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Researchers Kick-Start Neuro-Oncology Research Program with Donation, Grant

With a generous grant from the Vince Lombardi Cancer Foundation, vice president of Aurora Neurosciences, Amin Kassam, MD, is leading the development of a neuro-oncology research program.

Stem cell bank

Access to human brain tumor samples is essential for a successful neuro-oncology research program to thrive, since the stem cells derived from the samples will be used to test new cancer therapies in the lab.

With an initial Aurora Cancer Care Research Award in 2014 and continued funding in 2015, Dr. Kassam established a brain tumor stem cell bank. The research award program is generously supported by Vince Lombardi Cancer Foundation.

Using residual tissue from surgeries to remove brain tumors, researchers are collecting samples to grow and store stem cells. The project was initiated in an existing laboratory in the Regenerative Medicine Center at Aurora St. Luke's Medical Center. The proximity of the lab to the operating rooms was advantageous to facilitate effective communication between the study team, operating room staff and pathology, as well as efficient transfer of the tumor tissue from the operating room to the lab.

Coordinating and streamlining the process required the collaboration of neurosciences research nurse coordinators, representatives of the Biorepository and Specimen Resource Center, research scientists and technologists, and the surgeons.



Researchers collected numerous samples of a variety of brain tumors. Using a novel culture method, the team has demonstrated exceptional success rates. Tissue collection is ongoing.

Animal models

After construction of Discovery Laboratory and the vivarium at Aurora Sinai Medical Center, the neuro-oncology researchers moved into the state-of-the-art facility, setting up shop and beginning the next phase of the research—characterization of the cells in animal models. Led by senior research scientist Chang-Hyuk Kwon, PhD, and neuro-surgeon Richard Rovin, MD, the goal of the laboratory research is to determine whether the cells are able to reinitiate tumor growth in mice, since this stem cell characteristic of self-renewal contributes to tumor recurrence in humans.



BrightMatter™ Servo Solution Robotic Exoscope

In 2016, researchers will use new methods of magnetic resonance imaging (MRI), optical coherence tomography (OCT) and raman spectroscopy (RS) to identify differences between healthy and unhealthy tissue at molecular and structural levels.

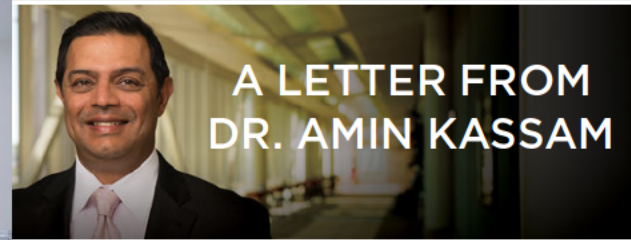
MRI uses strong magnetic fields to create detailed images of tissues by detecting protons in water molecules. OCT is a “light” ultrasound that measures tissue topography and structure. RS uses light to measure tissue chemistry, akin to chemical fingerprinting.

Researchers are using these highly specialized imaging technologies before and after the tumor is removed from the patient, before the tumor stem cells are injected into mice, and after the tumor has regrown in the mouse.

The next phase of the program is to test new therapeutics on the tumor stem cells and in tumor-bearing mice using the imaging modalities to detect tumor shrinkage or elimination. One method includes reengineering brain tumor stem cells and redeploying them using viral vectors, the most effective means of gene transfer.

Testing New Targeted and Personalized Cancer Therapies

Developing new therapeutic strategies to treat the most frequent forms of brain cancer is the driving force behind the research of senior research scientist Santhi Konduri, PhD, and neuro-oncologist George Bobustuc, MD. Patient-derived cancer cells are tested to identify different markers associated with Glioblastoma Multiforme (GBM) and Meningioma. The long-term goal is to understand molecular changes that occur during tumor development and to use these molecular markers as therapeutic targets. This is one way to individualize and tailor treatment in real time to the specific genetic makeup of a patient's tumor. The ultimate goal is to design a safe, effective system allowing for use of a combination of drugs and therapies unique to each patient. ■



WHERE IS HEALTHCARE GOING?

The health care sector is undergoing transformative changes as regulations and the market economy drive performance measures from volume to value. The failure during the past decade to meaningfully accomplish this has created a profound appetite for the transformation of health care into a risk-based value realization economy. These changing dynamics are creating a realignment of the key traditional stakeholders, and are making way for emerging, non-traditional health care players.

