



# AUSTEN BioInnovation INSTITUTE IN AKRON

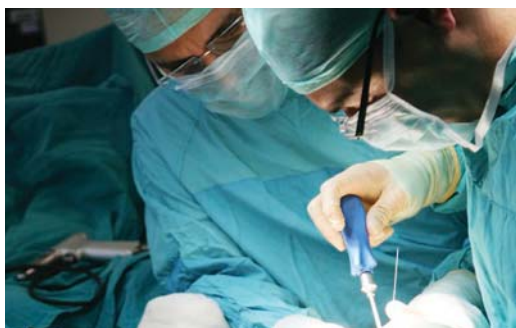
The BioInnovation Institute in Akron – an exceptional collaboration of Akron Children’s Hospital, Akron General Health System, Northeastern Ohio Universities Colleges of Medicine and Pharmacy, Summa Health System, The University of Akron and The John S. and James L. Knight Foundation – is focused on patient-centered innovation and commercialization at the intersection of biomaterials and medicine.

This strategic alignment of institutional, state, federal and philanthropic support, accompanied with Akron’s rich legacy in industrial and materials science, is working to pioneer the next generation of life-enhancing and life-saving innovation that will transform Akron and the surrounding region into a model for biomedical discovery and enterprise.

## Transformative Economic Development

The Austen BioInnovation Institute has been designated as an Ohio Center of Excellence for Biomedicine and Health Care. The institute provides the convergence force necessary to develop compelling projects that will attract private funding and venture capital investment to the region. The institute is moving Akron toward a secure economic future by accelerating the creation of 2,400 jobs within the next decade, and is a critical element of the City of Akron’s Biomedical Corridor.

an Ohio Center  
of Excellence  
for **Biomedicine** and  
**Healthcare**



## Nationally Distinct Centers of Innovation

The Austen BioInnovation Institute consists of four interrelated centers designed to accelerate innovation to commercialization and community transformation. The centers include

***Center for Biomaterials and Medicine*** – with core strengths in biopolymers, orthopaedics and wound healing, the center will leverage world-class polymer science and engineering into high-value clinical applications aimed at accelerating biomedical innovation. The center is focused on research platforms to capitalize on opportunities in the areas of musculoskeletal and tissue biology, polymer/material science, and wound healing;

***Medical Device Development Center*** – provides a unique resource for companies and researchers to design, test, synthesize and manufacture new materials and healthcare applications of biomaterials, while providing entrepreneurs and scientists with flexible and easy access to resources for commercialization of their ideas and products;

***Center for Simulation and Integrated Healthcare Education*** – is establishing a nationally recognized model of collaborative space where innovative technologies and methodologies are tested and used to improve the performance of the provider teams and early responders; and

***Center for Clinical and Community Health Improvement*** – is improving healthcare delivery and outcomes by developing and implementing novel community- and hospital-based clinical trials and health self-management programs.

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## EDA National i6 Challenge

The Austen BioInnovation Institute in Akron (ABIA) and University of Akron Research Foundation (UARF) recently joined an exclusive group when their project "*Innovative Solutions for Invention Xceleration*" was honored as one of six winners in the National i6 Challenge, a innovation competition led by the U.S. Department of Commerce's Economic Development Administration (EDA), in partnership with the National Institutes of Health (NIH) and the National Science Foundation (NSF). Together through the award winning project, ABIA and UARF are working to increase the innovation level of Northeast Ohio as well as increasing jobs in the high-potential, highly competitive biomedical sector. The i6 triumph further propels ABIA and UARF to be economic engines for Akron and the surrounding region.

### **What is the i6 Challenge?**

The National i6 Challenge, launched in 2010, is a \$12 million innovation competition led by EDA, in partnership NIH and NSF, that identified the nation's best ideas for technology commercialization and entrepreneurship throughout six different regions of the country.

The winning team from each region received \$1 million from the EDA in support, and is also eligible for additional awards from the NIH and NSF. Qualifications for winning projects include the engagement in efforts to drive innovative technologies in medical and bioscience industries to market more quickly by bringing experts in science and academia together with public and private sector businesses, organizations and entrepreneurs.

### **ABIA/UARF's Innovative Solutions for Invention Xceleration**

The ABIA/UARF award-winning project "*Innovative Solutions for Invention Xceleration*" aims to increase innovation and minimize the time from idea to commercialization of new technology by bringing together world-class scientists, physicians, engineers, researchers and entrepreneurs in the biomedical devices and polymer science industries of Northeast Ohio.

