who serves as the Lab's engineer as well as being a Principal Investigator. Dr. Stahl is using **cutting-edge neurophysiological techniques** to study the mechanisms underlying ataxia and diseases of the cerebellum. Dr. Serra, who is a specialist in multiple sclerosis, is using an abnormality of eye movements called **internuclear ophthalmoplegia** to study the mechanisms and treatment of disabling fatigue in MS. The lab team is rounded out by students, residents, and fellows who are actively involved in ongoing research projects.

(L-R, back row) Jonathan Jacobs, Aasef Shaikh, John Stahl
(L-R, front row) Mark Walker, Alessandro Serra

FDA & Quality Fast Facts

Investigational Device Exemption (IDE)

WHAT IS AN IDE?

An IDE is an FDA allowance to use an investigational device in a clinical study in order to collect feasibility, or safety and effectiveness data required to support applications toward (eventual) device commercialization. Technically, an IDE refers to the regulations under Chapter 21 Code of Federal Regulations (CFR) 812. An approved IDE means that the IRB (and FDA for significant risk devices) has approved the sponsor's study application and all the requirements under 21 CFR 812 are met.

The process of obtaining an IDE is formal, utilizing FDA templates and coordinated with IRB review and approval. All clinical evaluations of investigational devices, unless qualified as non-significant risk, exempt, or meeting narrowly defined criteria, must have an approved IDE before the study is initiated or advertised.

DO I NEED AN IDE?

Investigations covered under IDE regulations are subject to differing regulatory controls depending on the level of risk. The IDE regulation distinguishes between significant and non-significant risk device studies and the procedures for obtaining approval to begin your clinical study differ accordingly.

Significant risk devices present a potential for serious risk to the health, safety, or welfare of a study subject. An IDE must be obtained for significant risk devices/investigations even if you do not intend to commercialize the device.

- Requires both FDA and Institutional Review Board (IRB) approval prior to initiation of a clinical study.
- FDA approval is obtained by submitting an IDE application to FDA.
- An IDE will not be approved without confirmation that all affiliate IRBs have also approved the investigation.

Non-significant risk devices are devices that do not pose a significant risk to the human subjects (e.g., most daily-wear contact lenses, foley catheters, etc.).

- Requires only IRB approval prior to initiation of a clinical study, including a justification of why the device does not pose a significant risk.
- If you have begun your study and the IRB then disagrees with your non-risk assessment and determines that the device poses a significant risk, this finding must be reported to FDA within 5 working days.
- FDA considers an investigation of a non-significant risk device to have the *equivalent of an approved risk IDE* (without the application to FDA) when IRB concurs with your non-significant risk determination and approves the study.

The IRB is the primary point of origin for determining whether or not your device/investigation carries significant risk; however, it is useful and highly recommended that you visit with the FDA specialist prior to submitting a new study application to the IRB.

HOW DO I START?

Other Federal oversight bodies, the local IRB, and LSCVAMC also have guidelines and procedures that direct human subjects research. The APT Center can help you meet these requirements, determine which classification your device concept likely meets, and provide templates and a decision tree tool that will help determine your next step. Contact Jen Wall, PAHM, CCRP, at ext. 3578 or Jennifer.wall@va.gov with questions.

The APTC offers regulatory and quality support, including consulting services, to investigators at any point along their research and development continuums, from earliest concept to human trials. Developing a medical device with the ultimate goal of investigation via human studies? We provide a variety of resources to assist you.

APRIL NEWS

Congratulations to Hamid Charkhkar, PhD, and Andrew Shoffstall, PhD!

Drs. Charkhkar and Shoffstall, post-doctoral scholars for Drs. Ron Triolo and Jeff Capadona, respectively, joined the ranks of APTC Investigators at the beginning of March. Dr. Charkhkar will continue his work to restore natural sensation to lower limb amputees with Dr. Triolo, and Dr. Shoffstall will continue his work developing material-based solutions to reduce inflammation at the neural interface with Dr. Capadona

VA Innovators Network

APTC received 5 awards from the VA Innovators Network this year!

