

J LYONS MARKETING

- A technology marketing firm that gets new technology beta tested to prove out the merits can perform as claim
- The technology does the selling not JLM
- JLM has the “inside track” globally with OEM’s on new technology roadmaps
- A natural fit as external marketing partner
- JLM has 25 + years experience and relationships
- JLM works mostly with European companies with high revenue that want to enter the US market. The ideal business model is to license the technology

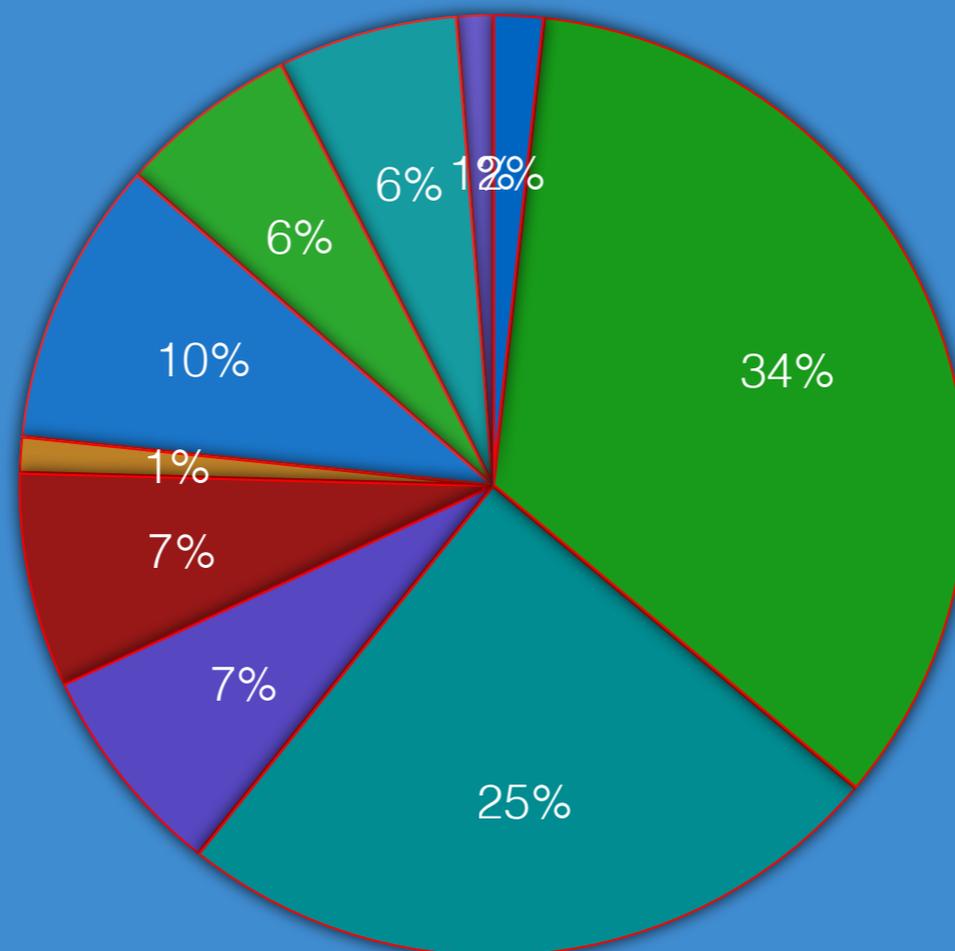
JLYONS MARKETING

US Medical OEM Market License Arrangement

- First Veterinary Market
- Second Dermatology / Aesthetic
- Third Orthopedic
- Fourth Osteoporosis
- Fifth Dental Implants
- Sixth Internal Medicine Urology (Increased urination) Brain Disease
- Seventh Audiology
- Eighth Ophthalmology
- Ninth Sports Fast Injury Recovery

Revenue Licensing

Veterin ary	Dermat ology	Orthop edic	Osteop orosis	Dental Implants	Internal Medicine	Ophth amology	Audiol ogy	Brain Diseases	Sports Fast Recovery
\$50M	\$280M	\$200M	\$60M	\$20M	\$50	\$80M	\$60M	\$100M	\$100M



Revenue Breakdown

Veterinary Market

100,000 treatments

500 machines equals 100,000 treatments with average 16 treatments a month per machine The market price is \$600 and \$80 royalty

Year one is expected 300 units , year two 800 units and year three 1,000 units for a total 2,100 units

100,000 treatments (urinary tract infection) market price \$500 and royalty fee is \$60 royalty

Dermatology

1,000,000 treatments (male pattern baldness) market price \$1,500+ and royalty \$200

1,000,000 treatments (anti age / skin rejuvenation) market price \$ 600 and royalty \$80

Market Size US

Today 35,000,000 bald pattern males , estimated 20% are easy stage (live roots) and 3,500,000 new opportunity every year

Aging population is at new high skin rejuvenation numbers could double or triple pending on the performance and price points.