The project creates a systematic model for increasing innovation and reducing the time it takes to go from idea to entry in competitive markets for new, promising technologies. The ABIA/UARF model includes steps to increase the number and quality of ideas at the head of Akron's innovation pipeline, provide early assessment for commercial potential and facilitating proof-of-concept prototyping to identify and resolve design, manufacturing or regulatory issues and to develop appropriate commercialization and marketing plans, be it for licensing or start-up. The process is reinforced by experienced, effective leadership and support by successful entrepreneurs at all stages of development. The innovative process aims to create new companies and jobs associated with the biomedical and polymer science industries in the Northeast Ohio region.

**For more information on the i6 Challenge, or on the Innovative Solutions for Invention Xceleration project visit [i6.abiakron.org](http://i6.abiakron.org)**



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*Center for Biomaterials and Medicine*

*The Austen BioInnovation Institute in Akron (ABIA) – an exceptional collaboration of Akron Children’s Hospital, Akron General Health System, Northeastern Ohio Universities Colleges of Medicine and Pharmacy (NEOUCOM), Summa Health System and The University of Akron – is focused on patient-centered innovation and commercialization at the intersection of biomaterials and medicine.*

*The ABIA consists of four interrelated Centers of Innovation, designed to accelerate translational research to biomedical commercialization as well as improve access, education, prevention, treatment and disease management.*

*The **Center for Biomaterials and Medicine (CBMM)**, one of four ABIA Centers of Innovation, is a center of research excellence with core strengths in biopolymers, orthopaedics and wound healing, that builds on the strengths of Akron’s extensive research base. The CBMM is made up of two research platforms aimed at accelerating biomedical research within orthopaedics and wound healing.*

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#### **BIOMATERIALS- ORTHOPAEDICS PLATFORM**

*The biomaterials-orthopaedics platform uses biomaterials combined with a deep understanding of musculoskeletal biology to develop technologies that improve the surgical and reconstructive outcomes for patients with bone damage.*

#### **BIOMATERIALS-WOUND HEALING PLATFORM**

*The biomaterials-wound healing platform creates engineered biomaterials for use in wound healing, as well as devices and materials to improve closure of surgical wounds. Researchers seek to identify biomarkers generated over the time-course of the wound healing process to allow better treatment of acute and chronic wounds.*

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***Geared toward its goals of building on the strengths of Akron's extensive research base, CBMM is building several initiatives to spur change:***

## **COLLABORATIVE RESEARCH AND DEVELOPMENT PROGRAM**

The Collaborative Research and Development grant program sponsors innovative research aimed towards commercialization of the developed technology. The eight funded projects recognize novel work across ABIA's founding member institutions, and are conducted through ABIA's Center for Biomaterials and Medicine, which focuses on core strengths in biopolymers, orthopaedics and wound healing to leverage research into high-value clinical applications aimed at accelerating biomedical innovations.

The CBMM's program is funding highly promising investigations such as:

- *Contact lenses that monitor blood sugar levels for diabetics*
- *Delivery of a patient's own altered cells to repair damage in deep wounds, for instance after a heart attack*
- *Special polymers in which pharmaceuticals can be embedded that may lead to healing of chronic wounds*
- *Non-invasive methods to monitor stress and strain on nerves during surgical repair operations*
- *Materials that will stimulate natural bone growth for patients with severe trauma, cancer or birth defects*

