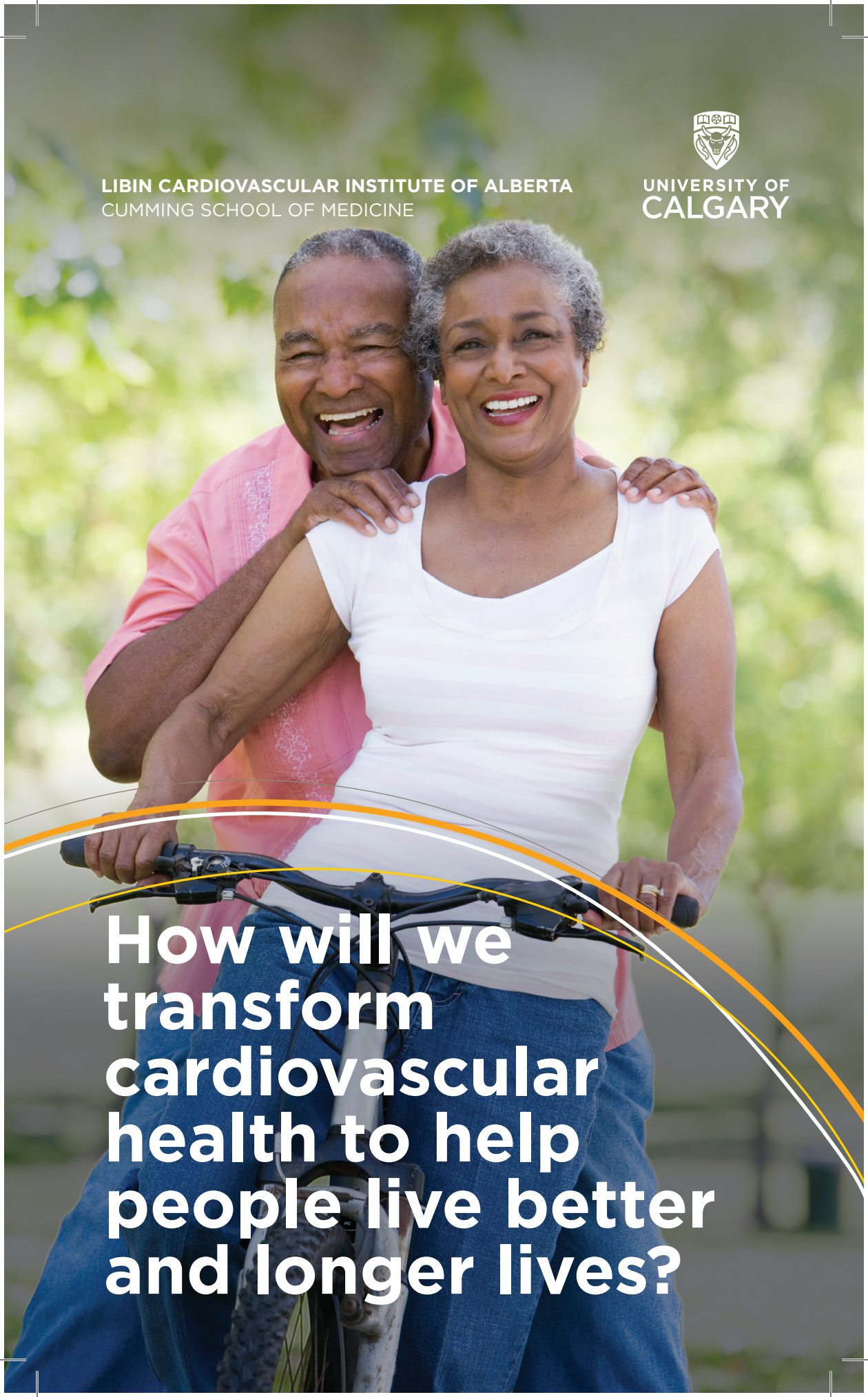


LIBIN CARDIOVASCULAR INSTITUTE OF ALBERTA
CUMMING SCHOOL OF MEDICINE

UNIVERSITY OF CALGARY

How will we transform cardiovascular health to help people live better and longer lives?


Together.

The Libin Cardiovascular Institute of Alberta is developing innovative and groundbreaking solutions and strategies to reduce the burden of suffering and premature death due to cardiovascular disease.

The University of Calgary has grown into a vital community of thought leaders and visionaries. **Energize: The Campaign for Eyes High** *is our drive to positively change our campus community, our city and beyond, to unleash the power of the Libin Cardiovascular Institute of Alberta in creating better health and better health care. And this power can only be unleashed together.*

Advancing research to reduce the impact of cardiovascular disease

Many of us have been impacted by cardiovascular disease. It is the leading cause of death worldwide, claiming the lives of more than 17 million people each year.

Someone in our country dies every seven minutes from maladies related to the cardiovascular system, costing the Canadian economy more than $20 billion annually. Sedentary lifestyles are increasing rates of high blood pressure and diabetes, leading to kidney disease and disorders of the blood vessels that cause serious cardiovascular complications. Already the world's leading cause of premature passing in those under 65, sudden cardiac death losses are predicted to exceed those due to lung, breast, prostate and colorectal cancer combined.

The Cumming School of Medicine's Libin Cardiovascular Institute of Alberta is dedicated to changing the future of cardiovascular health for all Albertans, from children to seniors, by translating innovative research into bold health-care solutions.