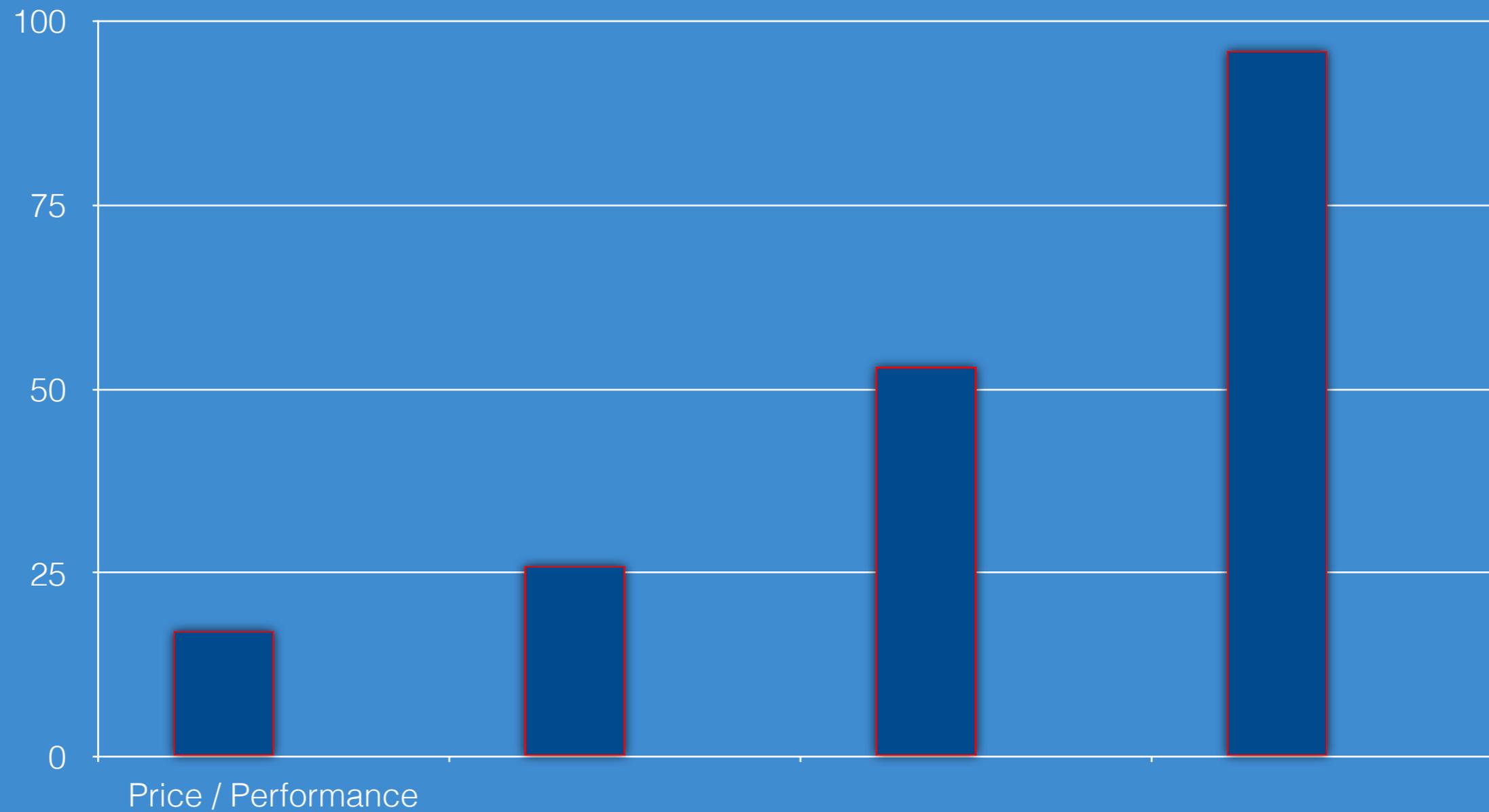
Orthopedics

1,000,000 treatments (knees) market price \$1,500 and royalty \$200 (cosmetic is all ready out of pocket)

Hips, lower back , disc can double the volume

Sports Fast Recovery could do 1,000,000 treatments a year market price \$800-\$1,000 (too early)

Price elasticity of demand

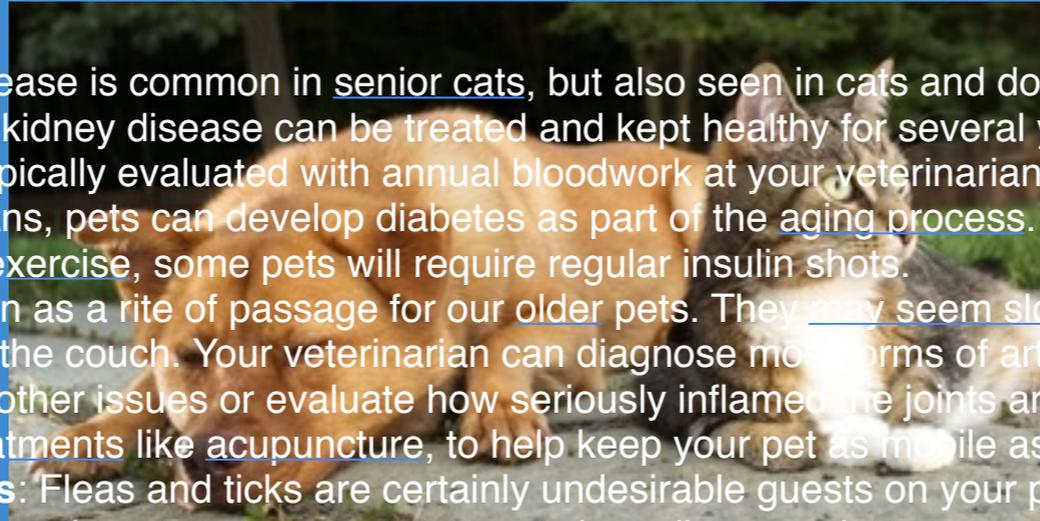


JLYONS MARKETING

Veterinary Market

- **Epica Medical to be signed licensee**
- **Market leader for offering new game changing technology**
- **Arthritis is often seen as a rite of passage for our older pets. Rank 8th most serious diseases**
- **Epica is expanding outside orthopedics including Diabetes , Kidney, Audiology, Ophthalmology**
- **Diabetes (rank 9th) just like with humans, pets can develop diabetes some pets will require regular insulin shots. The prevalence of diabetes has increased by nearly 80% in dogs and by almost 20% in cats over the past decade and those numbers are expected to continue to rise. Disease caused by the lack of insulin that regulates blood-sugar levels—affects as many as 1 in 100 dogs and cats. MedTec focus would be the pancreas regeneration**
- **Kidney disease incontinence (inability to control urination or defecation) this is urinary tract infections Rank 10th (dangerous diseases) is common in senior cats, Kidney health is typically evaluated with annual blood work by veterinarian.**
- **Equine market Epica Medical has great inroads to develop the business**
- **Internal medicine (urology) with data from veterinary market**
- **Can install 300 units year one if MBST performance is 80 % successful**
- **Revenue by third year should exceed \$100M**

Top 10 Most Serious Diseases



10. Kidney disease: Kidney disease is common in senior cats, but also seen in cats and dogs of all ages. It can be congenital or develop as the pet ages. While cats with kidney disease can be treated and kept healthy for several years in most cases, dogs typically deteriorate more quickly. Kidney health is typically evaluated with annual bloodwork at your veterinarian.

9. Diabetes: Just like with humans, pets can develop diabetes as part of the aging process. While diabetes in cats and dogs can often be controlled by a plan of diet and exercise, some pets will require regular insulin shots.

8. Arthritis: Arthritis is often seen as a rite of passage for our older pets. They may seem slow to rise in the morning, or a bit reluctant to jump up to their favorite spot on the couch. Your veterinarian can diagnose most forms of arthritis during a routine exam, but they may also recommend an x-ray to rule out other issues or evaluate how seriously inflamed the joints are. While there is no cure for arthritis, there are joint supplements, and even treatments like acupuncture, to help keep your pet as mobile as possible for as long as possible.