## **MEDTECH**

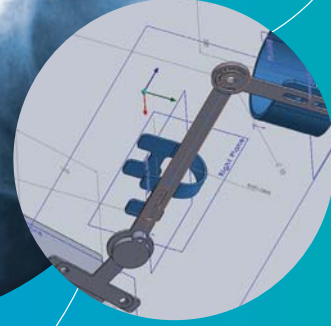
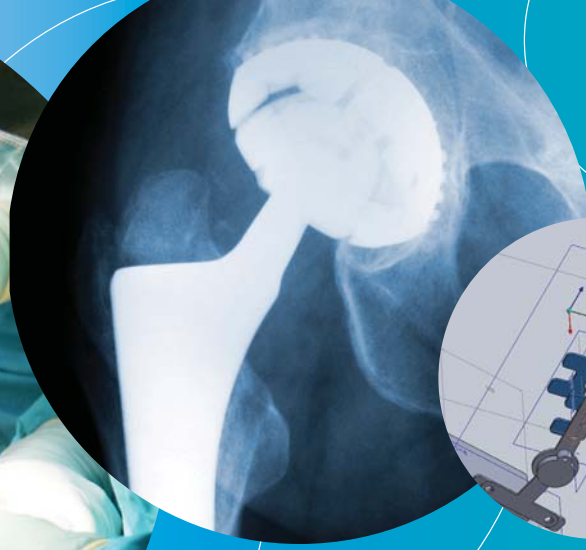
The goals of the MedTech program are to encourage and facilitate invention, patenting and early stage development of materials-oriented solutions to medical problems and to develop an effective resource for research and education in the area of biomedical technology design and development. With its three hospital partners, ABIA initiated a program of selecting students and faculty from The University of Akron's Polymer Science and Business Administration Departments to shadow physicians and surgeons in needs-finding missions.

Combined with didactic learning, observational experiences and a keen inquisitiveness, the team meets regularly to discuss the proceedings and to clear the inevitable hurdles that appear along the way. Assembling a multi-disciplinary team of students and teachers for this mission takes advantage of their respective expertise to solve real world problems associated with clinical medicine. For example, students from UA performed ethnographic research at a local hospital and chronicled the observations into specific problems with potential solutions. A project developed through the course included a digital wound assessment paradigm.

## **AKRON FUNCTIONAL MATERIALS CENTER**

The Akron Functional Materials Center (AFMC) is a unique national resource located in the National Polymer Innovation Center at The University of Akron. AFMC focuses on elevating the technology readiness level of research discoveries and new polymer materials. It will contain a suite of open source, research-level facilities coupled with established "combi tools" and polymer characterization instrumentation dedicated to assist researchers and industry innovators with the design, fabrication and optimization of polymers and advanced materials.

The AFMC's six technical working groups include: nanomaterials, complex fluids, biomaterials, adhesion, membranes and automation. The center addresses the translational needs of the medical community and materials industry by providing expertise in combinatorial analysis as well as the infrastructure and facilities to optimize polymer and biocompatible materials for clinical use.



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*Medical Device Development Center*

*The Austen BioInnovation Institute in Akron (ABIA) – an exceptional collaboration of Akron Children’s Hospital, Akron General Health System, Northeastern Ohio Universities Colleges of Medicine and Pharmacy (NEOUCOM), Summa Health System and The University of Akron – is focused on patient-centered innovation and commercialization at the intersection of biomaterials and medicine. The ABIA consists of four interrelated Centers of Innovation, designed to accelerate translational research to biomedical commercialization as well as improve access, education, prevention, treatment and disease management.*

*The **Medical Device Development Center (MDDC)**, one of four ABIA Centers of Innovation, provides a unique resource for companies and researchers to design, test, synthesize and manufacture new materials and healthcare applications of biomaterials, while providing entrepreneurs and scientists with easy access to resources for commercialization of their ideas and products.*

*Through the MDDC, medical innovators can access the resources needed to advance their ideas through business growth steps such as research, feasibility testing, planning, design, development, testing and commercialization. The MDDC consists of a diverse team with a wide variety of backgrounds that blend together to build an engineering powerhouse devoted to innovation and medical advancement in Akron. Collectively, the team represents years of practice in the fields of biomedical and mechanical engineering and business development.*

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**VALUE-DRIVEN  
ENGINEERING AND  
U.S. GLOBAL  
COMPETITIVENESS**

With the aim of retaining America’s lead in medical device development and innovation, the Austen BioInnovation Institute in Akron (ABIA) has gathered leaders from industry, academia and the public and private sector to provide researchers, device manufacturers and federal legislators with a pathway for industry action and public policy steps necessary to advance America’s capabilities in the face of rising competition from global forces. As healthcare costs are inextricably linked to the health of the nation’s economy, Value-driven Engineering will valuably enhance U.S. competitiveness on the global stage, save and create jobs and fuel innovation. The ultimate goal of the initiative is to improve quality of care while reducing the cost of care, thereby adding value to the patient and payers.

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**Alongside its mission to provide innovative ideas with the resources needed to manufacture and commercialize life-saving devices, the MDDC has several initiatives strengthening its offering:**

### IDEAS PORTAL

The online problem/ideas portal allows staff and clinicians at any of ABIA's partnering institutions to submit problems that are of a biomaterials and/or biomedical device design nature.

