

Health Kentucky²⁰⁰⁹

A Report on Medical Research, Innovation, Life Sciences, Facilities and Healthcare Providers



RoboDocs

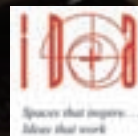
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GREATER LOUISVILLE
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The Lane Report

2009

Health Kentucky

GREATER LOUISVILLE AND WESTERN KENTUCKY

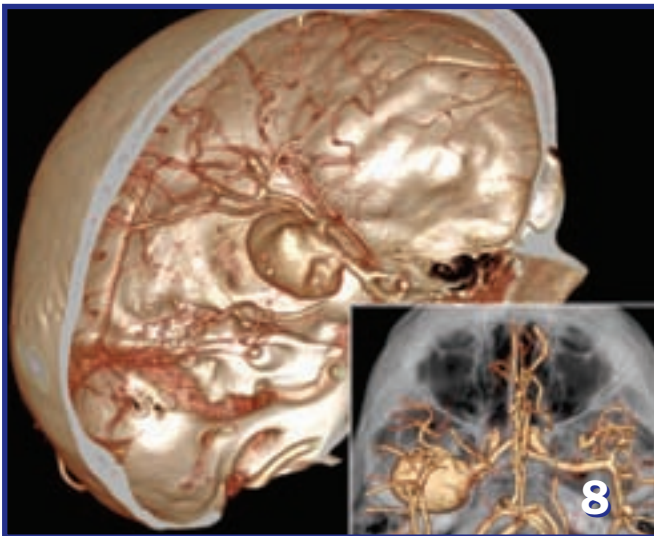
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On the Cover

Dr. Alex Abou-Chebl, left, a neurological interventionist with UofL Health Care, consults via a remote presence medical robot at UofL's University Hospital with Dr. Kerri Rimmel, director of University Hospital's Stroke Center. Using more than 10 robots placed in Kentucky hospitals, UofL specialists can interact with patients and medical personnel in time-critical cases such as strokes. The doctors can guide the robots, see, hear and talk to patients, evaluate scans, even listen with a stethoscope. Cover photo by Brian Bohannon

From The Publisher

The editors and staff of Lane Communications Group are very enthusiastic about *Health Kentucky*. The magazine provides in-depth information about the diversity of the state's health care industry; the high quality of medical services, facilities, training and research that are available; and how the health of Kentuckians is being improved.

Kentucky also benefits from the significant economic impact and employment opportunities that medical services provide the state's economy.



Ed Lane

Lane Report

2009

Health Kentucky

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HEALTH ENTERPRISES NETWORK



Louisville's Health-Related Industry: A Major and Growing Sector of the Local Economy

Health Enterprises Network: Fostering the Growth of the Region's Health-Related Economy

Louisville's health-related economy is thriving with the industry touted as the area's largest, according to University of Louisville (UofL) economists. Diverse in nature, health-related companies take on many forms, from hospital and other providers to medical device manufacturers and leading health law firms.



Michael P. Muldoon MPH
is the executive director
of the Health
Enterprises Network

In select examples, Louisville is home to strong leaders in the growth areas of behavioral health (Seven Counties Services); accounting firms targeting practice management consulting (Ernst & Young; BKD; Mountjoy & Bressler; Dean Dorton Ford and PricewaterhouseCoopers); health law (Hall Render Killian Heath & Lyman; Frost Brown Todd; Greenebaum Doll & McDonald; Woodward Hobson & Fulton; Wyatt Tarrant & Combs; Stites & Harbison and Stoll Keenan & Ogden); risk management (Marsh USA); healthcare collections (HCA-NPAS); and healthcare construction/interior design (Parsons, The Estopinal Group, GBBN Architects, ID&A and Bittners).

With 85,000 jobs and an annual payroll of \$3.5 billion, healthcare is Louisville's largest business sector. Ten of the top 25 employers in Louisville are health-related businesses, representing a significant share of the area's resources and talent. Over the years, all of the major components within the industry have shown significant growth with the prediction that growth will continue.

In 2000, the Health Enterprises (HE) Network was formed by area business leaders to promote the growth of this essential sector of Louisville's economy. Affiliated with Greater Louisville Inc., the local chamber of commerce and the recipient of the 2007 Chamber of the Year by the American Chamber of Commerce Executives, the HE Network is comprised of 190 member companies, with 1,200 individual company representatives.

The Region's Hospitals

Each of the area's hospital systems (Baptist, Jewish, Norton and UofL) continue to provide innovation and excellence and ongoing research. For example, Louisville hospitals ranked among the top 15 in quality care for heart attacks and pneumonia in a Harvard School of Public Health survey created to rate how well major metropolitan areas handled common medical problems.

Jewish Hospital was ranked among the leading U.S. institutions for two consecu-

tive years in the U.S. News & World Report's annual "America's Best Hospitals." And, Jewish Hospital was recognized nationally for being the only hospital to perform five hand transplants in the United States, as well as performing the first two implantations of the AbioCor self-contained artificial heart. Lastly, Our Lady of Peace, operated by Jewish Hospital & St. Mary's HealthCare, is a nationally recognized psychiatric hospital.

Norton Healthcare has shown great innovation in the area of transparency and is recognized as the first hospital company in the United States to post comprehensive performance data online. Kosair Children's Hospital, Kentucky's only freestanding, full-service children's hospital, is also operated by Norton Healthcare.

The 325-bed University Hospital, part of UofL Health Care, completed a \$40



Mark Carter is the chair
of the Health Enterprises
Network's Board of
Directors and managing
director of the Louisville
offices of Dean, Dorton
& Ford PSC.

million ambulatory facility in 2008, continuing to increase its presence in the community. In partnership with UofL and Jewish Hospital & St. Mary's HealthCare, the Cardiovascular Innovation Institute (CII) opened in 2007. CII is home to world class research labs, fabrication facilities and operating rooms.



To the east of downtown Louisville, Baptist Hospital East continues to expand its strong presence with 407 total acute and skilled care beds. Recently recognized for the fourth consecutive year as one of the nation's top hospitals with a 2007 Thomson Reuters 100 Top Hospital award, Baptist offers substantial specialized services in women's health, cancer, heart, orthopedics and neuroscience.



Curtis Warfield is vice chair for business development and retention, and president/CEO of HCA-National Patient Account Services

High-quality medical care continues across the Ohio River in Indiana within minutes of downtown Louisville, with several major hospitals. These include Clark Memorial Hospital, Jeffersonville; Harrison County Hospital, Corydon; and Floyd Memorial Hospital and Health Services, New Albany. A new heart and vascular center and a Woman's Imaging Center were recently opened at Floyd Memorial Hospital, while Harrison County Hospital, an affiliate of Norton Healthcare, completed construction of its new medical campus in early 2008. New, private, specialty hospitals in Indiana complement the mix as well.

Higher Education and Life Sciences

Human capital is key to Louisville's health businesses, and the local schools are a driving force. In 2008, Sullivan University answered the community's serious need for more pharmacists, opening the city's only pharmacy school with 65 students. The Sullivan University College of Pharmacy is expected to have a \$21 million impact on Louisville's economy.

In November 2008, Spalding University opened its College of Health & Natural Sci-

Top 25 Louisville Employers Ten of the 25 top employers are health-related, a significant share of resources and talent.		
EMPLOYER	SERVICE	TOTAL EMPLOYEES
United Parcel Service, Inc.	Logistics/distribution (healthcare logistics)	20,674
Humana, Inc.	Health benefits and insurance	8,775
Norton Healthcare	Healthcare	8,054
Ford Motor Company	Automotive manufacturer	7,586
Jewish Hospital HealthCare Services, Inc.	Healthcare	6,229
GE Consumer & Industrial	Appliance & electrical manufacturer	5,000
Kroger Company	Retail Grocer	4,644
Baptist Healthcare System	Healthcare	3,536
Kindred Healthcare	Long-term healthcare	3,033
University of Louisville Hospital	Healthcare	2,417
Catholic Archdiocese of Louisville	Nonprofit organization	2,348
Yum! Brands, Inc.	Restaurants	2,219
Caesars Indiana (Horseshoe)	Gaming and entertainment	1,895
Publishers Printing Co. LLC	Publishing	1,689
AT&T, Inc.	Telecommunications	1,561
American Commercial Lines Inc.	Transportation and manufacturing	1,560
Lowe's Cos., Inc.	Home improvement	1,520
JPMorgan Chase & Co.	Financial services	1,500
Anthem Blue Cross & Blue Shield Kentucky	Health benefits	1,438
Floyd Memorial Hospital	Healthcare	1,409
CitiGroup Inc.	Financial services/credit card operations	1,355
Brown-Forman Corp.	Manufacturing	1,317
Swift & Co.	Manufacturing	1,251
Al. J. Schneider Co.	Hospitality services	1,214
SHPS	Healthcare management services	1,200

Source: Business First, Book of Lists, 2007

ences. Housed in this \$5 million facility is the Spalding School of Nursing and the Kosair Charities enTECH Center, heralded as Kentucky's only public Microsoft Accessibility Resource Center for children and adults with disabilities.

UofL and its medical school continue to work toward progressive innovations in healthcare and life sciences. "Remote presence" robots help UofL physicians provide on-site expertise to hospitals across the commonwealth. Kentucky's Bucks for Brains initiative recruited nearly 70 key researchers and scientists to UofL. In addition, UofL

jumped from 204th to 103rd for institutional grant funding provided by the National Institutes of Health (NIH). UofL annually brings in over \$50 million in federal funding for health-related research. The top NIH-funded cell transplant program, Institute for Cellular Therapeutics (ICT), was created in 1996 by Dr. Suzanne Ildstad and has attracted more than \$50 million alone in peer-reviewed grants and awards. And, UofL's James Graham Brown Cancer Center is now within reach of obtaining the National Institutes of Health designation as a Comprehensive Cancer Center.

HEALTH ENTERPRISES NETWORK

UofL, Louisville government and independent business partners have committed over \$2.3 billion over the next 20 years to incubate health-related start-up companies and to recruit life science businesses, resulting in approximately 8,700 new jobs. In the past nine years, through UofL's research, 22 life science start-up companies have moved into the Louisville marketplace. A new entity called NUCLEUS will: (1) create an infrastructure to house life science and research-based companies; (2) build a bio-informatics system to create a seamless continuum for research through commercialization; and (3)

eliminate business barriers to research. Also, the UofL Office of Technology Transfer is committed to the mission of technology transfer with \$1.6 million invested, including \$750,000 in patent filings alone. For example, over 330 patent applications were submitted between 1997 and 2007.

Louisville's Two Fortune 1000 Healthcare Companies

Louisville is home to health benefits giant Humana Inc. Founded in Louisville in 1961, Humana has grown into a Fortune 500 company with 2006 revenue of \$21.4 billion,

11.3 million members and 22,000 employees (8,400 employees in Louisville). Also, Humana is locally known for one of the city's most architecturally significant buildings, the Michael Graves-designed corporate headquarters.

Louisville is home to another Fortune 1000 company, Kindred Healthcare – one of the nation's leading providers of post-acute care. Kindred has annual revenues of over \$4 billion with approximately 54,300 employees in 40 states.