7. Flea and tick borne diseases: Fleas and ticks are certainly undesirable guests on your pet's fur, but they are more than just unwelcome creepy crawlies. These tiny passengers can carry serious diseases that can cause profound illness in both pets and people. Want to keep your cats, dogs, and human family healthy? Use a monthly topical flea and tick preventative, vacuum regularly, and always check your pets and yourself after playing with other animals or in grassy fields.

6. Rabies: Rabies is the disease made famous in the heartbreaking scene in *Old Yeller*. Thankfully, the widespread use of the rabies vaccine in recent years has made its occurrence in pets in the U.S. quite rare. However, it is still present in wild animal populations, and because rabies is *always* fatal, it's critical to make sure that your pets are current on their rabies vaccination.

5. Distemper: Distemper is a tragic, often fatal disease of dogs and puppies. While the distemper virus is part of the typical puppy vaccine series, puppies too young for vaccination and dogs who were never vaccinated are most vulnerable. The virus typically comes along with neurological symptoms, nasal discharge, and high fevers. It also has a high mortality rate, and the rare dogs who survive infection often bear long-term effects, such as seizures and hardened paw pads.

4. Parvovirus: Commonly called "parvo," this virus is terribly common in parts of the country with low vaccination rates and can be seen in cats and dogs (although the disease cannot be spread cross-species). Parvo is most frequently seen in puppies and kittens who have not yet been vaccinated. The mortality rate depends on how quickly the symptoms are caught by the owner and addressed by a veterinarian and the strength of a pet's immune system. Most survivors of parvovirus do not harbor long-term effects.

3. Dental disease: While everyone dreads "dog breath," a stinky mouth is no joke. Both cats and dogs can develop tartar, gum disease, and cavities that require a professional dental cleaning. Dental disease is the perfect example of "an ounce of prevention is worth a pound of cure," because bad oral health can also lead to dangerous heart and kidney conditions in pets. Teach your kittens and puppies that brushing their teeth is a normal part of your grooming routine and save your pet a dental procedure down the line.

2. Heartworm: Heartworm is a disease spread by mosquitoes and it has been diagnosed in all 50 states. While it is much more common in dogs, cats can also acquire the disease. If the infection is caught early enough in dogs, it can generally be treated, but there is no cure for feline heartworm disease. Therefore, the best way to keep your pet's heart free of potentially deadly worms, is through a monthly preventative, prescribed by your veterinarian.

1. Obesity: Obesity has become as serious of a problem in our pets as it is in the human population. Sadly, overweight pets are more prone to heart disease, diabetes, arthritis, and premature death. But while underlying disease or slow metabolism might be a factor, all too often, pet obesity is caused by doting pet parents who overfeed and underexercise their cats and dogs. There is no quick fix for obesity, but, just like with a human diet, check with your veterinarian for feeding and exercise guidelines. It might be as easy as swapping the dog treats with green beans or giving your cat a five-minute run with the laser pointer before bed. It might sound crazy, but when it comes to obesity, we *can* love our pets to death. You can help your dogs and cats live long lives by giving them the tools to stay light on their paws.

Epica Medical Innovations

Animal Health

Mission Statement

Epica Medical Innovations strives to improve the prognosis, hopes, and outcomes for humans and animals suffering from conditions that were previously seen as less than adequately treatable. We accomplish this by providing new technologies with proven applications to the markets in such a manner that allows care providers improve their efficacy of treatment, efficiency, and profitability.

Vision

Epica seeks to leverage technology and innovation, to disrupt markets with novel solutions to improve efficacy, efficiency, safety, access, economics, and the human condition.



- Imaginalis** engineers and manufactures imaging products
- Epica Medical Innovations Animal Health** sells to, supports and educates the veterinary market.
- Epica Medical Innovations Animal Health** sells to, supports and educates the Medical market. No products yet.
- Epica Applied Technologies** sells to, supports and educates industrial markets
- Gruppo Scienza Machinale** engineers and manufactures technologies including robotics, medical devices, non-destructive testing, and automation.

U of Pennsylvania



- New Bolton Center for Large Animals and Ryan Hospital for companion Animals
 - Jean Bennett MD , PhD School of Medicine, F.M. Kirby Center for Molecular Ophthalmology, Scheie Eye Institute & Children's Hospital of Philadelphia, Center for Cellular and Molecular Therapeutics has received funding from CCMT, the Foundation Fighting Blindness sponsored CHOP-PENN Pediatric Center for Retinal Degenerations, Hope for Vision , Opaul And Evanina Mackall Foundation
 - Veterinary School has DE Mary Utter team specialist for eye vision
 - Center for Hereditary Retinal Degenerations, Scheie Eye Institute has Samuel G Jackson M.D , PhD
 - Dermatology Penn Medicine has George Costarelis one of the world leaders in hair loss
 - Radiology has Mitchell Schnall (my neighbor cousin) who is KOL that can endorse MBST and can introduce us to a number of departments (one of the world 's leader in MRI technology)
 - Department of Otorhinolaryngology Dr. O'Malley is board certified in Otolaryngology – Head and Neck Surgery and ... Laboratory for Research on the Structure of Matter, Intratympanic dexamethasone for sudden sensorineural hearing loss
 - Department of Gastroenterology Raymond & Ruth Perlman Center for Advance Medicine Dr Robert Weinrieb , Michael Rickels, , Rajender Reddy , ,Ali Naji
-
- The goal is to start with veterinary school with introduction from Mitch Schnall. It would be supported by Epica Medical

JLYONS MARKETING

Dermatology / Aesthetic Market

- Cynosure will be the signed licensee
- An in-house 30 + patients will be set up
- The study will include male pattern baldness and skin rejuvenation (anti -aging technology) . Removing of facial wrinkles is well in billions
- Working on Key Opinion Leader (KOL) to provide feedback from U of Penn Dermatologist George Costarelis and Radiologist Mitch Schnall
- The Cynosure study is expect to start March time frame
- A successful in-house study needs to be in agreement with both parties
- Market size is over billion a year

Cynosure

Westford, MA NASDAQ OMX **CYNO**

About Cynosure.

Company develops, makes, and markets aesthetic laser and pulsed light systems used by dermatologists and doctors to remove hair, reduce pigmentation, rejuvenate the skin, and treat vascular lesions. For patients who want to go deeper, its Smartlipo workstation allows cosmetic surgeons to perform a less-invasive procedure than conventional liposuction to target and reduce fat. Cynosure's laser systems consist of a control console and one or more handpieces. The company's direct sales force and international distributors market and sell its products worldwide under such names as Accolade, Affirm, Cynergy, Elite, and PicoSure.

