

Committee Name:
Senate Committee –
Judiciary, Corrections and Privacy
(SC–JCP)

Appointments

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Committee Hearings

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WISCONSIN TECHNOLOGY COUNCIL

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May 21, 2003

Testimony of Tom Still
President, Wisconsin Technology Council
Assembly Public Health Committee
Senate Judiciary, Corrections and Privacy Committee
Subject: AB 104 and SB 46

Thank you, co-chairmen Zien and Hines, for the opportunity to speak on this important issue. It's a pleasure to appear today before this committee.

I am not here today to try to persuade you that human reproductive cloning is a necessary or desirable thing -- in fact, I think you would find very few scientists and ethicists who would argue that it is. Nor am I here to try to persuade you that therapeutic cloning research offers a panacea for the many chronic diseases that plague mankind -- diseases such as Alzheimer's, Parkinson's and diabetes. We simply don't know if somatic nuclear cell transfer research, or therapeutic cloning, will yield results that can help mankind in the years and decades to come.

But that's just the point -- we don't know. It is too early to tell whether therapeutic cloning research is the bust some claim it is, or whether it offers great potential. But we do know this: The possible advantages of limiting therapeutic cloning research outweigh the known disadvantages.

It has been 50 years since Professors Crick and Watson published their report in "Nature" magazine explaining the existence of DNA, a discovery that essentially unlocked one of the secrets of life and which made us all familiar with the DNA "double helix." It has been 25 years since in vitro fertilization clinics first allowed people who could otherwise not conceive a baby the opportunity to do so, and thousands of parents have experienced that joy ever since. And it has been five years since Dr. James Thomson and his talented team at the UW-Madison were the first to isolate human embryonic stems in an undifferentiated state.

I mention these dates because they are related. They show the steady expansion of knowledge about life sciences -- a progression that might have been halted if policymakers had elected at some point along the way to say "no" to certain types of research.

If therapeutic cloning is banned here in Wisconsin, it will not stop such research from taking place -- in other states, in other countries, and in places where the regulations and ethical controls are far less stringent than they are here. The Wisconsin Technology Council has issued a position paper on research restrictions that recognizes there are very real ethical concerns with some kinds of research, but which also recognizes that banning such research is rarely, if ever, the answer.

With all due respect to this committee and the Legislature, this may be an issue that is best left to the federal government, where considerable debate is taking place. Is it advisable to have a patchwork quilt of state regulations related to cloning research. I think not. The federal government has a great deal of investment and expertise in life sciences research

through the National Institutes of Health and other agencies; Congress is well-prepared to deal with the issues related to cloning research in a way that makes sense for all 50 states.

A ban on such research in Wisconsin would have a chilling effect on some of the cutting-edge research in stem cells that originated here at UW-Madison. It very directly would affect investment in that research. When government puts up barriers to intellectual discovery, what you get is less discovery and less interest in transferring those innovations to the marketplace. It is of course right and proper to have ethical concerns about cloning, whether it be human reproductive cloning or therapeutic cloning. But there are ethical concerns on the flip side if therapeutic cloning is barred. What are we saying to those millions of people who suffer from now incurable diseases -- or those unborn who will suffer?

Every day, I track the competition from other states that want to become biotech leaders. Massachusetts and California, the nation's two leading biotech states, have actually introduced bills or resolutions that make it clear they welcome this research. I worry what would happen if Wisconsin says "no" to therapeutic cloning research, even if such research is not taking place in Wisconsin laboratories today. Researchers will naturally ask -- what's next? It's a question we cannot afford to ask if we value our natural infrastructure for biotechnology research.

Once again, I am not here to advocate for human reproductive cloning. Nor am I here say that therapeutic cloning has or will offer research breakthroughs. We don't know. And precisely because we don't know, we should not ban such research in Wisconsin.

Thank you for allowing me to testify today.

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Testimony for Assembly 104, and Senate Bill 54

45?

Thank you for letting us share a piece of our life with you today. My name is Sharon Kingsbury and I have had multiple sclerosis for 13 years. I strongly support stem cell research for therapeutic uses and the possibility of curing autoimmune diseases.

Many people don't realize that MS can be deadly, but it can. Last year I was faced with this possibility due to a simple, common bladder infection. Almost overnight, my MS raged out of control. I spent five months in the hospital where for an extended time, it paralyzed me from the neck down and threatened my ability to breathe. I lost the ability to speak or swallow. This disease, along with other autoimmune diseases, has robbed me and countless others of living a normal, healthy, productive life, which so many take for granted.

I have tried all the current treatments and now am faced with the clock, infections that cause a healthy person to get a cold, can destroy the life of someone with a compromised immune system, such as myself.