Other Significant Healthcare Providers

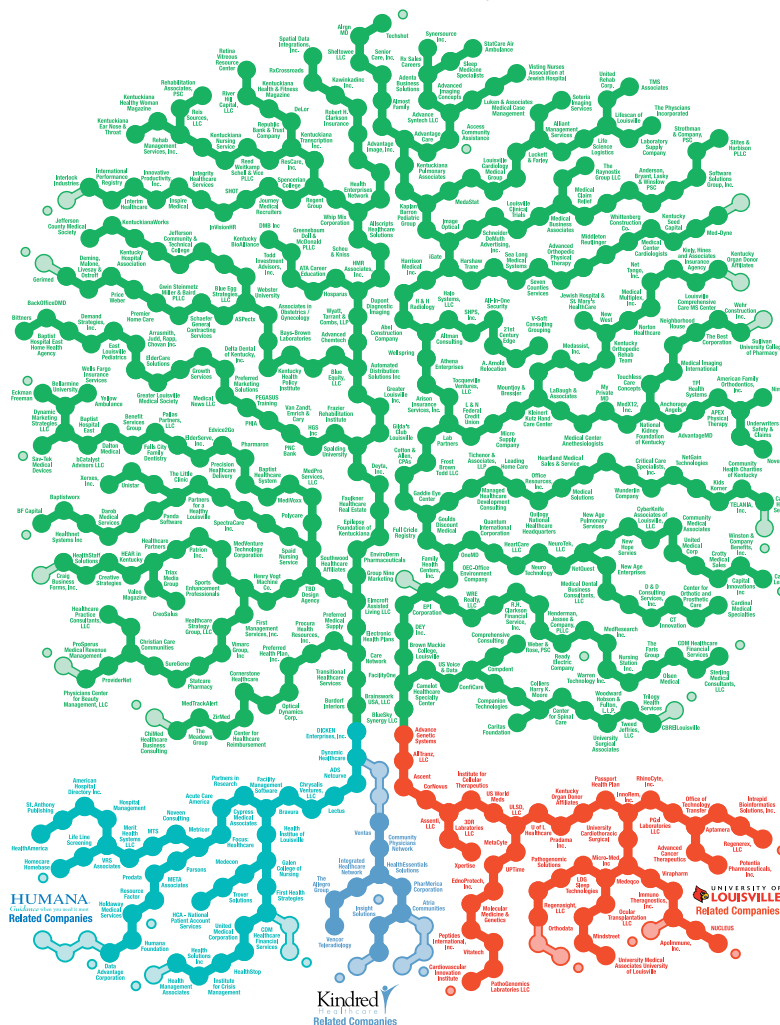
Headquartered in Louisville, ResCare is one of the largest providers of home care to the elderly and people with disabilities in the nation. ResCare offers residential and support services to people with intellectual and developmental disabilities and provides education, vocational training, and job placement for people of all ages and skill levels. The company employs 42,000 individuals who serve 65,000 persons in 37 states daily.

Anthem Blue Cross & Blue Shield, the largest managed care company in Kentucky, continues its growth and strong leadership in prevention with its 360° program. ZirMed, a leader in revenue cycle management, provides innovative solutions to providers to manage payments. Recently recognized by Inc. Magazine as the 77th largest healthcare information technology company in the U.S., ZirMed will move into its newly-built offices in 2009. Other significant health-related businesses in Louisville include SHPS Inc., an integrated health management provider that works with more than 700 organizations, including 85 Fortune 500 companies; Atria Senior Living Group, which owns and operates 130 assisted and independent living communities in 28 states; Homeline, a leader in home health supplies; and most recently PharMerica Corp.

Louisville's Health-Related Logistics & Distribution

With UPS Worldport located in Louisville, many distribution facilities have migrated to this area of the country. PharMerica, the second largest provider of institutional pharmacy in the nation, opened its corporate headquarters in 2007. Pharmaceutical distributor H.D. Smith Wholesale Drug Co. opened a new distribution center recently to support retail, hospital and institutional pharmacies. Other health-related distribution facilities include Amgen, Genentech, JOM Pharmaceutical Services, and Medline Industries. Opening at the end of 2008, Medline Industries, with a 400,260-square-foot warehouse, makes and distributes medical supplies.

2009 Louisville Family Tree of Health-Related Companies



The 4th edition of the Louisville Family Tree of Health-Related Companies features 128 health-related, Louisville-based companies from the Greater Louisville Area's network. The information is provided for informational purposes only and is not intended to be used for legal or financial purposes.

Compiled by the Louisville Family Tree of Health-Related Companies.

Visit us online at www.louisvillefamilytree.com.

GREENBAUM
Wholesale Drug Co.



Health Enterprises Network
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With 85,000 jobs and an annual payroll of \$3.5 billion, healthcare is Louisville's largest business sector. The diagram above represents the area's locally founded health-related businesses.

High-Tech Careers in Kentucky

Kentucky offers a fertile business environment for high-tech entrepreneurs and start-up companies. With innovative tax incentives and business development programs, a central location in the U.S. and a skilled workforce, it isn't surprising that Kentucky ranked as one of the Top 10 Business Climates by Site Selection magazine. Kentucky also houses world-class research institutions, early-stage funding resources and is the first state to match both Phase 1 and Phase 2 federal SBIR - STTR awards to high-tech businesses.

Source: High-Tech Careers in Kentucky, Department of Commercialization & Innovation

In Louisville, a 2008 update of the Greater Louisville Project, found that the area advanced on its goal to acquire more 21st Century jobs, moving the city to the middle-tier in the number of residents employed in professional and technical jobs. From 2000 to 2006, Louisville gained 7,000 additional jobs in the category, which translated to 36 percent of the total jobs in the metro area.

Sources: 2008 Update, Greater Louisville Project

Louisville's Biotechnology Industry

Louisville is also a city growing the biotechnology field. The statewide organization - Kentucky BioAlliance - is based in Louisville and has become a comprehensive network of biotech industry, academia and entrepreneurs.

MetaCyte Business Labs, a venture development entity, continues to prospect new ideas within the universities and healthcare institutions in and around Louisville and the surrounding area. Operating "from the mind to the marketplace," MetaCyte works to transfer cutting-edge ideas into high-growth entrepreneurial companies.

Service Awards

Healthcare and the healthcare delivery business in Louisville continue to receive awards for outstanding services. Some select examples include:

- University of Louisville listed as a Carnegie 1 Research designation, placing UofL on par with Duke University, Mayo Clinic, MIT and John Hopkins University

Louisville Healthcare Facts

Fourth Quarter 2006

- 53,691 total number of healthcare/ social assistance jobs
- 72,227 hospital employees
- Average monthly earnings in healthcare / social assistance - \$3,778 compared to \$3,413 statewide and up from \$2,768 in 2001
- 18,574 total employees in ambulatory healthcare services
- 9,529 total employees in nursing and residential care facilities

Source: Business First, 2007

- UofL listed as a top 10 school for micro/nano technology commercialization by SmallTimes (May/June 2007)
- 51 of Kindred Healthcare's Nursing & Rehabilitation Centers received American Healthcare Association Quality Awards
- Baptist Hospital East was named a magnet hospital by the American Nursing Credentialing Center - this distinction highlights quality patient care, nursing excellence and innovations in nursing practice
- Kosair Children's Hospital was named a magnet hospital by the American Nursing Credentialing Center in 2007
- Passport Health Plan ranked ninth in Medicaid health plans by U.S. News and World Reports in 2008, up from 11th in 2007
- Jewish Hospital and Kentucky Organ Donor Affiliates received the National Health and Human Services Medal of Honor for Organ Donation as presented by the U.S. Department of Health and Human Services
- SHPS Inc. received seven health-related awards from the Health Information Resource Center for client-specific communications collateral as part of benefits management programs, on-call nursing hotline and healthcare newsletters

- ZirMed ranked 77th in the Healthcare Informatics Top 100 Largest Healthcare Information Technology companies in the U.S.
- Dr. Adewale Troutman, director of Louisville Metro's Public Health & Wellness, was appointed to National Committee on Childhood Obesity
- A new VA Hospital, a \$400 million project, will soon be built in Louisville
- University Hospital, a member of UofL Health Care, boasts one of the only centers offering leading-edge capabilities in endovascular interventional neurology nationally
- Norton Suburban Hospital and Norton Hospital were recognized by J.D. Power and Associates for service excellence as part of its Distinguished Hospital Program

Healthcare foundation work and the Region's leadership in other innovative life science

Louisville is home to the Foundation for a Healthy Kentucky - one of many key, nonprofit groups focused on addressing unmet healthcare needs. The Foundation's reputation has been built on its substantial and high visibility work with both state legislators and local leaders, focused on improving access to healthcare, reducing health risks and disparities and promoting health equity.

Also, the Kentucky Science & Technology Corporation (KSTC) has been critical to creating an innovation-driven entrepreneurial economy that makes this region a leader in the development of knowledge and its application. Founded in 1987, KSTC advances science, technology and innovative economic development through such programming as the nationally recognized Idea Festival, held for three days each fall in Louisville.

Industries Most Important to the Region's Current Economic Success

RANK	RESPONSES	TOTAL	%
1	Healthcare	196	64%
2	Manufacturing	184	61%
3	Mining and Coal	83	27%
4	Education	81	27%
5	Agriculture and equine	58	19%
6	Energy	49	16%
7	Transportation, logistics & warehousing	44	14%
8	Retail and hospitality	30	10%
9	Tourism	28	9%
10	Information technology and communication	27	9%

Source: In the Eye of the Storm, KCTCS, statewide survey of 306 CEO participants, 2007.

NORTON CANCER INSTITUTE



John Hamm, M.D., director of research, and Sandra E. Brooks, M.D., MBA, associate vice president, cancer prevention and clinical research, Norton Cancer Institute, document samples for a clinical trial.

wide accredited by the ACoS. In 2007, it also became an Anthem Blue Distinction Center for Complex and Rare Cancers.

The first and the only ...

Norton Cancer Institute's Prevention & Early Detection Program is the first and, currently, the only program in the region dedicated to helping prevent and detect cancer at its earliest and most treatable stage. The program provides private assessments tailored to individuals' needs.

Additionally, Norton Cancer Institute's Genetic Counseling Service, the only dedicated service center of its kind in the region, is staffed by an oncologist and two genetic counselors specializing in cancer genetics and hereditary cancer syndromes.

The first of its kind in the region, Norton Cancer Institute's \$1 million Mobile Prevention Center is a 40-foot unit equipped with digital mammography, a clinical exam room and a small laboratory.

When cancer is found, living with the diagnosis is challenging. Norton Cancer Institute established one of the first dedicated behavioral oncology programs in the region to help patients and families cope with fear, worry and stress.

Norton Cancer Institute's unique Patient Navigator Program also assists in alleviating patients' stress by providing an oncology-certified nurse dedicated to providing emotional support from the point of diagnosis through treatment and survivorship. Navigator services are free to all cancer patients regardless of where they receive care.

For adults with a history of cancer who have completed active therapy, the Norton Cancer Institute Survivorship Program provides a special level of care, including clinical support, education and resources. It is the only program of its kind in the Louisville area.

Focus on community outreach

Norton Cancer Institute offers breast, cervical and prostate cancer screenings throughout the Louisville area. Individuals also can be evaluated by a cancer prevention specialist who conducts risk assessments and examinations.

To further meet community needs, Norton Cancer Institute's Mobile Prevention Center provides clinical breast exams,

Norton Cancer Institute

The leading provider of
comprehensive cancer care in Kentucky

In 2007, the Norton Healthcare Board of Trustees announced a \$100 million, five-year commitment to fight cancer in our community through the programs and services of Norton Cancer Institute.

