Cleveland Clinic entered its tenth decade in 2011. It was a time for looking back. It was a time for looking forward. It was an opportunity to revisit our basic values of quality, innovation, teamwork, service, integrity and compassion. It was a year of reflection and celebration as we prepared for the next 90 years of medical excellence.

A great deal has changed since 1921. But some things will never change. We will always be here for our communities. We will continue to offer exceptional medical services, research and education. We will promote health, wellness and innovation. Our every endeavor will be guided by one thought:

Patients first.
“We is more important than I.

In medicine, the advances are always the result of many efforts accumulated over the years.”

— René Favaloro (1923-2000), the Cleveland Clinic surgeon who performed the first published coronary artery bypass in 1967.
Dear Friends,

Cleveland Clinic had a productive year of patient care, research and education. We cared for more patients than ever before, expanded access to our services, and addressed issues of cost, quality and patient experience. We are committed to fiscal responsibility while still providing more than $500 million in charity care and community benefits.

We continue to invest in our regional infrastructure through new and expanded facilities. In 2011, we dedicated the new Twinsburg Family Health and Surgery Center and the Richard E. Jacobs Health Center in Avon, Ohio. We acquired North Coast Cancer Care Inc. and its locations in Sandusky, Clyde, and Norwalk, Ohio. A new Cleveland Clinic Laboratories building was completed on our main campus. Finally, we made the transition from an older inpatient facility for East Cleveland to the new Stephanie Tubbs Jones Health Center – an advanced concept specifically designed for the community’s needs.

We now offer same-day appointments across our system. More than one million same-day appointments were scheduled in 2011.

Nationally, the economic outlook for healthcare is challenging. We face an aging demographic, rising rates of chronic disease and falling reimbursement from all sources.

To meet these challenges, we are finding ways to do things better, faster and at a lower cost. We continue to improve the quality of our care, reduce complications and enhance the patient experience.

We celebrated the 90th anniversary of Cleveland Clinic in 2011. It was a year to reflect on the unique factors that make this a great organization. Our assets include dedicated caregivers, the integrated group practice model, and our enduring ability to adapt and change.

Today, the changes are coming at us in hyperspeed. If we keep our focus on the patient, we will continue to make the right decisions.

Sincerely,

Delos M. Cosgrove, MD
CEO and President
Cleveland Clinic

Chairman of the Board of Directors
Cleveland Clinic
In 1921, radiology was a relatively young medical specialty. Bernard H. Nichols, MD, was Cleveland Clinic’s first radiologist. At that time, radiology also included radiotherapy treatment. U.V. Portmann, MD, and Otto Glasser, MD, inventor of the dosimeter, were leaders of this function. Today, innovative radiology and radiotherapy are offered through Cleveland Clinic’s Imaging Institute and the Taussig Cancer Institute.

An unidentified Cleveland Clinic caregiver views a tautomorphic stereo-orthodiagraph of the skull in this early 1920s photo.
In 2011, a multidisciplinary team from the Neurological Institute, Anesthesiology Institute, Dermatology & Plastic Surgery Institute, and Head & Neck Institute studied a new therapy that relieves and may stop cluster and migraine headaches by delivering a mild electric pulse to a gateway nerve. An electrode is placed on the nerve using an approach developed by Frank Papay, MD, and activated by the patient using a wireless handheld device.

Frank Papay, MD, chair, Dermatology & Plastic Surgery Institute, with a view of the headache-blocking electrode in place.
In 1921, Cleveland Clinic’s original building included laboratories for diagnostic testing and research. Clinical laboratories were supervised by Henry J. John, MD, a diabetologist with an interest in chemical analysis. Later, testing laboratories were scattered across the main campus. In 1980, they were consolidated in the first Laboratory Medicine building.
In 2011, the Pathology & Laboratory Medicine Institute (PLMI) opened a new 135,000-square-foot building on Cleveland Clinic’s main campus. Under the leadership of PLMI Chair Kandice Kottke-Marchant, MD, PhD, the additional facilities will enhance PLMI’s high-tech testing capabilities. Cleveland Clinic Laboratories, a reference lab, will provide services for clients from across the nation and around the world.

The new Laboratory Medicine building expands Cleveland Clinic’s capacity to perform complex and esoteric testing.
In 1936, George Crile Sr., MD, performed his 25,000th thyroidectomy. He was a founder of Cleveland Clinic and one of the foremost surgeons of his day. His son, George Crile Jr., MD, was a renowned surgical pioneer. Their legacy of innovation continues to inspire Cleveland Clinic breakthroughs.
In 2011,
Matthew Kroh, MD, of the Digestive Disease Institute, performed the world’s first single-port robotic gallbladder removal – and followed it with 12 others. Dr. Kroh proved the efficacy of a new single-site robotic surgery platform designed to work with the da Vinci® robotic surgery system. This achievement is the latest in a long line of Cleveland Clinic minimally invasive “firsts.”
In 1921,

Cleveland Clinic opened its doors in this building at East 93rd Street and Euclid Avenue. Forty-two patients came that first day, February 28. Thirteen physicians and 48 nurses and other caregivers were there to greet them. In 1924, Cleveland Clinic built its first hospital building, beginning the expansion that has since taken it worldwide.
In 2011, Cleveland Clinic opened three new outpatient facilities in Northeast Ohio: the Stephanie Tubbs Jones Health Center in East Cleveland, the Twinsburg Family Health and Surgery Center, and the Richard E. Jacobs Health Center in Avon. Each is medically advanced, architecturally distinctive and designed to meet the health needs of its community.

Cancer treatment areas at the Twinsburg Family Health and Surgery Center are bright and spacious.
In 1953, Inez Salerno, RN, became assistant director of nursing. She was instructed to expand nursing education programs and launch Cleveland Clinic’s first nurse recruitment drive. Her efforts helped to increase the hospital’s general-duty staff from 87 to 170 RNs between 1959 and 1961. Today’s Stanley Shalom Zielony Institute for Nursing Excellence includes more than 11,000 nurses across the Cleveland Clinic health system.
In 2011, Cleveland Clinic nurses led shared medical appointments across the system. Group sessions last 90 minutes. Nurses examine each patient individually. Then a healthcare professional meets with the group as a whole. The sessions are popular with patients. Shared medical appointments are among many new strategies that bring nurses to the forefront of patient care.

Rebecca Hall, CNP, leads a shared medical appointment with osteoporosis patients at the Lorain Family Health and Surgery Center.
In 1958,

Cleveland Clinic cardiologist F. Mason Sones Jr., MD, made one of the great breakthroughs in visualization with the discovery of moving cine-coronary angiography. It revealed the interior of the coronary arteries, confirmed the natural history of coronary heart disease and set the stage for the first documented coronary artery bypass surgery, performed by René Favaloro, MD, at Cleveland Clinic in 1967.
In 2011, the most fatal form of bladder cancer has a new enemy: light. J. Stephen Jones, MD, of the Glickman Urological & Kidney Institute, is testing a new device that shines a fluorescent light into the bladder, causing hard-to-see tumors to shine a vivid pink. The new device has improved visibility of tumors by 25 percent and led to fewer readmissions for further surgery.

J. Stephen Jones, MD, demonstrates the blue-light cystoscope for the diagnosis of non-muscle invasive bladder cancer.
In 1948, Irvine Page, MD, and his colleagues explored the links between hypertension and dietary factors and identified substances in the body that modulate blood pressure. Among these substances is serotonin, which was identified and named by Dr. Page, Maurice Rapport, PhD, and Arda Green, MD. It is now known that serotonin is involved in many body processes, from digestion to mood regulation.
In 2011, Cleveland Clinic opened a new Center for Personalized Healthcare to support evidence-based care plans incorporating new technologies and innovations focused on the individual patient. Director Kathryn Teng, MD, will emphasize physician and patient collaboration to develop more accurate and personalized care plans. The center represents a cultural shift from a reactive, trial-and-error approach to proactive, targeted medicine.

Kathryn Teng, MD, director, and Meredith Holt, program manager, of the Center for Personalized Healthcare.
In 1956, Cleveland Clinic heart surgeons Donald B. Effler, MD, and Laurence K. Groves, MD, performed a pioneering “stopped heart” surgery. The 17-month-old patient was kept alive by a heart-lung device invented by Willem Kolff, MD, recruited to lead Cleveland Clinic’s artificial organs program. This technique was an important step in the development of open heart surgery.
In 2011, cardiologists and surgeons from the Sydell and Arnold Miller Family Heart & Vascular Institute performed one of the first transcatheter aortic valve replacements (TAVRs) in the United States following FDA approval of the device. The HVI team helped investigate and pioneer the minimally invasive technique for patients who are ineligible for conventional surgery.
In 1921, William Mayo, MD, spoke at the dedication of Cleveland Clinic. Charles Mayo, MD, addressed attendees at the dedication of Cleveland Clinic’s hospital building three years later. They were great friends with George Crile Sr., MD, and other founders of Cleveland Clinic. Sharing inspiration and ideas, these leaders of medicine developed the integrated group practice model that continues to be the most efficient for the delivery of patient care.

William Mayo, MD, left, and Cleveland Clinic founder George Crile Sr., MD, both served in leadership positions in World War I.
In 2011, the future of healthcare depends on the quality of medical leadership. Cleveland Clinic has launched a healthcare executive education program that gives participants reality-based, hands-on leadership experiences at one of the world’s great medical centers. The Samson Global Leadership Academy has welcomed aspiring leaders from around the nation and world who would like to effect change in their organizations and execute long-term leadership goals.

Caryl Hess, PhD, director of the Samson Global Leadership Academy for healthcare executives, and James K. Stoller, MD, chair of the Education Institute.
CLEVELAND CLINIC:
CELEBRATING 90 YEARS OF PUTTING PATIENTS FIRST

Cleveland Clinic opened its doors on February 28, 1921. It was the first kind of medical center: a not-for-profit, group practice where specialists were dedicated to achieving the best outcomes—where research, education were carried out alongside patient care. Cleveland Clinic survived a disastrous explosion and depression to become one of the busiest and most innovative medical centers in the world.
Cleveland Clinic’s 90th anniversary year found caregivers meeting the challenges of patient care, research and education at the highest levels of commitment and expertise. Hard work was the keynote, as caregivers across the enterprise maintained the daily pace of a leading academic medical center, making major contributions to science, medicine, and the efficiency and effectiveness of care.