Bringing together more than 175 members from varying disciplines, the Libin Institute has established a world-class research program. We are global leaders, integrating research, education and clinical care in partnership with our community to discover new and innovative solutions that will help people far beyond our campus.

At the heart of our work is precision medicine — treating individuals and conditions based upon their unique characteristics. Through research, data and technology, we will better predict, prevent and diagnose disease, and care for patients with the right treatment at the right time.

Partner with us and help shape the future of health in three key areas:

- **Discovery**
- **Detection**
- **Delivery**

Discovery

> “THE LIBIN INSTITUTE’S TIRELESS DEDICATION TO THE BETTERMENT OF CARDIOVASCULAR HEALTH CONTINUES TO RESULT IN INNOVATIVE AND GROUNDBREAKING RESEARCH ACHIEVEMENTS TO IMPROVE AND SAVE LIVES.”
>
> **TODD ANDERSON**, DIRECTOR,
> LIBIN CARDIOVASCULAR INSTITUTE OF ALBERTA

Understanding disease to identify opportunity

The most effective way to tackle cardiovascular disease is to understand its causes.

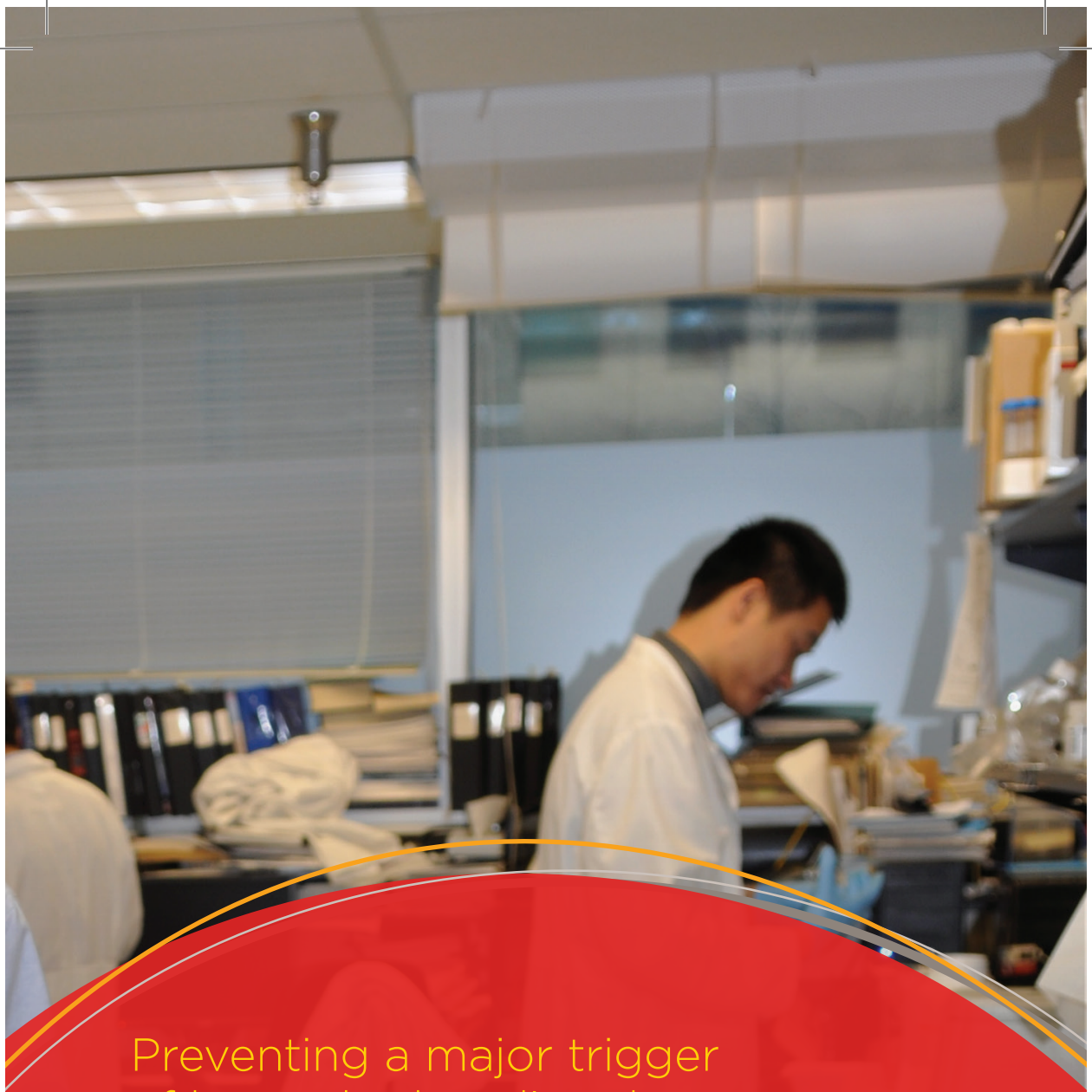
By using the most advanced technologies available, scientists are exploring the most basic functions of disease at the molecular level in the laboratory. It is this understanding that provides the road map for the translation of new discoveries directly into patient care. Specific targets can be identified and clinical trials developed to produce positive results for human health.

Our scientists have made critical discoveries in understanding vascular disease and heart-rhythm disorders, leading to the development of promising diagnostic tools and treatments. Research into the narrowing of the arteries and lethal disorders that lead to irregular heartbeat is advancing our knowledge of how to slow the progression of vascular disease and decrease the chances of sudden cardiac death.