Norton Cancer Institute, the leading provider of comprehensive cancer care in Kentucky and Southern Indiana, treats nearly half of the cancer cases in the area. Its specialists at Louisville Oncology are the most comprehensive team of oncologists in the region, dedicated to offering advanced cancer care and hope through a multidisciplinary approach to prevention, diagnosis, treatment and survivorship.

A physician practice with 25 oncology specialists at eight area locations, Louisville Oncology is the largest oncology physician group in the region. Together with the resources of Norton Cancer Institute, it provides education, outreach, physical and emotional support services, and opportunities to participate in research studies and clinical trials.

Norton Cancer Institute, designated by the American College of Surgeons' (ACoS) Commission on Cancer as the only network-accredited cancer program in Kentucky, is among an elite group of only 29 network cancer programs nation-

Norton Cancer Institute Fast Facts

- Received the 2008 Medical News Governor's Dignity of Humanity Award for its Cancer Prevention & Early Detection Program
- Home to Kentucky's only adult-service neuro-oncologist, Stephanie Wagner, M.D.
- Home to Kentucky's only two orthopaedic oncologists, Peter Buecker, M.D., and Corey Rothrock, M.D.
- The site of Louisville's first daVinci Surgical System, used for less invasive prostatectomies and gynecologic and colorectal surgeries
- One of the largest and most successful treatment centers, offering exclusive clinical trials to patients in the Louisville area thanks to a collaboration with Duke University's Preston Robert Tisch Brain Tumor Center
- Recipient of commendations for both our adult and pediatric oncology programs from the American College of Surgeons' Commission on Cancer

digital mammograms, Pap smears, prostate exams, PSA blood tests and educational activities for lung and colon cancer prevention. The center works with community leaders, the Louisville Metro Department of Public Health and Wellness and other organizations to improve cancer outcomes and promote healthy lifestyles.

Norton Cancer Institute and Norton Healthcare also promote healthy lifestyles and cancer prevention by maintaining a smoke-free environment on all Norton Healthcare campuses across Metro Louisville. In fact, Norton led a collaborative effort among all Louisville health care providers to implement smoke-free campuses, with Norton Healthcare leading the way by establishing smoke-free campuses in June 2007 – one of the first healthcare providers in Kentucky to do so. Also, smoking cessation classes are available at all Norton Healthcare adult-service hospitals and teach the successful 13-week Cooper/Clayton Method to Stop Smoking.

Additional classes on a variety of topics and support services for patients and families are offered through Norton Cancer Institute Resource Centers, one of the first to offer Louisville-area cancer patients a place to turn for assistance and education.

Cancer care for kids

Each year specialists at Kosair Children's Hospital,

the teaching facility for the University of Louisville School of Medicine Department of Pediatrics, treat more than 80 children newly diagnosed with cancer and more than 600 fighting the disease.

The Cancer Care and Renal Center at Kosair Children's Hospital houses the renowned pediatric oncology/hematology and bone marrow transplant programs. As the oldest continuously accredited children's oncology program – accredited by the American College of

Surgeons' Commission on Cancer since 1959 – it also received accreditation with commendation from the ACoS in seven clinical areas.

Kosair Children's Hospital nurses are vital in providing excellent patient care. In recognition of their hard work and dedication to excellence, in 2007 Kosair Children's received Magnet designation from the American Nurses Credentialing Center, making it one of only 26 children's hospitals in the country with this designation.

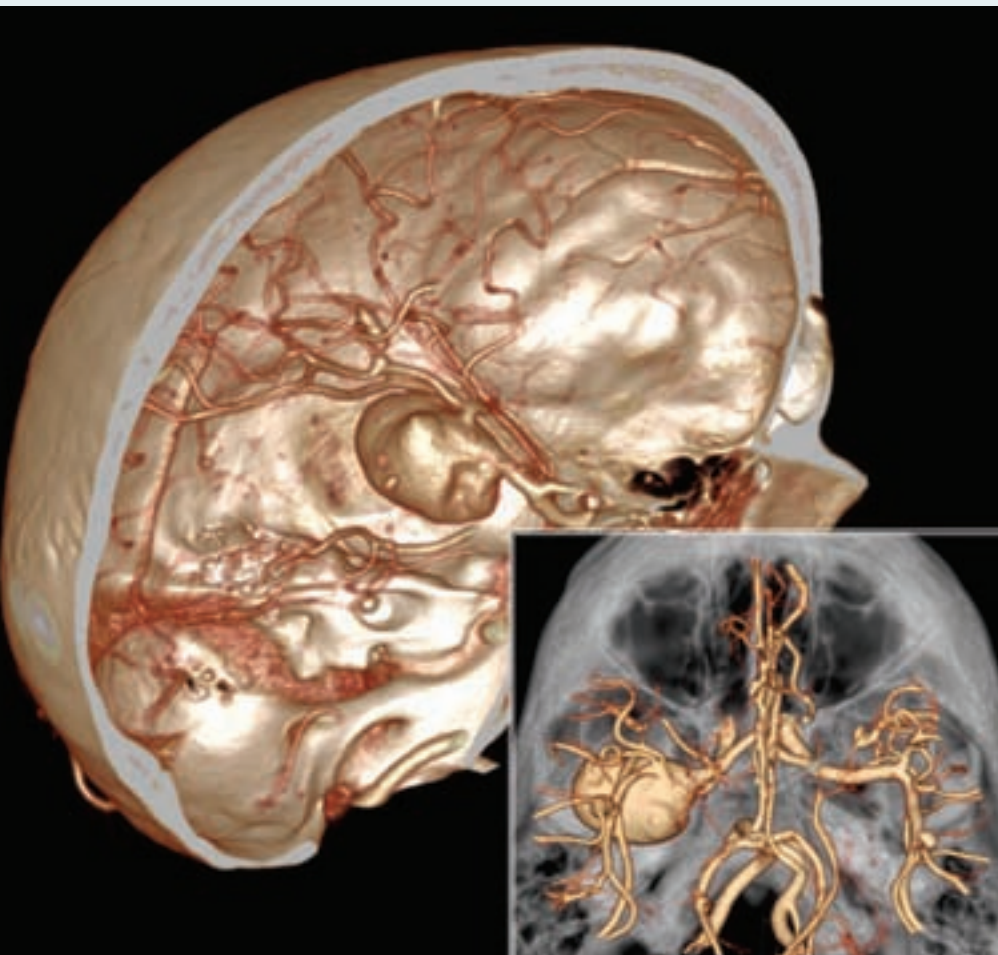
Preparing for the future

When Norton Healthcare committed \$100 million to fight cancer and establish Norton Cancer Institute, it also announced plans to build a new 14,400-square-foot, \$9.7 million radiation cancer radiation center on its downtown Louisville campus. The radiation center will feature the most sophisticated technology available to provide radiation therapy treatments for adults and children in Kentucky and Southern Indiana. It also will include an education center and meditation garden. The pediatric section will be modeled after St. Jude Children's Research Hospital's new radiation center, with input from its radiation oncologists.



Joann Smyzer, lay health navigator, Norton Cancer Institute, welcomes Karen Allen, of Crestwood, to Norton Cancer Institute's Mobile Prevention Center, which offers clinical breast exams, digital mammograms, Pap smears, prostate exams and PSA blood tests, and colon cancer testing kits.

3DR LABORATORIES, LLC



CTA-Head volume rendered image reveals abnormally large middle cerebral artery aneurysm.

Outsourcing of 3D Medical Imaging Offers Access to Expertise in New Technology

3DR Laboratories, LLC is a Louisville-based healthcare services company that specializes in the creation of sophisticated 3D medical images. These images are used to better visualize anatomy and disease processes, leading to better diagnoses, lower costs and improved patient care. 3DR meets a striking need in the healthcare market by providing highly trained, competent SuperTechs with the training and talent to create the best images possible for hospitals and doctors, or anyone else needing access to advanced visualization. 3DR also provides consulting services, IT support/infrastructure and training, with a variety of platforms available to provide its customers maximum flexibility at minimum cost. Finally the medical imaging market has a true plug and play

outsourcing solution for providing advanced image processing services on a 24/7 basis.

What created the need for 3DR Laboratories? Founder, Dr. Robert Falk, a practicing radiologist in Louisville, first saw the need for centralization of 3D services in 2004. "There was a dramatic improvement in the performance and capability of CT scanners in the early 2000's. Speed of scanning increased dramatically and resolution improved as well. Because of these changes we have seen the number of images produced per patient skyrocket from less than 50 to many thousands. Dealing with all of these slices moved advanced image processing from a luxury to a necessity. At the same time, these advances in CT performance allowed the scanner to be used in ways

never thought possible before, replacing older, riskier and more expensive tests with CT."

Who Needs 3DR Laboratories?

Who, then, can benefit from outsourcing their 3D imaging needs to 3DR? The answer is simple – anyone wishing to provide their patients access to leading edge medicine in the most affordable way possible.

Hospitals

3D laboratory services in medical imaging are an absolute necessity for state-of-the-art hospitals. CT angiography is rapidly replacing catheter angiography for the evaluation of stroke, chest pain, aneurysms and peripheral vascular disease. Three dimensional imaging is also being used for presurgical planning in orthopedics, neurosurgery, oncology and plastic surgery to name just a few specialties. New applications of advanced image processing are being introduced constantly. Yet, reimbursement is inconsistent and relatively low compared with the technical fee for CT and MRI. Development of an in-house 3D laboratory requires substantial upfront capital and continuous operational costs for software upgrades, FTE's and 24/7 coverage. 3DR Laboratories' unique pricing structure bundles 3D lab services with flexible, scalable IT infrastructure into an affordable monthly subscription. This allows hospitals to either establish 3D services or grow their existing services with no upfront capital expenditures. With 3DR, hospitals are able to focus their valuable resources where they provide maximum return on investment – scanning patients.

Radiologists

The radiologist community has been quick to embrace CT angiography and other applications of advanced imaging. 3D software and workstation vendors claim that complete, clinically useful 3D renderings can be produced routinely with just a few clicks of the mouse with minimal interruption of workflow. Radiologists who actually try to post process their cases as part of a typical, hectic community practice quickly learn otherwise. Sitting in front of the computer to do advanced visualization

protocols can be an enjoyable new task when a 3D program is just getting started and there are only a few cases per day but those few cases quickly grow to 10, 20 or more. As the volume of cases grows, so does the complexity of those cases. At 7 PM, after a long day, with three more carotid CTA's to process it's not so much fun anymore. While radiologists are the ideal 3D imagers, the reality is that the vast majority of 3D processing will be performed by SuperTechs in a protocol-driven fashion. The role of the radiologist is to review the protocolled images and only access the 3D software on an as-needed basis in order to answer specific questions. 3DR Laboratories provides the most complete standard protocols in the industry and is the only lab that provides customer-specific protocols. 3DR truly wants to be your laboratory.

Clinicians

More and more clinicians, from specialists to primary care, are discovering the benefits of 3D imaging and advanced visualization. The key, of course, is access. The best 3D images in the world are useless to a surgeon if he or she is unable to access them when needed. 3DR, with its sophisticated and robust thin client/server architecture, allows unlimited distribution of images without the need for sophisticated software and workstations. Any computer with access to simple broadband internet connectivity becomes a platform for advanced 3D image viewing and manipulation. Learning to use it is easy. As the treating physician, your patient's 3D studies can be viewed from the operating room, at home, the office, or even the beach!