This annual report presents highlights of this very productive year. A chronicle as limited as this cannot comprehensively record the multiplicity of events that make up the life of an organization as busy and complex as Cleveland Clinic. This year, as every year, Cleveland Clinic caregivers saved many lives and enhanced the quality of life for many more. What follows are some of the achievements, honors and insights from the past year.
4,000th Brachytherapy

Prostate cancer specialists at the Glickman Urological & Kidney Institute marked two milestones this past September: the 15th anniversary of introducing brachytherapy treatment and the completion of more than 4,000 brachytherapy cases. Prostate brachytherapy is a minimally invasive procedure during which radioactive seeds are permanently implanted into the prostate. Cleveland Clinic began offering prostate brachytherapy in September 1996. The team surpassed 1,000 cases in 2004, and the program has since grown to become one of the largest in the country. “Patients at Cleveland Clinic benefit from being able to consult with a multidisciplinary team that has shown strong results in identifying cancer types and offering treatment options that consider the risk of recurrence and optimal quality of life,” said Eric Klein, MD, chairman of the Glickman Urological & Kidney Institute.

Largest Series of Focal Treatments for Prostate Cancer

Cleveland Clinic surgeons pioneered conservative surgery for cancers of the breast and kidney. Today, the lumpectomy for the breast and partial nephrectomy for the kidney are considered standards of care. Now Cleveland Clinic has added a new conservative surgery “first.” Investigators from the Glickman Urological & Kidney Institute have reported the world’s largest experience in what is called focal therapy for prostate cancer. In this procedure, only the small cancerous area of the prostate is destroyed. The gland itself and the critical structures around it are mostly preserved. The investigators reported data on 1,100 focal therapy treatments – 10 times as many as the next largest series. The data were submitted to the COLD (Cryoablation OnLine Database) registry of cryoablation-based clinical information, of which J. Stephen Jones, MD, of the Glickman Urological & Kidney Institute, is primary investigator and chairman.

First Implantation of Novel Heart Valve System

Lars Svensson, MD, PhD, of the Miller Family Heart & Vascular Institute, performed “first in man” implantation of a new two-part heart valve system designed at Cleveland Clinic that allows for the percutaneous replacement of worn-out leaflets. The bioprosthetic valve consists of a ring and detachable leaflets that are inserted at the first procedure, usually via a minimally invasive incision. While the ring is permanently implanted, the leaflets are designed to be withdrawn and replaced when necessary, without open surgery, via a small chest incision and transapical approach. The system is being commercialized with the aid of Cleveland Clinic Innovations. Trials are commencing in Europe, and the manufacturer is seeking European regulatory approval.

Plastic Surgery Shown Safe for Seniors

Patients who undergo a facelift after the age of 65, if screened properly, are at no higher risk for complications compared with younger patients, according to a first-of-its-kind retrospective study published online by Plastic and Reconstructive Surgery. The authors studied consecutive facelifts performed by one Cleveland Clinic surgeon on more than 200 women over a three-year period.

“Facelift surgery in the elderly has always been perceived to carry more postoperative risk,” said James Zins, MD, of the Dermatology & Plastic Surgery Institute. “According to our study and preoperative screenings, patients over 65 had no statistically significant increase in complications.” In a series of carefully selected elderly patients, facelift complication rates were not statistically different when compared with a younger control group. The data suggest that chronologic age alone was not an independent risk factor for facelift surgery. “It should not be generalized from the study that elderly patients can undergo a facelift operation with the same low complication rate seen in the younger age group,” said Dr. Zins. “Careful screening of the elderly patients and excluding those with significant comorbidities led to the low complication rate.”
Stroke Treatment Advances in the Cerebrovascular Center

The Cerebrovascular Center at Cleveland Clinic’s Neurological Institute integrates a multidisciplinary team of neurologists, neurosurgeons, neuroradiologists, neurointensivists and rehabilitation specialists who provide expert diagnosis and medical, endovascular and surgical management of all cerebrovascular conditions. In 2011, the Cerebrovascular Center reported several advances in treating aneurysms and stroke:

**Implantable Device to Treat Complex Brain Aneurysms**

An aneurysm in the brain can be fatal. Blood vessels in the brain can weaken over time. They can tear or burst. The result is hemorrhagic stroke, neurological deficits or even death. Treating aneurysms can be difficult. Small aneurysms can be clipped through major surgery, or blocked through a catheterization procedure that inserts a small coil that stimulates a beneficial blood clot. Larger or difficult-to-treat aneurysms have fewer options. The Cerebrovascular Center has become one of a handful of American centers using a new FDA-approved device that uses a catheter to implant a flexible mesh tube at the site of a large or challenging aneurysm. The device redirects blood flow to the undamaged part of the blood vessel. It allows a clot to form, which prevents the aneurysm from rupturing. Over time, it may even cause the aneurysm to shrink. This breakthrough was named one of the Top 10 Medical Innovations at the annual Cleveland Clinic Medical Innovation Summit in 2011.

**Improving Patient Selection for Stroke Treatment**

Ischemic stroke is caused by a clot in a blood vessel in the brain. The goal of treatment is to eliminate the clot and restore or “recanalize” blood flow to the brain tissue. Patients with smaller blood clots and less ischemia (blood-starved tissue) can benefit from intra-arterial intervention. On the other hand, patients with larger clots and more ischemia do worse, and may even be at risk for complications from intra-arterial intervention.

Specialists at the Cerebrovascular Center have devised a new protocol that allows them to better select patients for intra-arterial intervention. The protocol substitutes MRI diffusion-weighted imaging for the initial CT scan that determines treatment at most centers. Unlike CT-based protocols, MRI diffusion-weighted imaging is able to detect the signs of ischemia that appear minutes after the onset of stroke. It enables patients to get the right treatment at the right time. Preliminary results are promising, with the new protocol resulting in a substantial improvement.
Cleveland Clinic is at the forefront of environmental sustainability in American healthcare. Through the Office for a Healthy Environment, it is changing the way that it builds, operates, purchases and communicates.

“Throughout our system, we are advancing strategic sustainability goals, from waste and energy to healthier buildings, improved food access and storm water management, and through active community and caregiver engagement,” says Christina Vernon, AIA, LEED AP, senior director of the Office for a Healthy Environment.

Cleveland Clinic managed a 20 percent reduction in its energy intensity over the past three years, and several Cleveland Clinic hospitals have exceeded a 30 percent recycling rate. Cleveland Clinic has committed itself to reducing the use of harmful chemicals such as mercury and phthalates in clinical products, building materials and daily operations.

Cleveland Clinic surpassed its 10 percent local food procurement goal in 2011 through its support of farmers markets, hospital gardens and direct-from-farm purchasing. In 2012, Cleveland Clinic will be supporting its fifth community farmers market season, aligning with Sustainable Cleveland 2019's Year of Local Food.

Cleveland Clinic earned its first LEED Gold Certification and first LEED Silver Certification for a clinical facility in 2011. It was named an ENERGY STAR Partner of the Year by the U.S. Environmental Protection Agency for the second time, with several community hospitals earning ENERGY STAR awards for building performance.

Cleveland Clinic is proud to be the first healthcare provider to sign the United Nations Global Compact, which stands for sustainability, fairness and integrity, allowing the institution to share best practices with partners around the world. Cleveland Clinic has earned Practice Greenhealth’s System for Change and Environmental Leadership Award.
MRI-Compatible Pacemaker Tested and FDA-Approved
Magnetic resonance imaging (MRI) and heart rhythm devices don’t get along. MRI can cause pacemakers to speed up or stop. It can also heat pacemaker leads enough to scar the heart muscle they touch. However, it is estimated that as many as 50 to 75 percent of patients with pacemakers will need MRI testing in their lives. What is to be done? Bruce Wilkoff, MD, director of Cardiac Pacing and Tachyarrhythmia Devices at the Miller Family Heart & Vascular Institute, led a prospective, controlled, worldwide clinical trial of 464 patients using a new pacemaker system designed to be compatible with MRI imaging. Patients using the new Revo MRI® SureScan® Pacing system had no MRI-related complications during or after imaging. As a result of Dr. Wilkoff’s study, the FDA approved use of the system for certain parts of the body under certain scanning conditions. A feature of the FDA approval is that it calls for collaboration and communication between cardiologists and radiologists. “I think this is a good thing,” said Dr. Wilkoff.

Viable Home Sperm Banking System
Sperm banking for patients about to undergo cancer treatment has been made easier by a new collection kit, NextGenSM, developed by Ashok Agarwal, PhD, and Edmund Sabanegh Jr., MD, of the Glickman Urological & Kidney Institute. Semen samples can be collected by patients at their homes in a private setting without the need to visit a fertility laboratory. These specimens remain viable through a short transport cycle to a sperm bank and can be cryopreserved for long-term storage. This technique is of immense value to cancer patients, pre-vasectomy patients and military personnel being deployed overseas.

Chronic Leukemia Treatment Personalized
Although chronic lymphocytic leukemia (CLL) may be controlled using conventional chemotherapy, patients inevitably relapse. While testing a new drug designed to treat CLL, researchers led by Alex Almasan, PhD, of the Lerner Research Institute, discovered new markers that could identify which patients would receive maximum benefit from the treatment. The finding will speed clinical trials and perhaps approval of the new drug navitoclax, whose early results have been promising. It also may help identify what other types of malignancies or tumors may effectively be treated with the new drug.

New Test for Rare Cancer
A genetic alteration that causes epithelioid hemangioendothelioma (EHE) has been discovered and developed into a new diagnostic test for this rare but devastating vascular cancer. An international research effort led by Brian Rubin, MD, PhD, of the Pathology & Laboratory Medicine Institute and the Lerner Research Institute, identified the oncogenes in a translocation between chromosomes linked to the disease. Identification of driver oncogenes in cancers provides understanding of the molecular pathways at work inside cancer cells. The techniques used to identify EHE translocations may be transferable to other cancers as well.

Cancer Care for Northwestern Ohio
North Coast Cancer Care, a seven-physician practice with locations in Sandusky, Clyde and Norwalk, Ohio, became part of the Taussig Cancer Institute in November. The practice is now known as Cleveland Clinic Cancer Centers. The Sandusky office serves Erie and Ottawa counties; the Clyde office serves western Huron County and Sandusky County; and the office at Fisher-Titus Medical Center serves Huron and Ashland counties. Each site will continue offering consultation in hematology and oncology, chemotherapy, diagnostic services, and patient support. The oncology specialty pharmacy will remain on the Sandusky campus. The Sandusky location will also continue to provide patients with access to innovations in radiation therapy, including RapidArc®, partial breast radiation, high-dose-rate brachytherapy and stereotactic radiotherapy.
Effective Drug Combination to Treat Bone Marrow Cancer

Two drugs used in combination have been found to be highly effective in treating higher-risk patients with myelodysplastic syndromes (MDS). Research led by Mikkael Sekeres, MD, and Jaroslaw Maciejewski, MD, PhD, of the Taussig Cancer Institute, proved that two FDA-approved drugs – azacitidine and lenalidomide – were well-tolerated and had a better response rate and remission rate than either drug used individually. The Phase I and II studies were funded by the National Institutes of Health as part of the Rare Diseases Clinical Research Network of the Bone Marrow Failure Disease Consortium. They looked at the safety and efficacy of combination therapy in 36 higher-risk MDS patients with a median age of 68 years, and reported a response in 72 percent of patients. “This combination was so successful, it’s being incorporated into the next North American intergroup MDS study, as well as international MDS studies,” Dr. Sekeres said.