All shareholders are converging and trying to capture the value associated with the new emerging economy. This impending disruption will greatly alter the status quo, allowing new players into the health care space, effectively changing the roles of traditional stakeholders. We are witnessing unprecedented levels of activity as participants are consolidating through mergers/acquisitions or creating entirely new entities. What is clear is that this dynamic and shifting market over the next ten years will not look like it has in the past ten years. What is equally clear is the considerable opportunity this represents. The market will be further transformed through disruptive innovation both in technologies and in the models that deliver them. The “volume to value” continuum is incomplete and inherently flawed as it has not been possible to effectively quantify the true definition of value ... value itself. This inability to quantitate value has led to the failures of the past decade to transform health care, largely because value is an intermediate stop in the actual continuum, which is volume > value > risk. As is the case in many other industries, risk in health care can be effectively quantified and measured, and thereby embody the true meaning of value.

WHO IS AURORA HEALTH CARE?

Aurora Health Care System represents a unique entity with a 15-hospital network and large integrated primary care and specialty service lines covering an expansive geographic region. A strong foundation has been built within the health system to include primary practice groups, numerous physical locations, as well as incredible research infrastructure.

The health system has set its next and foremost requirement to expanding its network of hands-on quality service providers and specialties through a tertiary and quaternary clinical focus. Quality is

a primary focus for all, as is maintaining pluralistic model and integrating existing providers where possible while maintaining this objective. The system has successfully accomplished this in Cardiac, Women's health and Transplant and now is in the process to do the same in Neurosciences.

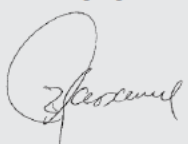
HOW ARE WE RESPONDING?

In response to the changing healthcare marketplace, Aurora Health Care poignantly recognized the need to deconstruct the divisive structure of individual services and remove the delivery silos of care. They set a formidable goal of turning the patient into the primary shareholder, establishing scope-constraint by removing patient ownership and making sure the right team member was providing the right care at the right time.

These goals led to the creation and development of the Neurosciences service line and establishment of the Aurora Neuroscience Innovation Institute (ANII). This development brings together neuroscientists and adjacent disciplines of all sub specialties within the service line to provide consultation and collaborate with specialists from other departments creating a culture of collaboration where the patient is truly the central, primary focus and empowered to determine their care.

Like other medical disciplines, Neurosciences is moving toward a performance-based meritocratic market demanding increased specialization, which translates to patients often requiring multiple providers to meet their care needs. This market environment is therefore driving the need for highly integrated systems of care where multi-disciplinary delivery models are required to deliver on quality, cost, and risk-based metrics.

As we enter this new risk-based, market-driven health care economy, the Neuroscience service line at Aurora Health Care is positioning itself to be a leader in clinical care for neurology and neurosurgery, including spine, neuro-ophthalmology, and other aligned subspecialties to provide the most optimal patient experience and outcome at any of our clinic or hospital locations. At its core, this requires complete integration across the neurosciences health continuum. As many organizations are now trying to formulate their concepts of clinical service lines, Aurora Health Care has made the successful transformation and is leading the way nationally in integrating the neurosciences health care delivery and is embodying the principle of the patient as the primary shareholder in a meritocratic-based delivery system. ■



*Amin Kassam, MD
Vice President Neurosciences,
Aurora Health Care*



Welcoming a New Expert of Oculoplastic Surgery and Neuro-Ophthalmology

The Aurora Neuroscience Innovation Institute is pleased to welcome Thomas A. Gardner, MD.

Dr. Gardner earned his medical degree from the University of Pennsylvania School of Medicine in Philadelphia, after which he completed his residency at the University of Pittsburgh Eye and Ear Institute. He also completed a fellowship in neuro-ophthalmology and orbital disease with Jack Kennerdell, MD. He is board-certified by the American Board of Ophthalmology.

In 2012, he was presented with the American Academy of Ophthalmology Achievement Award.

Dr. Gardner frequently partners with neurosurgeons and otolaryngologists to provide multidisciplinary care to his patients in need of neurosurgery or treatment for orbital disorders.

His focus is on providing his patients with the best medical evaluation available by thoroughly discussing their options with them, and helping them make the best possible treatment decisions that fit their personal goals for their health and quality of life.

Dr. Gardner's special areas of interest include orbital tumors, Graves' disease and optic nerve surgery, but his experience and expertise covers the full spectrum of oculoplastic and neuro-ophthalmic disorders. This includes surgery for eyelid abnormalities and skin cancers, eye socket tumors, reconstruction, and treatments for tearing or dry-eye problems.

