



University of Colorado **Anschutz Medical Campus**



HEADlines

TIMELY NEWS FROM THE DEPARTMENT OF NEUROSURGERY

Winter 2021





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MESSAGE FROM THE CHAIR OF NEUROSURGERY:

Despite our ongoing battle with COVID-19, the Department of Neurosurgery has remained incredibly busy through these hard times. Our inpatient surgeries are up 18-20% compared to one year ago, the ICUs remain over-flowing and both the clinical and basic science research efforts are going strong. In this Newsletter, in addition to welcoming new staff and listing new positions and publications, we are high-lighting an incredibly exciting program being developed by Dr. Dan Kramer, on Brain Computer Interface. The BCI program will be one of only 4 such programs in the country, revolutionizing how we approach patients with devastating neurologic injuries. Also, two of our spine neurosurgeons share a relatively new procedure that is changing the lives of patients with SI joint issues.

Each month we like to highlight one of our incredibly talented teams and this month is dedicated to our Advanced Practice Providers (APPs). Our APPs are the glue that holds us all together and are the face of neurosurgery to many of our patients. We are so grateful for all they do!



Our Newsletter is a means to update people on all the diverse activities currently going on in the Department and to recognize the accomplishments of many. This is an incredible team and a Department we can all be proud of.

*Kevin O. Lillehei, MD
Professor & Ogsbury-Kindt Chair
Department of Neurosurgery*



CHILDREN'S HOSPITAL OF COLORADO NAMES NEW CHAIR OF PEDIATRIC NEUROSURGERY



*Todd Hankinson, MD
New Chair of Neurosurgery,
Children's Hospital of
Colorado*

We are excited to announce that Todd Hankinson, MD, Clinical Medical Director of the Department of Neurosurgery at Children's Hospital of Colorado, assumed the role of Chief of Neurosurgery at Children's in January of 2021. In addition to this new position, he will continue his responsibilities as Clinical Medical Director.

Dr. Hankinson, a professor of Neurosurgery and Pediatrics, has been a member of the CU Neurosurgery faculty, since Aug. 2010. He is a worldwide leader in the care of patients with craniopharyngiomas and has made many significant contributions to clinical outcome research. Dr. Hankinson is eager to advance his leadership vision and expand our focus on research and unique approaches to multi-disciplinary care.

Dr. Hankinson will take over for Michael Handler, MD, Associate Surgeon-In-Chief, who has held this role for the past 15 years. The Department of Neurosurgery at CHCO, thanks in large part to Dr. Handler's leadership, has earned national and international recognition as a center for excellence in neuro-oncology, fetal neurosurgery, epilepsy surgery and more. Additionally, under Dr. Handler's leadership, the CHCO Neurosurgery team has developed a competitive International Pediatric Neurosurgery Fellowship, expanded from two attending physicians to seven, introduced an additional four advanced practice providers and fostered a culture of innovation and excellence.

Dr. Handler will continue serving as Associate Surgeon-in-Chief. Please join us in congratulating Dr. Hankinson and thanking Dr. Handler for his continued commitment to Children's Colorado, and to the CU Neurosurgery Department.

CU Anschutz Medical Campus Only

7,850

neuro ICU equivalent patient days

900

neuro trauma and critical
care patients

7,909

neuro spine cases

710

neuro spine procedures

3,059

cerebrovascular cases

237

cerebrovascular neurosurgical
interventions

5,307

brain tumor cases

612

brain tumor procedures

1,238

functional neurosurgical cases

340

functional neurosurgical procedures

4,248

Neuropsychological
Evaluations Performed

3,103

pediatric neurosurgical cases

2020 NEUROSURGERY NUMBERS LOOK GOOD!

Each year, we are required to gather clinic and procedural data for the U.S. News & World Report ranking of hospitals and academic programs across the country. This year, these were some of our numbers:

57

total
publications

9

anatomy labs in the
Center for Surgical
Innovation (CSI)

18

research
grants awarded

31

active clinical
trials

29

grand rounds
presentations

57

research grants
submitted

7

national awards
presented to
faculty

65

external speaking
engagements

CU NEUROSURGERY DEPARTMENT IS EXPANDING NORTH AND SOUTH!