Market Value is \$1.07B 2015 sales \$340M main competitors are two Israel firms Syneron and Lumenis. Cynosure is largest US OEM for aesthetic market. We are now in two areas male pattern baldness & skin rejuvenation

Bosley

BOSLEY MEDICAL GROUP CHIEF MEDICAL OFFICER NAMED NEW PRESIDENT OF INTERNATIONAL SOCIETY OF HAIR RESTORATION SURGERY

We are in discussions for in-house clinical trial with Ken Washenik in parallel with Cynosure

LAS VEGAS, NV—October 19, 2016— The International Society of Hair Restoration Surgery (ISHRS), a global non-profit medical association and a leading authority on hair loss treatment and restoration, elected Dr. Ken Washenik, M.D., Ph.D., FISHRS, as President. The announcement took place at the ISHRS 24th World Congress in Las Vegas, Nevada. His new role will be implemented immediately.

Washenik is Chief Medical Officer of Bosley Medical Group, a practice focused on medical hair restoration and hair loss solutions. Washenik has been on the ISHRS board for 5 years and in his new role, he will be leading 1,200 members across 70 countries worldwide. The ISHRS offers continuing medical education to physicians who specialize in hair transplant surgery and promotes and funds research in the area of hair restoration.

“The ISHRS is dedicated to achieving positive patient outcomes by educating physicians about the latest medical and surgical treatments for patients who are suffering from hair loss. Dr. Washenik is respected both in the world of dermatologic research involving hair loss, as well as hair restoration surgery. He brings with him valuable knowledge and experience in hair loss solutions. Our physicians will greatly benefit from his recognized leadership and expertise,” said Sharon Keene, M.D., a past president of the International Society of Hair Restoration Surgery.

Washenik has published scientific and medical articles in peer review journals including Endocrinology, Journal of the American Academy of Dermatology, Archives of Dermatology, The Lancet and The New England Journal of Medicine to help further education and collaboration within the field.

“Suffering from hair loss is much more than just an aesthetic issue. Being elected as the new ISHRS President is a great honor and an opportunity to continue to enhance the professional educational offerings of the ISHRS and to raise awareness of new procedures and medical treatments that will help patients with hair loss,” shares Washenik.

Prior to his role at Bosley Medical Group, Washenik was director of the Dermatopharmacology Unit at New York University School of Medicine. He continues to serve as a faculty member in the Department of Dermatology.

Washenik received his Ph.D. in cell biology from Baylor College of Medicine with a focus on hormone metabolism.

About Bosley Medical Group

Founded in 1974, Bosley Medical Group is the largest hair restoration practice in the United States. For more than 40 years, Bosley physicians have focused on the art and science of hair restoration for both men and women, utilizing innovative, artistic and scientific techniques. With more than 275,000 hair restoration procedures performed (with patients from all 50 states and 60 foreign countries), Bosley has helped hundreds of thousands find a permanent solution for their hair loss. For more information please visit <http://www.bosley.com>

About International Society of Hair Restoration Surgery (ISHRS) Founded in 1993, the International Society of Hair Restoration Surgery (ISHRS) is a non-profit medical association with a membership of over 1,200 members worldwide dedicated to the advancement of the art and science of hair restoration. Above all, the ISHRS is dedicated to achieving excellence in patient outcomes by promoting member education, international collegiality, research, ethics, and public awareness. For more information and to locate a physician, visit <http://www.ishrs.org>.

Adavium Medical - Brazil

Market

Adavium Medical (based in Palo Alto , CA) is the largest Brazilian medical equipment and diagnostics company, with Brazil being the third largest private healthcare market in the world. The Company was formed with the intent to bring commercial sophistication to a highly fragmented market, partnering with some of the most innovative companies in the world, and developing and commercializing complementary high-quality, yet cost-effective, products that we develop on our own for the value-based – or “long tail” – segment of the market in Brazil and in other emerging markets.

When many in the medical device and diagnostics industry think about Brazil, what commonly comes to mind is a large vibrant market, but with complex regulatory requirements, loose standards, limited commercial sophistication and a high cost of capital. By navigating this complexity, we have built a commercial leader in Brazil.

Adavium Medical was formed with the intent to commercialize the most innovative portfolio of medical device and diagnostics products in Brazil. Our portfolio today is made up of products that we commercialize on behalf of leading international companies.

We have assembled an experienced team of more than 300 employees that ensure that our fully-integrated commercial platform operates at world-class standards.

We have chosen to specialize in two segments that we can “own”:

- Medical devices, focused on **aesthetics, dermatology**, plastic surgery, vascular surgery and gynecology
- Clinical diagnostics, focused on equipment and reagents used by clinical laboratories

Both markets are \$1 billion markets individually, with substantial growth potential driven by demographics and the growing privatization of healthcare.

We have the largest customer base across premium and “long tail” customers of any medical equipment and/or diagnostics company in Brazil, with more than 2,500 customers respectively in medical equipment and diagnostics. This is exponentially more than the average distributor or multinational in the region.

NO FDA requirements a licensee will be the manufacturer which is key for the Brazilian market. Can partner with Cynosure or be exclusive licensee for country of Brazil. Also Fred Aslan (founder) is director of Venturerock

J Lyons Marketing

Orthopedic Market

- Stryker pending but wants MedTec clinical study published in a leading US orthopedic journal
- Key Opinion Leader Irving Shapiro from Thomas Jefferson Rothman Institute to provide a proposal on clinical trial which would be published in a leading journal
- GE thru venture group has shown interest in both orthopedic & osteoporosis
- Zimmer-Biomet will not move forward without FDA, feedback was not technology mature enough and regulatory for FDA would be a “battle”.
- Mitek (JNJ) has no interest and cannot get JNJ Ventures as needed positive feedback from knees & hips group
- HPA Inc Regulatory Classification and Approval Pathway including clinical trial strategy \$15,000 proposal was presented
- Epica Medical is a back up option to enter the orthopedic market and pay for FDA approval. First need to generate revenue in animal healthcare. Second no interest with major OEM's
- Revenue would go over \$1 Billion

GE Ventures Healthymagination

- Corporate Venture Capital

Investing and partnering with startups to accelerate growth and commercialize innovative ideas. GE Ventures combines capital, expertise, infrastructure, and the GE global network to help accelerate the growth of businesses.