Attorneys

It may come as a surprise, but trial attorneys who deal with medical images need 3DR Laboratories. Imaging has become a critical component of medicine, and therefore it stands to reason that imaging has also become a critical component of medical litigation. Healthcare and the practice of medicine are complicated. Getting a jury of non-medical people to understand complicated disease processes or injuries could make the difference between winning and losing a case. Typically, hours of depositions and stacks of x-rays are presented as evidence and exhibits. Imagine, as a jury member, the difference between trying to comprehend a series of thousand-slice CT scans as opposed to a few 3D renderings that can be expertly created directly from the original CT data. In the case of 3DR, one picture can literally be worth a thousand words.

You Can't Afford Not to Use Kentucky's Own 3DR Laboratories!

Bringing advanced visualization into your healthcare organization is not cheap. You've invested a lot by upgrading to a 16, 64 or 256-slice CT scanner. Now that you own the Corvette of CT scanners, how do you make sure that you're not driving it like a Ford Escort? Getting the most from your CT department requires an infrastructure of equipment, people and training. The table below illustrates that, even for a small CT department, the costs of doing your own 3D post-processing far outweigh the cost of outsourcing to 3DR.

The model below assumes a small to mid-sized CT department. Potential savings are larger with larger patient volumes. Assume one CT scanner and one 3D processing computer with two CT technologists working an eight hour day. Six cases per day need 3D processing at the workstation, requiring four hours of tech time.

	In-House 3D	3DR Laboratories
24/7 Coverage	No	Yes
Technologist fully trained	Minimum 9 months	Immediate
Upfront workstation cost	\$250,000	\$0
Annual license/upgrades	\$25,000	\$0
Tech 1's day	8 hours scanning	8 hours scanning
Tech 2's day	4 hours scanning 4 hours at 3D WS	8 hours scanning (3DR is your 3D tech)
CT Scans per day	28*	32* <i>More techs scanning = more scans per day</i>
CT revenue @ \$300 per scan	\$8400	\$9600
Call pay for 24/7 3D coverage per day	??	\$0
Cost of 3DR Laboratories' service	\$0	\$360 (6@ \$60)
Net revenue per day	\$8400 less call pay	\$9240
Revenue per year (260 days)	\$2,159,000 (includes cost of license)	\$2,402,400

The 3DR difference

\$243,000/yr

* Clinical studies show that one tech can scan a patient every 22 minutes while two techs can scan a patient every 14 minutes on a multislice CT scanner

3DR Academy

The Volumetric Medical Imaging (VMI) program was developed at Jefferson Community and Technical College (JCTC) in 2005 to produce an employee pool for 3DR Laboratories. The demand for this curriculum is nationwide, however because few radiologic technologists possess the knowledge base or technical skills to be proficient 3D "super" techs. Now, 3DR Academy in partnership with JCTC offers the VMI curriculum online to students across the country. Students learn detailed cross-sectional anatomy, pathophysiology, and the intricacies of post-processing to create diagnostically useful images.

3DR Academy offers both flexibility and accessibility. RadTechs can enroll in the 4-credit courses comprising the VMI certificate or shortened modules that focus on a specific type of exam (e.g. Carotid Artery Post-processing). Each course or module will earn both college credit and continuing education units. The curriculum is offered in a self-paced format with multi-media content, including audio-video lectures. Broadband internet access allows students to login to the Louisville-based server to practice their skills on test cases as video tutorials walk them through the key steps.

For more information, go to 3dracademy.com.

UofL Health Care



Together, we create the knowledge to heal.

So much more than a medical facility, UofL Health Care is a comprehensive medical treatment, research and services organization, combining the extraordinary resources of University Hospital, the James Graham Brown Cancer Center, and University of Louisville Physicians. Nationally recognized for leadership in research and teaching, this cooperative group of exceptional people, services and technologies offers patients leading-edge care for virtually any medical need, all in one convenient location. While each part of the organization provides outstanding care, the true strength of UofL Health Care is its ability to work together to benefit our patients, our community and the region's medical professionals, and to improve the practice of medicine around the world.



University of Louisville Physicians

University of Louisville Physicians is a group of more than 450 dedicated doctors, working together to care for patients from prenatal days to the senior years. As faculty members at the University of Louisville School of Medicine, UofL Physicians are providers of excellent care, as well as teachers of the next generation of physicians. Many UofL physicians have achieved such a high level of sustained excellence that they serve in leadership roles in national medical organizations and on specialty review boards that examine other doctors and programs across the country.

Above all, UofL Physicians is a team committed to providing outstanding care, whose leading-edge knowledge helps patients throughout Kentucky, Southern Indiana and in hospitals all across the region. They are the heart of UofL Health Care.

Equipped with the latest digital patient information system, next-generation diagnostic and treatment technologies, the UofL Health Care Outpatient Center is the new hub for University of Louisville physicians, dentists, nurses and health care professionals. While our doctors practice in locations across the region, the University of Louisville is proud to share this multi-specialty facility, serving as a "one-stop-shop" for nearly all health and dental care needs to a broad population.

"University of Louisville Physicians are the heart of UofL Health Care."

James Graham Brown Cancer Center

The James Graham Brown Cancer Center at the University of Louisville is dedicated to finding the answers to cancer. Our multidisciplinary approach to cancer treatment brings together experts selected to meet the patient's unique needs. Specialties range from surgical, medical and radiation oncology to nutrition, psychology and physical therapy. Working together, a select team develops individualized treatment plans for patients using a broad scope of advanced technology and equipment.

Profound discoveries produced through our extensive research and clinical trials have drawn international attention and provide our patients with leading-edge treatment not readily available elsewhere.

In addition, The Mint Jubilee Cancer Resource Center provides a peaceful environment for cancer patients to learn and relax. Educational materials, Internet access and support group meetings are a few of the many services available to patients and their families to help learn, cope and heal.

University of Louisville Hospital

Located in the heart of University of Louisville's academic medical center, this 404-bed hospital, provides a full range of

diagnostic, therapeutic, emergency and surgical services. From high-risk obstetrics, trauma or cancer, to stroke care or any of our multiple programs and specialties, our skilled staff is dedicated to providing the most advanced diagnostic and treatment services to our patients. We're also committed to improving the standard of care for patients worldwide through internationally recognized research and the latest clinical trials



The James Graham Brown Cancer Center
529 South Jackson Street
Louisville, Kentucky 40202
browncancercenter.org
(502) 562-4158

As a primary adult teaching hospital, the latest treatments and medical advances are available to patients long before they're available elsewhere.

The Difference

All the physicians that practice at University of Louisville Hospital, the James Graham Brown Cancer Center and the UofL Health Care Outpatient Center are faculty members at the University of Louisville School of Medicine. From the excellent care they provide to their patients, to the leadership they give the next generation of health care professionals, they are the foundation and direction of health care. And an academic medical center such as ours attracts more types of specialists and sub-specialists than other community hospitals.

Because University of Louisville's academic medical center is truly a vibrant, advanced, collaborative medical community, patients as well as other health care partners find they get among the best and most advanced health care available.



University of Louisville Hospital
530 South Jackson Street
Louisville, Kentucky 40202
uoflhealthcare.org
(502) 562-3000

UNIVERSITY OF LOUISVILLE



Painting a new picture of health care delivery

University of Louisville's Academic Medical Center

The University of Louisville Health Sciences Center is a comprehensive, integrated academic medical center that is working to bring new discoveries, technologies and solutions for the changing healthcare landscape to the citizens of Louisville, the state of Kentucky, our region and beyond.

The Academic Medical Center Advantage

At the University of Louisville Health Sciences Center, you'll benefit from the unique strengths of the region's premier academic medical center, where comprehensive and compassionate patient care comes together with research and education to provide more options for patients and more hope.

Our scope is broad and includes:

- More than 460 physicians, dentists and advanced nurse practitioners – who are also professors – offering the full range of specialty and subspecialty care. Among the top specialists in their fields, they provide leading-edge care for patients from the simple to the most complex problems, collaborate in breakthroughs in prevention, diagnosis and treatment of disease, and pass along their knowledge to the next generation of health care professionals.
- One million medical patient encounters annually and more than 50,000 dental patient visits annually.
- Nationally-recognized excellence in medical care.
- A robust and rapidly-growing research capability with an emphasis on bringing the newest treatments from the lab to the patient.
- A fully-accredited Continuing Health Sciences Education program offering more than 60 annual conferences that draw participants from around the world to learn about the newest medical breakthroughs.
- Leading-edge care and nursing education aimed at meeting the tremendous demand for skilled nursing professionals.

UofL Health Care Outpatient Center

Collaboration among UofL Physicians is the goal of the UofL Health Care Outpatient Center, a state-of-the-art facility where patients can receive comprehensive, coordinated medical care ranging from primary care to the most complex specialty services that span the range of adult medical issues. Instead of traveling to multiple locations, patients can see all of their doctors in one attractive, convenient facility.

Beyond Louisville

Telemedicine helps bring the best medical specialists to communities and patients across the state and the region.

Conventional teleconferencing with real-time transmission of echocardiogram results is used by UofL cardiologists and other specialists in congenital heart defects, in partnership with facilities



The UofL Health Care Outpatient Center
401 East Chestnut Street
Louisville, Kentucky 40202
uoflphysicians.org
(502) 813-6720

across the commonwealth to help other doctors identify and treat patients with congenital heart defects.

UofL Health Care has also created a remote presence robot network to bring the best expertise in academic medicine to hospitals across Kentucky. Using a secure wireless Internet connection, UofL physicians can log into a computer ControlStation from anywhere in the world that connects via the Internet to the InTouch Robot.

Within moments of a request for a medical consultation, patients can see the doctor they're talking to and the physician can perform examinations via high-resolution audio and video feeds, bringing their world-class expertise in stroke, movement disorders, pediatric specialties, neonatology, maternal-fetal medicine and cardiology to patient bed-sides across the region.

Patients tell UofL doctors that they hardly notice the robot after just a few minutes, allowing doctor-patient relationships to form over long distances and bringing the very best care to patients while keeping them in their hometown facility – near their personal doctor, friends and loved ones – whenever possible.

Partnerships that Make Sense

The strength of an academic medical center is that patients benefit from comprehensive, integrated, multidisciplinary collaboration among physicians, dentists, nurses and other providers. Patients have access to the latest and most comprehensive diagnostic and treatment options.

Our capabilities aren't a one-size-fits-all proposition. Our role as a comprehensive academic medical center located in the largest city in Kentucky with a statewide mission means that we work together with hospitals, systems and providers through a model of collaborative planning to create partnerships that make sense and allow us to work together to deliver the best care to patients, no matter where they receive that care.



Dr. Kerri Rimmel, MD, PhD, director of University Hospital's Stroke Center, is using one of University of Louisville Health Care's remote presence medical robots. In at least 10 Kentucky hospitals with more planned, Rimmel and other specialists interact in real time with patients and medical personnel in time-critical cases such as strokes from their work station or from home using a special outfitted laptop computer. UofL doctors can guide the robots, see, hear and talk to patients, evaluate scans, even listen with a stethoscope remotely.