The CU Department of Neurosurgery Faculty provides neurosurgical services to several hospitals, including the University of Colorado Hospital at CU Anschutz, Children's Hospital at CU Anschutz, the VA at CU Anschutz, Denver Health Medical Center in downtown Denver, Highlands Ranch Hospital in Littleton, and now – our newest additions! Please help us in welcoming Dr. Tom Ridder who will join Dr. Michael Handler to provide pediatric Neurosurgical Services at Memorial Hospital in Colorado Springs; Dr. Daniel Cavalcante who will provide neurosurgical call services at Medical Center of the Rockies in Loveland, as well as inpatient and outpatient and surgical coverage at Longs Peak Hospital in Longmont. In addition, one of our talented spine surgeons, Dr. Peter Lennarson, is now seeing patients at CU's Sports Medicine and Performance Center in Boulder. CU Neurosurgery's got you covered!!



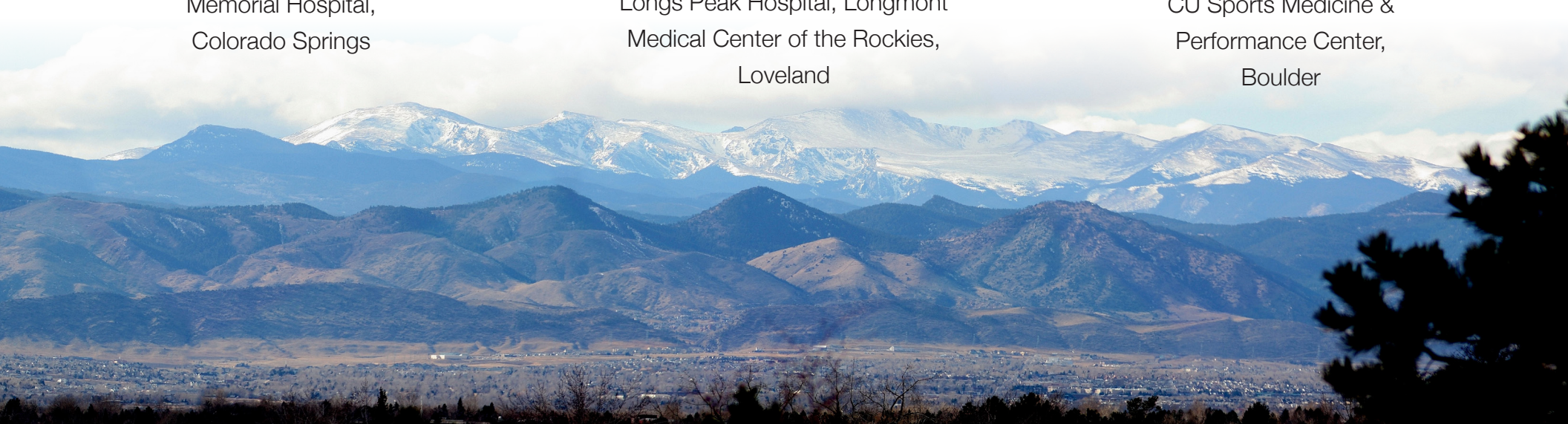
Thomas Ridder, MD
Pediatric Neurosurgeon
Memorial Hospital,
Colorado Springs



Daniel Cavalcante, MD
General Neurosurgeon
Longs Peak Hospital, Longmont
Medical Center of the Rockies,
Loveland



Peter Lennarson, MD
Spine Neurosurgeon
CU Sports Medicine &
Performance Center,
Boulder



ADVANCED PRACTICE PROVIDERS MAKE A HUGE DIFFERENCE!

APP stands for Advanced Practice Provider and there are several types of designations that fall into this category.

- NP- Nurse Practitioners
- PA – Physician Assistant
- CRNA - Certified Nurse Anesthetist
- AA – Anesthesia Assistant
- CNS – Clinical Nurse Specialist
- CNM – Certified Nurse Midwife

In all cases, these are providers who have gone to graduate programs (masters or doctorate degree) and have received specialized clinical training to be able to diagnose and treat patients within their specialty.

APP's can NOT perform major surgery, but can assist in surgery. APP's are specially trained to do several procedures (shunt taps, lumbar punctures, drain/monitor placement, etc), and can prescribe medications. They are often the “go to” for patients before and after major surgery and are seen as the “constant” within our clinical programs.