We are expanding our insights, creating new diagnostic tools and developing unique treatments to better serve the population of southern Alberta and beyond.

Together, we will keep the beat.

> OUR RESEARCH IS JUST THE BEGINNING. THE POSSIBILITY OF NEW LIFE-CHANGING INTERVENTIONS THROUGH THESE STUDIES CAN BECOME A REALITY IN THE CLINIC WITH MORE TIME AND TESTING.
>
> **WAYNE CHEN**, PROFESSOR,
> DEPARTMENT OF PHYSIOLOGY AND PHARMACOLOGY

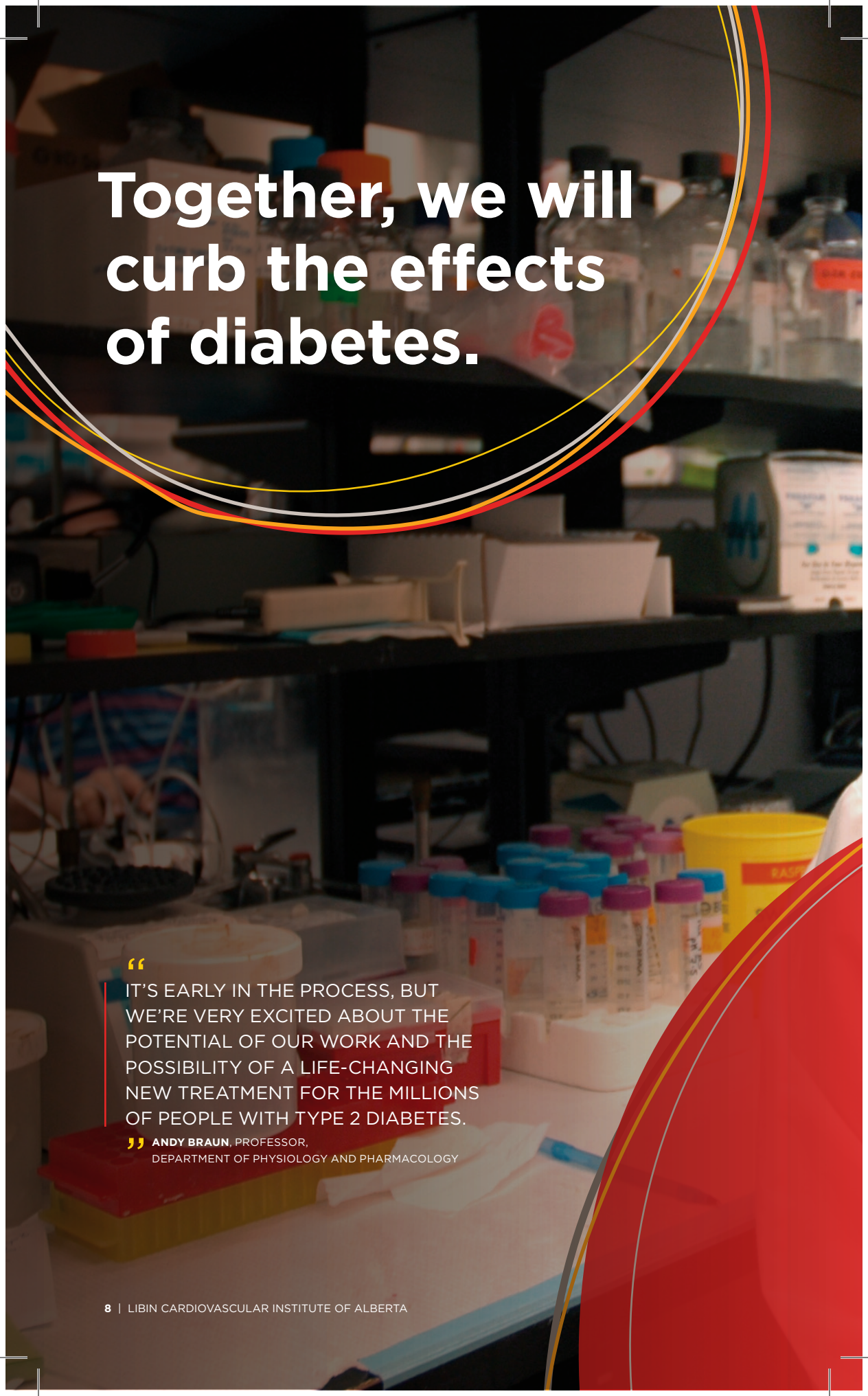


Preventing a major trigger of heart rhythm disorder

One of our most senior and globally recognized researchers, Wayne Chen knows what makes the heart tick, and where to look when it's not working correctly.