He also performs treatments for neuro-ophthalmic disorders, including eye muscle surgery, optic nerve fenestration, and BOTOX® for eyelid spasms.

We're excited to have Dr. Gardner here with us at the Aurora Neuroscience Innovation Institute, and we can't wait to see what his expertise and dedication will bring to Aurora. ■



Dr. Ofer Zikel

Aurora Back and Spine Program Eyes More Growth

The Back and Spine Program at Aurora St. Luke's was introduced two years ago. In its first year, it saw 881 new patients (annualized). Last year, that number almost doubled to 1,635. As it has grown, we've continued to find new ways to improve the patient care process.

Triage has been eliminated to provide quicker patient access; an appointment wait time of one week is the ultimate goal. The program has been so successful, we are actively adding providers to achieve it.

Patients are connected to an integrated team of spine experts, including physical therapists, physiatry specialists, surgical experts, radiologists and other providers. Led by Dr. Mustafa Farooque, the team coordinates nonsurgical care and implements a variety of treatment plans. Referrals to spine surgeons are made as needed.

In the past, surgeons saw a wide range of patients, many of whom didn't need surgery. The program works closely with orthopedic surgeons and neurosurgeons to refer the most appropriate candidates for consults. This gives surgeons more time to focus on surgery and pre/post-surgical care, and eliminates additional wait time for patients.

Another unique aspect of the program is the RN Coordinator, who serves as a navigator for patients. This role has been adapted in the last two years, allowing nurses to spend more one-on-one time with patients and track their progress.

It's a different way to approach spine care, and patients aren't the only ones who've noticed. In August, Dr. Farooque was featured on the cover of Milwaukee Magazine, who profiled him and the program. Dr. Farooque also presents quarterly educational programs on spine-related conditions that are open to anyone interested. ■

PHYSICIAN PROFILE: DR. OFER ZIKEL



Ofer M. Zikel, MD, joins the Aurora Medical Group as a full-time physician and surgeon at Aurora Medical Center–Summit, where he will be the medical director of neurosurgical services.

A board-certified neurosurgeon, Dr. Zikel attended medical school at Northwestern University Medical School in Chicago and completed his residency training at the Mayo Clinic in Minnesota.

Dr. Zikel treats all neurosurgical conditions affecting the brain. He provides both operative and nonoperative care for the entire spine, including cervical, thoracic and lumbar issues.

Dr. Zikel is also a Fellow of the American College of Surgeons and the American Association of Neurological Surgeons.

Aurora Medical Center and the Aurora Wilkinson Medical Clinic in Summit feature the most advanced technologies for diagnosis and treatment, as well as primary and specialty care services.

Aurora Medical Center–Summit is a Level II trauma center that supports craniotomies, complex tumor resections, cranial/spinal cord trauma, spinal fusions and minimally invasive spinal procedures.

To make an appointment with Dr. Zikel or for more information about his practice, please call 262-434-5000. ■

*Dr. Richard Rovin*

Aurora Doctor Answers the President's Call

In his last State of the Union address, President Obama called for a “new moonshot” to cure cancer, asking Vice President Joe Biden to lead the charge. “For the loved ones we’ve all lost, for the families we can still save, let’s make America the country that cures cancer once and for all,” said the president.

Aurora neurosurgeon Dr. Richard Rovin also heard the call. “When they said out loud their goal is to cure cancer—that’s what we say out loud,” said Dr. Rovin.

At the suggestion of his wife, Dr. Rovin decided to reach out to Vice President Biden. He wrote a letter and posted it to the vice president’s Medium.com page.

The letter invites Biden and his team to visit the the Aurora Neuroscience Innovation Institute (ANII) to “see the progress that can be made when silos are broken down and clinical and basic science research is conducted with the urgency and passion cancer patients and their families expect.”

Dr. Rovin is a neurosurgeon at Aurora St. Luke’s Medical Center and the director of clinical research at ANII. “It really is a lab for discovery. We work with head and neck cancers. We work with brain tumor cells. We work with breast cancer cells,” he says.

Dr. Rovin specializes in the diagnosis and surgical treatment of disorders relating to the central and peripheral nervous system. He is skilled in the most advanced minimally invasive surgical procedures, including the revolutionary Six Pillar Approach.

“I think Aurora has a role to play in the moonshot to cure cancer.”