All of the APP's in the Department of Neurosurgery are also faculty members. They teach in many areas, including pharmacology, diagnostics, care management, pediatric neurosurgery and other areas within certain specialties, such as spine, brain tumor and movement disorders. Most of them teach Nurse Practitioner students, PA students, nursing students, residents, fellows, and all

staff that also care for our patients, including RN's, rehab therapists, social workers and MD's from other services.

These amazing providers also do a great deal of research in our academic setting. Research projects cover a wide range of topics, from MRI changes in carcinomatous meningitis in patients with metastatic melanoma, to quality improvement projects, to how the ketogenic diet contributed to significant tumor growth in a patient with a tumor that carried a specific genetic mutation.

“We are fortunate within our department to work with surgeons who value and support what APPs have to offer in the care of our patients,” says Patti Batchelder, PNP-BC, MSN, Senior Instructor. The APPs see patients in coordination with the surgeons, but also independently, which results in more available clinic time for patients. Sometimes, the APP's have a bit more time to spend with patients, which brings more patient satisfaction and better outcomes. They know their surgeons well and can often predict next steps, medications, and/or tools the surgeons will choose in treating various conditions.

Our department simply could not handle the patient load, nor the complexity of neurological conditions and cases that we do without our APP's. Many thanks to each and every one of them!

WELCOME To Our Newest Advanced Practice Provider

Erin Pillette, DNP,
RN, FNP-BC
Instructor, Brain Tumor &
Skull Based Surgery



ADULT NEUROSURGERY ADVANCED PRACTICE PROVIDERS:



Azin Alizadehardebili, PA-C
Instructor, Functional &
Movement Disorders



Terri Baker, PA-C
Instructor, Spine Disorders



Amanda Brill, NP, MSN, RN
Senior Instructor, Endovascular &
Skull Base Surgery



Colin Catel, MMS, PA-C
Instructor,
Adult Brain Tumor



Lawrence Cloutier, PA-C
Instructor, Spine Disorders



Michelle DeGrave, PA-C
Instructor, Spine Disorders



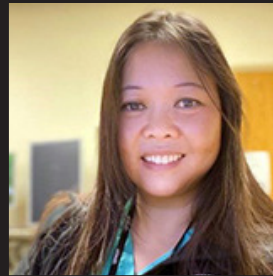
Elizabeth Humes, PA-C
Instructor, Functional &
Movement Disorders



Kristin Kasper, ANPC
Instructor, Complex Cranial &
Skull Base Surgery



Marisa Marsolek, PA-C
Instructor, Neuro Critical Care



Sonemala Phommatha, PA-C
Instructor, Spine Disorders



Everlyne Ongechi, NP
Instructor, Neuro Oncology



Ana Redington, PA-C
Instructor, Spine Disorders



Rachel Reem, PA-C
Instructor,
Neuro Critical Care



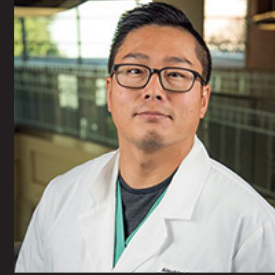
Jason Rich, PA
Instructor, Endovascular Surgery



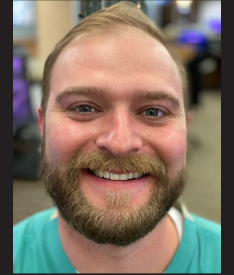
Jodi Sagastume, PA-C
Instructor, Endovascular Surgery



Robin Saiki, NP, MSN, RN
Assistant Professor, Endovascular
& Skull Base Surgery



Atsuhiko Saisho, PA-C
Instructor, Neuro
Critical Care



Ryan Williams, PA-C
Instructor, Neuro Critical Care

PEDIATRIC NEUROSURGERY ADVANCED PRACTICE PROVIDERS:



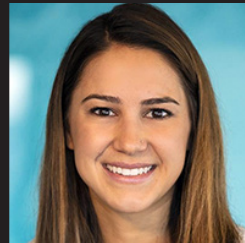
Patti Batchelder,
PNP-BC, MSN
Senior Instructor



Jane Freeman,
MSN, RN
Instructor



Chinonye Ihekweazu, MSN
Instructor



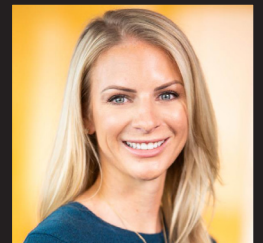
Elana O'Hara, PA-C
Instructor



Jessica Outten, FNP
Instructor



Rachel Schwartz, PA-C
Instructor



Brooke Wiedman,
CPNP-AC, MSN,
Instructor

CU NEUROSURGERY TO BECOME NATIONAL LEADER IN “BRAIN COMPUTER INTERFACE”