First Comparison of Leading Statins

Maximum doses of both rosuvastatin (Crestor®) and atorvastatin (Lipitor®) resulted in significant regression of coronary atherosclerosis in a new study led by Stephen Nicholls, MBBS, PhD, of the Miller Family Heart & Vascular Institute. The two statins tied for the regression endpoint despite each having differing effects on HDL and LDL cholesterol levels. The high doses were well-tolerated, indicating the statins can be safely prescribed at higher and more effective levels than they commonly are. “This study demonstrates that the highest doses of the most effective statins currently available are safe and well-tolerated and produce marked plaque regression,” said Dr. Nicholls. “The finding that these therapies produced low levels of LDL, raised HDL and removed plaque from the artery wall in a safe manner is positive news for patients with heart disease.”

Results were published in the New England Journal of Medicine. The study used intravascular ultrasound imaging to compare the progression of coronary atherosclerosis after two years of treatment with these two drugs. There were few adverse events observed during the study, and no patients experienced serious muscle injury, demonstrating that disease regression can be achieved with excellent safety.

Cleveland Clinic researchers led by Steven Nissen, MD, chair of Cardiovascular Medicine, first proved that it was possible to halt and reverse the development of coronary plaques back in 2006, using only rosuvastatin, in a trial called ASTEROID. This latest study shows that cardiologists who would like a choice of statins to prescribe for this purpose can choose one or the other, based on their judgment and preference with respect to each patient.

Microflora Link to Heart Disease

Research led by Stanley Hazen, MD, PhD, of the Miller Family Heart & Vascular Institute and Lerner Research Institute, discovered a new pathway that links a common dietary lipid, lecithin, and intestinal microflora to the development of heart disease.

The finding explains why two people might eat the same high-fat diet but only one of them develops heart disease. It was previously thought that genes alone were sufficient to explain the difference. But Dr. Hazen’s finding shows that gut flora may be just as important.

In fact, as a predictor of heart disease, the substances produced by intestinal microflora breakdown of lecithin appear to be as much as 10 times more powerful a predictor of heart disease risk than cholesterol. Measuring the substances formed by intestinal microflora in plasma or urine may give physicians a better idea of who is at greater risk of developing coronary artery disease and peripheral artery disease, as well as heart attack and stroke.

For patients, it’s a powerful new reason for decreasing fatty foods in the diet such as meat, cheese, organ meats and certain fish. For physicians, it should lead to the creation of a new and more powerful means of predicting risk for heart disease. It also is opening avenues for new therapeutic interventions for the treatment of heart disease.
The Cleveland Clinic Lou Ruvo Center for Brain Health (LRCBH) is building an innovative network to advance patient care through discovery of new therapies for Alzheimer’s disease and other neurocognitive disorders. Under Director Jeffrey Cummings, MD, it has expanded from Nevada to Cleveland and Florida, creating the opportunity to conduct research at all these sites within the Cleveland Clinic framework with one leadership, one set of operational guidelines, the same data collection approaches and one institutional review board for research approval.

The center is establishing a unique clinical trials network that can more rapidly advance the development of new therapies for Alzheimer’s disease and other cognitive disorders. The network will position the center as a leader in developing new biomarkers and initiating novel programs for patients and caregivers. This program will address the problems of slow trial recruitment and slow emergence of new therapies.

Meanwhile, research increased from six to 22 clinical trials, including evaluation of a new blood test for Alzheimer’s disease. A long-term study of boxers and mixed martial arts fighters was launched to understand the effects of head trauma on athletes. LRCBH and the Center for Neurological Restoration are collaborating with independent gene experts at 23andMe to genotype all Parkinson’s disease patients in the Cleveland Clinic health system.

Dr. Cummings and Erik Pioro, MD, PhD, published a study of the effectiveness of a new therapeutic agent for amyotrophic lateral sclerosis and multiple sclerosis that was approved by the FDA.

“We’ve identified a real need for specialized treatment,” Dr. Cummings told the Las Vegas Sun. “What will make our programs unique here is that the integration of clinical trials into our care allows the patients to help solve these brain diseases themselves. No other facility will be as integrated and empowering as this one.”
The Pathology & Laboratory Medicine Institute (PLMI) is the largest-volume hospital lab in the United States. Institute Chair Kandice Kottke-Marchant, MD, PhD, oversees more than 20 million tests each year. In 2011, Dr. Marchant and her team continued to expand PLMI's productivity and reach, even as many of its personnel prepared to move to a new building.

Clinical Pathology performed approximately 10 million clinical laboratory tests in its laboratories. Molecular Pathology performed more than 75,000 diagnostic molecular assays. Anatomic Pathology processed and interpreted more than 100,000 surgical pathology specimens, 85,000 cytopathology specimens and 200 autopsies. PLMI also offers educational training programs for medical technologists, medical laboratory technicians, pathology assistants, phlebotomists, histotechnologists and cytotechnologists, along with postgraduate residency and fellowship pathology training, continuing education programs and annual symposia.

Research
Members of the PLMI carried out clinically applied and translational research investigations/projects in diverse areas in the study of human disease.

An international research effort led by Brian Rubin, MD, PhD, discovered a translocation between chromosomes linked to epithelioid hemangioendothelioma (EHE) and developed a new test for this rare but devastating vascular cancer. Identifying translocations in cancers provides an understanding of the molecular pathways at work inside cancer cells. The techniques used to identify EHE translocations may be transferable to other cancers as well. “This finding is the beginning of a new era for patients with EHE,” said Dr. Rubin.

“We firmly believe that the characterization of this genetic translocation will lead to a cure for EHE patients.” Dr. Rubin was also first author of a paper, “Evidence for an unanticipated relationship between undifferentiated pleomorphic sarcoma (UPS) and embryonal rhabdomyosarcoma (ERMS).” UPS is a soft-tissue sarcoma that affects mostly men. ERMS is a cancerous (malignant) tumor of the muscles that attach to the bones. The paper’s findings tie UPS to a differentiated sarcoma ERMS in a concrete, experimental mechanism-oriented way. The collaborative study among major labs in the field explains how UPS arises from ERMS mechanistically. The paper was published in Cancer Cell.

Pathology & Laboratory Medicine Serves One Cleveland Clinic
Dr. Marchant and her team have been pioneers of regionalization at Cleveland Clinic, implementing strategies to serve not only the main campus but the entire system of community hospitals and family health centers. In 2011 alone, PLMI
Daily Vitamin E May Promote Prostate Cancer

A daily vitamin E regimen once thought to reduce cancer risk has been found actually to increase the risk of prostate cancer. The latest results of the Selenium and Vitamin E Cancer Prevention Trial, led by Eric Klein, MD, chair of the Glickman Urological & Kidney Institute, showed that there is no benefit from a cancer standpoint to taking vitamin E. The results, published in the *Journal of the American Medical Association*, found that a group of men taking a daily dose of 400 IU of vitamin E from 2001 to 2008 had 17 percent more cases of prostate cancer than men who took a placebo. “For the typical man, there appears to be no benefit in taking vitamin E and, in fact, there may be some harm,” said Dr. Klein.

More Discoveries from the Genomic Medicine Institute

Discovery of Thyroid Cancer Gene

Three genes that increase the risk of thyroid cancer have been discovered at Cleveland Clinic, yielding important insights for diagnosis and treatment. Charis Eng, MD, PhD, chair of the Genomic Medicine Institute, led the study, which involved 3,000 patients with Cowden syndrome. The findings may result in increased surveillance for thyroid cancer among children who are found to have these particular gene mutations, enabling earlier treatment. “We hope to promote the earliest diagnosis and most tailored treatment, dictated by which gene is involved,” said Dr. Eng.

Gene Mutation Linked to Esophageal Cancer

In another study, Dr. Eng and her team have identified three distinct mutant genes in patients with esophageal adenocarcinoma (EAC) and Barrett’s esophagus (BE). Currently, esophageal cancer isn’t diagnosed until its late stages, when radiation, chemotherapy and other forms of treatment are unlikely to be effective. “We are absolutely thrilled to now know three distinct genes that link to BE/EAC,” said Dr. Eng. “This is essential for improving risk assessment and disease management and to save lives.” The findings were published in the *Journal of the American Medical Association*. 
Tumor-Suppressing Effect of Red Wine Compound

A substance known as resveratrol, found in red wine, has been shown to have a tumor-suppressing effect on breast cancer cells that are resistant to rapamycin alone. Dr. Eng led the study, which suggests that adding foods or supplements containing resveratrol to a rapamycin regimen could help make it a more effective anti-cancer agent. The research showed an additive effect between these two drugs on breast cancer cell signaling and growth. "Rapamycin has been used in clinical trials as a cancer treatment. Unfortunately, after a while, the cancer cells develop resistance to rapamycin," said Dr. Eng. "Our findings show that resveratrol seems to mitigate rapamycin-induced drug resistance in breast cancers, at least in the laboratory. If these observations hold true in the clinical setting, then enjoying a glass of red wine or eating a bowl of boiled peanuts – peanuts have an even higher resveratrol content than red wine – before rapamycin treatment for cancer might be a prudent approach." Rapamycin, an immunosuppressant drug used to prevent rejection in organ transplantation, has been considered for use against breast cancer because it shows antitumor activity. Resveratrol, a type of polyphenol found in the skin of red grapes, has been considered for multiple therapeutic uses.

New Perspectives on Brain Cancer

Jeremy Rich, MD, MHSc, of the Lerner Research Institute, was involved in two studies with significant implications for brain cancer.

Cancer Pathway Can Be Blocked by Drugs

Scientists have discovered a brain-tumor-promoting cellular pathway that can be blocked with existing medications. Dr. Rich and Anita Hjelmeland, PhD, defined a novel molecular pathway that cancer stem cells use to promote tumor growth. Cancer stem cells produce elevated nitric oxide, a molecule whose role in cancer is not well-defined but which has been linked to therapeutic resistance, evasion of cell death, and enhanced proliferation. Nitric oxide is produced in cancer stem cells through increased levels of the enzyme nitric oxide synthase 2 (NOS2); decreasing the level or activity of this enzyme reduces cancer stem cell growth. Using the National Institutes of Health-supported database of glioma specimen data, they also found that increased levels of this enzyme are associated with decreased survival of glioma patients. Targeting this pathway with NOS2 inhibitors could therefore provide benefits for patients with malignant glioma, an aggressive brain tumor.