— *Dr. Richard Rovin*

This approach is used to remove tumors and other lesions from deep beneath the brain’s surface while preserving the white matter fiber tracts. Aurora St. Luke’s has pioneered the advanced planning software and robotic optical platform used to perform this type of surgery.

The ANII clinic features an education suite, an anatomic research lab, a regenerative cellular lab, four state-of-the-art neurosurgery suites and a neurocritical care unit, each with first-in-the-world technology. Together, the ANII team is constantly pushing the boundaries of their knowledge, making new discoveries every day and sharing them with surgeons across the world.

“In all seriousness,” says Dr. Rovin, “I think Aurora has a role to play in the moonshot to cure cancer.” ■

Read Dr. Rovin’s full letter to Vice President Biden at <https://medium.com/@rarovin/dear-vp-biden-624087c7cf29#.gt7uxh1r8>



The MS team at Aurora works with patients to determine the best way to slow or stop the disease's progress using the latest technologies and treatments.

Diagnosing and Treating Multiple Sclerosis

Multiple Sclerosis is an unpredictable disease with an erratic presentation of symptoms. Most patients experience common initial symptoms, which might include blurred or double vision, vision loss from optic neuritis, difficulty walking, arm or leg weakness, and sensory loss or paresthesia.

As the disease progresses, other symptoms can emerge. They include muscle weakness in the extremities, difficulty with coordination, partial or complete paralysis, muscle spasticity, fatigue, loss of sensation, speech impediments, cognitive impairment, tremor, dizziness, hearing loss, bowel and bladder disturbances, depression and changes in sexual function.

A diagnosis of MS can be considered if a patient has experienced two attacks at least one month apart. Attacks involve a sudden onset or worsening of symptoms that last at least 24 hours and affect at least two areas in the central nervous system. The presence of Gadolinium-enhancing lesions and/or T2 lesions in two different areas on an MRI scan can also suggest MS, even without repeated attacks.

Once a diagnosis is made, the MS team at Aurora works with patients to determine the best way to slow or stop the disease's progress using the latest technologies and treatments.

In addition to established injectable therapies and more recent oral medications, the MS team uses a new intravenous treatment for unique cases. Advancements in two new drug therapies are also likely to become available in the next six to 12 months.

Patients are assisted in managing their MS challenges through symptomatic therapies. These include many problem-specific medications, physical therapy, occupational therapy, speech therapy, physiatry consultation, Botox injections, baclofen pumps, cognitive and psychological assessment and support, and other specialty consultations. ■

Aurora Physicians specializing in MS:

Akram Dastagir, MD

Aurora St. Luke's Medical Center
414-385-1922

Lorri Lobeck, MD

Aurora Good Hope Clinic
414-247-4671

Eric Maas, MD

Aurora St. Luke's Medical Center
414-385-8780

Aurora Good Hope Clinic
414-247-4671

Lea Rayman, MD

Aurora Medical Center-Summit
262-434-5000

She's Too Young to Be a Neurosurgeon, But Not Too Young to Help

Most adults can't name all the lobes of the brain, but eight-year-old Laina Stachowicz has got it down.

"Frontal, parietal, occipital, temporal, brain stem and cerebellum," she says without hesitation.

This precocious third-grader already knows what she wants to be when she grows up—a neurosurgeon—and she loves to spend her free time studying the brain. But since she's a decade or two away from having a medical degree, she's finding other ways to help people who are undergoing neurosurgical procedures: care packages.

On Thursday, July 28, the Slinger native delivered nearly 1,100 gifts to neurosurgery patients at Aurora St. Luke's Medical Center. The care packages contained playing cards, word finds, crossword puzzles and more—in other words, brain-stimulating games to keep patients entertained and to help with communication and cognitive therapies for stroke and brain surgery patients.

What Laina didn't know was that she was in for a surprise of her own: a visit (and a hug) from her hero, Dr. Amin Kassam, VP of neuroscience at Aurora Health Care.

"What makes it exciting? Just to see him and to look up to him in my future," she says.

Dr. Kassam has high hopes for Laina as well, even beyond what she's dreamed.

"I hope she just doesn't settle for being a brain surgeon," he says.

Someday, Laina may be the head of the Aurora Neuroscience Innovation Institute. She may pioneer new procedures and technologies we can't even begin to imagine today. She may change the world as we know it.

But, as she says, "since I can't do that now, I made care packages to help the patients."



"I hope she just doesn't settle for being a brain surgeon."

— Dr. Amin Kassam



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aurora.org/neuro