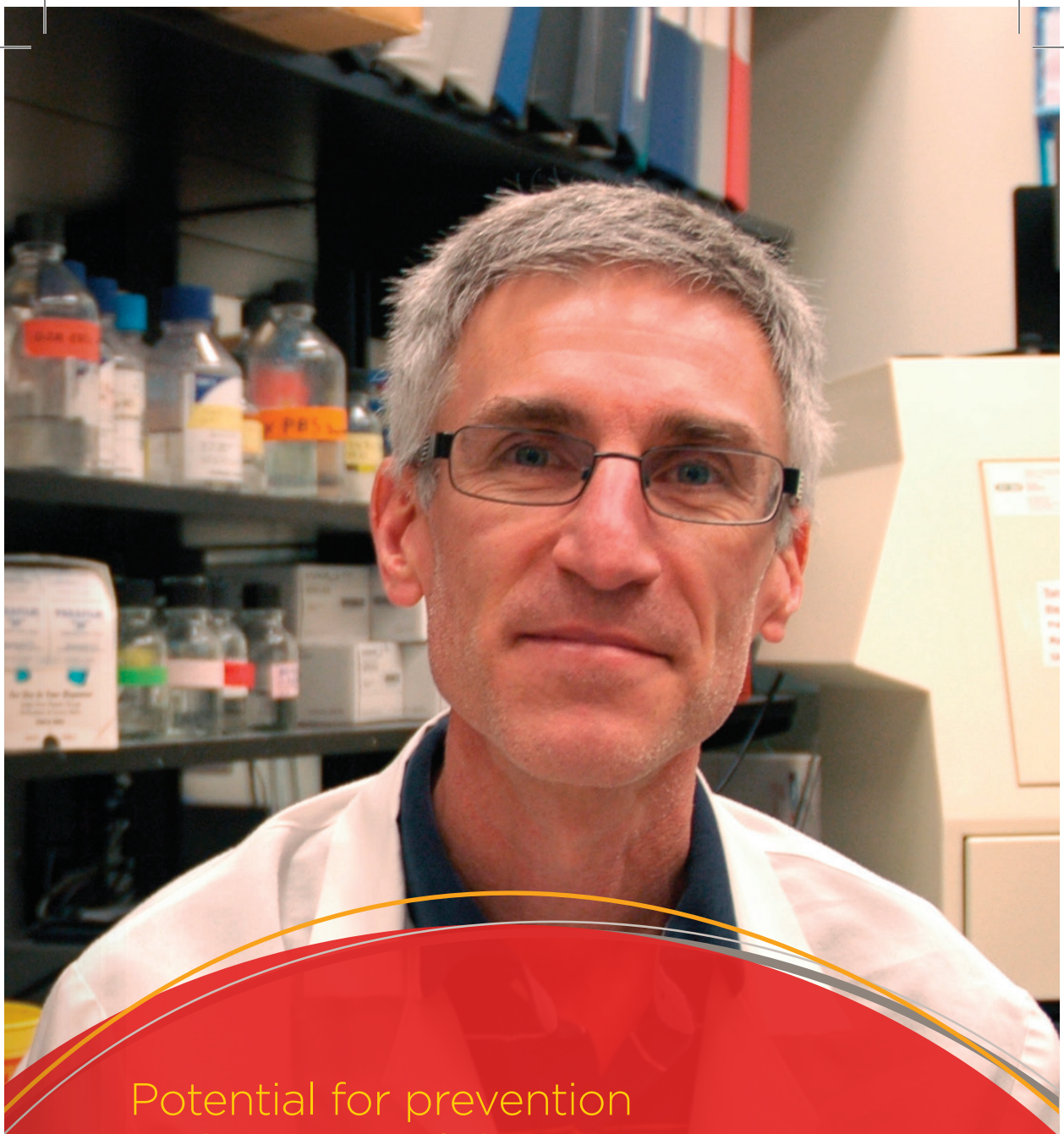
Heart rhythm disorders cause the organ to beat irregularly, resulting in dizziness, fainting or even sudden death. While genetics, lifestyle choices and other medical conditions contribute to these disorders, scientists know a common trigger is calcium overload in heart cells. The underlying cause of calcium overload has remained a mystery for decades, but a research team led by Chen looked at the heart's electrical activity and the basic cellular function to study a calcium-sensing gate within the cells and its effect on heartbeat. Through Chen's research we've learned that the body's sensor to detect calcium is responsible for calcium-triggered irregularities and that we can completely prevent them by manipulating the sensor.

This discovery has shifted our understanding of cardiac arrhythmias and their treatment, and could help us design tailored medications for patients.



Together, we will curb the effects of diabetes.

> IT'S EARLY IN THE PROCESS, BUT WE'RE VERY EXCITED ABOUT THE POTENTIAL OF OUR WORK AND THE POSSIBILITY OF A LIFE-CHANGING NEW TREATMENT FOR THE MILLIONS OF PEOPLE WITH TYPE 2 DIABETES.
>
> **ANDY BRAUN**, PROFESSOR,
> DEPARTMENT OF PHYSIOLOGY AND PHARMACOLOGY



Potential for prevention and reversal of damage

Andy Braun is a passionate researcher whose critical work in the lab could change the lives of millions of people with one of the fastest-growing diseases in Canada. The incidence of Type 2 Diabetes (T2D) has doubled in the past decade, and most of those living with it will die from cardiovascular disease caused by T2D. The cell layer lining blood vessels often becomes damaged, which can narrow vessels, limit blood flow and cause circulation problems that lead to nerve and tissue damage, and even heart attack and stroke.

Braun's research group has discovered that drug-based targeting of certain proteins in the cellular lining of blood vessels can fix the restriction and improve blood flow. His work has the potential to lead to groundbreaking new treatment that can prevent and limit tissue damage done in the early stages of diabetes.