New Strategy Against Glioblastomas

Dr. Rich partnered with Shideng Bao, PhD, of the Lerner Research Institute, to discover a new therapeutic target for glioblastoma (a lethal type of brain tumor). They found that bone marrow X-linked (BMX) kinase, which is uniquely present in glioblastoma stem cells, also regulates their maintenance by activating the STAT3 pathway. Targeting BMX to specifically disrupt cancer stem cells could become a strategy for new therapeutics to improve the treatment of glioblastomas. They are investigating the effect in biological models.

Saturation Biopsy Better for Prostate Cancer Detection

J. Stephen Jones, MD, and a team from the Glickman Urological & Kidney Institute published the first comparative report of transrectal saturation biopsy for prostate cancer detection. The team studied 1,000 patients with suspected prostate cancer following a negative prostate biopsy. The cancer detection rate for patients who had an office-based transrectal saturation biopsy (first performed anywhere in the world at Cleveland Clinic in 2001) was almost one-third higher than for patients who had a standard biopsy, with an identical low complication rate. This and subsequent findings prove that saturation biopsy makes further costly biopsies unnecessary for most patients who have them.
New “Outside-In” Pathway of Multiple Sclerosis

A collaborative study between Cleveland Clinic and Mayo Clinic has reversed conventional wisdom on the progression of multiple sclerosis (MS). The previous belief was that the disease began deep in the inner white matter of the brain and progressed outward. This study shows that MS in fact begins in the outer or cortical layer of the brain and progresses inward. The study, co-led by Richard Ransohoff, MD, of the Neurological Institute, gives scientists a more detailed picture of MS than ever before and both challenges and reaffirms a number of prevailing theories and treatments.

For instance, the study concludes that it is "overwhelmingly likely" that MS is fundamentally an inflammatory disease, and not a neurodegenerative Alzheimer’s-like disease. “For patients, the key idea of this research is that we have discovered an entirely new concept of how MS may start,” said Dr. Ransohoff. “This research shows that a non-inflammatory form of MS is much less likely, and the prevailing research path has been going in the right direction.” The study appeared in the New England Journal of Medicine.

Evacetrapib Boosts HDL, Drops LDL

A study led by Stephen Nicholls, MBBS, PhD, of the Miller Family Heart & Vascular Institute, showed that the drug evacetrapib had dramatically favorable effects on both good (HDL) and bad (LDL) cholesterol. At the highest doses, evacetrapib doubled HDL levels. “In this study, evacetrapib was able to show striking increases in HDL while significantly lowering LDL,” said Dr. Nicholls. “The next step will be a large cardiovascular outcome trial to determine if this drug can reduce cardiovascular morbidity and mortality.” Results of the study were eagerly awaited, as a previous drug in this class (known as cholesteryl ester transfer protein inhibitors) failed due to unexpected toxicity. Evacetrapib, the drug used in Dr. Nicholls’ trial, did not show any of these adverse effects. The study was published in the Journal of the American Medical Association.

New Autoinflammatory Disease Reported

A team led by Qingping Yao, MD, PhD, of the Orthopaedic & Rheumatologic Institute, has reported a new category of autoinflammatory disease. Genetic testing was performed on diagnostically challenging patients with periodic fever, dermatitis, inflammatory polyarthritis and other symptoms. The team identified a new disease category of autoinflammatory disease with characteristic clinical phenotypes and genotypes. This finding could lead to more accurate diagnosis and treatment of what may not be a rare disorder.

Modern Football Helmets Fall Short in Protection

The kind of football helmets used 100 years ago are as good, and sometimes better, than 21st century football helmets for protecting players. Adam Bartsch, PhD, of the Center for Spine Health and the Neurological Institute, led a study comparing early 20th century leather helmet models with modern state-of-the-art polycarbonate helmets. For many of the impacts and angles studied, the leather helmets offered similar and sometimes better protection than did the modern helmets. “The point of this study is not to advocate for a return to leather helmets but rather to test the notion that modern helmets must be more protective than older helmets simply because ‘newer must be better,’” said Dr. Bartsch. “Unlike cars, in which seat belts, airbags and crumple zones make the choice between a Model T and modern minivan a no-brainer, these results tell us that modern helmets have ample room to improve safety against many game-like hits that may cause long-term neurological impairment.”
Cleveland Clinic Florida was established in 1986 in an office building in Fort Lauderdale. Today, it flourishes at an integrated medical campus and family health center in Weston and in West Palm Beach.

Cleveland Clinic Florida had 331,000 patient visits in 2011, including 31,000 Emergency Department visits, 10,250 admissions and 10,589 surgeries. More than 15,300 international patients from South America, the Caribbean and elsewhere came to Cleveland Clinic Florida for care. The number of staff physicians rose to above 200. Seventy-six residents and fellows trained in 10 accredited programs. Visits at the West Palm Beach office were up 30 percent.

Awards and honors have been increasing for Cleveland Clinic Florida. It was ranked among the top two hospitals in the Miami and Fort Lauderdale area by U.S. News & World Report and 17th in America for gastroenterology. It was named among the 100 Top Hospitals by Thomson Reuters for the third year in a row.

The Pelvic Floor Center has been designated a Center of Excellence: Continence Care in Women by the National Association for Continence – the first hospital on the East Coast and only the third in the nation to earn this designation. Cleveland Clinic Florida’s general surgery residency program became the first program of its kind in Broward County to be accredited by the Accreditation Council for Graduate Medical Education.

“Cleveland Clinic’s unique model of medicine, which integrates clinical and hospital care with research and education, is the perfect training ground for physicians pursuing their specialty,” said CEO Bernie Fernandez, MD. “They learn from some of our nation’s top doctors and surgeons, including Drs. Steven Wexner, Eric Weiss, Raul Rosenthal, Conrad Simpfendorfer, Mark Grove and Mark Sesto, who were instrumental in initiating this important program for Cleveland Clinic Florida.”

With all its success, Cleveland Clinic Florida is outgrowing its facilities at a rapid pace. To enable it to continue to meet the healthcare needs of South Florida, Cleveland Clinic Florida has now been slated for expansion. The facilities currently being planned will nearly double its size.
New Rejection Test for Transplant Patients
Randall Starling, MD, of the Miller Family Heart & Vascular Institute, co-authored a study that offers heart transplant patients a less painful and risky means of testing for heart rejection than the standard procedure of endomyocardial biopsy. Gene profiling of peripheral blood specimens was found to produce results that correlated with the biopsy and may be adopted as an alternative test. The study was published in the New England Journal of Medicine.

A Less Expensive Alternative for Macular Degeneration
A $50-a-dose drug (Avastin®) is as effective as the gold-standard $2,000-a-dose drug (Lucentis®) for treating age-related macular degeneration. Daniel F. Martin, MD, chair of the Cole Eye Institute, is study chair of the landmark Comparison of AMD Treatments Trials, which is comparing the safety and effectiveness of the two drugs. “The fact that we have proven a far less expensive treatment can be used means we now have a good chance of treating macular degeneration in countries that have far fewer resources than our own,” said Dr. Martin. “The most satisfying part is that we now understand how to provide the best care with the lowest treatment burden for our patients.” The study was published in the New England Journal of Medicine.

Using the EMR to Detect Complications
Cleveland Clinic was a pioneer in the adoption of the electronic medical record (EMR). Now it is using analytic software to monitor patient data for potential complications. The initiative is called DERT, for Documentation, Extraction, Reporting and Transformation. Teams in Patient Financial Services enter diagnosis and treatment codes, along with other data, into special clinical document approval software. This software is able to search for patterns and anomalies and flag them for review by the diagnosing physician. This can happen while the patient is still in the hospital. “The closer you can get to real-time care, the better you can enhance clinical outcomes,” said Lyman Sornberger, executive director of Revenue Cycle Management. DERT, which began in 2011, is already successfully preventing complications by finding and reporting discrepancies.

Hairstyles May Harm Scalp
Braids and hair weaves have been linked to a permanent type of hair loss affecting some African-American women. The hairstyles may pull at hair strands and cause inflammation of the follicle, leading to scarring. The result could be a condition known as central centrifugal cicatricial alopecia, which spreads slowly from the top of the scalp. The study was led by Angela Kyei, MD, of the Dermatology & Plastic Surgery Institute. “To dismiss hair loss as a mere cosmetic problem is the wrong approach,” Dr. Kyei told The New York Times.

Treatment of Functional Dysphonia with a Laryngeal Repositioning Technique
Claudio F. Milstein, PhD, of the Head & Neck Institute, has developed a multimodal treatment for functional dysphonia (loss of voice in the absence of anatomical abnormalities) that results in a 95 percent cure rate, usually after a single intervention. A laryngeal repositioning technique is combined with vegetative voicing tasks to restore normal vocal function. “The hoarseness is usually severe, rendering patients unable to function in life, career, social or recreational needs,” said Dr. Milstein. “Through manipulation of laryngeal structures, this noninvasive intervention changes the maladaptive posturing of the vocal tract, giving patients their normal voices back, allowing them to return to work and socialize, and resulting in significant improvement in their quality of life.”
New Endocrine Calcium Clinic Formed

Abnormal calcium-related problems can cause serious disorders, including kidney stones, hypo- or hypercalcemia, vitamin D deficiency, hyperparathyroidism and osteoporosis. A new center has opened in the Endocrinology & Metabolism Institute to deal with these issues, as well as Paget's disease, secondary osteoporosis and other conditions. The institute includes three endocrinologists: consultant director Angelo A. Licata, MD, PhD, Krupa Doshi, MD, and Leila Khan, MD, along with Susan E. Williams, MD, an expert on nutrition and bariatric bone disease from the Medicine Institute.

The center will also look at inflammatory bowel disease, cancer, renal failure and other problems that increase the risk of metabolic abnormalities, as well as metabolic abnormalities associated with bariatric surgery and organ transplantation. Bone density scans are performed and interpreted by certified specialists. Experts in the Pathology & Laboratory Medicine Institute are able to test markers of bone turnover, mineral and nutrient deficiencies, and hormonal abnormalities. An infusion center allows patients to receive injections or infusions of the latest therapies.

New Laparoscopic Technique for IBD- and Bowel Surgery-Associated Stricture and Anastomotic Leak

Bo Shen, MD, of the Digestive Disease Institute, was the first to successfully manage inflammatory bowel disease (IBD)-associated and bowel surgery-associated strictures and anastomotic leaks using an endoscopic device called a needle knife, under the guidance of Doppler ultrasound. An anastomotic stricture is the luminal narrowing where two pieces of bowel have been joined together. An anastomotic leak happens when two structures that have been surgically joined break down. The patients had previously undergone bowel resection surgery for rectal cancer or IBD. Patients with strictures or anastomotic leaks are often ill from the complications. The needle knife is a miniaturized cutting tool. The procedure typically took 20 to 30 minutes, and the patient was discharged after 30 minutes of observation. The procedures have saved patients from additional surgery by improving symptoms and correcting mechanical defects.