- GE could put up \$50M Med for global rights orthopedic market only & pay for FDA clearance . GE makes image equipment X-Ray , Bone Density , Ultrasound , MRI thus very complimentary. A “ deal ” could be set up for \$10M after all cost US clinical studies , FDA etc and the balance goes to MedTec.
- GE was very positive on MedTec ’s business model and years in business
- Most Fortune 500 firms have venture capital arm as example JNJ has strong team . We never developed enough interest in orthopedic area to move forward
- Stryker does more M & A still reviewing for their venture group

Rottman Institute

About Us

Rothman Institute is internationally recognized for excellence in orthopaedic science and technology. Our physicians are experts in their specialty areas, leaders in clinical research and innovators in the development of advanced treatment methods and technologies.

Rothman Institute - World Leader in Orthopaedics

Rothman Orthopedic Specialty Hospital ranks #1 in Surgical Care & Patient Satisfaction (*2013 HCAHPS & SCIP Data*) and is a Healthgrades five-star recipient for both Total Knee and Hip Replacements in 2013.

Rothman's Spine team performs over 3,000 surgical procedures each year and is anchored by three surgeons recognized on the list of the Top 28 Spine Surgeons in the Country.

Orthopedics This Week

Rothman's Sports Medicine team evaluates over 40,000 sports injuries and performs over 5,000 surgeries each year. Named the #1 Sports Medicine Program in the Region

Becker's Orthopaedic Review

Team Physicians of the Philadelphia Eagles, Philadelphia Phillies, Philadelphia Flyers, Philadelphia 76ers, Villanova University, St. Joseph's University and over 40 local high school and colleges.

Rothman Institute is included in the Jefferson Department of Orthopedics, which received a #7 national ranking by US News & World Reports for 2013.

More Podium & Poster Presentations at AAOS annual meeting 2013, (*World's Largest Orthopedic Meeting*) than any other Orthopedic group in the world.

Approximately 10,000 Hip & Knee replacements a year, one of the world's largest volumes.

Rothman Institute



Alex Vaccaro, M.D., Ph.D., president of The Rothman Institute in Philadelphia, is taking that facility into the future with strong leadership and well conceived expansions. Dr. Vaccaro told OTW, “As an organization we continue to look for strategic market/regions regarding growth for the organization. Currently we have 20 offices throughout the Philadelphia and South Jersey region and look to fill in ‘market pockets’ as well as expansion opportunities in the broader market base such as Central and Northern New Jersey.”

The Rothman Institute currently has ownership interest in nine of its office locations and is in the development phase for two further offices. In addition to ownership interest in a number of surgical facilities such as Specialty Hospitals and Ambulatory Surgery Centers, The Rothman institute owns a number of technology companies such as Business Analytics, Outcome Measurements, Telemedicine and Home Physical Therapy Applications.

“We have spent a significant amount on technology over the last seven years as we feel it will be an integral part of our success in the future of health care,” said Vaccaro. “Our clinical outcome systems includes patient education and patient satisfaction tools and along with our Business Analytics Systems will allow us to continue to improve the quality of care, be cost effective and be the ‘Value Provider’ that the market and consumers are demanding in the future.

In addition to the technology companies, The Rothman Institute has ownership interest in Velocity Sports Performance Centers in both Cherry Hill, New Jersey and Washington Township. “This allows athletes of all levels as well as the ‘weekend warriors’ to participate in high performance training and wellness.”

“As an organization we are essentially creating a hybrid academic teaching culture with a large clinical practice base. We are following through on our commitments to a profound clinical and operational transformation that involves looking at a whole different level of effectiveness in patient care and population health. This model allows us to continue our culture of academic and teaching and integrate evidenced based medicine with our clinical practice. We feel this is the future of health care. We feel this culture, along with our outstanding physicians and staff, as well as our technology will help us not only survive, but thrive in the new world of health care.”

Orthopedics at 200 Miles Per Hour

Nascar drivers are extremely protected these days in their cars, in part because of a tragic accident 14 years ago with the death of Dale Earnhardt and in part because of the work of a physician assistant from OrthoCarolina. About eight years ago Bill Heisel noticed that help was needed in the motorsports arena. Heisel tells OTW, “Those working in the motorsports industry have to contend with the longest season in professional sports—February through November. Few people realize how taxing these jobs are on the body...and the vast majority of injuries occur amongst the pit crews.” Heisel, who works with 19 teams including Joe Gibbs Racing, Stewart-Haas Racing and Hendrick Motorsports, states, “I have been enamored with the seriousness with which NASCAR takes safety. Since the 2001 death of Dale Earnhardt things have greatly improved, with softer walls called Safer Barriers, advances in the car construction and design engineering, and the overall goal of making the driver part of the vehicle rather than passenger. Drivers are essentially cocooned in the cars. There are improved crumple zones in car that allow energy to be dispersed around—rather than through—the driver. There have been major advancements in safety seat design and seat material. Truly, we went from drivers making their own seats to the use of carbon fiber technology that is custom molded to fit the driver perfectly (the way a custom knee brace is made for an NFL player). This has given us an improved ability to strap the driver into the seat with more sophisticated belt technology that keeps him or her from going forward or submarining’ (scooting out the bottom of the seat).”

Stryker

Stryker's surgical products include such instruments as drills, saws, and even cement mixers. The company's Orthopaedic segment makes artificial hip and knee joints, trauma implants, bone cement, and other orthopedic supplies. The MedSurg equipment segment houses microsurgery instruments, endoscopy equipment, and communications and patient handling tools. Stryker's Neurotechnology and Spine unit provides rods, screws, and artificial discs for spinal surgeries, as well as coils and stents for cerebral vascular procedures. The firm's products are marketed globally to hospitals, doctors, and other health care facilities via direct sales personnel and distributors.

Sales over \$10 Billion , innovation is big push . The main competitors Zimmermann Biomet and JNJ companies Deputy, Synthes & Mitek Rothman Institue is writing up a proposal for Stryker on in-house proof of concept . The study details will take at least 4-8 weeks.

FDA Pre-Submission

Regulatory Strategy, Submissions, FDA Interactions

HPA Health Policy Associates, Inc.) is a boutique consulting services group for the biotechnology community located in Boston, Silicon Valley, and San Antonio. Our capabilities are in the areas of quality systems regulations, regulatory strategy and submissions/FDA interactions, clinical strategy and operations, and software development/database management related to the above functions.

Up to two indications in one therapeutic area.