Targeting risk to prevent disease progression

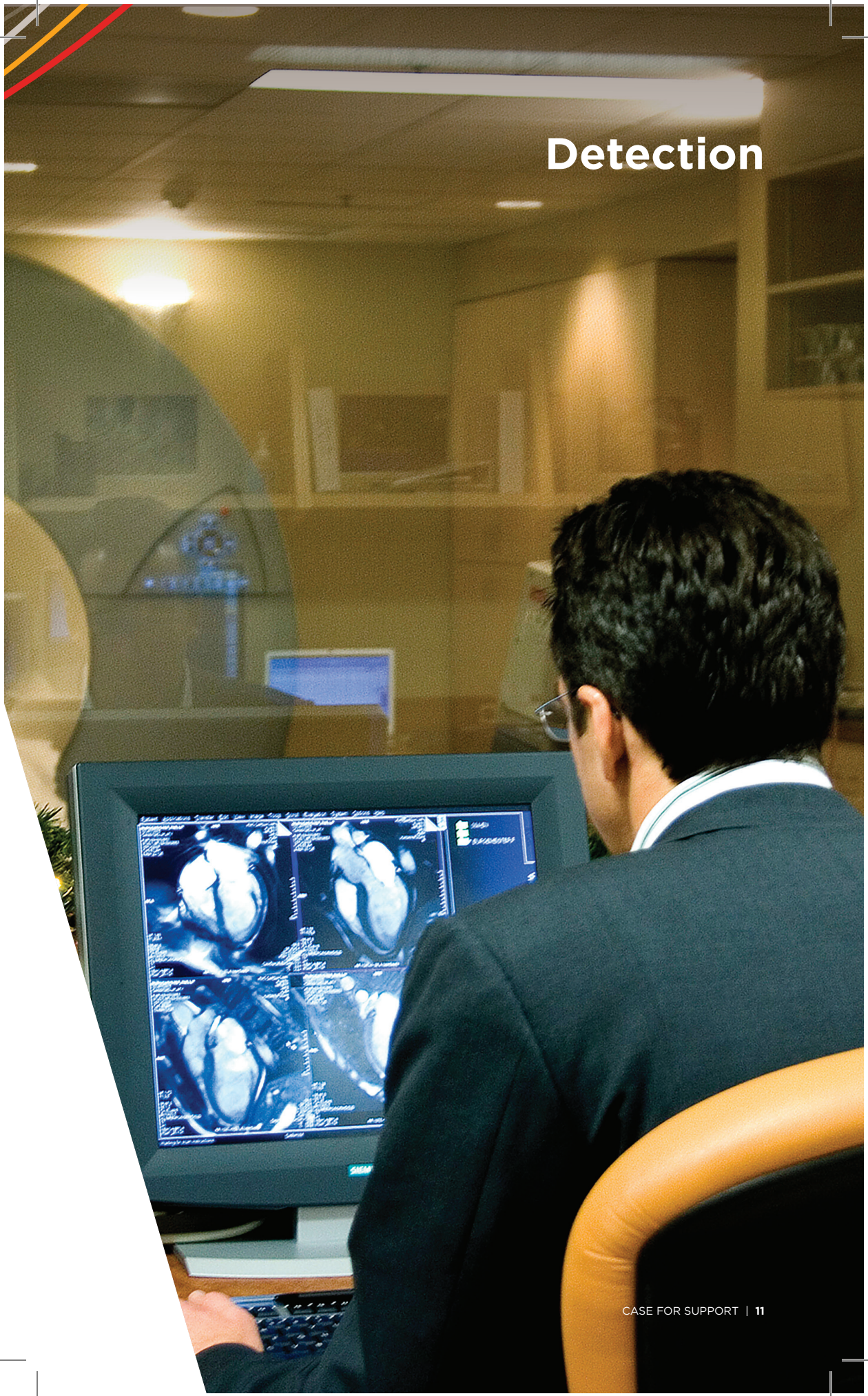
By confirming unique risk markers through the use of cutting-edge imaging tools, biochemistry and genetic information, we are able to detect disease and its progression at the earliest stages. Identifying and predicting which patients are high-risk can help us make better decisions around disease prevention and treatment options.

Large databases of information are helping us understand patterns of disease. Analyzing outcomes can help determine how a solution that works for one patient may lead to answers for many more.

We're leveraging our strengths to detect premature vascular disease, risk markers for sudden cardiac death and the development of atrial fibrillation, as well as how they react to treatment.

Armed with these insights, we can make educated choices leading to better health outcomes in our city, our province, our country and across the globe.

Detection



Together, we will get personal.

Using advanced imaging to determine who needs life-saving surgery

Bicuspid aortic valve (BAV) is a common heart defect — people are born with only two flaps in their aortic valve instead of three. These people are prone to developing aneurysms of the aorta that could rupture, causing death. Using advanced technology that visualizes blood-flow patterns within the aorta, cardiac surgeon and translational scientist Paul Fedak is confident this technique can help determine who most needs life-saving open-heart surgery. His research is gaining worldwide attention, showing for the first time that abnormal flow from an irregular heart valve in the aorta can create weakness in the blood vessel wall.

Invasive open-heart surgery is the most common treatment, but the same imaging technology — used by Fedak in his research in collaboration with the Stephenson Cardiac Imaging Centre — can help cut down on those numbers, leading to more personalized and precise treatment. Fedak leads an international team of investigators exploring the use of this new imaging tool to provide better insights into the possible risks of having BAV.