Under the direction of one of our newest neurosurgical recruits, Dr. Daniel Kramer, we are soon to become the fourth center for human BCI research (after CalTech, Stanford and Pittsburgh). “Brain computer interface is the moon landing of the neuroscience world,” says Dr. Kramer. The race is on for an operational neural prosthesis to restore motor and sensory function to paralyzed individuals. This type of effort requires a collaboration from a neurosurgeon and an experienced neural engineering team.

For people who have lost control of their body from paralysis, stroke, or Amyotrophic lateral sclerosis (Lou Gehrig’s disease), their ability to interact with the world is severely limited. Although incredible work is being done to repair their injured brains and spinal cords, a more immediate solution is to bypass the injured area by connecting their healthy brain directly to computers, robotic arms, exoskeletons, and even their own limbs.

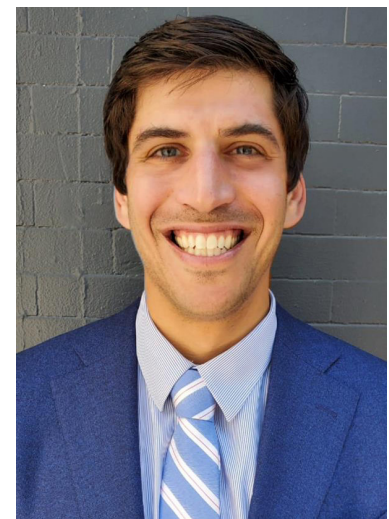
This neural engineering field, called **Brain Computer Interface (BCI)**, has garnered a large amount of attention recently, serving as the face of the International Brain Initiative, drawing in \$100 million from Bryan Johnson, \$160 million from Elon Musk, and an undisclosed amount from Mark Zuckerberg.

Dr. Kramer’s lab at CU will have a dual focus. First, to extend the scientific comprehension of how the motor and sensory systems integrate to create normal motion, thereby improving motor control, restoring sensation, and translating these findings into treatments for Parkinson’s disease and other movement disorders. And second, to move this field from the lab to the real world. We will operationalize BCI by creating systems that can be used at home, for daily assistance to patients, with real world applications of BCI that can be implemented in the immediate future.



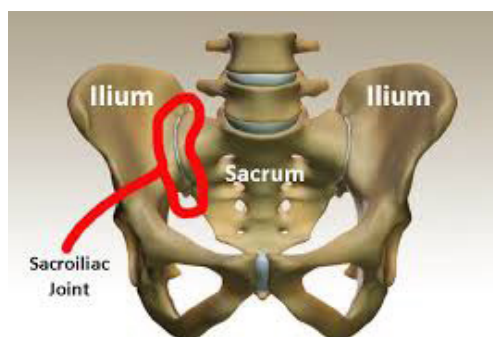
*Barack Obama “fist bumping”
a mind-controlled robotic limb.*

Photo Credit: University of Pittsburgh

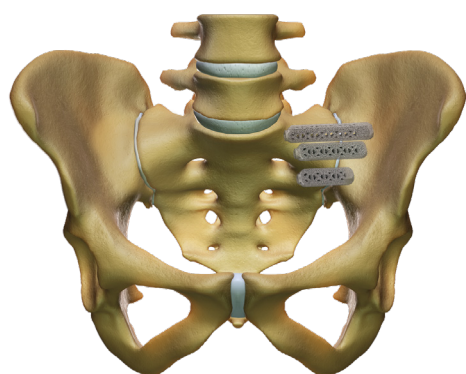


*Dr. Daniel Kramer, new
functional neurosurgeon who
will head up the BCI lab.*

NEUROSURGICAL SPINE OFFERS ANOTHER MINIMALLY INVASIVE PROCEDURE



Thanks to CU faculty members, Dr. Bradley Duhon and Dr. Peter Lennarson, we are able to offer another new, minimally invasive procedure for our patients with spine conditions. The sacroiliac (SI) joint is a junction between the spine and the pelvic bones. There is one joint on either side formed between the sacrum of the spine and the ilium of the pelvis. The sacroiliac joint acts like a shock absorber transmitting the forces of the upper body to the hips and legs. The joints are reinforced by ligaments and provide limited movement.