Optional pre-submission package submitted to FDA to certify regulatory assumptions in strategy

Fee is \$15,000 US

J Lyons Marketing

Osteoporosis Market

- Norland - SwissRay has real interest to be licensee under restructure circ back mid January
- GE Ventures wants both orthopedic & osteoporosis global rights
- Hologic has no interest for US market Sales for Europe is pending
- HPA Pre Admissions FDA Regulatory would be included
- KOL Irving Shapiro & Mitch Schnall is pending
- Revenue \$1Billion for a “cure” osteoporosis as no product on market

J Lyons Marketing

Dental Implants

- Biohorizon's one of market leaders for dental implants . Do early R & D pilots with new technology
- Nobel Biocare own by Danaher reviewing
- Straumann based in Germany also reviewing
- Epica Medical will do a dental gum tissue / bone if needed
- Revenue over \$100M

J Lyons Marketing

Internal Medicine - Kidneys

- Just reviewing possibility first area would be pancreas in animals for diabetes
- Alfred Mann Foundation if interest would jump start the program
- Urinary tract infection in cats & dogs can start with Epica Medical
- Admetsys OEM Diabetic Treatment reviewing

Gastroenterology Market

Liver Regeneration **Internal Medicine**

- The diagnosis and therapy of diseases of the digestive tract (esophagus, stomach, small intestine and colon), pancreas and liver.
- OEM's Medtronic and Boston Scientific sell to this market Both companies have venture group just need business development to jump in
- The nationally renowned GI Division of the University of Pennsylvania Raymond and Ruth Perelman Center for Advanced Medicine Discoveries into the pathogenesis and therapy of digestive, liver and pancreatic diseases are facilitated by a large research base at the University and NIH Digestive Disease Research Center. Funding through the National Institutes of Health and other sources among the largest in GI in the country, totaling \$17 million a year.

Liver Regeneration - Gastroenterology

University of Penn

The nationally renowned Division of Gastroenterology (GI) provides comprehensive resources for the diagnosis and therapy of diseases of the digestive tract (esophagus, stomach, small intestine and colon), pancreas and liver. Our mission is to facilitate the development of and advances in patient care, education, and research programs in digestive, liver and pancreatic diseases.

Clinical programs benefit from the largest group of specialists in digestive, liver and pancreatic diseases in the greater Philadelphia region, bringing a breadth of expertise that ensures comprehensive and innovative care. Discoveries into the pathogenesis and therapy of digestive, liver and pancreatic diseases are facilitated by a large research base at the university and NIH Digestive Disease Research Center. **Funding through the National Institutes of Health and other sources among the largest in GI in the country, totaling \$15 million a year.**

The Raymond and Ruth Perelman Center for Advanced Medicine opened in 2008. It is a state-of-the-art, 600,000+ square foot outpatient facility adjacent to the Hospital of the University of Pennsylvania. It is the home of the gastroenterology outpatient clinics and endoscopy unit. Also, we coordinate our clinical practice at Penn Presbyterian Medical Center, Penn Medicine at Radnor, Pennsylvania Hospital, and the Philadelphia VA Medical Center. In aggregate, we conduct 40,000 office visits per year and 33,000 procedures per year. We are committed to the education and training of students, residents and GI Fellows as future leaders.

The goal is to set up clinical trials as improve treatment that is funded by NIH and U of Penn receives the grant . MedTec provides the machines and has access to study results.

J Lyons Marketing

Ophthalmology Market

- Second Sight discussion in-house clinical trial NDA is being sent over
- Alcon R & D is reviewing feedback shortly
- Bausch Director of Innovation / R & D is reviewing
- Abbott R & D is reviewing might be too early
- Tier two OEM's Alphascon, Lensar, Ziemer
- Epical Medical will do free clinical study on horses at U of Colorado State
- U of Penn Veterinary has program for blind horses , Ophthalmology human side has number of funded eye disease program . U of Penn will want to be pay for any clinical studies . U of Pennsylvania is consider globally number one in ophthalmology
- Revenue could reach \$Billion if a number disease can have positive reaction

CEO Robert Greenberg



Dr. Robert J. Greenberg, MD, PhD served as the Chief Executive Officer and President at Second Sight Medical Products, Inc. until August 18, 2015. Dr. Greenberg worked **co-managing the Alfred E. Mann Foundation**. From 1997 to 1998, he served as a Medical Officer and Lead Reviewer for IDEs and 510(k)s at the Office of Device Evaluation at the U.S. Food and Drug Administration in the Neurological Devices Division. He also has biosensor and microsensor fabrication experience from work and teaching at the Whittaker Sensors Laboratory at Johns Hopkins. He has started several other small companies including one called 'Campus Security' where he designed, manufactured, and marketed an electronic intercom security system called TELEKEY®. He has been the Chairman of Second Sight Medical Products, Inc. since August 18, 2015 and serves as its Director. Dr. Greenberg serves on the Board of directors of the Southern California Biomedical Council and the Alfred E. Mann Foundation. He has been a Director of Pulse Biosciences, Inc. since May 2015. He served as an Associate Director of the Alfred Mann Institute at USC and Adjunct Professor at UCLA. From 1991 to 1997, he conducted animal and human trials demonstrating the feasibility of retinal electrical stimulation in patients with Retinitis Pigmentosa. This work was done at the Wilmer Eye Institute at The Johns Hopkins Hospital in Baltimore and led to the granting of his Ph.D. in 1997 from the Johns Hopkins Biomedical Engineering Department. In 1998, he received his Medical Degree from The Johns Hopkins School of Medicine. Dr. Greenberg received a B.S. in Electrical and Biomedical Engineering from Duke University in 1990 and a degree in Technical Electronics from Nassau Technical Institute in 1985.

Second Sight Medical Products, Inc.



The Argus® II Retinal Prosthesis System (“Argus II”) is intended to provide electrical stimulation of the retina to elicit visual perception in blind individuals with severe to profound Retinitis Pigmentosa.

Argus® II Retinal Prosthesis System

The Argus® II Retinal Prosthesis System ("Argus II") is also known as the bionic eye or the retinal implant. It is intended to provide electrical stimulation of the retina to induce visual perception in blind individuals. It is indicated for use in patients with severe to profound retinitis pigmentosa. A miniature video camera housed in the patient's glasses captures a scene. The video is sent to a small patient-worn computer (i.e., the video processing unit – VPU) where it is processed and transformed into instructions that are sent back to the glasses via a cable. These instructions are transmitted wirelessly to an antenna in the retinal implant. The signals are then sent to the electrode array, which emits small pulses of electricity. These pulses bypass the damaged photoreceptors and stimulate the retina's remaining cells, which transmit the visual information along the optic nerve to the brain, creating the perception of patterns of light. Patients learn to interpret these visual patterns with their retinal implant.