> “EACH PATIENT IS UNIQUE, BUT EVERYONE BORN WITH THIS CONDITION HAS TYPICALLY BEEN TREATED WITH AGGRESSIVE SURGERY. THROUGH A MORE PRECISE AND INDIVIDUALIZED APPROACH, OUR RESEARCH PREVENTS UNNECESSARY SURGERY FOR THOSE AT THE LOWEST RISK OF COMPLICATIONS.”
>
> **PAUL FEDAK**,
> CLINICIAN SCIENTIST AND CARDIAC SURGEON

Together, we will protect future generations.

"WE'RE OPENING MORE POSSIBILITIES FOR PERSONALIZED APPROACHES TO PREVENTION AND TREATMENT THROUGH OUR STUDIES. BY DETECTING RISK BEFORE BIRTH, WE CAN INTERVENE AND ENSURE THE HEALTH OF THE NEXT GENERATIONS."

JENNIFER THOMPSON, ASSISTANT PROFESSOR, CUMMING SCHOOL OF MEDICINE

Taking early intervention to a new level

New Libin Institute recruit Jennifer Thompson is committed to stopping cardiovascular disease before it happens by detecting the factors that influence its development at the earliest stages possible. Gestational diabetes has increased by 50 per cent in the last decade in Alberta, motivating Thompson to discover the long-term impact on children's health.

Genetics and lifestyle factors have long been believed to be the cause of chronic conditions like cardiovascular disease, but evidence over the past 20 years suggests the environment in the womb plays an important role in risk for cardiovascular disease, obesity and diabetes.

Thompson's work will offer a better understanding of the extent to which that environment influences disease risk, enhancing our ability to predict cardiovascular disease and treat risk factors before damage happens.

Together, we will make simple tasks possible again.

"BY DEVELOPING A STRONG NATIONAL NETWORK OF RESEARCH HUBS AND SPECIALTY CLINICS, WE ENABLE THE DISCOVERY OF NEW AND MORE EFFECTIVE THERAPIES TO IMPROVE LIVES."

SATISH RAJ, PROFESSOR IN CARDIAC SCIENCES AT THE CUMMING SCHOOL OF MEDICINE

Standing up for those who can't remain upright

Imagine waking up every day feeling lightheaded, nauseated, with the idea of just getting out of bed too difficult to bear. These symptoms are the norm for millions worldwide who suffer from a debilitating heart condition that affects many young women in their teens to their 30s. A malfunction in the autonomic nervous system can result in an increase in heart rate and decrease in blood pressure when a person stands upright, causing gut irritation, joint problems, and severe dizziness and fatigue.

Satish Raj leads a world-class team of researchers at the Calgary Autonomic Investigation and Management Clinic at Foothills Medical Centre studying these kinds of disorders through clinical trials designed to detect specific indicators of these conditions. Early diagnosis leads to the best treatment available and offers patients the ability to perform simple daily tasks.

Delivery

Research allows us to deliver the best in care, utilizing less-invasive procedures. For example, the tiny pacemaker on the right is the latest evolution of the instrument, compared with an older model.

Changing the way we deliver care

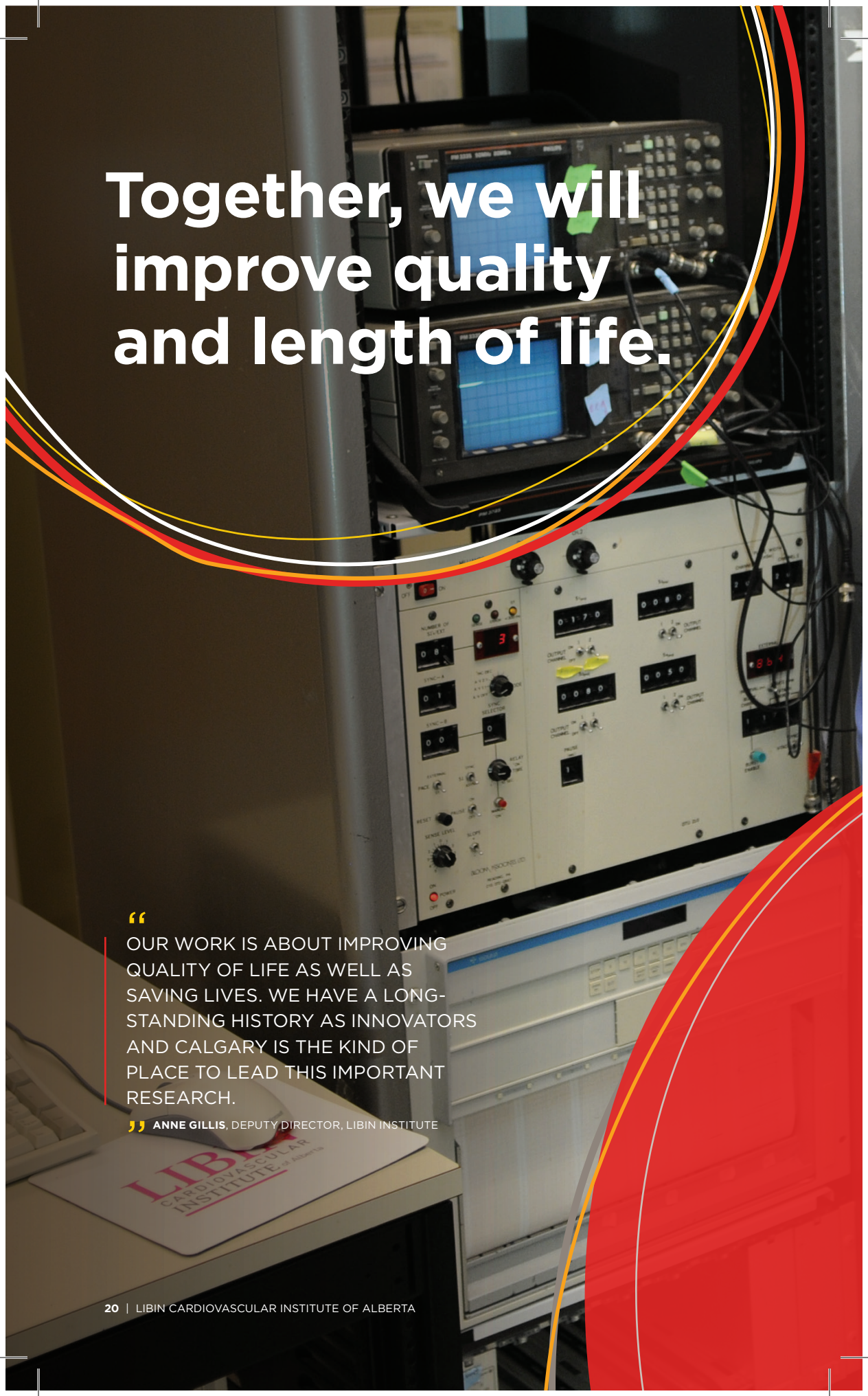
Through precision medicine, we're redesigning the health system and improving the quality of life for people across southern Alberta and surrounding areas.