Robotic-Assisted vs. Conventional Laparoscopy Trial

The first randomized trial comparing robotic-assisted laparoscopic and conventional laparoscopic gynecological surgery has been performed by Marie Paraiso, MD, of the Ob/Gyn & Women’s Health Institute. It’s also the largest comparative trial of any two minimally invasive surgery routes ever done, including robotic-assisted laparoscopy. The trial studied a procedure called sacrocolpopexy, which repairs vaginal vault prolapse using a soft synthetic mesh as a bridge to the anterior support ligaments of the sacrum.

Dr. Paraiso was primarily looking at the difference in time between the two techniques. She found that the robotic surgery took significantly longer, and that this was not affected by the surgeon’s level of experience. There were no significant differences in the rate of complications, length of hospital stay, and functional or anatomic outcomes between groups; however, postoperative pain, severity of pain and requirement for NSAIDs were greater in the robotic-assisted group during the six-week period after surgery compared with the laparoscopic group. Finally, each robotic-assisted sacrocolpopexy cost on average $1,946 more than conventional laparoscopy. This did not take into account the costs of acquisition and maintenance of the robot. This manuscript was voted one of the top four manuscripts published in Obstetrics & Gynecology in 2011. It also won Best Clinical Paper at the American Urogynecologic Society Annual Meeting and the Kurt Semm Award for Best Manuscript in Laparoscopic Surgery at the American Association of Gynecologic Laparoscopists Annual Meeting in 2010.
Arts & Medicine Institute

The Arts & Medicine Institute reached far and wide in 2011, to more patients and families, more locations, and national and international audiences.

“Our vision is to rehumanize the hospital experience, and we do that by bringing the arts to the hospital,” says Iva Fattorini, MD, chair of the Arts & Medicine Institute. “Patients access the arts through our world-class art collection, our art and music therapists working throughout the hospital, and our daily music performances.”

In 2011, the Art Program curated and installed more than 3,500 works of art and posters in three new family health centers and other facilities. It also provided hundreds of guided tours of the art collection to groups ranging from international visitors and healthcare executives to school and employee groups. The Art in the Afternoon program was introduced to provide tours of Cleveland Clinic’s art collection for patients with dementia and their caregivers.

The Art and Music Therapy programs have expanded into dozens of units at the main campus, as well as pilot programs at Hillcrest and Lakewood hospitals. Several hundred patients and family members benefit from art or music therapy services each month, including bone marrow transplant patients, pediatric cardiac patients, visitors at the main campus Wellness Store, cancer patients and their families, elderly patients at Hillcrest, and stroke patients at Lakewood.

The Performing Arts Program held more than 325 performances in the last year, including performances five days per week, in four locations, with monthly special performances on weekends. A study of 1,000 patients and family members showed that 98 percent of those surveyed wanted to hear more music and 95 percent said the music made a difference in their time at the hospital.

“The message about the importance of the arts in medicine is really resonating with people,” explains Dr. Fattorini. “We are encountering an audience thirsting for this kind of message, and we are thrilled to be on the forefront of the arts and medicine movement.”

Music therapist Debbie Bates
1,000th Hip Resurfacing at Euclid Hospital

Peter Brooks, MD, of the Orthopaedic & Rheumatologic Institute, performed his 1,000th hip resurfacing at Euclid Hospital. “Euclid Hospital is one of only a handful of centers in the world to reach this milestone,” said Dr. Brooks. An alternative to total hip replacement, hip resurfacing places a hollow metal cap over the tip of the femur. This fits into a metal cup that is placed into the hip socket. Less bone is removed than in conventional hip replacement. Long-term results show that hip resurfacing may last as long as hip replacement in younger, active patients. The surgeon’s experience in performing hip resurfacing is related to the quality of outcome.

Hypertension Linked to Survival in Kidney Cancer

High blood pressure isn’t always bad. Research led by Brian Rini, MD, of the Taussig Cancer Institute, shows that hypertensive patients being treated for advanced kidney cancer with the drug sunitinib respond better to treatment, maintain longer progression-free survival, and survive longer. “These findings support the hypothesis that high blood pressure may act as a biomarker of a medication’s anti-tumor effectiveness,” said Dr. Rini. “What that means is that physicians may be able to monitor a patient’s blood pressure to gauge how effectively sunitinib is treating advanced kidney cancer.”

Strokes Decline in 27-Year CABG Study

Coronary artery bypass grafting (CABG), first developed at Cleveland Clinic in 1967, keeps getting safer. A study of 45,432 patients who had CABG at Cleveland Clinic between 1982 and 2009 showed a steadily decreasing incidence of stroke during or after surgery – this despite a steadily increasing patient risk profile. The study, led by Khaldoun Tarakji, MD, MPH, of the Miller Family Heart & Vascular Institute, attributed the decrease in occurrence of stroke to improvements in preoperative assessment, intraoperative anesthetic and surgical techniques, and postoperative care. The study was published in the Journal of the American Medical Association.

Pulmonary Hypertension Linked to Bone Marrow

Results from a study co-authored by Serpil Erzurum, MD, of the Lerner Research Institute, reveal a close relationship between pulmonary arterial hypertension (PAH) – exceedingly high blood pressure in the arteries carrying blood from the heart to the lungs – and abnormalities of the blood-forming cells in the bone marrow (known as myeloid abnormalities).

The study, conducted by a team of researchers at Cleveland Clinic, showed that blood progenitor cells (cells that are capable of forming white blood cells, red blood cells or platelets in the bone marrow and are reported to affect blood vessel formation) are increased in the bone marrow, blood and lungs of patients with PAH. These findings suggest that the disease processes in the bone marrow and the lungs are related.

“This research pieces together a number of previous studies and observations suggesting a very close relationship between PAH and underlying bone marrow abnormalities,” said Dr. Erzurum. “Our study homed in on the stem cells involved in blood
vessel maintenance to identify factors that might be involved in bone marrow stem cell abnormalities as well as progressive arterial disease."

Stem Cells and Proteins Heal Damaged Urethras

Stem cells from bone marrow may be able to help stress urinary incontinence in women whose urethras have been damaged in childbirth. Researchers at the Glickman Urological & Kidney Institute injected bone marrow-derived mesenchymal stem cells (MSCs) into the peripheral bloodstream and demonstrated that the cells were able to home in on the urethral area. Other groups have done similar studies using stem cells from tissue around the urethra rather than bone marrow. But this process is lengthy and requires a muscle biopsy.

Alongside this discovery, Charuspong Dissaranan, MD, Howard Goldman, MD, and Margot Damaser, PhD, have found that proteins secreted by MSCs are equally effective in stimulating urethral recovery. With further research, the aim is to fully characterize these proteins so that they can be synthesized and used as an off-the-shelf treatment to prevent or treat the development of stress urinary incontinence.

ECMO Mortality Explored

The use of extracorporeal membrane oxygenation (ECMO) devices has risen over the past 20 years. ECMOs function almost like the heart-lung machines that take over blood oxygenation and circulation activities during stopped-heart surgeries, but are much smaller and used outside the operating room to support, rather than take over, a patient’s heart function. Hesham Elsharkawy, MD, of the Anesthesiology Institute, led a study to determine the causes of hospital mortality in adult patients on ECMO after cardiac surgery. Its goal was to define the patient population that would most benefit from ECMO. The team observed a linear relationship between age and mortality, with 50 percent survival at 53 years. Mortality was lowest in younger, nondiabetic patients with reversible cardiogenic shock who had shorter cardiopulmonary bypass times. But no factors stood out robustly.

Attempt to Stop Postsurgical Metastasis

Cancer surgery often releases cancer cells into the lymphatic system and bloodstream. Typically, the body’s immune system and other defenses should be able to neutralize this residual disease. But factors associated with the surgery itself can inhibit the body’s natural defenses against metastasis. Surgical anesthesia impairs many immune functions based in neutrophils, macrophages and other killer cells; plus, opioids given for pain relief can inhibit cellular and humoral immune function. An international team of researchers including Daniel Sessler, MD, of the Anesthesiology Institute, sought to discover if substituting epidural block for general anesthesia in cancer surgery would result in lower rates of subsequent metastasis. Animal studies were promising. Dr. Sessler and his colleagues evaluated 500 patients having major abdominal surgery for cancer who were randomized to epidural block or general anesthesia alone. The primary endpoint was cancer-free survival after surgery. They discovered that use of epidural block in abdominal surgery for cancer is not associated with improved cancer-free survival.
In 2011, Cleveland Clinic Innovations continued to evolve as an international leader in the commercialization of medical technology while expanding into exciting new territory. Cleveland Clinic entered into an agreement with MedStar Health to launch Healthcare Innovation Alliance, the foundation for a national innovation system. The alliance will include other academic medical centers, research universities and industry in leveraging proven processes, leading to additional collaboration, discovery, efficiencies and patient-benefiting technologies.

Over the past 12 years, Cleveland Clinic Innovations has earned a reputation as an industry leader in technology commercialization, recognized by Global Corporate Venturing as one of the world’s top five corporate venturing organizations in healthcare. It has spun off 48 companies and nearly 600 licensed technologies, resulting in the creation of nearly 1,000 jobs in the United States.

The 2011 Cleveland Clinic Medical Innovation Summit, presented by Cleveland Clinic Innovations, welcomed more than 1,100 industry leaders and investors and focused on emerging cardiovascular technologies.
Personal Health Records in Diabetes Management

Millions of patients have access to online personal health records (PHRs) such as Cleveland Clinic’s MyChart. PHRs have the potential to empower patients to self-manage chronic diseases and lead to better outcomes. Mark Tenforde, then a student in the Cleveland Clinic Lerner College of Medicine, undertook a study to measure the association between use of an advanced electronic medical record-linked PHR and diabetes quality measures in adults with diabetes mellitus (DM). The researchers studied the records of more than 10,000 adults seen at Cleveland Clinic over the course of one year. They found that PHR use was associated with improved diabetes quality measure profiles – mainly because the PHR users were more highly engaged with their health than the nonusers. PHR use was low overall. The study, published in the Journal of General Internal Medicine, suggested that to maximize value, the next generation of PHRs should be designed to engage patients in everyday diabetes self-management.