THE ALFRED E. MANN FOUNDATION FOR SCIENTIFIC RESEARCH

Alfred E. Mann has founded and largely funded 17 companies in his career. Two companies became public and ten were acquired at an overall total of almost \$8 billion. The companies currently within the family:

- MannKind Corporation, which develops novel therapeutics and drug delivery technologies for treatment primarily of diabetes, metabolic disease and cancer;
- Bioness, which develops and manufactures systems to address neural deficits and to restore controlled function of paralyzed limbs to address peripheral pain;
- Second Sight, which is developing visual prostheses to restore sight to the blind;
- IncuMed, which is developing novel percutaneous seals for various applications; and
- perQflo, which is developing drug delivery systems; and
- Axonics The team is developing a complete system around a miniaturized rechargeable stimulator for the treatment of Overactive Bladder (OAB) and Fecal

Incontinence (FI) as first applications. Innovation and invention are the life blood of AMF. When our scientists discover novel technology, inventions are documented and reviewed internally by a multi-disciplinary group representing science, legal, operational, clinical and regulatory groups

The AMF encourages the dissemination of its research results to scientific, engineering and medical communities in the form of publications and presentations at scientific meetings.

Averdro Ophthalmology

avedro
Avedro KXL



Avedro is a privately held pharmaceutical and medical device company advancing the science and technology of corneal cross-linking and refractive correction.

Avedro's Photrexa Viscous, Photrexa and KXL products are approved for sale in the United States for the treatment of progressive keratoconus. Avedro's products sold outside of the United States include capital equipment such as the UV-X devices, the KXL® and Mosaic™ Systems, and related proprietary pharmaceuticals such as the VibeX® and MedioCROSS® formulations. Avedro distributes its products in countries outside of the United States through a network of ophthalmic medical device distributors.

Keratoconus is a progressive thinning and distortion of the cornea. It is the most common corneal dystrophy in the US, affecting approximately one in every 2,000 Americans¹ or approximately 170,000 people in the US. Keratoconus causes the cornea to bulge from its normal symmetric domelike smooth optical shape, creating an abnormal curvature that changes the cornea's optics, producing blurred and distorted vision that is difficult to correct with spectacle lenses. This progressive thinning and weakening can result in significant visual loss and may lead to corneal transplants.

REBISCAN

Board Chairman, Co-founder, and Scientific Advisor | Pediatric Vision Scanner Co-inventor

Dr. Hunter is Ophthalmologist-in-Chief and the Richard M. Robb Chair of Ophthalmology at Boston Children's Hospital, President of the Children's Hospital Ophthalmology Foundation, and Professor and Vice Chair of Ophthalmology at Harvard Medical School. Dr. Hunter earned a Bachelor of Science in electrical engineering from Rice University and a PhD (in Cell Biology) and MD from Baylor College of Medicine. After he completed an ophthalmology residency at Harvard's Mass Eye and Ear Infirmary, he was a fellow at the Wilmer Ophthalmological Institute, Johns Hopkins University. He remained on faculty there as Associate Professor of Ophthalmology and of Biomedical Engineering until 2002, when he was selected as Ophthalmologist-in-Chief at Children's.

During his time at Children's, the Department of Ophthalmology has grown to become the largest pediatric ophthalmology department in the nation and perhaps the world, with 30 full-time faculty and pediatric subspecialists in nearly every aspect of ophthalmology, as well as 7 full-time research faculty.

Dr. Hunter's clinical and research interests focus on strabismus and amblyopia. Dr. Hunter is former Editor-in-Chief of the [Journal of the American Association of Pediatric Ophthalmology and Strabismus](#), and former Vice President of the 12,000-member [Association for Research in Vision and Ophthalmology](#). He is also co-author of *Last Minute Optics*, now in its second edition, and *Learning Strabismus Surgery*. His clinical expertise includes evaluation and correction of strabismus (misaligned eyes) in adults and children, including highly complex cases, and treatment of pediatric cataracts with intraocular lens implantation. He is developing new approaches to strabismus surgery for complex cases, including sutures adjustable for several days after surgery, and [superior rectus transposition \(SRT\) for Duane syndrome and sixth nerve palsy](#). He has been listed as a Best Doctor in [Boston Magazine](#) and *Boston*

lazy eye- amblyopia , Current technology to identify vision loss in children is only 60 to 70 percent accurate, Justin Shaka Cofounder said. Dave Hunter co-founder

JLyonsMarketing

Audiology Market

We owe our hearing to a tiny field of swaying cilia deep in the skull. Four rows of hair cells sprout in the snail-shaped cochlea of the inner ear, which is filled with fluid. Sound vibrations cause them to bend, opening pores that activate electrical signals bound for the brain. We are born with 15,000 hair cells in each ear, but unlike skin or other cell types, they do not turn over or replenish themselves. (There are three major pharma firms investing heavy in this area)

- Alfred Mann Foundation is reviewing as to fund a clinical study
- Epica Medical will do animals at number of veterinary practices
- OEM's Advanced Bionics part of Alfred Mann Foundation has been reviewing and now a push by Bob Greenberg
- Other OEM's Cochlear , StarKey

American Tinnitus Association

Research

ATA is one of very few organizations that funds advanced, independent tinnitus research. ATA supports cutting-edge science, with targeted, annual research grants to innovative and promising projects. Over the last 35 years, we have contributed nearly \$6 million to the search for a cure.

Research Toward a Cure

Finding a cure for tinnitus is ATA's priority. Research will help us reach this goal. ATA is the only patient-based membership association that directly funds tinnitus research.

Cardiology-Stents OEMs

Internal Medicine

Preventing Heart Attacks

- Medtronic
- St Jude
- JNJ Cordis
- Abbott
- Xtent

J LYONS MARKETING

Internal Medicine Brain Disease

- Areas CTE Chronic Traumatic Encephalopathy, Traumatic Brain Injury (TBI), Alzheimer's disease, memory lost, depression etc.
- Parkinson's, a neural disease in which cells deep within the brain die which causes tremors, difficulty staying still and moving, may not emanate from the brain as conventional wisdom would lead us to believe.
- Nexstim OEM does brain mapping to measure before and after results
- NIH grant from Johns Hopkins has been the focus

Nexstim -Stroke The NBS System 5 is A Revolutionary Noninvasive Device for Presurgical Mapping



a

Navigated Brain Stimulation (NBS) by Nexstim, is the only CE marked and FDA cleared noninvasive solution to presurgical mapping of the motor cortex. The NBS System 5 allows navigation to transcranial magnetic stimulation (nTMS), creating a precise map of the eloquent cortex superimposed on a patient specific MRI. NBS accurately locates the stimulating electric field (E-field) in the cortex, with the proven accuracy of direct cortical stimulation (DCS)¹. The stereotactic camera provides visualization of the induced E-field, which is displayed in a 3D rendering of the individual patient's MRI. Placing surface electrodes on the desired muscles, the 6-channel EMG records motor evoked potentials (MEPs) amplitudes and latencies. As the TMS coil is moved over the patient's head, the operator can see, in real-time, the E-field location, strength and direction in the 3-D intracranial rendering, creating a map of the cortical somatotopy.