Submissions into the portal are reviewed by the engineering and technology assessment teams within the Medical Device Development Center, and feedback is given to the problem owner within six weeks of submittal. The goal of the program is that for each problem posted that leads to establishment of a pilot project, the submitter receives a small reward as well as the potential for further compensation, should the idea produce a commercial success.

### STRUCTURED INNOVATION PROGRAM

The Structured Innovation Program stimulates innovation in each of the founders by hosting round table sessions where clinicians describe major problems affecting patient care. An innovation team creates a strategy for solving one or more of the clinical problems, with the objective of streamlining the process for inventors to submit invention disclosures. The sessions succeed by coupling fundamental scientific insights with those gained from the clinical use of thousands of medical products every day. The focus – value-based engineering – can incorporate concepts related to re-usable instruments and surgical devices that serve multiple purposes.

### TECHNOLOGY DEVELOPMENT FUNDING

In a further effort to enhance future innovation, the MDDC has established the Technology Development Fund. The fund will be used to facilitate continued development of promising technologies generated within the ABIA. Funds and MDDC's staff expertise can be utilized for a number of purposes, including but not limited to prototype development, market analysis and intellectual property review. Projects are vetted internally at the MDDC, and presented to the MDDC Committee on a monthly basis for final funding approval.

### "BRIDGING ENGINEERING SCIENCE AND TECHNOLOGY (BEST)" MEDICINE ENGINEERING FAIR

BEST Medicine is Northeast Ohio's only engineering fair devoted exclusively to students interested in exploring biomedical engineering, and brings together the most talented and innovative students to interact with each other and with leaders in medical device research and development. The BEST Medicine Engineering Fair hosts students in grades 6-12 with science projects related to biomedical science and engineering. BEST Medicine promotes interactions among youth with interests in becoming physician scientists or biomedical engineers, as well as helps educators motivate their students to get interested in science.

### "Diagnostic Engineering Technologies for Evaluating Connective Tissues" (DETECT) Project

The DETECT project concentrates on patients at risk for chronic wounds and/or connective tissue degradation, such as elderly patients with diminished fracture healing capabilities, athletes susceptible to ligament injuries, diabetic patients who are at risk for skin breakdown, individuals with vascular wall abnormalities and women with stress incontinence problems. The platform includes five projects addressing the profound need for sensor systems for diagnosing, treating and monitoring connective tissue disorders. The patient-centered projects include creating sensor materials to solve issues relating to bladder control, wound healing, diabetic foot ulcers, skin health on amputee patients and pathomechanics of connective vascular tissues. By assembling the talents and resources of the project's clinicians, scientists and engineers, DETECT will provide the infrastructure for developing new technologies for multiple sensor needs. The commercialization project is expected to generate licensing revenue, new business and jobs for project partners, and Ohio-based spin-off companies, while positioning the state to have a competitive advantage in training of the biomedical sensor workforce of the future.



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*Center for Simulation and Integrated Healthcare Education*

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*The **Center for Simulation and Integrated Healthcare Education (CSIHE)**, one of four ABIA Centers of Innovation, is committed to enhancing the quality and safety of the healthcare delivered to patients in Northeast Ohio and surrounding communities. CSIHE will establish a nationally recognized model for simulation-based education, assessment and research by creating a collaborative interprofessional space where innovative technologies and methodologies are tested and used to improve the performance of the healthcare professionals, provider teams and early responders.*

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**CSIHE additionally works to improve healthcare education through:**

- Inter-professional communications and teamwork skills training
  - Patient safety training and error reduction
  - Pediatric emergency training
  - Patient hand-offs
  - Disaster preparedness training
  - Procedural skills training
  - Interactive and emerging technology training
-

***Geared toward its goals of enhancing the quality and safety of the healthcare delivered to patients in Northeast Ohio and surrounding communities, CSIHE is building several initiatives to spur change:***

## **SIMULATION CENTER**

CSIHE is responsible for developing the centerpiece of the new ABIA permanent facility, a 25,000-square foot, world class center for collaboration in biomedical research, education, commercialization and community health in the heart of Akron's Biomedical Corridor. Featured within the new facility will be a state-of-the-art simulation center, a collaborative space where innovative technologies and methodologies are tested and used to improve the education and performance of the region's current and future healthcare professionals. The facility includes a nine-bay bio-skills lab, mock decontamination facility, simulated operating room, eight standardized patient rooms, and a large, configurable area with a central control room, which can be divided into eight distinct simulation rooms. Multidisciplinary staff members, each affiliated with the ABIA founding partner institutions, will present course content suited for active learning under realistic conditions through the use of high-fidelity scenarios.