Dysfunction of the sacroiliac joint can cause pain in the lower back, groin or leg on the affected side. This may be related to excessive mobility or restriction of the joint due to injuries, overuse, or posture-related strain such as sitting or bending for extended periods. Sacroiliac joint dysfunction is difficult to diagnose as symptoms are often similar to other conditions such as disc herniation or sciatica. Drs. Duhon and Lennarson are experts in this condition, and two of the very few in the state to offer this minimally invasive technique. To confirm the diagnosis, an anesthetic injection is administered to the sacroiliac joint under image guidance.



Brad Duhon, MD
CU Spine Neurosurgeon
in South Metro



Peter Lennarson, MD
CU Spine Neurosurgeon
Anschutz Medical Campus
and CU Sports Medicine &
Performance Center in Boulder

Drs. Duhon and Lennarson have a few surgical options, one of which is minimally invasive surgery, which uses a smaller incision and is carried out under live X-ray imaging. Implants stabilize the bones allowing them to fuse while protecting the surrounding soft tissues. The procedure takes about an hour to perform, the patient usually returns home within a day, rehab begins at 4-6 weeks and a complete recovery takes about 6 months.

This procedure is offering patients who have suffered, sometimes for years, a new lease on life!

To find out more about this procedure and/or these physicians, contact the Lone Tree Clinic for Dr. Duhon at 720-848-2200, or the CU Sports Medicine & Performance Center in Boulder for Dr. Lennarson at (303) 315-9900.

NEW CU NEUROSURGERY COMMUNITY ADVISORY COUNCIL BEGINS!

In our effort to expand our services and increase awareness of the neurosciences (particularly neurosurgery) in Colorado, we have formed a community advisory council that is already fully engaged! The committee has met three times and has divided into committees that will address communications and marketing, fundraising, and the presence of Neurosurgery and neuroscience innovation on the CU Anschutz Medical Campus, and across the state. Many thanks to this talented, eclectic and generous group of individuals:

Suzanne D. Birkans	Philanthropist, community leader. Advisor for Family Foundation serving patients and families dealing with ALS, background in academic development and fundraising.
Jennifer Brusstar	Executive Director, Tug McGraw Foundation in Napa, CA at the Veteran's Home of CA, very engaged with neuroscience research and the military.
Dr. Lotta Granholm	Executive Director, Knoebel Institute for Healthy Aging at the University of Denver. Nationally recognized Neuroscience Researcher in the areas of Alzheimer's, Downs Syndrome, exosomes and artificial intelligence.
Dr. Richard Kelly	Former President, Colorado Neurological Institute, philanthropist, PD patient, community leader. Former DU Trustee and former owner, Outrigger Hotels, Hawaii, Fiji & Costa Rica.
Giancarlo Macchiarella	Former brain tumor patient, restaurateur in Vail and L.A., community leader
Jodi Novak	Former brain tumor patient – very involved in the national brain tumor community, book author.
Dr. Jay Ogsbury	Retired Neurosurgeon, Lutheran Medical Center. Philanthropist, community leader, leader in Healthcare policy & reform, major donor for endowed chair in Department of Neurosurgery at CU.
Melanie Shutt	Former patient, enthusiastic brain tumor survivor, wedding planner, highly engaged with Craig Rehabilitation Center. Many community connections, heavy event expertise.
Rob Schwartz	Former CU Neuro Spine patient. Community leader, investor, philanthropist & former administrator: Yale-New Haven Medical Center; former Chief of Staff for Joe Lieberman.
Dr. Lynn Taussig	Former CEO of National Jewish Hospital, former advisor to provost at University of Denver, highly respected community leader and PD Patient.
Dan Weyland	Former Chair, Colorado Neurological Institute, philanthropist, community leader, consultant & project manager for several HealthONE Medical Office Buildings. Instrumental in formation of HCP (property arm of HCA – Health Corporation of America).

STROKE AWARENESS & RESOURCES BECOME STRONG MARKETING INITIATIVE FOR NEUROSURGERY

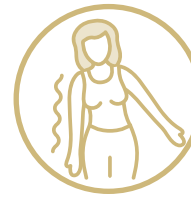
Through the COVID pandemic, some disturbing trends have been identified concerning our stroke population.