Whether we accept consultations from across the hall, across town or across the state, our goal is to provide a continuous network of care that leverages our strengths

as an academic medical center. Our combination of research, education and compassion ensures that patients will receive the most advanced level of care possible.

"Part of our responsibility at UofL, as an academic medical center, is to provide leading-edge medical care across innumerable disciplines to as many parts of the state as possible."

Larry Cook, M.D.
Executive Vice President for Health Affairs
University of Louisville



Transforming discovery into treatment



As part of an academic medical center, the University of Louisville's James Graham Brown Cancer Center is dedicated to finding the answers to cancer. We are committed to creating a center that not only improves cancer care in our region, but also one that is becoming one of the nation's preeminent centers for cancer research and treatment.

As a regional referral center, the James Graham Brown Cancer Center provides compassionate, state-of-the-art care to patients from across Kentucky and beyond. As part of the University of Louisville, the Brown Cancer Center is committed to raising the standard of cancer care in our region and advancing the world's knowledge about this terrible disease.

The James Graham Brown Cancer Center is poised to make significant contributions to the fight against cancer in Kentucky and throughout the world.

James Graham Brown Foundation's commitment of \$20 million over the next five years to help the University of Louisville recruit some of the world's best and brightest minds to the cancer center named after the foundation's benefactor.

*The mission of the **James Graham Brown Cancer Center** is to generate new knowledge relating to the nature of cancer, and to create new and more effective approaches to prevention, diagnosis and therapy, while delivering medical advances with compassion and respect to cancer patients throughout our region.*

The center's focus on translational research takes promising scientific discoveries to patients as quickly as possible. By placing our priority on the discovery of new, targeted and less toxic drugs, we have developed one of the most promising pipelines of new anti-cancer drugs of any cancer center in the nation.

To facilitate rapid drug development, our staff has created Advanced Cancer Therapeutics (ACT), which will fund the development of two to three new drugs per year through Phase I clinical trials.

Our participation in clinical trials, which test the safety and effectiveness of new treatments, means that patients at the James Graham Brown Cancer Center may be among the first in the world to have access to new therapies.





Groundbreaking Scientific Research Programs

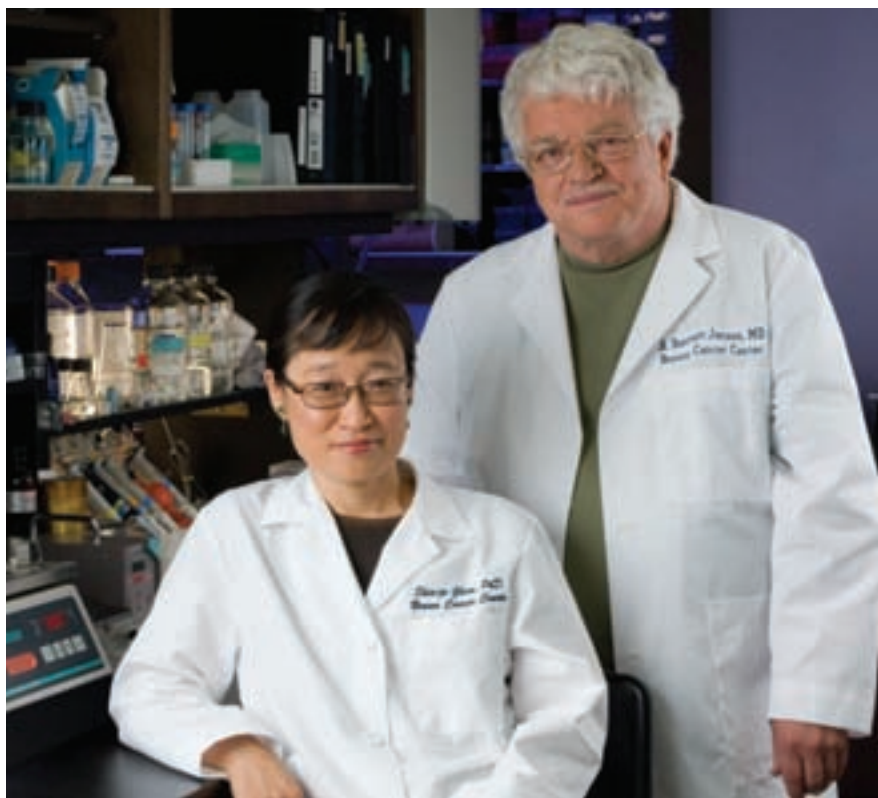
Our scientists and doctors are gaining a national and international reputation for groundbreaking research and the close collaboration between our physicians and research scientists is yielding results.

Recent breakthroughs include:

First description of VSELs (Very Small Embryonic-Like Stem Cells) in adult bone marrow. These cells, found in adult bone marrow, promise to revolutionize the use of stem cells in personalized medicine and our understanding of how cancer spreads.

First development of a cancer vaccine grown in tobacco plants. Dr. Ben Jenson and Dr. Shin-je Ghim, the minds behind the world's first 100 percent effective cancer vaccine, are working on a next-generation vaccine that will be less expensive and protect against more strains of the virus that causes cervical cancer. The key active ingredient for this vaccine is being grown in specially-bred tobacco plants.

First discovery of targeted drugs that inhibit cancer cell metabolism. If the cancer cells can't use nutrients to fuel their growth, they can't grow and spread. The Brown Cancer Center has developed several of the first drugs that specifically shut down cancer cells' ability to metabolize energy – helping control cancer by “starving” it!



First clinical use of G-rich Oligonucleotide aptamer therapy for cancer. Scientists John Trent and Paula Bates discovered these special molecules that, in clinical trials, have been effective in stopping cancer growth without any toxic side effects whatsoever. The drug, AS1411, is now showing remarkable results in Phase II clinical trials.

Putting an Entire Team to Work for Each Patient

The James Graham Brown Cancer Center embraces the team concept of patient care. This approach leads to a unified plan that benefits from the combined expertise of multidisciplinary teams of physicians, nurses and other care providers.

Each of the following multidisciplinary clinics at the James Graham Brown Cancer Center reflects the combined strength of groundbreaking research, leading-edge technology, accomplished specialists and exceptional, collaborative care:



- Breast Care Clinic
- Gastrointestinal Clinic
- Genito-Urinary Cancer Clinic
- Gynecologic Oncology Clinic
- Head and Neck Cancer Clinic
- Lung Clinic
- Melanoma Clinic
- Blood and Marrow Transplant

James Graham Brown Cancer Center

529 South Jackson Street, Louisville, Kentucky 40202

browncancercenter.org

(502) 562-4158

UNIVERSITY OF LOUISVILLE NUCLEUS

Nucleus, Kentucky's Life Science & Innovation Center, LLC: Where It All Comes Together

Life sciences innovation that builds Kentucky's knowledge economy.
Research and medical breakthroughs that change lives.



Dawghaus Photography



Our Mission: To fully integrate all assets of the University of Louisville, including life sciences, with those of the region to leverage their strengths for university academic enrichment and for community economic development.

Our Vision: To transform life science concepts from the mind to the logistics of the marketplace to improve the physical and economic health of the Commonwealth of Kentucky.

The imagination to pursue the undiscovered. It starts with ideas – world-class researchers and scientists making breakthroughs with the potential to change the face of medicine and the life sciences.

Established in 2008, Nucleus provides state-of-the-art infrastructure for attracting, developing and retaining new science and technology related businesses.

Building on a foundation of leading-edge life sciences research and intellectual property generated by the University of Louisville and other local entities, Nucleus creates a dynamic business environment – bringing together partnerships of innovative health, medical device and biomedical entrepreneurs and businesses with customized real estate and local resources tailored to the needs of the life sciences industry.

Supported by the University of Louisville Foundation, Nucleus connects the best assets from the University of Louisville – discoveries, new technologies and a passion for improving lives – with the business community, and helps transform them into tomorrow's dynamic life sciences economy.

Uniting the elements to generate economic development and high-paying jobs for the community and state, Nucleus is a catalyst for improved health care and quality of life, not only for Louisville, but for people everywhere helped by the inventions generated here. We help Kentucky touch the world.

Leadership

The passion to break new ground. That's what Vickie Yates Brown, president and CEO, brings to all of Nucleus' partnerships. An attorney with extensive experience in health care law and finance, specializing in privacy, security and technology transfer, Brown works closely with the University of Louisville Foundation, UofL President James Ramsey, Metro government and UofL's most innovative minds to build partnerships and plan the infrastructure that provides a solid foundation for future development, like the Tax Increment Financing funding that will multiply Nucleus' investment. The people to bring it to life. That's Gordon Duke,



Dawghaus Photography

Vickie Yates Brown

who has more than 30 years of experience in financial administration, economic development and real estate development and management. He brings a wealth of expertise in state government finance and private sector real estate development and management to Nucleus, where he will help manage the Tax Increment Finance (TIF) program and partner with other state and local economic development programs to help maximize the financial resources Nucleus needs to carry out its

missions and goals. Duke will also work with the president and board on Nucleus' ongoing business planning and to recruit new business to the Haymarket and will serve as a liaison between Nucleus and Kentucky State Government agencies.

It's also Chad Stiening, Ph.D., originally recruited to Louisville from the University of Arizona to join the Cardiovascular Innovation Institute. Dr. Stiening's background in finance, industry experience in biotechnology and continued involvement in biomedical engineering and regenerative medicine research programs uniquely positions him at the intersection of life sciences and business. At Nucleus, he will work closely with partners like Metacyte, EnterpriseCorp, Greater Louisville Inc., and UofL's Office of Technology Transfer to help connect scientists and inventors with the industry and business community resources they need to translate new discoveries into medical devices and applications that benefit the patient.

The insight to champion community – Nucleus is a platform for combining Louisville's assets in new and powerful ways to create a dynamic life sciences environment with local and national impact. This insight and passion is shared by Nucleus' partners, including the Office of Mayor Jerry Abramson, Greater Louisville Inc., the Kentucky Cabinet for Economic Development, major business investors and supporters at all levels of government.

This tremendous commitment extends to Nucleus' board of 20 advisors representing a wide variety of entities and partners from around the state of Kentucky – the strong community-based leadership behind Nucleus.



Gordon Duke



Dawghaus Photography

Nucleus: where it all comes together

Locating a \$2.3 billion life science development downtown may question convention, but Nucleus' development of UofL's Haymarket property will bring a vibrant technology business district to life, close to Louisville's already dynamic commercial core and downtown Health Sciences Center and medical community. Nucleus' ability to build the custom facilities needed by life sciences entrepreneurs and established companies in a central location is key to its two paths of development:

Nucleus' development of UofL's Haymarket property will bring a vibrant technology business district to life, close to Louisville's already dynamic commercial core.

Nurturing partnerships that create and advance companies stemming from UofL's world-class research discoveries, which have led to 22 new life science startup companies in the last nine years.

Recruiting companies to take advantage of Louisville's considerable business, logistics and scientific assets, facilitat-

Nucleus Board of Advisors

Mr. Jerry Abramson (Chair)

Mayor of Louisville Metro

Dr. James R. Ramsey (Vice Chair)

President of the University of Louisville and the University of Louisville Foundation

Mr. Henry Altman, Jr.