## **PILOT SIMULATIONS**

CSIHE has launched pilot simulations with several regional groups to address issues that range from emergency training to disaster preparedness to inter-professionalism skills. All ABIA founding member institutions have provided teaching faculty, learners or a site for one or more of the four pilot programs conducted to date. Several external groups, including the City of Akron Fire Department, Aultman Hospital and City of Cuyahoga Falls Emergency Management Service, have participated in giving feedback for the development of relevant curriculum.

## **NEUROLOGIC SIMULATION PLATFORM**

Work is taking place with key individuals at the founding member institutions in the areas of neurology, neurosurgery, critical care, emergency medicine and health professions education to create a neurologic simulation platform to train and assess clinical performance. Under the direction of CSIHE, the aim of the project team, which is working with ABIA's Medical Device Development Center and a Northeast Ohio company that specializes in avatar-based instructional products, is to replicate key symptoms of patients with neurologic injuries and disorders to create more realistic testing and feedback.

## **MEDICAL TECHNOLOGY EVALUATION AND IMPLEMENTATION CONSULTATION**

To support the growing medical device industry in Northeast Ohio, CSIHE in collaboration with partner physicians and health care providers has established a service line to support medical technology/device preclinical evaluations in both the BioSkills Laboratory and the Simulation Center. CSIHE staff will also provide consulting services to our clients in developing new product training and implementation programs utilizing state-of-the-art simulation and education techniques. In addition, CSIHE skilled staff is available to collaborate and support SBIR, Ohio -Third Frontier and AHRQ grant mechanisms.

## **TRAINING COURSES**

CSIHE offers the American Heart Association's (AHA) Basic Life Support (BLS) and Advanced Cardiac Life Support (ACLS) courses in a convenient, self-paced and timesaving format. All required coursework can be completed in approximately half the time required for a traditional, classroom-based course. By utilizing the American Heart Association's HeartCode products, participants can complete the cognitive online portion of HeartCode BLS or ACLS from any location. Upon completing the course's online educational components, learners are able to schedule an appointment with CSIHE to complete the Part 2 skills test component of the course.



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*Center for Clinical and Community Health Improvement*

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*The **Center for Clinical and Community Health Improvement (CCCHI)**, one of four ABIA Centers of Innovation, is improving health and outcomes by developing and implementing novel community- and hospital-based clinical trials and health self-management programs.*

*Through collaboration among health professionals, CCCHI seeks to improve the delivery of healthcare to populations across the board throughout the Akron region. In addition, CCCHI is developing a national community model to improve health promotion and disease prevention, access to medical services, healthcare delivery and health outcomes.*

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***Guided by these missions, CCCHI additionally works to improve health by:***

- *Improving care through increased access to leading-edge medical therapies and services*
  - *Increasing translational research and commercialization through clinical and community-based studies*
  - *Expanding opportunities for medical professionals, such as research fellows and clinical investigators, to engage in leading-edge research*
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**Geared toward the goal of changing the model for clinical trials and revolutionizing community health, CCCHI is building several initiatives to spur change in the medical community:**

## COMMUNITY-BASED HEALTH SERVICES RESEARCH

Community-Based Health Services Research (CBHSR) is a two-fold program that consists of health services research and community-based participatory research. The purpose of CBHSR is to develop, implement, and manage a core infrastructure for research in Akron by focusing on:

- *primary care*
- *population health*
- *health systems redesign*
- *community engagement in research*
- *healthcare workforce planning*

The concentration of this program is to engage the greater Akron community in design, implementation and dissemination of research. The ultimate goal of CBHSR is to improve both individual- and population-level health outcomes that are meaningful to the Akron region.

### Accountable Care Community: Healthier By Design™

A key initiative through CCCHI is the development of the Accountable Care Community (ACC). The project connects ABIA and its founding members with the City of Akron, Summit County and other community health providers to collaborate in the promotion and provision of wellness and improved health outcomes. The establishment of this national model, in Akron, takes on great significance in light of recent reforms to healthcare at the federal level that aim to reduce factors leading to chronic disease and reach risk groups in convenient, accessible ways.