Approaches to the delivery of clinical care have been population-based for much of our past. By treating everyone experiencing similar conditions with the same drug, for example, we know that a percentage of them would benefit. But others would see no positive outcomes.

We're changing that using research to specifically target which patients will respond to specific treatments or prevention methods.

Using data to support decisions and taking advantage of advances in technology, we are developing better ways of delivering care, creating new treatments and innovative diagnostic tools through research — ensuring access to the right treatment for the right person at the right time.

We will lead the charge in revolutionizing our health system to address issues such as kidney disease, heart attack and stroke.



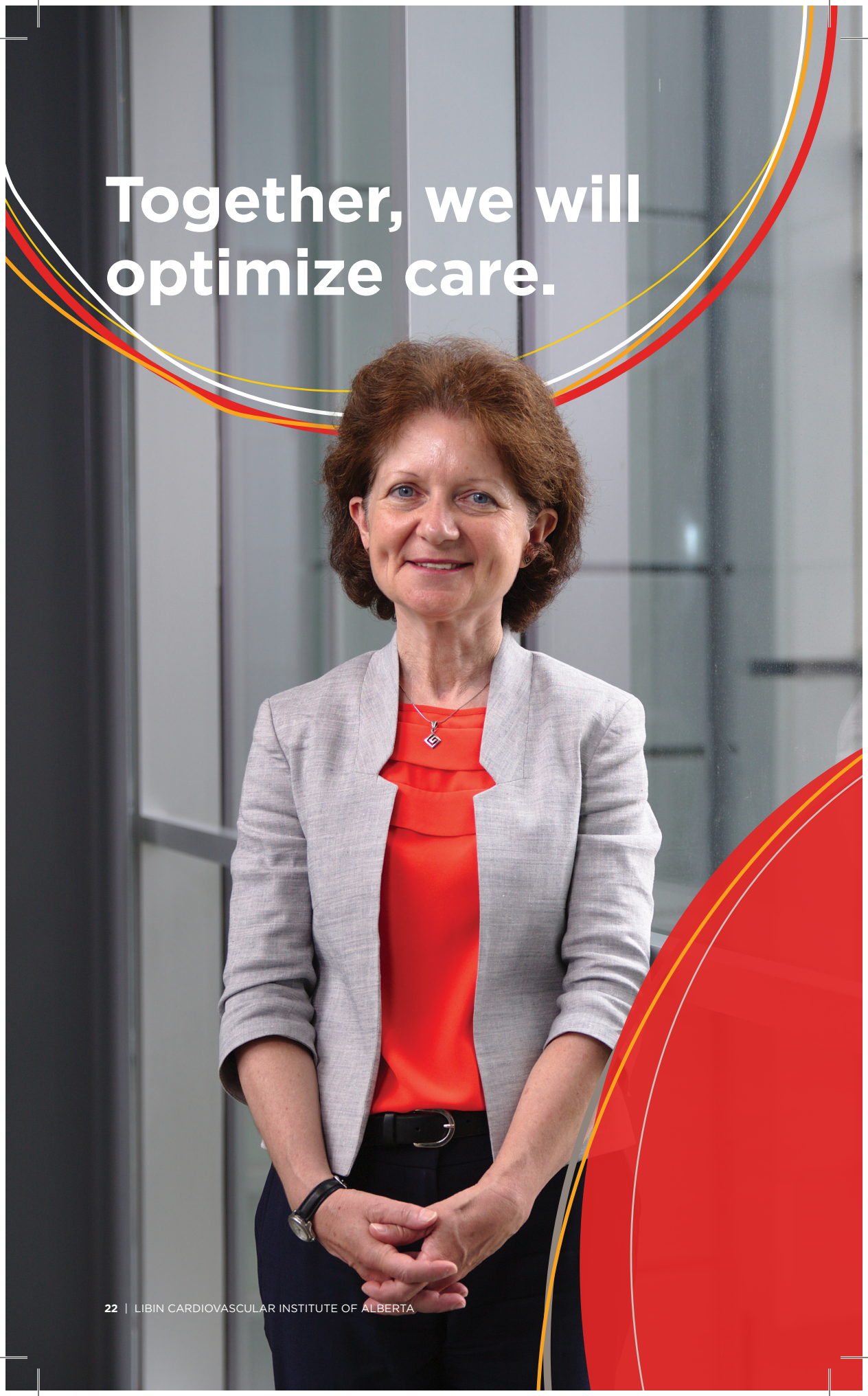
Together, we will improve quality and length of life.