Former President & Managing Director of Deming, Malone, Livesay and Ostroff, CPA

Ms. Deborah Clayton (Observer)

Commissioner of the Department of Commercialization and Innovation at the Cabinet for Economic Development

Dr. Larry Cook (Ex officio)

Executive Vice President for Health Affairs at the University of Louisville

Mr. Chuck Denny

President and CEO of National City Bank

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Founder & Member of Tandem Public Relations, LLC

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Co-Managing Director of Frost Brown Todd

Mr. David Laird

Vice President of Strategic Planning for Jewish Hospital & St. Mary's Healthcare

Dr. Manny Martinez (Ex officio)

Executive Vice President for Research at the University of Louisville

Ms. Diane Medley

Co-Founder & Managing Partner of Chilton and Medley CPA

Dr. Tony Newberry

President of Jefferson Community and Technical College

Mr. Joe Reagan

President & CEO of Greater Louisville Inc.

Ms. Sandy Metts Snowden

Owner & President of Sandy Metts & Associates

Mr. Bill Street

Former President & CEO of Brown-Forman

Dr. James Taylor

President of University Hospital

Mr. Ty Wilburn

Chairman of the Board, President & CEO of Merit Health System, LLC

Dr. Shirley Willihnganz (Ex officio)

Executive Vice President and Provost at the University of Louisville

UNIVERSITY OF LOUISVILLE NUCLEUS

ing their progress as commercial enterprises and providing opportunities to work closely with national and international leaders in their fields.

Building a portal for linking University of Louisville researchers with business and industry partners, as well as facilities and partnerships, Nucleus will take the research park concept beyond simple facilities development and management to provide a unique suite of services to member companies.

Positioned along Louisville's key corridors connecting the city's healthcare, riverfront, commercial and university districts, Nucleus' life science research park is designed as the core of a vibrant technology business district. This proximity will foster collaboration and shared expertise, scientific resources and facilities including specialized laboratories, clean rooms and professional office space.

Tax Increment Financing (TIF) approved by the state legislature in 2007 will leverage \$200 million in private investment by Nucleus, the University of Louisville and Jewish Hospital & St. Mary's Healthcare

Peritus Public Relations



over the next three years to generate as much as \$350 million in infrastructure improvements. These improvements, dedicated to life sciences development, include state-of-the-art facilities, computing resources, secure research data storage and other technology-intensive resources required by growing life sciences enterprises.

More than \$30 million has already been invested as part of UofL's Health Sciences Center master plan.

The Promise of a Limitless Future

Nucleus will deliver on the promise of a limitless future by uniting the elements needed to generate economic development and high-paying jobs for the community and state. In the next 20 years, Nucleus projects are expected to:

Positioned along Louisville's key corridors connecting the city's healthcare, riverfront, commercial and university districts, Nucleus' life science research park is designed as the core of a vibrant technology business district.

- Recruit healthcare and life sciences businesses
- Promote partnerships between the University of Louisville, the business community and beyond
- Grow university-private research partnerships
- Leverage \$2.3 billion in capital investment to build specialized facilities for life science and research-based infrastructure
- Facilitate state-of-the-art bioinformatics, biologistics and other technology-intensive infrastructure development
- Overcome traditional business barriers to commercializing University technology and advancing life science companies
- Create more than 8,700 new , high-paying, knowledge-based jobs

A catalyst for improved health care and quality of life, not only for Louisville, but for people everywhere helped by the inventions generated here, Nucleus' impact will help Kentucky touch the world.

Nucleus will deliver on the promise of a limitless future by uniting the elements needed to generate economic development and high-paying jobs for the community and state.

**For more information,
(502) 584-7824
or nucleusky.com.**





A proud member of **UofL** Health Care



In Louisville you'll find a unique group of physicians. These 450 outstanding doctors have come together to provide comprehensive, multidisciplinary care to people at every stage of their lives. No problem is too big a challenge for their expert care or too small to receive their closest attention.

450 remarkable physicians united to provide outstanding care.

They are University of Louisville physicians. Each is committed to excellence, providing care beyond expectations. And each has the in-depth understanding of a professor responsible for teaching the next generation of physicians. This amazing team serves at hospitals throughout the region, has developed some of the latest innovations in healthcare, and has leading-edge knowledge that benefits patients and the communities in which we live.

University of Louisville Physicians – the heart of UofL HealthCare.

Creating The Knowledge To Heal.

401 East Chestnut, Louisville KY 40202
www.uoflphysicians.com

HE TREATS THE PATIENT.



WE TREAT THE HOSPITAL.



FacilityONE improved emergency preparedness at Jewish Hospital in Louisville while saving them \$1.2 million in annual operating costs.

In here, life and death situations are a way of life. Anything can happen and usually does. In here, it's all about preparedness. That's where we come in.

We're FacilityONE® and our technology empowers hospitals—and just about any facility under the sun—to integrate critical systems and software into a time-saving, money-saving, and yes, even life-saving facility management solution.

For instance, our SMARTPRINT® interactive blueprint technology helped Jewish Hospital of Louisville equip its multiple locations with a rapid response emergency solution that will not only save lives in crisis situations, but has already saved the hospital \$1.2 million in the first year of implementation.

FacilityONE can do the same for your facility, whether it's a hospital, a skyscraper, a school or even an aircraft carrier. Here is how FacilityONE helps your enterprise take control of its systems and software applications to provide a safer, more efficient day-to-day operation:

- We provide a cost effective, comprehensive facility management solution with both onsite monitoring and optional remote monitoring.

- Our solution uses minimal equipment with no major capital investment for hardware.
- We deliver simultaneous asset management for day-to-day operations as well as maintenance schedules and reminders for complete asset management protection.
- We provide accurate and readily available documentation that adheres to regulatory commission inspection requirements.
- With our solution, your in-depth Emergency Preparedness Plan can be implemented at a moment's notice, helping you protect assets and save lives.

Every FacilityONE client has a unique success story to tell. You can read about them at facilityone.com. Or better yet, you can start writing your own. Contact FacilityONE today for a free assessment of our facility information solutions for your company.



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COVER STORY



Brian Bohannon photo

University of Louisville Health Care extends its personnel's reach to a growing number of Kentucky hospitals via remote presence medical robot. UofL specialists using the robots include Dr. Kerri Rimmel, on the robot video screen at center, director of University Hospital's Stroke Center, and Dr. Alex Abou-Chebl, left, neurological interventionist. With them, left to right, are Kari Moore, RN; Betsy Wise, ARNP; Ieshia Blakey, ARNP; and Rori Spray, ARNP, CNRN.

"We've been in this program about a year now, and we think we are just beginning to scratch the surface," said Dr. Larry Cook, M.D., UofL's executive vice president for health affairs. "It has been phenomenally successful at augmenting treatment of stroke patients in the community."

Cook describes the program as a "win-win situation for everybody." Robots are provided at no cost to partner hospitals. "You take a community that doesn't have a neurologist or a neonatologist, and you're able to put someone like Dr. Rimmel or Dr. Robinson right there at the bedside instantaneously. That's an amazing thing," he says.

Some patients get to stay home. Others are referred quickly elsewhere for the best in state-of-the-art care.

"Part of our responsibility at UofL, as an academic medical center, is to provide leading-edge medical care across innumerable disciplines to as many parts of the state as possible," Cook said, who was an early champion of the program and provided \$1 million in seed money to cover start-up costs. The effort is sponsored by University Hospital.

"These robots provide a very efficient way to extend our expertise into partner hospitals, helping them augment existing patient care virtually over night. It really is the next best thing to being there."

"We will ultimately go specialty by specialty and ask 'is there a use for the robot?' to extend UofL Healthcare's capabilities out into the state, Cook said. "We see this robot as a symbol of our commitment to these partner communities."

RoboDocs

'Remote presence' robots help UofL physicians provide on-site expertise to hospitals across the commonwealth

University of Louisville Healthcare's medical robot program is making Dr. Kerri Rimmel, director of the UofL University Hospital's Stroke Center, and Dr. Alex Abou-Chebl, a neurological interventionist with UofL Healthcare, familiar faces in Kentucky hospitals hundreds of miles apart.

Rimmel or Abou-Chebl can make a consultative or diagnostic appearances in Murray-Calloway County Hospital one minute, then 326 miles east at Pikeville Medical Center the next. The six-hour drive is unnecessary because each facility has an RP-7 "remote presence" machine manufactured by InTouch Health of Santa Barbara, Calif.

Using a desktop workstation or a specially outfitted laptop computer – there's one near their beds at home – the UofL specialists can guide a robot down hospital halls to the emergency department, neonatal unit or a patient's room and interact directly. They can see the patient and hear the patient – including listening to breath sounds with the robot's stethoscope. They can question the patient and health-care personnel on the scene.

Patients see and hear them, too; Rimmel or Abou-Chebl's face displays live on the robot's head.

The nearly 5-foot-tall RP -7 has advanced digital audio and video. Headphones allow the doctor can speak pri-

vately to the patient or others. The "head" turns independently of the body, whose sensors keep it from bumping into people and things as it moves.

"It's usually less than 30 seconds before the patient ignores the technology and starts interacting with me as a normal stroke neurologist," Rimmel said.

Stroke patients, whose treatment is among the most time-crucial and potentially very costly, have been an early focus. UofL Healthcare staff includes some of the top stroke specialists in the nation, including, Abou-Chebl, one of a only about 15 "interventionists" in the nation.

UofL also has top neonatal practitioners, such as Dr. Tonya Robinson, an associate professor of pediatrics and a neonatal medicine specialist, whose expertise is available via robot, too.

For both types of patient, early specialty assessment is crucial to long-term quality of life. Accomplishing this without transporting patient or doctor time-consuming long distances is not just amazing, it's lifesaving. Vital resources and health care dollars are allotted optimally.

UofL Remote Presence Technology Locations

Owensboro Medical Health System, Owensboro
Spring View Hospital, Lebanon
Taylor Regional Hospital, Campbellsville
Trover Health System, Madisonville
Murray-Calloway County Hospital, Murray
Jennie Stuart Medical Center, Hopkinsville
Hardin Memorial Hospital, Elizabethtown
Pikeville Medical Center, Pikeville
TJ Samson Community Hospital, Glasgow
The Medical Center at Bowling Green, Bowling Green

Now, digital x-ray is clearly affordable for private practice

With the latest technology in your office you could:

- Optimize workflow with increased efficiency in radiology;
- Eliminate wet processing and the mess and maintenance that go with it;
- Eliminate the need to store films by using reliable digital PACS (Picture Archiving and Communication System);
- **Finally go filmless.**

More and more practices are realizing the tremendous advantages of digital X-ray technology, including excellent resolution, ease of storage and retrieval, speed and more. Raynostix makes it affordable and we can show you how with our free Return On Investment analysis. We can also provide a turnkey solution that includes everything from site plan to construction, and from installation to training, so the conversion to digital is simple as well as affordable.

Put our Healthcare Information Technology (IT) division to work for you.

In response to the growing need in medical practices for simple, well integrated IT, we have created a division that focuses solely on IT for healthcare. Our specialists are experts in your field's unique technologies, regulations and need for all equipment to communicate seamlessly.

The future is filmless. We can get you there now.

To find out what digital X-ray technology could mean to you, call us today and schedule a free analysis of your

Call 636-0487 today for your free ROI analysis.



A sample of the technology that Raynostix can put in your office.



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digital
The Company with X-ray Vision.

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Telephone 502.636.0487 · Fax 502.636.0489



Diet Time

Pick an eating plan with staying power to aid weight loss

IT doesn't take long to figure out what's happened when the seams split on your favorite skirt, your shirt buttons pop, or those dress snaps just won't stay, well, snapped.