Anti-Cancer Approach Avoids Apoptosis

Every cell in the body has “suicide” genes that trigger expiration under great stress. The goal of most cancer treatments is to torment cancer cells until their suicide genes kick in (a process called apoptosis) and they die. Unfortunately, the worst cancers have a way of inactivating key apoptosis genes, meaning that treatments often miss their mark and end up stressing healthy rather than cancerous tissue. Yogen Saunthararajah, MD, of the Taussig Cancer Institute, is leading research on cancer treatments that avoid this dependence on apoptosis and target another natural cell function: specialization. He and his team have developed and published the scientific basis for drug treatments that flip cancer cells’ specialization switch “on” and steer them away from malignancy. Dr. Saunthararajah and his team have altered a currently available drug to achieve this, and are working on novel drugs they hope can do this even better. They are planning clinical trials addressing as many cancers as possible to learn if this less-toxic medical therapy can provide better outcomes than current treatments do.

Studies Advance Cholangioscopy

The development of new cholangioscopy systems has revolutionized the visualization of the bile duct. During cholangioscopy, a small-caliber endoscope is passed through a larger endoscope and into the bile duct to reveal the walls and lumen in unprecedented detail. The Digestive Disease Institute has been at the forefront of cholangioscopy and cholangioscopic research in recent years. In a study published in 2011, Mansour Parsi, MD, was part of a multicenter international team that evaluated the role of single-operator cholangioscopy in biliary diseases. In other publications, Dr. Parsi assessed the role of a prototype high-definition video cholangioscope, and editorialized on peroral cholangioscopy in the new millennium. “As the image quality of cholangioscopes improves, so too does their diagnostic capability;” wrote Dr. Parsi. “And as their durability and maneuverability increase, so too does their potential use for therapeutic applications.”
**Education Institute**

The Education Institute oversees Cleveland Clinic’s educational mission, including the Cleveland Clinic Lerner College of Medicine of Case Western Reserve University, community education, and one of the nation’s largest graduate medical education programs. For the past 90 years, the volume and diversity of clinical problems seen by trainees at Cleveland Clinic and the opportunity to participate in a group practice model of medical care have provided an ideal teaching and learning environment. Under the leadership of Chair James K. Stoller, MD, MS, the Education Institute continues to reflect Cleveland Clinic’s values of quality, innovation, teamwork, service, integrity and compassion.

**Graduate Medical Education (GME)**

In 2011, there were 1,758 residents and fellows at Cleveland Clinic, Fairview Hospital, South Pointe Hospital, the Lerner Research Institute and Cleveland Clinic Florida. In addition, 245 postdoctoral fellows were appointed. This is the largest number of residents and fellows ever hosted by Cleveland Clinic and part of a continuing upward trend. Cleveland Clinic offers 65 training programs approved by the Accreditation Council for Graduate Medical Education (ACGME), along with 100 programs outside ACGME oversight.

**Continuing Medical Education**

Physicians and other medical personnel around the world are required to keep their knowledge and skills up-to-date through participation in continuing medical education (CME) programs. Cleveland Clinic is a leading provider of CME courses in virtually all media. In 2011, the Center for Continuing Education offered 1,473 CME programs – a 23 percent increase over the previous year – to 233,606 participants from around the world.

**The CME Website**

For the second year in a row, Cleveland Clinic’s Center for Continuing Education website, ccfcmce.com, received top awards from two respected health information organizations, Strategic Health Care Communications and the Health Information Resource Center, for its content, credibility and ease of use. These distinctions bring prominence to a website that physicians have relied on for world-class medical content for more than 10 years. Launched in 2000 and featuring a virtual textbook of medicine, ccfcmce.com has attracted millions of visitors and has become one of the world’s largest providers of online CME among the nation’s academic medical centers.

**Scientific Publications**

The *Cleveland Clinic Journal of Medicine* celebrated its 80th anniversary in 2011. (See next page.)

**International Medical Education**

The Center for International Medical Education offers international healthcare professionals the opportunity to experience the best of U.S. medical practices and to learn about the latest clinical achievements. In 2011, more than 850 physicians from around the world visited Cleveland Clinic to observe firsthand Cleveland Clinic’s model of care.

**Cleveland Clinic Academy**

Cleveland Clinic Academy offers professional development opportunities to employees at Cleveland Clinic and beyond. It is part of an effort to develop a pipeline of leadership talent for Cleveland Clinic and Northeast Ohio. Caregivers with a master’s degree or above, or three years of supervisory experience, can select from relevant courses in leadership, education and business. Since its founding in 2006, and through 2010, 86 Cleveland Clinic Academy faculty have provided 54 competency-based courses in leadership and management to more than 3,500 employees. In 2010, the academy experienced a 25 percent year-over-year increase in course enrollment.
The Cleveland Clinic Journal of Medicine (CCJM) marked its 80th anniversary in 2011. The CCJM began in 1931 as the Cleveland Clinic Bulletin. Amy Rowland, MS, was the first chair of the Editorial Committee. In 1935, the bulletin was relaunched as the Cleveland Clinic Quarterly with papers by George Crile Sr., MD, William Lower, MD, Robert S. Dinsmore, MD, and other then-living giants of Cleveland Clinic history. It was given its current name in 1987.

Today, CCJM is published 12 times a year, has a national circulation of more than 101,000, and in December 2011 ranked first among internal medicine journals in readership among office-based internists and office-based cardiologists. Brian F. Mandell, MD, PhD, is the physician editor-in-chief – the eighth to hold that distinguished post. CCJM is produced by the Scientific Publications Department in the Education Institute, under the direction of Executive Publisher Peter G. Studer.

CCJM primarily publishes review articles that undergo a rigorous peer-review process. It has close ties to the Center for Continuing Education and maintains a robust Internet presence. Authors and peer reviewers include both experienced Cleveland Clinic staff and nationally recognized clinical content experts.

In his lead editorial of the January 2011 issue, titled “Same As It Ever Was – Sort Of,” Dr. Mandell wrote, “The Journal in 2011 faces challenges. Advertising income, which has supported a significant portion of our expenses, has decreased, as it has for almost all medical journals. The complicated relationships between industry, academia, physicians and medical education companies at times strain our ability to provide full disclosure and adequate peer review. … But despite all the challenges, the spirit of the Clinic’s mission to further the education of those who serve is maintained, the same as it ever was.”
Cleveland Clinic in the Middle East

Cleveland Clinic’s activities in Abu Dhabi, United Arab Emirates, and in Saudi Arabia are building toward a new dimension of care in the Middle East.

Cleveland Clinic Abu Dhabi

Cleveland Clinic Abu Dhabi strengthened its leadership team in 2011, added new caregivers and continued building toward completion of its integrated medical facilities in 2013. A. Marc Harrison, MD, was named CEO of Cleveland Clinic Abu Dhabi, where he will lead a planned workforce of 3,000 caregivers from 20 nations. Tomislav Mihaljevic, MD, has been named Chief of Staff and chairman of the Heart & Vascular Institute. Other appointments include Calum Laurie, chief financial officer, Manaf Afyouni, chief operating officer, Josette Beren, executive administration officer, and Randall Hudspeth, PhD, chief nursing officer.

The structural phase of construction was topped off in 2011. More than 13,000 individuals have been working on the Sowwah Island site. The next phase of the project includes the installation of ventilation, cooling, plumbing and electrical infrastructure. A project of Cleveland Clinic and Mubadala Development Company, Cleveland Clinic Abu Dhabi includes a 360-bed hospital. It will offer advanced diagnostic and treatment capabilities and utilize advanced technologies in surgery, imaging, telemedicine and electronic medical records.

Cleveland Clinic Global Solutions

Cleveland Clinic signed an affiliation agreement with Healthcare Development Holding Co., a leading Saudi Arabian firm dedicated to enhancing the quality and infrastructure of healthcare services in the region. The new partnership, called Cleveland Clinic Global Solutions, will be based in an office in Riyadh, Saudi Arabia, through which enhanced Cleveland Clinic outreach programs will be made available. The programs include medical visitation and observerships, medical student visitation, symposia, and physician speaker programs.

Patients in Saudi Arabia will benefit from streamlined, expanded access to Cleveland Clinic for medical second opinions or appointments with physicians in the United States. Executive training programs, continuing education, business development and consulting services, and advanced web-based referral and telemedicine products also will be available through the partnership.

Sheikh Khalifa Medical City

Sheikh Khalifa Medical City (SKMC) is managed by Cleveland Clinic and serves as the flagship institution for SEHA’s (Abu Dhabi Health Services Co.) healthcare system. SKMC serves the Abu Dhabi community with patient care, research and education in the tradition of Cleveland Clinic excellence.

SKMC consists of a 568-bed acute care hospital, 14 outpatient specialty clinics and a blood bank, all accredited by Joint Commission International (JCI). The blood bank is also accredited by the College of American Pathologists, the first blood bank in the UAE to receive this honor. Additionally, SKMC manages a 125-bed behavioral sciences pavilion, six family medicine clinics, two urgent care...
centers and two dental centers located within the city of Abu Dhabi.

Ninety-eight percent of patients report that they would recommend SKMC for care. The system was reaccredited by JCI with only a single finding. This is the first time an international facility of this size has achieved such a remarkable score, earning praise from JCI.

SKMC promotes access through outpatient specialty clinics, increasing their volume by 18 percent over 2010. It opened a new pediatric emergency department, providing dedicated and specialized resources for children. It also instituted Saturday clinics to reduce new-patient waiting time.

SKMC education and research programs continue to grow and excel, with 61 articles published in peer-reviewed journals this past year. The postgraduate medical education program has grown to include 149 resident physicians in 13 different specialties. SKMC’s graduating residents enjoy a 90 percent pass rate on the Arab Board exams. This is the highest rate in the country and is a testament to the talent and dedication of SKMC’s staff and resident physicians.

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Patient Education

The Education Institute offers patient education and health information for the public through its Center for Consumer Health Information. In 2011, the center provided 41 community health talks to 2,406 attendees. Users of the center’s online health information continue to increase, with 1,094,509 page views in 2011. Podcasts, webcasts and live webchats also are offered.

Health Sciences

Cleveland Clinic sponsors in-house and affiliated local, state, regional and national health science education programs to educate and train students in allied health careers such as cardiovascular perfusion, medical technology, pharmacy technology, medical dosimetry, respiratory therapy, genetic counseling, occupational and physical therapy, phlebotomy, and dozens of others. During 2011, the Cleveland Clinic health system provided more than 1,700 student rotations.

Cleveland Clinic Lerner College of Medicine

The Cleveland Clinic Lerner College of Medicine of Case Western Reserve University has seen its number of applicants more than double since 2001, to almost 1,745 applicants for 32 positions in 2011. The average MCAT score of applicants is 11.7, well above the national average of 10.4, meaning the Lerner College of Medicine draws from an elite applicant pool. Indeed, applicants’ MCAT scores are the fourth highest in the country, and the GPA of matriculants is well above the national average. One-third of the graduating class won residencies at America’s top five hospitals.
Philanthropy

Philanthropic supporters are key to Cleveland Clinic’s ability to provide world-class care. Generous gifts have launched new research and patient care innovations that would not have happened otherwise. Programs including development of the artificial heart, the artificial kidney, exploration of a breast cancer vaccine, and education of future physicians rely on philanthropy.