Interested in finding out how you can join the ranks of APTC Investigators and Staff that were recently awarded VA Innovators Network (VAIN) Spark-Seed-Spread Innovation Funding Program awards? Check out VAIN's website to find out more and join the Network! The next call for applications will open in the Fall.

The VA Center for Innovation, the parent organization of VAIN, also emails updates full of great information. Sign up here!

Visitors are welcomed in the APT Center!

We had a flurry of activities the past few months, including two tours of the Motion Study Lab.

VA Stakeholders Day

On March 21, Dr. Ron Triolo, Rudi Kobetic and staff, along with Medical Center Director Sue Fuehrer, hosted staff representatives/congressional aides from many of the Congressional Offices throughout NEO, as well as representatives from some Veteran Service Organizations.

Dr. Ron Triolo, Kevin Foglyano, Lisa Lombardo and visitors listen as a research subject who is paraplegic demonstrates how the implanted technology she has to give her "trunk control" also allows her to ride a "trike."

Congressman Louis Stokes' family

On March 24, LSCVAMC paid tribute to the Medical Center's namesake, United States Congressman Louis Stokes, and celebrate his life and the contributions he made to Cleveland Veterans. After the event, APTC staff were honored to meet with the late Congressman's family and show them a few APTC projects, including Dr. Triolo's sit-to-stand technology that lead to a victory in the Cybathlon last year, and a prototype of the Hybrid Neuroprosthesis.

(L-R) Lisa Lombardo, Marvin Cross, Alexandra Thompson, Jay Stokes, Sue Fuehrer, Lori Stokes, Brooke Odle, Kevin Foglyano, Kevin Tloczynski, Krysttel Stryczek

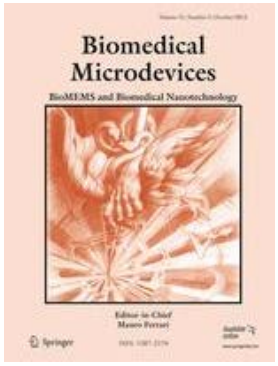
INNOVATIONS WALL and RECOGNITION CEREMONY

On April 3, the APTC held an official unveiling of the **Innovations Wall** along with a **Recognition Ceremony** for all of the Investigators that possess patents for their inventions. We were joined by Medical Center Director, Sue Fuehrer, and Chief of Staff, Dr. Murray Altose for the occasion.

And a giant THANK YOU to Trinity Albertson (below, left) for all of her hard work designing the Innovations Wall, creating the Recognition Awards for our patent recipients, and setting up the reception. This would not have been possible without your creativity and drive!

RECENT PUBLICATIONS

Microfluidic processing of synovial fluid for cytological analysis

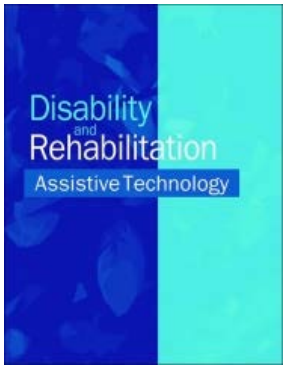


Biomedical Microdevices, 2017

Authors: John C. Krebs, Yunus Alapan, Barbara A. Dennstedt, Glenn D. Wera, Umut A. Gurkan

This article is a result of pilot funds from the APTC's Steven Garverick Innovation Incentive Program, awarded to Drs. Gurkan and Wera in 2014.

Detecting destabilizing wheelchair conditions for maintaining seated posture



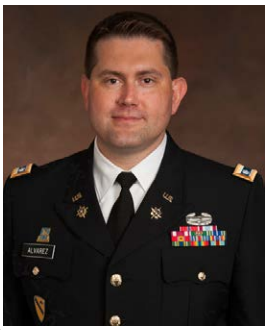
Disability and Rehabilitation: Assistive Technology, 2017

Authors: Anna Crawford, Kiley Armstrong, Kenneth Loparo, Musa Audu, Ronald Triolo

This article is the result of Anna Crawford's master's thesis on event detection, which was a part of Dr. Ron Triolo's seated posture and balance project.