All those super-sized orders at the drive-through have made you super sized. You need a diet.

Finding one that's right for you can be a challenge, especially if you're look-

ing to quickly shed the pounds you've packed on over a long period of time. You can do it yourself by ditching rich desserts, passing on the potatoes and limiting lunch to a couple of carrot sticks and a scoop of cottage cheese.

But if you're like most people, you'll try the latest fad diet. It's usually the one that promises the quickest results. You may lose a couple of pounds immediately,

but chances are you gain it all back — and then some.

“All diets work in the short term, because each one has a trick for helping you cut calories whether you’re actually counting them or not,” explained Colleen Pierre, a registered dietitian, licensed nutritionist and an adjunct instructor of aging, nutrition and fitness in Johns Hopkins University’s certificate on aging program who works in private practice in Baltimore. “Keeping the weight off over the long haul is the tricky part.”

Pierre recommends choosing a diet with staying power. “A plan that includes all food groups, even small treats, keeps you well-nourished while you dispose of excess body fat,” she said. “Changes made gradually over time are most likely to become permanent and help you keep the weight off.”

Choosing a diet can be daunting. There are hundreds of plans — some are good, some are bad. Advertising and promotional campaigns on television and in print, as well as celebrity endorsements, can make even the worst diet an instant hit with the public. Others, like the now popular Mediterranean diet, may take years to catch on.

The Mediterranean diet drew scant interest in 1945 when Ancel Keys, an American doctor stationed in Italy, advanced the idea that a diet rich in olive oil, fresh fruits and vegetables could translate into lower cholesterol levels and better health. In 2001, well-known Harvard epidemiologist Walter Willett came to the same conclusion in “Eat, Drink and Be Healthy,” his best-selling book.

Today the Mediterranean diet, which goes easy on meat and urges the daily consumption of fruits, fish, salads, bread, pasta, beans, cheese and yogurt, is the basis of several other popular plans including the Sonoma Diet, the Omega Diet and the Miami Mediterranean Diet.

Some diet programs have staying power. Weight Watchers has had a following for more than 45 years. Each week, approximately 1.5 million members attend over 50,000 Weight Watchers meetings around the world. The Jenny Craig Weight Loss Program draws 150,000 a week and five million clients worldwide since 1983. Both stress portion control and support to keep dieters on track.

The biggest weight loss website is eDiets.com, whose 1.3 million paid members can choose from nearly two-dozen diets including its own calorie-controlled plan and well-known plans like Atkins, Mediterranean, Slim-Fast Optima and Glycemic Impact, or special need diets that are wheat-free, low-fat, low sodium, vegetarian, high fiber, hypoglycemic, lactose free and heart smart.

eDiets members have access to nutritionists and fitness specialists, can participate in online support boards, get recipes and diet tools, track their weight loss history and, like a growing number of other diet operations, have portioned-controlled meals and snacks delivered right to the door for an extra fee.

Even with close monitoring and support, many dieters still fail to lose those extra pounds. David Grotto, president and founder of Elmhurst, Ill.-headquartered

Nutrition Housecall and nutrition advisor to Fitness Magazine, said dieters do themselves in by setting unrealistic goals such as putting an “end date” on their diet.

Focusing on deprivation and ignoring the details of when, what and how much to eat doom dieters along with failing to exercise, not getting at least seven to eight hours of sleep and not keeping records of what they’ve consumed. “Every morsel needs to be accounted for if you are to ever make sense of the scale!” He said.



Get Away from Problems and Back to Relaxation



If you find yourself barking at the kids, snapping at coworkers, unable to focus, forgetting things easily or even driving too fast, you probably need time to relax. However, if you're waiting for your yearly vacation to unwind, you're waiting too long.

It's far more effective to recharge as you go, according to psychologist Suzanne Zoglio, author of "Recharge in Minutes: The Quick-Lift Way to Less Stress, More Success, and Renewed Energy!"

Using simple relaxation techniques, you can restore your focus, confidence and energy in less time than it takes to

run out for that mid-morning latte. The key is to capture the spirit of that yearly vacation each and every day.

"Stress is an everyday occurrence. You have to manage it or it manages you," Zoglio said. "The best way to recharge is in short bursts every few hours, every day. That way, your body has time to re-center itself. If you were to take 10 to 20 breaks every day you'd never become over stressed."

Take time to manage your stress, unwinding and refueling as you go, and you reduce your risk of stress-related medical problems.

"Stress causes real symptoms," said David Clarke, clinical assistant professor of medicine with Oregon Health Sciences

"Stress that is strong enough or goes on for too long is capable of causing physical symptoms that can be just as severe as those of any disease," Clarke said.

We generally associate high blood pressure, acid reflux, peptic ulcers and a rapid pulse with high levels of stress, but stress can manifest itself in a myriad of ways and affect virtually any part of the body, Clarke said.

Changes in your eating habits, sleep schedule or energy level can all be signs that you're overstressed. Headaches, muscle stiffness, difficulty breathing and pain in the chest, abdomen, pelvis or back are also common.

Other physical symptoms include nausea, vomiting, diarrhea and constipation, as well as dizziness, ringing in the ears, numbness and tingling in the hands and feet, changes in the voice, a lump in the throat and itching skin.

If left unchecked, chronic uninterrupted stress can increase the risk of heart disease, stroke, diabetes, arthritis and even the common cold, according to Zoglio. That's why quick, routine breaks that help you unwind and refocus are so important.

"While the stress response – increased heart rate, shallow breathing, production of stress hormones, etc. – is an automatic response, we can reverse that response and any negative effects by taking quick refueling breaks regularly and at the first onset of stress," Zoglio said.

Spend just 10 minutes a day "playing," and by the end of the year you will have "vacationed" a total of 61 hours – that's more than a full workweek. Zoglio suggests the following:

Vacations are a time of reflection, so make time to acknowledge the good things in life. Review all of your accomplishments for the day or make a list of five things you're grateful for. It's a sure-fire mood booster.

Vacations are a time to catch up on sleep, permit yourself to take naps. Find a quiet spot for ten minutes of shut-eye. Practice deep breathing and let your mind go blank. Even if you don't fall asleep, you'll still feel refreshed and refocused.

100,000 People Need Transplants

Help by donating a life-enhancing or life-saving gift

Kentuckians can now make their wishes known about organ donation by registering on the Kentucky Organ Donor Registry. It is as simple as logging on donatelifeky.org and completing the registration form. Individuals may also sign up when obtaining or renewing their driver's license at their local circuit court clerks' office, where they will be encouraged to "Say Yes!" to joining the Registry.

With over 100,000 individuals on the national waiting list for a life-saving organ transplant, it is crucial that people are made aware of the need for organ donation. Over 78,000 endure dialysis as they await a kidney transplant, while others on the list are hoping to receive a heart, lung, liver or pancreas transplant. When individuals are listed for a transplant, all other means to treat their end stage disease has been tried, and transplantation is the only mode of treatment that will enable them to continue living.

State donor registries play an essential role in the donation process by enabling individuals to make a decision that is similar to an advanced directive. In this case, donor designations authorize donation to proceed, due to Kentucky's First Person Consent law.

"By joining the Registry, individuals can potentially help those waiting for life-saving organ transplants and life-enhancing cornea and tissue transplants," said Jenny Miller Jones, director of education for the Kentucky Organ Donor Affiliates (KODA).

Numerous entities across the commonwealth have been involved with promoting organ donor awareness and the Donor Registry through the Workplace Partnership for Life. Hospitals, businesses, universities and others have partnered with KODA by hosting the Kentucky Donor Memorial Quilt display and allowing employees time to sign the Registry. Some have run web banners about the importance of donation and supplied a link to the Donor Registry permanently on their in-house website.

Others have featured stories of those who have received or given the "Gift of Life." Several college campuses have estab-

lished "Walks for Awareness" and friendly competitions for Registry sign-ups.

For more information about the Kentucky Organ Donor Registry or

the Workplace Partnership for Life, contact K ODA at 1-800-525-3456 or kyorgandonor.org.



Meet Riley Speck, a 4 year old heart recipient, racing for the gold at the 2008 US Transplant Games

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Kentucky

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KICKSTART for Health

Chuck Norris' passion is getting kids into the martial arts

It seems like health consciousness is everywhere. From the latest fad diet to the newest gym equipment, it seems like we can never get enough of trying to lose those stubborn pounds that we accumulate throughout the year.

However, we often overlook those who need health guidance most — our children. They are the ones facing some of the greatest obstacles and the most skyrocketing rates of health-related prob-

cal book but a cultural manifesto on eight major problems in our society. The health chapter not only gives eight pillars of staying fit, but in it for the first time I discuss my own family's weekly nutritional and exercise plan.

It's easy to criticize the inadequacies of young people. It's far more difficult to invest in kids, but much more rewarding. Continuing to give back to society and build up our youth are two of the reasons

dren develop a strong sense of self-awareness and inner strength, they are able to resist negative peer pressure that might involve taking drugs, drinking alcohol or joining gangs.

In addition, martial arts training provides them with the core values and philosophies associated with leading a productive and healthy life: Things like discipline, hard work and respect for other people. One of the greatest byproducts of the KICKSTART program, however, is not only how it builds self-esteem and discipline in our youth, but also how it helps them get in shape.

John Kurek, a great veteran leader in the program, explained its health benefits: "KICKSTART provides a safe atmosphere with a controlled structured class, in which even kids who would not normally physically excel can excel. We are able to reach more numbers of students and get them in shape instead of riding the bench in gym class. Another thing is, with the belt ranking system, KICKSTART provides challenges for each student to excel, and with each belt a student becomes more flexible, stronger and faster. Not to mention it is a requirement for our instructors to be teaching value lessons every class, and a big part of the value lessons are eating habits and living a healthy life."

That is what KICKSTART is all about: To give every child a chance for a productive life in which they can make healthy decisions and achieve their goals and dreams. Someday, it is our vision to have this program in every middle school in America. Our goal is to see the 7,300 students we have in 41 schools in Texas multiply into millions of students throughout our country. To date we have graduated 60,000 children in Texas. My wife Gena and I consider this program our life's mission.

I am often given recognition for the way KICKSTART helps young people. But the real heroes of the program and these younger people's lives are the instructors. They are my heroes too, because they are the ones investing their lives into the lives of young people every day. The kids they are teaching in the program score higher academically, and almost 100 percent of them graduate.

I'm still amazed when God uses my life to influence someone else in a special way. I've made plenty of mistakes in my life, and I sure don't claim to know all the answers. I am convinced, however, of the force of one. As Edward Everett Hale put it, "I am only one, but I am one. I can't do everything, but I can do something. The something I ought to do, I can do. And by the grace of God, I will." And the proof of that is KICKSTART.



lems because of their lack of exercise and consumptive practices.

According to the World Health Organization and the Centers for Disease Control and Prevention, childhood and teen obesity in the U.S. has tripled over the last 30 years. They also report one-third of adults are now overweight, with another third being obese. According to their data, those numbers have "increased sharply for both adults and children" since the 1970s.

Helping young and old overcome apathy and master their health is why I included the chapter, "Fit for the Fight," in my new New York Times best-seller, "Black Belt Patriotism: How to Reawaken America" (\$27, Regnery Publishing), which is not a politi-

I created KICKSTART (kick-start.org), which is a martial arts program for at-risk students taught in public middle schools in lieu of physical education.