Nexstim Stroke Trial

Nexstim has launched a multicenter double-blinded, randomized, and sham-controlled trial to determine the therapeutic effects of navigated rTMS (repetitive transcranial magnetic stimulation) for stroke rehabilitation. This cutting-edge stroke therapy combines occupational therapy with nTMS (navigated transcranial magnetic stimulation). Initial results from the Contralateral study have opened the door to improving the quality of life for stroke survivors. The study is looking at the combination of non-invasive navigated transcranial magnetic stimulation (nTMS) along with occupational therapy (OT) in post-stroke patients. Called the NICHE trial (Navigated Inhibitory rTMS in Contralesional Hemisphere Evaluation), this study will be conducted at twelve of the top rehabilitation centers in the United States.

St. Jude Children's Research Hospital

Brain Tumors

[Brain Tumor Clinical Trials](#)

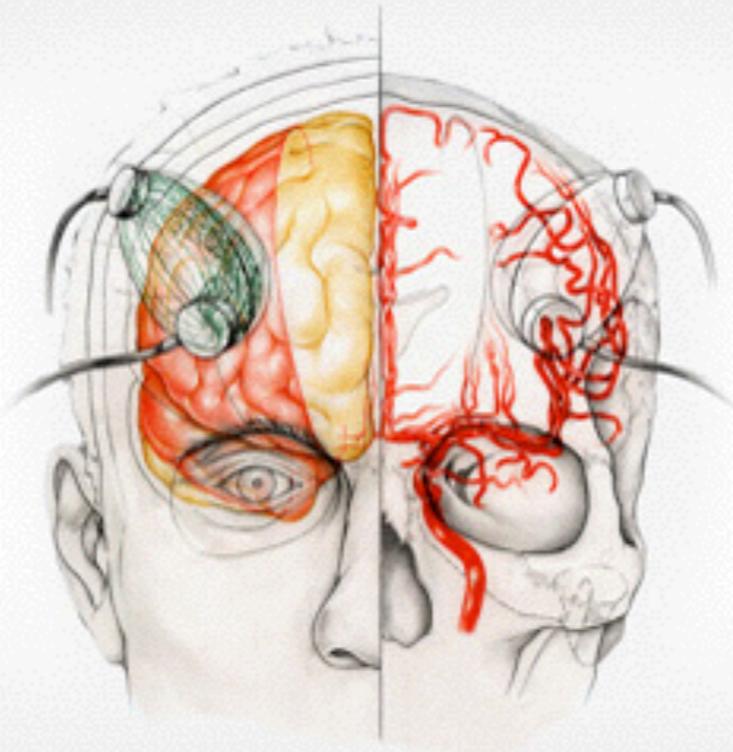
[Brain Tumor Treatment Program](#)

St. Jude Children's Research Hospital has one of the world's leading brain tumor programs devoted entirely to children. We specialize in treating the most challenging pediatric brain tumors.

Brain tumors treated at St. Jude include:

- Astrocytoma / Glioma
- Atypical Teratoid / Rhabdoid Tumor (ATRT)
- Choroid Plexus Tumor
- Craniopharyngioma
- Diffuse Intrinsic Pontine Glioma
- Ependymoma
- Ganglioglioma
- Germ Cell Tumors (Brain)
- Gliomatosis Cerebri
- Medulloblastoma
- Oligodendroglioma
- Optic Pathway Tumor
- Pineoblastoma

NeMoDevices



NeMoDevices AG was founded in 2007 as a spin-off company from the University and ETH Zurich. It dedicated to optimizing diagnosis and treatment of patients with stroke and brain injuries in order to save and improve life and life quality. High ethical standards and providing sustainable benefits to human beings are part of the culture and the vision of NeMoDevices.

The is technology

NeMoDevices' new neuromonitoring system is based on optical spectroscopy & imaging. The method is based on near infrared spectroscopy (NIRS). NIRS is based upon the principle that light in the near infrared region penetrates biological tissue and is absorbed differently by the blood containing deoxygenated and oxygenated haemoglobin.

NIH National Institution of Healthcare

The National Institutes of Health (NIH), a part of the U.S. Department of Health and Human Services, is the nation's medical research agency — making important discoveries that improve health and save lives. The NIH main campus is located in Bethesda, Maryland on the East Coast of the U.S., just 10 miles from the center of Washington, D.C

About Grants

Did you know that NIH is the largest public funder of biomedical research in the world, investing more than \$32 billion a year to enhance life, and reduce illness and disability? NIH funded research has led to breakthroughs and new treatments, helping people live longer, healthier lives, and building the research foundation that drives discovery.

Mitch Schnall knows how to write the grants and receiving funded as over \$100M to date for U of Penn

Foreign Grants

The [National Institutes of Health \(NIH\)](#), part of the [United States Department of Health & Human Services](#), is the primary U.S. Federal agency that conducts and supports medical research. To realize its mission of extending healthy life and reducing the burdens of illness and disability, NIH funds grants, cooperative agreements, and contracts that support the advancement of fundamental knowledge about the nature and behavior of living systems.

The [27 Institutes and Centers](#) (ICs) of NIH provide leadership and financial support to researchers both inside and outside the United States. Approximately 80% of NIH funding goes to support research grants, including grants to foreign organizations. Many of the ICs have international programs/collaborations that can be linked to from their homepages. This page provides information specifically for foreign applicants and grantees. Applications for research grant support from foreign organizations are treated as if they were applications from domestic organizations. There are a few exceptions which are highlighted on this page. This page also provides links to important information for foreign applicants as they consider and prepare applications and administer grant awards.

J Lyons Marketing

Summary

Strategy wise MedTec to license MBST technology to US OEM's is very sound. This is based on feedback with two signed letter of interest in 2016 and expecting at least two more letter of interest / intent in 2017. License revenue Sales to reach billion is all depending on performance of the technology. Now based on MedTec 15 + years product performance then there is very high likelihood to reach \$1billion dollars in license fees. The orthopedic market to close on OEM is very important as this is MedTec's core technology. Veterinary & Aesthetic markets will produce revenue to support orthopedic market. The aesthetic market could be a game changer with very high revenues within two-three years.