- The Mobile Stroke Treatment Unit (MSTU) at UCH has shown a 73% reduction in call rates since COVID hit.
- The MSTU at UCH has shown a 52% reduction in the administration of TPA (the “clot busting” drug) since COVID hit
- The largest Metro Denver EMS provider reported that “Dead on arrival due to stroke” numbers were up 128% in late April (coincided with peak of COVID/round 1)
- Same EMS provider, Year over Year, “DOA due to stroke,” up 10% since COVID hit
- Calls are down for 3 main EMS agencies in Denver
- 9 cardiac cath labs have reported a drop in volume of 38% since COVID hit (nationally)
- The rate of thrombectomy and thrombolysis also decreased by approximately 25%.
- Those who have had strokes have not received proper rehab due to COVID and are desperate for resources and help. Rocky Mountain Stroke Center reports a 50% increase in calls from people who have had strokes who don’t have the resources they need.

Spot the signs of a stroke F.A.S.T.



FACE
droops



ARMS
weakness



SPEECH
difficulty



TIME
is critical

Due to these troubling trends, the Department of Neurosurgery, together with the Rocky Mountain Stroke Center, have applied for funding for an aggressive marketing campaign across the Denver Metro region, to encourage people to call 911 when they experience the signs of stroke, and to call a designated “hot line” for resources, once they have had a stroke and are needing services.

“The reason this is important is that stroke is the third leading cause of death and there is so much that can be done if it’s caught early,” says Neurosurgery Chair, Kevin Lillehei, MD. “Besides this, every symptom of stroke is also the symptom of other neurological issues and should not ever be ignored.”

Do you know the signs? ACT FAST! Call 911 if you’re experiencing any of these symptoms!

AWARDS & RECOGNITIONS

Children's Hospital Names SEED AWARD Recipients (Service Excellence Every Day)

Congratulations to two of our Children's Hospital Faculty, **Todd Hankinson, MD and Patti Batchelder, PNP-BC, MSN**. Both faculty were recognized by peers for "above and beyond" service excellence.

Dr. Todd Hankinson was nominated by Dr. John Binder in Billings, Montana who commended him for excellent communication and care coordination with mutual patients. "It was challenging at times practicing without a pediatric neurosurgeon in the region and you really helped provide excellent rural care in Montana."

Patti Batchelder was recognized by Sara Hahn after presenting at the Level 6 BUFF Days education series. "Our team greatly appreciated you taking the time to share your knowledge and expertise with our new nursing team members!"

Medical Students Recognize Great Faculty

John Thompson, PhD was recently recognized for his outstanding teaching expertise. A student wrote, "I just wanted to take a moment to recognize Dr. John Thompson, my synaptic physiology facilitator, for an incredible session. In such a challenging time where professors have had to quickly learn new skills for online teaching, Dr. Thompson was exemplary. His energy was calm and consistent throughout the session which effected my own energy and motivated me to stay engaged. He was extremely knowledgeable, answering all of our questions and then explaining it well, using terminology relevant to our level of training. He was very well prepared and the structure of the session was excellent."

Congratulations to Ash Razmara, MD, Inaugural Neurosurgery Resident of the Quarter (ROQ)

Thanks to retiring neurosurgeon, Dr. Wayne Gluf, a fund has been established to recognize outstanding resident performance every quarter. We are proud to announce the inaugural winner of this award is **Ash Razmara**. Those who nominated him state, "Ash has an incredible work ethic, exceptional knowledge of the patients in the ICU & his pod, he is a hard worker with extraordinary performance on call. He has a uniformly positive attitude and leads by example for his resident colleagues and all members of the department. He willingly assumes extra work and is a pleasure to work with for all with whom he comes in contact."