## CLINICAL TRIALS UNIT

As part of CCCHI, the Clinical Trials Unit (CTU) establishes, enhances, manages, and supports clinical investigational drug and device trials performed at ABIA partner institutions. The objectives of the CTU are to clarify sources of clinical trial subjects in the greater Akron area and match currently unmet medical and clinical trial research needs by building a strong team and systems to support the planning, attraction, and execution of studies. By partnering with the pharmaceutical and medical device industries, as well as biotechnology and clinician researchers, the CTU leverages resources and develops clear channels for translational research that will allow for increased clinical research based jobs and companies, as well as a better understanding of key health issues in the Akron region.

## PRACTICE-BASED RESEARCH NETWORK

CCCHI's Practice-Based Research Network (PBRN) provides practicing clinicians and academic researchers with access to a network where clinical questions and rigorous research methods can combine to produce answers that lead to the improved delivery of care. CCCHI and founding partner NEOUCOM have teamed to create the PBRN to deliver high quality surveillance, clinical and community-based research, and health outcomes assessments to Northeast Ohio.

## AKRON WELLNESS PROJECT

CCCHI's Akron Wellness Project will enhance the health information available about Akron's communities, transforming community-based research and outreach programs to better fit the needs of Akron's population. Through the Akron Wellness Project, researchers will collect de-identified data on the health and lifestyles of Akron community members, creating a database of information that is both accurate and relevant to the Akron region. By pairing health responses with demographic data, researchers and community-outreach providers will be able to pinpoint where health research and education are needed most on appropriate health issues, revolutionizing community care in the Akron region.

## Dr. Without Borders

Frank Douglas has just about done it all. Teenage minister in his native Guyana, head of R&D at a global pharmaceuticals company, chief scientific adviser of Bayer Healthcare, professor and administrator at MIT. Now he brings those experiences and a whole lot of conviction to Akron, where he hopes to turn an \$80 million investment in the BioInnovation Institute into an economic catalyst for the entire region.



Chris Walters

They called him “job killer.”

Protestors rallied, German newspapers heaped scorn, and researchers at international pharmaceutical firm Hoechst Marion Roussel openly reviled the new, American executive vice president who had been brought in to turn their corporation around.

Still, nothing could have prepared Dr. Frank Douglas for the experience of pulling into the company’s Frankfurt, Germany, corporate campus one early morning to find a green lawn filled with white crosses.

“There was a chill down my spine,” Douglas recalls. “I was never so scared in my life.” He’d been a black man in America during racially charged times. The Klu Klux Klan implication was immediate, even if, he says, the Germans later told him they had erected the crosses because they wanted to demonstrate that he was killing research.

Corporate officials were scared as well. They escorted Douglas into the office that morning and announced they were beefing up security measures. “[They] squirreled me away for a week with a bodyguard,” he says. After seven days, Douglas came back to work. The bodyguard stayed for months.

None of it deterred Douglas from his mission to streamline research and development at Hoechst Marion Roussel. He became fluent in German within six months as a way to show his staff that, because he was asking for change from them, he would change as well. Eventually, the protests dissipated and Douglas’ leadership showed results.

Even 13 years later, the memory of all those white crosses still puts a slight tremble in Douglas’ steady voice. At the time, his family had been an ocean away in the United States, and he admits wrestling with uncertainty. “I did ask myself, What am I doing here?”

Douglas’ ability to stay focused is one of his greatest strengths, according to former colleague Richard Markham. “He’s an excellent scientist, works extremely hard, obviously very bright,” Markham says. “[He’s] one of the most honest people I’ve ever met, and he is extremely principled, and no matter what the consequences, he does not vary from them.”

This sense of direction most recently led Douglas to Akron, where he is president and CEO of the new Austen BioInnovation Institute. The institute hopes to build on the region’s strength in health care and education, particularly its background in polymer research, orthopedics and wound care.

Five Akron-area institutions — Akron Children’s Hospital, Summa Health System, Akron General Health System, the University of Akron, and the Northeastern Ohio Universities College of Medicine and Pharmacy — joined with the Knight Foundation to create the BioInnovation Institute. A total of \$80 million has been

[http://www.ibmag.com/Main/Archive/Dr\\_Without\\_Borders\\_16.aspx](http://www.ibmag.com/Main/Archive/Dr_Without_Borders_16.aspx)

committed over five years by the state of Ohio, Summit County, the city of Akron and other private, foundation and government sources.