President George H. W. Bush helped me start it in 1992. I also could not have started this program if I did not have my martial arts ability and my celebrity to initiate it. I believe God has allowed me to become successful in the martial arts and successful as an actor, and one of the primary reasons He did so was to start this program.

KICKSTART is a character-building life-skills program, the fundamental purpose of which is to give our nation's students the tools to strengthen their self-image and be disciplined. When chil-

Sweet Dreams

Turning off technology might be the solution for sleep

Want to get more sleep? Tune out the technology. That's right – turn off your smart phone, power down the computer and skip the sensationalist news programs. Technology is one of the biggest barriers to a full night's rest.

The bright lights inhibit melatonin secretion, which tells your body that it's time to sleep. Late-night activities that actively engage the mind, like checking e-mail, playing video games, text messaging and watching television, also make it difficult to relax and transition into sleep mode. Plus, it's easy to lose track of time and stay up later than you intended.

"Anthropologists tell us that 5,000 years ago, the average night sleep was 11-12 hours a night. When the sun went down, it was dark, boring and dangerous outside, so people went to bed," said Jacob Teitelbaum, medical director of the national Fibromyalgia and Fatigue Centers, Inc., and author of "From Fatigued to Fantastic!"

"The use of candles initially shortened our sleep time. Then light bulbs were developed, followed by radio, TV and computers. We are now down to an average of 6 1/2 to 7 hours of sleep a night, and this is simply not adequate to allow proper tissue repair," he said.

They don't call it "beauty rest" for nothing. Deep sleep stimulates the "fountain of youth" growth hormones and regulates appetite hormones, leaving you thinner and younger looking.

Just one or two nights of poor sleep can cause aches and fatigue and hinder concentration, learning and memory. Long-term sleep deprivation has been linked to an increased risk of heart problems, diabetes, obesity and psychiatric difficulties like depression and substance abuse. Poor sleep is also a major trigger for chronic fatigue syndrome and fibromyalgia, Teitelbaum said.

"Sleep is important for a number of things, and we're still learning. It helps with areas such as brain development, consolidation of memories and enhancement of learning," said Shelby Freedman Harris, a top behavioral therapist with the Sleep-Wake Disorders Center at Monte-

fio Medical Center in New York City.

A good night's sleep starts with a proper winding down period. Allow at least one hour of relaxation time before bed to give your body a chance to calm down and let your mind drift from the worries of the day.

"Winding down is an important part of sleep hygiene," Harris said. "Creating a buffer period — or a protected period of time between a very stimulating or busy day and bedtime — is helpful to calm down the mind and body, to relax and not bring the daytime to-dos and worries to bed with you. It starts signaling to your body that it is time to go to sleep."

Dim the lights, turn off the cell phone, power down the computer and immerse yourself in a calm, relaxing activity. Read a book, practice deep breathing and relaxation exercises or take up a tranquil hobby like knitting or crochet.

If you must have the television on, skip the evening news, prime time dramas and horror movies that get your adrenaline flowing and make it harder to fall asleep. Opt for a light-hearted comedy or educational documentary instead.

Harris offers a few additional tips to ensure you fall asleep easily, stay asleep longer and wake refreshed and rejuvenated:

- Set a routine, and be consistent. Establish a regular bedtime and waking time, and stick to it – seven days a week.
- Skip the sleep-disrupting stimulants. Avoid nicotine, alcohol and excessive liquid intake within three hours of bedtime. Limit caffeine to the morning hours. Even a small cup of coffee or a can of soda at lunch can interfere with your body's natural sleep schedule.
- Exercise regularly, but not before bed. Regular physical activity promotes



deep sleep, but exercise in the early evening to give your body time to unwind following the stimulating rush of endorphins.

- Keep an eye on comfort. Make sure your bedroom is someplace you want to be. The room should be dark, comfortable and free from noise. Indulge in a decent mattress, plush pillows and nice bed linens, and keep the space clean and clutter-free.

- Don't let the day's worries keep you up at night. Make sure your work and household chores are complete before winding down for the evening. Make a to-do list for the next day then set it aside until morning. That hour or so before bed should be spent relaxing, not fussing over all the things you plan to accomplish tomorrow.

- If you can't fall asleep, don't force it. If you are still lying in bed wide awake within 20 minutes of your bedtime, get up, leave the bedroom and do something relaxing. Go back to bed only when you feel sleepy.

Walk On

Get up and start moving by beginning this lifelong exercise

WALKING, the ability to propel oneself from one place to another, has had all the makings of a lifelong exercise program since man first stood up on two legs. The benefits – both psychologically and physically – are plentiful.

“Just about anybody can walk,” said Carla Sottovia, senior personal trainer at the Cooper Fitness Center, a 3,500-member high-end health club on the campus of the Cooper Aerobics Center in Dallas. As exercise programs go, “walking is less injurious than running, increases cardiovascular fitness, releases hormones that improve your mood and can be pursued throughout life,” she said.

If that isn’t enough to get you off the couch, walking requires no expensive equipment and no membership dues. You don’t need a partner or perplexing instructions, you’re not tied to a treadmill and you can walk anywhere, anytime and in any season.

Sottovia, who has competed in more than 50 triathlons, agreed with other exercise physiologists that active walking can also be a stress reducer, giving you time to think good thoughts or sort out problems. You can also ponder, pray, plan your day or just enjoy the outdoors.

But how do you begin to forge a lifelong good health habit?

As a rule of thumb, if you’ve been very inactive and have not had a physical in a year, get a checkup before beginning a walking program, Sottovia said.

“When starting out, sedentary individuals should walk three times a week, 30 minutes each. If 30 minutes is too exhausting, break it up into two 15-minute walks or even three 10-minute segments. Then increase the time a little each week.”

During this period, determine your resting heart rate. As you progress, this will figure into a formula used to show improvement in your heart at rest as well as find out the intensity of your workout.

Intensity is not the objective in the beginning, however. “Early on, the single most important element is consistency,” she said.

Stick to it. Establishing a walking habit may seem tedious and uncomfortable initially. You may be tempted to skip a session or fudge on the time or distance you walk. Just do it until walking becomes as important to you as brushing your teeth.

“The first month is critical,” she said. “Make it up to six months and the chance of having a lifelong habit increases considerably.”

As an interim goal, strive for a 20-minute mile. Determine a pleasant one-mile route. Wear a watch and work toward walking the route in 20 minutes. Then, when comfortable, work up to a 15-minute mile, a moderate intensity workout.

“When you start to get intensity up, you can calculate your resting heart rate again as well as your training heart rate,” Sottovia said. Use the Karvonen Formula, a mathematical formula which helps determine your heart rate target area, to monitor your progress quickly and easily.

Your ultimate objective is 45 to 60 minutes at moderate intensity most days of the week. Warm up by starting at a slower pace and cool down by slowing for five minutes at the end of the walk.

When you pick up the pace to moderate intensity you accrue a host of physiological benefits.

“You enhance the cardiovascular system and your heart’s endurance,” she said. “You can push harder, longer and faster. There’s a decrease in your resting heart rate. Blood pressure issues might be helped. Your metabolic rate increases and you use calories more efficiently.”

At this stage it’s likely a habit has been formed. “Just do it” is replaced with a sense of pleasure and wellbeing when you walk.

“It’s not hard to get hooked on walking,” said Charlie Cook, who for 28 years



has been director and guide of Wild Earth Adventures, a hiking club in New York State that offers guided hiking and walking trips year round. “Once it’s a routine in your life, you don’t feel good without it.”

Offering one-day jaunts most weekends, Wild Earth Adventures is one of hundreds of such groups in the United States. “There are clubs in all 50 states,” said Cook. “Go to Google to access them.”

Cook, author of “Awakening to Nature: Renewing Your Life by Connecting with the Natural World” also reinforces the fact that walking can be a lifelong activity.

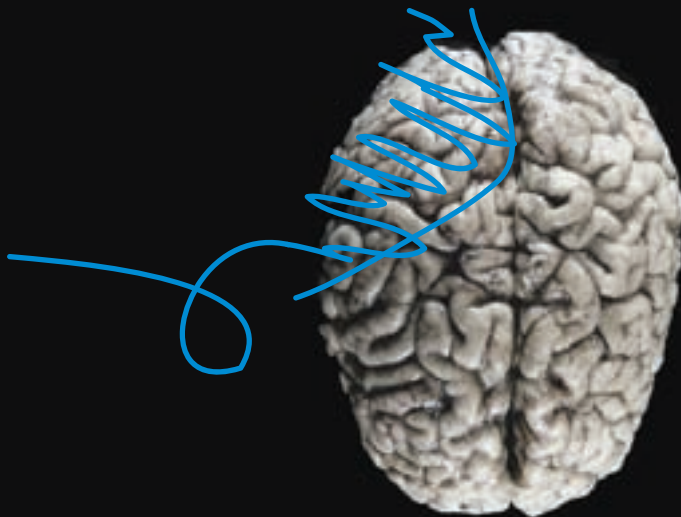
“Our hikes always have a substantial number of participants in their sixties and it’s very common to have people in their eighties, as well,” he said.

Kentucky has lost one-fifth of its brain.

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The Synergistic Benefits of Yoga and Massage



BY CORINNE R. LaREAU

A healthy lifestyle promotes total body wellness in a variety of simple and profound ways. The synergistic approach of massage and yoga can help reduce the stress in everyday life and with regular practice can help develop or sustain an overall sense of physical and mental balance.

Many licensed massage therapists are skilled in a variety of therapeutic techniques. After assessing a client's current health status and any identified problem areas of their body, a therapist can customize the massage session to promote wellness and healing. Massage has been

proven to increase circulation, promote relaxation, eliminate toxins, and soothe aching and tired muscles. Massage also improves muscle elasticity and the suppleness of tissues including ligaments, tendons and joints.

As the benefits of massage start to unfold during a session, mental tension can melt away creating an avenue for the mind to become quiet. Body awareness and mind connection may result from receiving a professional massage and can be one of the most powerful effects of this therapy. Whether receiving an occasional or a consistent schedule of massages, the

Suggested Web sites

American Massage
Therapy Association

amtamassage.org

Yoga Alliance

yogaalliance.org

benefits can be significant and are often enhanced when combined with yoga.

The recent resurgence and popularity of yoga in the west is quite an amazing trend. Yoga, a 5,000 year old tradition, is the ocean from which so many other fitness concepts have sprung. Practicing yoga creates the opportunity to lengthen muscles and create space in joints, which often stimulates a higher level of body comfort and awareness.

Yoga also builds endurance and can prevent or reduce injuries for other physical activities by helping to define and expand the limits of the body. Various breathing techniques associated with yoga enhance oxygen flow to the body and nourish muscles. With continued practice, many yoga practitioners note a softening of the mind akin to meditation. In its purest form and over time, yoga has the capacity to open the body and mind. Forcing, straining or giving up too soon can often be a step back. The design of a yoga program is essential to creating success in its implementation.

Starting a new endeavor can be intimidating at first. Working with an experienced massage therapist or a skilled yoga instructor provides the practitioner with the opportunity to promote holistic balance and harmony. The best way to obtain background information about yoga and massage and to locally pursue these wellness activities is through a search of the Web or by asking friends who utilize yoga or massage.



Corinne R. LaReau is a licensed massage therapist and yoga instructor. She can be reached at yogamoons@gmail.com.

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