In 2011, 37,746 donors made nearly 55,000 gifts totaling $126 million, advancing our mission in a variety of ways. A few examples include:

- **ENDOWED CHAIRS:** These allow chair holders to start new projects and are incentives in recruiting and retaining top researchers. Endowed chairs support the collection of preliminary data, an important step in obtaining new outside funding.

- **FINANCIAL SUPPORT:** Through giving societies, Cleveland Clinic honors those who have made philanthropic gifts.

- **ANNUAL EVENTS:** In Ohio, Florida and Nevada, supporters of Cleveland Clinic gather to enjoy music, dining, entertainment; to be recognized for their efforts throughout the year; and to help support programs and research at Cleveland Clinic. Annual events include Cleveland Clinic Florida’s ball, An Evening with Scott Hamilton & Friends, the HeartThrob Ball, and the Cleveland Clinic Lou Ruvo Center for Brain Health Keep Memory Alive Power of Love™ Gala.

“Because of the kind generosity of our supporters, Cleveland Clinic is able to maintain its role as a leader, nationally and internationally, in medical care, education and research,” says Armando Chardiet, Cleveland Clinic chairman of Institutional Relations and Development. “We are grateful for each and every gift.”

The development of this titanium artificial heart device was launched at Cleveland Clinic through a philanthropic gift. Additional support is needed to begin clinical trials.
In 2011, Cleveland Clinic Canada launched an innovative collaboration, strengthened its clinical programs and continued to leverage the expertise and clinical excellence of Cleveland Clinic to complement healthcare in Canada.

Cleveland Clinic Canada opened in 2006, in a 26,000-square-foot outpatient clinic in the heart of Toronto’s financial district. The facility specializes in executive health, sports health and lifestyle management services, personalized for each patient. Patients benefit from the expertise of physicians, specialists and wellness experts in Toronto and more than 2,800 physicians at other Cleveland Clinic facilities. Seamless referrals connect patients to the advanced procedures and medical technologies available at Cleveland Clinic facilities in the United States.

Cleveland Clinic Canada began a new collaboration with Sunnybrook Health Sciences Centre, one of the largest hospitals in Ontario, to share knowledge, study best practices and improve the patient experience for Canadians. Together with Cleveland Clinic Continuous Improvement, the team assessed Emergency Department overcrowding – a key healthcare challenge in Ontario – examining how simultaneous arrivals were prioritized. As a result, the practice of “pre-triage” screening – a first for Toronto – was implemented at Sunnybrook with the hope of improving patient satisfaction and ensuring every patient is prioritized in the most appropriate manner.
Community Outreach

Cleveland Clinic is dedicated to building healthy lives and enriching its communities. World-class community caring is coordinated by the Office of Community Outreach. The office reaches out to help individuals and groups make affirmative choices for health and wellness. It partners with community groups and organizations to bring quality health screenings, wellness initiatives and educational programs to local neighborhoods. It offers health assessments, neighborhood education classes, health coaching, and community resources, referrals and service opportunities. Cleveland Clinic believes that when people maintain healthy bodies, minds and spirits, the entire community benefits.

Community Benefit

Cleveland Clinic has a long tradition of serving the needs of Greater Cleveland’s citizens. Cleveland Clinic is a community asset with no owners, investors or stockholders. Any and all extra funds from operations are invested back into the organization to fund new clinical initiatives, and to continue our long-standing research, education and charitable efforts.

Diversity and Inclusion

Cleveland Clinic provides strategic leadership for creating an inclusive organizational culture for patients, employees, business partners and the communities served by Cleveland Clinic. Initiatives focus on workforce demographics, education, pipeline development, economic initiatives/supplier diversity and cultural competency learning.

“The diversity and unique perspectives that Cleveland Clinic employees bring to the workplace have made us a world-class organization,” says CEO and president Toby Cosgrove, MD. “As our world becomes even more diverse, we are working to ensure that we continue to relate to our patients, communities and one another as productively as possible.”

Cleveland Clinic is recognized by DiversityInc as one of the nation’s Top Five Hospital Systems for diversity practices. It uses employee resource groups and diversity councils to help drive the mission, vision and values of Cleveland Clinic.

Reaching out to organizations that meet and support supplier diversity remains a proactive business process at Cleveland Clinic. Through the Office of Diversity & Inclusion’s supplier diversity initiatives, Cleveland Clinic aims to provide equal access to potential business opportunities for qualified women-owned, minority-owned and small businesses.

This work is core to Cleveland Clinic’s commitment to the economic vitality of Northeast Ohio. In 2011, 23 percent of Cleveland Clinic’s construction dollars went to minority and women business contractors.

Community Celebration

Approximately 600 community members and caregivers gather annually to help Cleveland Clinic celebrate the national Martin Luther King Jr. holiday. A community breakfast gathering honors Dr. King as a serving leader and recognizes employees for their significant volunteer contributions to society.
Education

Cleveland Clinic’s Office of Civic Education Initiatives (OCEI) develops and manages innovative K-12 educational programs that help stimulate student interest in science, technology, engineering and math. It provides experiential learning opportunities that bridge classroom learning and support students who aspire to be physicians, scientists, nurses and other healthcare professionals. Programs promote critical thinking, problem-solving, creativity, the arts, innovation, communication and teamwork. Students learn in classrooms and labs and through distance learning. Robust internship programs prepare the next generation of healthcare professionals and increase the number of minorities in medicine.

OCEI Results:

- Nearly 900 interns participated during the past seven years.
- Interns have garnered nearly $30 million in scholarships.
- Students represent more than 80 school districts in 16 Northeast Ohio counties.
- Students contributed to more than 80 research publications and medical conference presentations.
- Several students are now in medical school, doctoral or health professional programs, including an internship alum who was accepted into Lerner College of Medicine.
Awards and Honors

Consumer Choice Award  
National Research Corporation

Corporate Good Scout Award  
Greater Cleveland Council, Boy Scouts of America

2011 Best Practices Award Winner for Performance Management  
TDWI International

Top Five Hospital Systems  
DiversityInc

50 Best Hospitals in America  
Becker's Hospital Review

100 Best Places to Work in Healthcare  
Becker's Hospital Review

Large Hospital Patient Advocate – Winner  
Office of Patient Experience  
Professional Patient Advocate Institute

First Place – Healthy Living Innovation Award  
Shape Up and Go Program  
U.S. Department of Health and Human Services

No. 1 in America for Protective Services  
“Security 500 Report,” Hospital/Medical category

Law Enforcement Accreditation  
Commission on Accreditation for Law Enforcement Agencies Inc.

The Healthcare Supply Chain Top 25  
Gartner

Top Five Corporate Venturing Organizations  
Cleveland Clinic Innovations  
Global Corporate Venturing

10 Most Innovative Healthcare Companies  
Fast Company

Medical Design Excellence Award  
PleuraFlow® active tube clearance system, developed at Cleveland Clinic

Heart Failure Gold Plus  
Get with the Guidelines® Awards, American Heart Association

Stroke Gold Plus  
Get with the Guidelines® Awards, American Heart Association

Sustained Improvement Award  
J56 and J64 ICUs  
U.S. Department of Health and Human Services

Three Stars (highest rating)  
Thoracic and Cardiovascular Surgery  
Society of Thoracic Surgeons

HealthGrades  
Cleveland Clinic Florida
  • Distinguished Hospital for Clinical Excellence
  • Patient Safety Excellence Award
  • Emergency Medicine Excellence Award

ENERGY STAR Partner of the Year Award  
U.S. Environmental Protection Agency

Melvin Creeley Environmental Leadership Award  
Environmental Leadership Council, Ohio Hospital Association

Better Buildings Initiative  
U.S. Department of Energy

John Chapman Award  
Practice GreenHealth Award, Ohio Hospital Association

Environmental Leadership Circle – Highest Award  
Cleveland Clinic  
LEED Gold Certification  
GCiC
  • Partner Recognition Award  
    Chagrin Falls Family Health Center  
    Cleveland Clinic Florida  
    Euclid Hospital
  • Partner for Change Award  
    Ashtabula County Medical Center  
    Beachwood Family Health and Surgery Center  
    Brunswick Family Health Center  
    Fairview Hospital  
    Hillcrest Hospital  
    Huron Hospital  
    Independence Family Health and Surgery Center  
    Lakewood Hospital  
    Lutheran Hospital  
    Marymount Hospital  
    Solon Family Health Center  
    South Pointe Hospital  
    Strongsville Family Health and Surgery Center  
    Westlake Family Health Center  
    Willoughby Hills Family Health Center  
    Wooster Family Health Center
• Making Medicine Mercury Free Award
  Beachwood Family Health and Surgery Center
• System for Change Award
  Cleveland Clinic Health System

Nurses Choice Award
Media Category, “The Legacy Continues with You”
Ohio Nurses Foundation Board of Trustees

Telly Awards
Honoring Finest Film and Video Production
Cleveland Clinic Media Production
Cleveland Clinic News Service
Civic Education Initiatives

eHealthcare Leadership Awards
ClevelandClinic.org
ClevelandClinicMedEd.com
• Platinum Award – Best Doctor Directory
• Platinum Award – Best Site Design
• Platinum Award – Best Overall Internet Site
• Best Health/Healthcare Content
• Best Integrated Marketing Campaign
• Winner – eHealth Organizational Commitment
• Gold Award – Best Site Design
• Gold Award – Best Overall Internet Site

Thomson Reuters 100 Top Hospitals 2011
Fairview Hospital

ESRD Patient Safety Improvement Award
Renal Physicians Association

Cleveland Rocks Award
“Sports Health with Cleveland Clinic”
Public Relations Society of America

Silver Award, Get with the Guidelines®
Hillcrest Hospital
American Heart Association

Success Story Award for Patient Satisfaction
Press Ganey

Member Organization Leadership
Pathology & Laboratory Medicine Institute
Clinical and Laboratory Standards Institute

Beacon Award for Excellence
J32 – Heart Failure Intensive Care Unit
American Association of Critical Care Nurses

Ohio School Boards Association
Business Honor Roll
Civic Education Initiative

Best Practice of “Deeper Learning”
Civic Education Initiatives
Edutopia

2011 American Red Cross Recovery Blood Drive
Charles R. Drew Saturday Academy
Civic Education Initiatives

OVERALL RANKING
Cleveland Clinic 4th

RANKED NO. 1
Heart & Heart Surgery 17 years in a row

RANKED NO. 2
Urology 12 years in a row

IN AMERICA’S TOP 10
Respiratory Disorders 3rd
Rheumatology 3rd
Gynecology 4th
Orthopaedics 4th
Diabetes & Endocrine Disorders 5th
Neurology & Neurosurgery 6th
Geriatric Care 7th
Pediatric Neurology & Neurosurgery 7th
Ear, Nose & Throat 8th
Cancer 9th