> OUR WORK IS ABOUT IMPROVING QUALITY OF LIFE AS WELL AS SAVING LIVES. WE HAVE A LONG-STANDING HISTORY AS INNOVATORS AND CALGARY IS THE KIND OF PLACE TO LEAD THIS IMPORTANT RESEARCH.
>
> **ANNE GILLIS**, DEPUTY DIRECTOR, LIBIN INSTITUTE

Reducing the likelihood of sudden cardiac death

Not only can Anne Gillis and colleagues ensure your pacemaker is functioning properly without even seeing you, she can tell when your heart condition is worsening and intervene before it becomes critical. Sudden cardiac death (SCD) is the leading cause of premature death among those younger than 65 in North America. While a heart attack is an injury to the heart muscle from a lack of blood flow, SCD results from an electrical glitch. Libin researchers are pioneers in care delivery and lead the field in identifying and preventing SCD.

Spearheaded by Gillis, our remote monitoring clinic for cardiac patients with life-saving implants opened in 2004, the first clinic of its kind outside the U.S. It saves long and difficult trips for the elderly or those in rural areas, and can detect worsening heart failure. Leading an international clinical trial studying a group of the most at-risk individuals following heart attack, Gillis's colleague, Derek Exner, will more precisely determine who will benefit most from the technology to prevent sudden death.


Together, we will
optimize care.

> “WE’RE IDENTIFYING PEOPLE WITH SERIOUS CASES OF KIDNEY DISEASE AND HELPING PATIENTS AND THEIR FAMILIES IMPROVE THEIR OWN MANAGEMENT OF IT, SLOWING THE PROGRESSION TO AVOID THE POTENTIAL LIFE-THREATENING OUTCOMES.”
>
> **BRENDA HEMMELGARN,** HEAD OF THE DEPARTMENT OF COMMUNITY HEALTH SCIENCES

More efficient and accessible health delivery

People with kidney disease can suffer cardiovascular complications and many die of stroke or heart attack. It affects about one in 10 people in Canada and is particularly severe in Indigenous populations, with rates three to five times higher than other Canadians. We’re advancing outstanding research to better address this problem. Our clinician-researchers are not only delivering the best care possible in our community but, through science, are changing the definition of what best care delivery is.

Part of our world-renowned Alberta Kidney Disease Network research group, Brenda Hemmelgarn’s work has led to optimal changes in patient care over the past decade. By studying clinical outcomes, she helps doctors make decisions and puts health care in the hands of more people who can make a positive impact. For example, an online decision-making tool she helped develop is assisting front-line care providers play key roles in identifying patients at higher risk of chronic kidney disease. These tools can help ensure timely and appropriate delivery of care.

People
$20
million

Platforms
$20
million

Research
$10
million

$50 million

Take your place among the leading philanthropists of your time.

Join us to support research investigating cardiovascular disease and disorders. Your support will ignite the minds of tomorrow's medical leaders, enable transformative research, strengthen community partnerships, and build a vibrant research program that allows for innovative ideas and solutions.

Together, we will spark discovery, creativity and innovation to define a better tomorrow.

Together, we will help people live longer, healthier lives.

Our research collaborations and partnerships with community are enabling discoveries across the lifespan of disease and improving the health of our citizens. You can help us continue this important work through:

People

Better outcomes for people living with cardiovascular conditions depend upon leaders who will bring discoveries to a community in need. Help support:

- Scholarships and bursaries to train the future leaders in research
- Awards and recruitment start-up packages to attract the next generation of researchers and clinicians who will find solutions to pressing questions in cardiovascular health
- Funding for highly skilled technicians and specialized researchers with the unique expertise required to deliver innovative research programs

Research

Philanthropic support of research will lead to new discoveries in prevention, treatment and care through:

- Creation of highly integrated and multidisciplined teams focused on the continuum of research
- Seed funding to lay the research foundation needed to leverage larger support from government and national granting bodies

Platforms

Tools and research platforms are necessary to support the goal of reducing the burden of cardiovascular disease and premature death by:

- Adding to existing imaging technologies with cutting-edge tools, creating the most enlightening picture of disease in action
- Providing advanced and specialized equipment to facilitate precise and personalized therapies
- Establishing and supporting data resources and storage to support real-time data-driven decisions, while actively engaging patients, families and caregivers
- Supporting clinical trials to advance therapies, taking them from the laboratory into the clinic

This is your opportunity to make a difference, spark meaningful change and create a legacy that will never fade. **JOIN US.**

Join us, and together we will enrich and extend lives through healthier hearts.

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