TRAINING AND EVENTS

APT Center Distinguished Lecture Series



Neural Culture Screening Platform to Accelerate Regenerative Electrode Design
Presented by LTC Luis M. Alvarez, Ph.D., P.M.P.
May 19, 2017
11:00a - 12:00p
https://www.regenbiogroup.org/

Abstract: The long-term performance of regenerative neural electrodes is determined in large part by the biological effects of material surfaces at the *neural interface* and by the bulk material properties beneath the *biological interface*. We have started to explore known morphogenic cues presented in the form of biologically-active surface coatings to guide axon extension and afford precise spatial control over axon placement. We have developed a neural culture platform that can be used to screen biologically-active surface coatings and mechanical properties in a relevant 3D context. This platform can be used as a research tool to guide material selection in the development of neural electrodes, in drug screening, or as a selective neural guide where precise spatial control over axon placement is required either pre- or post-extension.

Department of Veterans Affairs Technology Transfer Program

Ms. Kerry Leonard, JD, MBA, a Technology Transfer Specialist in the Department of Veterans Affairs Technology Transfer Program, recently visited LSCVAMC. While she was here, she gave two presentations:

1) Overview of the VA Technology Transfer Program. Click here to see slides from the presentation.

2) Technology Transfer In-depth. Click here to see slides from the presentation or watch here**.**

- When a technology/discovery is worth filing an invention disclosure
- At what point should an investigator file an invention disclosure
- Examples of a completed invention disclosure form

VA Technology Transfer Program's Intellectual property management services include:

- Invention evaluation
- Obtaining intellectual property protection
- Marketing inventions
- Negotiating license agreements
- Advising on IP-related agreements and CRADAs

BRAVE

TECHNOLOGY TRANSFER PROGRAM

APTC maintains libraries to many regulatory guidance documents

The **Association for the Advancement of Medical Instrumentation (AAMI)** standards program consists of over 100 technical committees and working groups that produce internationally recognized Standards, Recommended Practices, and Technical Information Reports for medical devices.

Standards and Recommended Practices represent a national consensus and many have been approved by the **American National Standards Institute (ANSI)**. AAMI also administers many international technical committees of the **International Organization for Standardization (ISO)** and the **International Electrotechnical Commission (IEC)**, as well as **U.S. Technical Advisory Groups (TAGs)**.

Please contact Ed Panek at Edward.panek@va.gov if you are in need of a document.

UPCOMING GRANT DEADLINES

APRIL
28 - DARPA: Full Biological Technologies Office (BTO) proposals for 2017

MAY
1 - VA BLRD/CSRD: CDA LOI
1 - VA CSRD: Clinical Trial Merit LOI
1 - VA HSRD: Merit LOI
1 - VA RRD: Merit, RCS, CDA LOI and Waiver Requests
10 - CWRU Technology Validation & Start-Up Fund Program: Full Proposal

JUNE
1 - VA BLRD/CSRD: CDA
5 - NIH: R01, U01 New Applications
12 - NIH: K New Applications
12 - VA HSRD: Merit, CDA Applications
12 - VA RRD: Merit, RCS, CDA Applications
16 - NIH: R21 New Applications

JULY
5 - NIH: R01, U01 Renewal, Resubmission, Revision Applications
12 - NIH: K Renewal, Resubmission, Revision Applications
16 - NIH: R21 Renewal, Resubmission, Revision Applications

LINKS TO ANNOUNCEMENTS
CWRU RFP
DARPA Announcement
NIH Parent Announcements
VA RFAs

Have something to share? Send YOUR good news and professional accomplishments to Rebecca Polito at rpolito@aptcenter.org to include in a future APT Center eNewsletter.