Douglas is the one who's charged with making that investment pay off.

He certainly doesn't need the Akron job. He was a senior fellow at the Ewing Marion Kauffman Foundation, chief scientific adviser of Bayer Healthcare and a senior partner of Puretech Ventures. He served as executive vice president, chief scientific officer and member of the board of management of Aventis. He has been a member of the Scientific Advisory Board of the U.S. Food and Drug Administration and chairman of the executive committee of the Science and Regulatory section of the Pharmaceutical Manufacturers Association.

Douglas and his wife of 43 years, Lynnet, were living in New Jersey. They were expecting their first grandchild who would be living nearby. So why come to Akron? Douglas smiles. He does that a lot as he talks about his new job. Then he responds: "It's a question my colleagues in Boston and Cambridge have asked repeatedly."

Even though his wife will spend most of her time in New Jersey while Douglas charts a future for the BioInnovation Institute, he sees the job as his chance to create a personal legacy.



Chris Walters

"When I think about why we are here, we are here to contribute to our fellow man," he says, "to make a better world for those coming behind us."

Richard Markham met Douglas in 1993 when Markham was recruited to be president and COO of Marion Merrell Dow Inc. Douglas was executive vice president of research and development for the corporation at the time. When the American company merged with a German business to become Hoechst Marion Roussel a few years later, the men forged a strong friendship while enduring the protests in Frankfurt, Germany.

"It was very, very difficult," Markham recalls. Following the merger, Douglas says the German employees were reluctant to accept him and Markham as their new leaders. The pair's ultimate goal was to cut drug development times from nine-to-15 years to six-to-nine years. Douglas was clear from the start that such streamlining would lead to job cuts.

"There was a lot of opposition, and most of it was directed at me," Douglas says. He attributes that to the fact that the company was downsizing and that he and Markham were perceived as two Americans against thousands of Germans. It's kind of funny, Douglas chuckles, because he isn't American; he is Guyanese.

"I grew up without a dad," he says. "I grew up very poor." He was so poor that friends of his mother provided the family shelter when they needed a place to stay. Church was an important part of his early life, too. Douglas was a boy preacher; he met his wife in church and ran the Youth of Christ movement in Guyana at age 19.

A friend of his mother financed Douglas' education at the Cambridge Academy, which won him a scholarship to Queens College in Guyana. He came to the United States at age 20 as a Fulbright fellow, two weeks before Martin Luther King Jr.'s 1963 march on Washington.

"I experienced a lot of discrimination in the United States," Douglas recalls. Some of it happened at church. He didn't understand why the same people who came to Guyana as missionaries weren't welcoming black people to their churches. Douglas says those early experiences made him decide at age 23 to only attend church for weddings and baptisms and to live his life based on principles.

After studying in the United States, Douglas returned to Guyana to assess his career options. His life there came to an abrupt end in 1975 when he refused a job offered to him by Prime Minister Forbes Burnham. Burnham was an autocrat who led Guyana from 1957 to 1985, and it wasn't the first time Douglas and Burnham had been at odds.

"He had invited me one Sunday to come to his office and meet with him," Douglas recalls, of an invitation he received before moving to the United States in 1963. Church service ran late that day, and when he finally arrived, an associate of Burnham asked why Douglas was showing such a "lack of respect."

"I told him I was doing the work of someone higher than him," Douglas says.

The snub must have lingered. Twelve years later Burnham offered Douglas a job running a leather-tanning factory. The position made no sense. Douglas was two years into medical school at the time and says he believes Burnham knew full well he'd turn down the position. "[It] clearly was an attempt to banish me," Douglas says. "I never expressed allegiance to him."

Douglas was asked to leave Guyana — not something to ignore in the South American country where dissidents had been killed. He did not return until well after Burnham's death. As he talks about that experience now, Douglas says he has never been particularly impressed with authority. "That's why I don't take my [own] authority very seriously."

Instead, collaboration has been key to his career success, just as it has been to the startup of the BioInnovation Institute. That similarity might help explain the "immediate chemistry" William Considine, chairman of the BioInnovation Institute's board, says was evident between Douglas and the board when he first interviewed in Akron.

"There's an inner peace about the man," says Considine, who is also president and CEO of Akron Children's Hospital. "He treats everyone with enormous respect. ... He's a transformational leader, there's no 'ands,' 'ifs' and 'buts' about it."