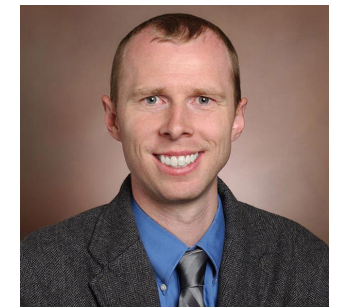
Akal Sethi, MD, named as third annual "Kindt Research Award" recipient at Neurosurgery in the Rockies conference in early March. This award is named in honor of Glenn Kindt, prior chair of neurosurgery at CU who restarted the residency program in the 1970s. Akal's winning presentation: Ultra-Early Cranioplasty vs Standard Cranioplasty: A Retrospective Review at an Academic Level 1



Dr. Todd Hankinson



Patti Patchelder



Dr. John Thompson



Dr. Ash Razmara



Dr. Akal Sethi

WELCOME TO NEW RESEARCH STAFF

Marielle Darwin, M.S.

is finishing her Cognitive Neuroscience PhD program at Colorado State University and is graduating in Spring 2021. She is most passionate about utilizing neurotechnological and psychophysiological methods to improve quality of life for people with neurocognitive impairments. Her clinical interests include acquired brain injury, alcohol and substance use, aging populations, and other populations with cognitive dysfunction. Research interests include neurocardiac and electrophysiological correlates of self-regulation, optimizing performance with human-computer interfaces, and developing predictive models of treatment efficacy. Marielle will be joining Dr. Thompson's lab.



Bachelor's in Mechanical Engineering from Princeton University. His research interests include the neuroscience of reach and grasp, brain-computer interfaces and learning, and cognitive neuroscience. Outside of the lab, Rex enjoys singing, maker projects, and rock climbing.

Kristen Hirter, M.A., B.S.,

is a biological anthropologist whose primary research focus has been human brain evolution. She has over five years of experience in comparative neurobiology and specializes in histological and molecular techniques to investigate human-specific cognitive and behavioral specializations. After graduating with her Master's degree in 2019, she worked as a Professional Research Assistant on an NIH-funded project examining Alzheimer's disease-type pathology in chimpanzees. When she isn't pondering the complexity of the human brain, she enjoys painting, hiking, and yoga in her free time. Kristen will be working in Dr. Yu and Dr. Graner's lab. She will be assisting them with their NIH R33 project.



Rex Tien, PhD is joining the Department of Neurosurgery as a Postdoctoral Fellow, working with Dr. Daniel Kramer. Rex recently completed his PhD in Bioengineering at the University of Pittsburgh and holds a



NEW CLINICAL TRIALS



Congratulations to Dr. David Case who will be working with Marinus Pharmaceuticals on a study for Status Epilepticus.



Congratulations to Dr. Kevin Lillehei, who will be working with Neuraptive Therapeutics, Inc., on a study involving the treatment of transected peripheral nerves (below the shoulder).

GET INVOLVED

You can be involved in all the exciting programs and research innovations happening in the Department of Neurosurgery! Donations are currently needed for investigator initiated trials, new positions, and even some capital equipment! Recurring monthly donors are especially helpful – and you can give *any amount*! Follow these easy steps:

Directions for online giving:

1. Go to: giving.cu.edu/fund/write-fund
2. Select the amount or write in an amount you would like to give.
3. If you would like to give this amount monthly, check the recurring box and indicate “monthly.”
4. If you are giving the gift in honor or in memory of someone, select ‘yes’. In the comment section, you can add the name of the person, or just mark “no.”
5. In the comment section, write the fund name and number. (See fund names and numbers on the right side of this page).
6. Select ‘Give Now’ button.
7. Follow prompts to fill in personal, payroll deduction or credit card information for processing. You will be able to print a receipt of your donation.

FUND NAMES & NUMBERS:

General Neurosurgery Fund: #0223130

Neuro-oncology Research Funds:

General Neurosurgery-Oncology # 221101
(includes brain tumor tissue bank)
Meningioma Momma’s Research # 0223181
Brain Immunology Research # 222176
Functional Neurosurgery Research #222277

Stroke, Aneurism & Neurovascular Funding:

Foreman Family Research Fund # 0223133
Stem Cell & Gene Therapy Research # 0222912

Radiology & Imaging Research:

Mannetti 3D Printer Fund # 0222672

Education and Scholarship Funds:

Neurosurgery Resident Education # 221955
Foreman Family Lectureship Fund # 0223134
VanderArk Lectureship Fund # 0230389

Ogsbury/Kindt Neurosurgery Chair
Endowment Fund # 0230133

Neurosurgery in Schizophrenia & Mental Illness
Research Fund # 0222913

Checks of any amount can be sent with a note in the memo about the fund to be supported, and mailed to:

University of Colorado Foundation
Office of Advancement
Attn: Marti Laule
Mail Stop AO65
13001 E. 17th Place, WG112
Aurora, CO 80045





University of Colorado **Anschutz Medical Campus**