IN AMERICA’S TOP 50
Ophthalmology 11th
Pediatric Diabetes & Endocrine Disorders 16th
Psychiatry 17th
Pediatric Digestive Disorders 18th
Rehabilitation 19th
Pediatric Cancer 21st
Pediatric Respiratory Disorders 22nd
Pediatric Orthopaedics 26th
Pediatric Heart & Heart Surgery 28th
Neonatology 38th
Pediatric Kidney Disorders 40th
Pediatric Urology 45th

90 YEARS OF PATIENTS FIRST
# Financial and Statistical Highlights

## Cleveland Clinic

### Patient Care

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2011</th>
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<tbody>
<tr>
<td>Total Clinic Visits</td>
<td>3,848,425</td>
<td>4,311,183</td>
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<tr>
<td>Emergency Visits</td>
<td>53,771</td>
<td>58,653</td>
</tr>
<tr>
<td>Total Admissions (excluding newborns)</td>
<td>53,443</td>
<td>52,885</td>
</tr>
<tr>
<td>Acute</td>
<td>52,910</td>
<td>52,076</td>
</tr>
<tr>
<td>Non-Acute</td>
<td>533</td>
<td>809</td>
</tr>
<tr>
<td>Surgical Cases</td>
<td>80,729</td>
<td>81,954</td>
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<tr>
<td>Inpatient</td>
<td>27,427</td>
<td>26,124</td>
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<tr>
<td>Outpatient</td>
<td>53,302</td>
<td>55,830</td>
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### Education

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<tr>
<td>Residents and Fellows-in-Training</td>
<td>1,041</td>
<td>1,130</td>
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<tr>
<td>Continuing Medical Education</td>
<td></td>
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<tr>
<td>Programs</td>
<td>1,125</td>
<td>1,474</td>
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<tr>
<td>Participants</td>
<td>234,698</td>
<td>257,604</td>
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<tr>
<td>Accredited Residency Training Programs</td>
<td>60</td>
<td>65</td>
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<tr>
<td>Allied Health Student Rotations</td>
<td>1,421</td>
<td>1,711</td>
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<tr>
<td>Programs for Allied Health Specialists</td>
<td>55</td>
<td>61</td>
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### Research

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<tr>
<td>Total Grant and Contract Revenue</td>
<td>$169M</td>
<td>$171M</td>
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<tr>
<td>Total Federal Revenue</td>
<td>$106M</td>
<td>$112M</td>
</tr>
<tr>
<td>Total Laboratory Principal Investigators</td>
<td>159</td>
<td>156</td>
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</table>

## Cleveland Clinic Health System

### Patient Care

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Emergency Visits</td>
<td>435,981</td>
<td>437,692</td>
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<tr>
<td>Total Admissions (excluding newborns)</td>
<td>167,015</td>
<td>160,632</td>
</tr>
<tr>
<td>Acute</td>
<td>153,388</td>
<td>147,300</td>
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<tr>
<td>Non-Acute</td>
<td>13,627</td>
<td>13,332</td>
</tr>
<tr>
<td>Surgical Cases</td>
<td>191,663</td>
<td>187,905</td>
</tr>
<tr>
<td>Inpatient</td>
<td>61,772</td>
<td>59,092</td>
</tr>
<tr>
<td>Outpatient</td>
<td>129,891</td>
<td>128,813</td>
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### Financial Highlights ($ in thousands)

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Total Operating Revenues</td>
<td>5,599,960</td>
<td>5,826,567</td>
</tr>
<tr>
<td>Operating Income</td>
<td>250,552</td>
<td>301,195</td>
</tr>
<tr>
<td>Total Assets</td>
<td>8,790,408</td>
<td>9,099,743</td>
</tr>
</tbody>
</table>

NOTE: Chart includes revised figures since 2010 annual report.
At the end of 2011, nursing had 108 active research projects in progress and had completed an additional 22 projects during the year. Fourteen research-based manuscripts with a nurse author were published in 2011.
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Norma Lerner
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Parma Metal Fabricating Division

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Cleveland Clinic

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Moen Incorporated

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Roseann Park

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Co-President, Nottingham Spink

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Cleveland Clinic

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Partner, Hermann, Cahn & Schneider, LLP

Ronald E. Weinberg
Director, Weinberg & Bell Group

90 YEARS OF PATIENTS FIRST
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Chair, Board of Governors

Manaf Afyouni
Chief Operating Officer,
Cleveland Clinic Abu Dhabi

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Chair, Head & Neck Institute

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Chair, Taussig Cancer Institute
Associate Chief of Staff
Chair, Department of Hematologic Oncology & Blood Disorders

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Chair, Emergency Services Institute

Gregory Borkowski, MD
Chair, Imaging Institute

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David Brown, MD
Chair, Anesthesiology Institute

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Chair, Business Operations & Strategy

Armando L. Chardiet
Chair, Institutional Relations & Development

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Vice Chair, Lerner Research Institute

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Executive Director, Cleveland Clinic Innovations

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Chair, Cleveland Clinic Lorain Institute

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Executive Director, Professional Staff Affairs

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Chair, Cleveland Clinic Community Physician Partnership & Quality Alliance
Co-Chair, Provider Network

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Chair, Regional Operations

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Chair, Lerner Research Institute

William Donato
Executive Director, Supply Chain

Corinne Ehretsman
Executive Director, Medical Operations

Tommaso Falcone, MD
Associate Chief of Staff
Chair, Ob/Gyn & Women’s Health Institute

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Chair, Arts & Medicine Institute

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CEO, Cleveland Clinic Florida

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Deputy Chief Medical Officer, Sheik Khalifa Medical Center

John Fung, MD
Chair, Digestive Disease Institute

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Chief Financial Officer and Treasurer

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Chief, Cleveland Clinic Innovations

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Vice Chair, Board of Governors

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Controller
Chief Accounting Officer

C. Martin Harris, MD
Chief Information Officer
Chair, Information Technology Division

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CEO, Cleveland Clinic Abu Dhabi

J. Michael Henderson, MD
Chief Quality Officer, Cleveland Clinic Health System

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Chief Government Relations Officer

Cynthia Hundorfean
Chief Administrative Officer, Clinical Services

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Chair, Orthopaedic & Rheumatologic Institute

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Executive Director, Professional Staff Leadership Development

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President, Medical Staff

Catherine Keating, MD
Chief, Regional Hospital Medical Affairs

Michael Kessel
CEO and President, Cleveland Clinic Canada

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Chair, Glickman Urological & Kidney Institute

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Chair, Pathology & Laboratory Medicine Institute

David Longworth, MD
Chair, Medicine Institute

Bruce Lytle, MD
Chair, Sydell and Arnold Miller Family Heart & Vascular Institute

Daniel F. Martin, MD
Chair, Cole Eye Institute

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Chief Marketing and Communications Officer

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Executive Administrator to CEO and Board of Governors
Assistant Secretary, Board of Trustees

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Executive Director, Market and Network Services

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Chief Experience Officer

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Chair, Neurological Institute

Francis Papay, MD
Chair, Dermatology & Plastic Surgery Institute

Joseph Patrchnak
Chief Human Resources Officer

William M. Peacock III
Chief of Operations

Shannon Phillips, MD
Quality Officer, Main Campus

Michael Reagin
Chief Information Officer, Cleveland Clinic Abu Dhabi

Susan J. Rehm, MD
Executive Director, Physician Health

Ricardo Rodriguez, MD
Interim Chair, Pediatric Institute
### Board of Governors

<table>
<thead>
<tr>
<th>Appointed Members</th>
</tr>
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<tbody>
<tr>
<td>Delos M. Cosgrove, MD</td>
</tr>
<tr>
<td>Chair</td>
</tr>
<tr>
<td>Joseph Hahn, MD</td>
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<tr>
<td>Vice Chair</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Elected/Voting Members</th>
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<tbody>
<tr>
<td>Abby Abelson, MD</td>
</tr>
<tr>
<td>Raed Dweik, MD</td>
</tr>
<tr>
<td>Serpil Erzurum, MD</td>
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<tr>
<td>J. Stephen Jones, MD</td>
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<tr>
<td>Matthew Kalaycio, MD</td>
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<tr>
<td>Alan Kominsky, MD</td>
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<tr>
<td>Kandice Kettke-Marchant, MD, PhD</td>
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<td>Deborah Lonzer, MD</td>
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<td>Donald Malone, MD</td>
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<td>Daniel Martin, MD</td>
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<td>Edmund Sabanegh, MD</td>
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<td>Randall Starling, MD</td>
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<tr>
<td>Robert Weil, MD</td>
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<td>Robert Wyllie, MD</td>
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### Community Hospital Presidents

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<thead>
<tr>
<th>President</th>
</tr>
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<tbody>
<tr>
<td>Brian Donley, MD</td>
</tr>
<tr>
<td>Lutheran Hospital</td>
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<tr>
<td>Mark Froimson, MD</td>
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<td>Euclid Hospital</td>
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<td>Brian Harte, MD</td>
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<td>Jeffrey Leimgruber</td>
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<td>Janice Murphy</td>
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<td>Robert Weil, MD</td>
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<td>Lakewood Hospital</td>
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<tr>
<td>Joanne Zeroske</td>
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<tr>
<td>Marymount Hospital</td>
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</tbody>
</table>

Explore the rich history of Cleveland Clinic on your iPad. Download the free Cleveland Clinic Heritage App from the App Store.

To view an online version of this annual report, visit clevelandclinic.org/annualreport.

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Cynthia Galbrinco – Executive Director, Marketing Communications
Mary King – Creative Director, Marketing Communications
Steve Szilagyi – Writer
Adrienne Russ – Editor
Anne Drago – Art Director
Marty Goan – Print Production
Gillian Higgins – Administrative Assistant
Photography: Russell Lee, Cleveland Clinic Archives, Cleveland Clinic Center for Art & Photography
Photo of Twinsburg cancer treatment area: Kevin G. Reeves
In 1931, Fleming Stevens, left, and Andrew Eanes were longtime caregivers who served as elevator operators, hosts and greeters to patients and families. Both are warmly remembered for their dedication to patient safety and comfort. They were forerunners of today’s Cleveland Clinic Red Coats.
In 2011, Patient Access Services’ Red Coats welcome all patients when they walk through the doors of Cleveland Clinic. Red Coat caregivers such as Nathan Pope and Caitlin DeBoey are available to help patients with directions, transportation to their destination, wheelchairs and patient room information.