"He listens, he wants to get contributions from people," adds Robert Langer, who first met Douglas about 12 years ago while chairing the FDA Science Board. Langer, internationally renowned for his research and innovations in medical technology and a professor at the Massachusetts Institute of Technology, talked with Douglas about the Akron position early on in the search for someone to lead it.

"It doesn't hurt that I enjoy a challenge," Douglas says. "I'm probably a builder by nature, a synthesizer."

In 2007, Douglas faced a very different kind of challenge when he decided to resign from faculty and administrative positions at MIT where, two years earlier, he had launched the institute's Center for Biomedical Innovation. Many media outlets reported that Douglas resigned in protest of MIT's decision not to grant tenure to James Sherley, who had gone on a hunger strike earlier in 2007.

"James Sherley was not the reason I left MIT," Douglas quickly notes when asked about his resignation.

But Sherley's claims that the tenure appeal process was tainted by "racism and conflict of interest" and the public's reaction to those claims did prompt Douglas to suggest MIT hire an external panel to "evaluate and make recommendations to improve the environment in which minority faculty at MIT work." MIT's leaders said they would rather not involve an outside mediator.

"I began to wonder whether there was a lack of integrity at the highest levels of the institute, or simply a lack of care in expressing the institute's intention," Douglas wrote in an article printed in *The Scientist* in July 2007. "I concluded that it was not an issue of lack of capability, but one of lack of will to deal with a problem that had clearly polarized minority faculty and the larger MIT community."

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Looking back at the situation now, Douglas shakes his head. MIT's leaders "kept focusing on tenure and the right of the university" as they tried to convince him to stay. Also perplexing to Douglas were his MIT colleagues who came into his office, closed the door and said, "Frank, you're right," then returned to their jobs without ever publicly voicing their support.

>> One of Douglas' first goals at the BioInnovation Institute is to identify initial projects and hire leaders for each of five "centers of excellence." Although Douglas will make the final hiring decisions, he will do so based on job descriptions and interviews conducted by five committees that have been working together for the past eight to 10 months.

Douglas and the board have also identified three potential sites for the BioInnovation Institute's permanent facility, which will house administrative offices, the Center for Healthcare Training, the Center for Clinical Trials and the Center for Community Outreach to the Medically Underserved. All potential sites are existing structures that would be modified.

The labs that house the Center for Biomaterials and Medicine and the Medical Device Development Center will be distributed as appropriate among the four Akron-based partners. Douglas doesn't anticipate this will be a difficult process, even given the inherent competition between institutions. He says each of the institutions' leaders has agreed to a selection process and criteria. Because of that and his experience, Douglas says "political horse trading" won't be a problem.

The institute's community outreach center has already agreed to assume the costs and leadership of the Access to Care program, which connects lower-income, uninsured working Summit County residents to health care services volunteered by local providers. As part of that agreement, the number of program clients will double from 1,500 to 3,000. Douglas also wants to start a research component to examine health delivery system outcomes. "Are there things that we can do to keep this population well?" he asks.

Within 12 months, Douglas wants to have all of his directors in place, to have clearly identified projects happening at each center and to show that the member institutions are working together. Within the next five years, he expects BioInnovation will spin out at least two or three small companies, snare a number of National Institutes of Health grants and gain national recognition.

If done right, Considine says the institute could one day lead to the creation of a projected 2,400 jobs and bring 30 to 45 companies and triple the number of clinical trials (and the money that comes with them) to Akron.

Ten years from now, Douglas envisions a BioInnovation campus "humming with post-graduate students from around the world." The only question in his mind seems to be whether he'll be there to see it through.

Douglas says that when he was interviewing for the position, he was asked, "Do you have 10 good years in you to do this?" He told the board that it should identify his successor by his fourth year on the job. Markham chuckles when he hears that. "If he leaves in four years, it will take him about a week and a half to find the next thing he's going to do. ... He's so engrossed in his work."

That fits Douglas. When asked what he does to relax, he says, "I think ... I work."

It's work that remains grounded by his principles, and from time to time, he's reminded of the positive effect that approach has had on others as well. In August, Douglas was invited to the National Institutes of Health to do grand rounds, a medical-education ritual during which medical experts present information to students, residents and doctors.

At the end of the session, he was approached by a doctor who had once been his student. "[He told me] 'You never shouted, you never screamed. You always treated us with respect,' " Douglas says recalling the younger doctor's compliment. "I was quite touched by that."

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