We turn to you, that you may know, that our suffering is real. And it not only affects those stricken with MS, but also are children and spouses. My family was preparing my young children for the possibility of losing their mother. No child should have to face such hardships such as my children and my family went through last year.

With the inability to control my disease, there is no guarantee that it won't happen again. We did not ask you today to compromise your values. The fact is, with every live birth, an umbilical chord, full of live stem cells, are just waiting to be harvested.

What an awesome gift of life it could bring to so many. Sadly, it is discarded as medical waste and not utilized. So knowing this, please try to put yourself in our shoes. Do not throw away our cure, for this disease along with others, affects individuals, families, communities, and our nation as a whole. Do not let us become casualties of this war called MS.

Sharon Kingsbury
601 Nordic Trail
Stoughton, WI 53589
(608) 873-9998

Cloning Ban

My name is Dr. Cynthia Jones-Nosacek. I am a family physician with St. Mary's Medical Clinic in Milwaukee, WI. I am here today to testify for AB 104 + Senate Bill 45

This is my daughter Angela. She would have come today to be with me, but when faced with the decision of being here or going with her future in-laws to Las Vegas, well, there was no choice. She did, however, give me permission to tell her story.

Angela is my oldest child. She has just finished her second year at UW-Platteville where she is majoring in prelaw. It is a profession for which she is eminently suited. Even as a little girl, if I didn't cross my T's and dot my I's, she would be sure to find a loophole. And even though she wants to be a lawyer and I am a doctor, we still talk to each other. She has a beautiful soul.

She also has had diabetes since she was four years old. It has not stopped her. She has camped in the Smoky Mountains, hiked at Devil's Lake, gone to a wedding in Mexico, and walked a marathon in Dublin. This summer, she is going with us to Italy. She has gone scuba diving. She rides horses, including jumping over fences.

But the diabetes always lingers in the background. A few years ago, we almost lost her. She was taking a bath when she had a low blood sugar and lost consciousness. If there hadn't been an angel on my husband's shoulder that led him to go up to the bathroom, she would have drowned. My other children still talk about the firefighters running up the stairs with their axes to break the door down.

I am telling you all of this because there are people who are saying that no one can judge what should be done unless you suffer as they have. Well, I have suffered. My daughter has suffered. And we say that the limited funds that are available for research should not be spent on cloning for stem cells. In fact, Angela's battle cry has become, "Don't give me stem cells. I want a Mercedes!"

Besides, the hype over the potential of cloning is just that. Hype. It took 277 attempts to create Dolly the sheep who aged faster than a normal sheep and suffered a premature death. Human cloning is said to be even more difficult. And where will we get the billions of eggs for the over 100 million people cloning is supposed to cure? The idea that so-called therapeutic cloning will amount to anything, much less cure any disease, is doubtful at best. Yet, the expectation that cloning will cure is held like a carrot in front of desperately ill people and their families with overly optimistic projections. Those who support cloning are using people like my daughter Angela as human battering rams to obtain their goal of public and political acceptance of their agenda and take money away from other research.

Is a clone human? How can it not be? You could not get human tissue if it was not. The cells divide. It grows. And, when provided the proper environment, it will develop from

an embryo to a fetus, an infant, a child, an adolescent, an adult. And it will live to a ripe old age unless death in the form of disease or violence ends its life. It a life, a human life.
We should be passed the time when other human beings are treated as property.

Medical advances should not be made from the intentional destruction of a human life. Clones are merely our identical twin. What is being asked to do is to kill Steve's identical twin Stan to save Steve's life. To create a human life for that sole purpose is heinous. Whether or not one lives should not be a matter of the opinion of some researcher with eyes on a Nobel Prize.

My daughter Angela is not a thing to be used to manipulate public opinion. She does not ask for anyone's pity. She wants a chance to live a full life. What we both want is that millions of dollars be better spent on research that is already showing promise, not wasted on mathematical impossibilities. And not at the expense of another human's life.

I therefore ask you to support AB 104 + SB45.

Thank you.

To the Committee members reviewing Legislative Bills...AB 104 and SB 45

co-authored by Representative Steve Kestell of Elkhart and Senator Joe Leibham of Sheboygan

I wish to testify in favor of these two billswhich, in my opinion, would summarily prevent a scientific nightmare from taking place if either form of cloning human embryos...therapeutic or reproductive.... would be allowed to begin, even on a temporary or trial basis, in this country. The cloning of Dolly the sheep and other animals has already raised fears among many scientists that the method is fraught with many dangerous consequences. The state of Wisconsin does not need the shame such consequences could bring.

Indeed, these bills, if adopted, would force the more positive and proven method of Adult Stem Cell research to get a 'jump start' here in Wisconsin which has become a front runner in this field of exploration. Allowing either form of research will put Wisconsin in the back seat of scientific research simply because it has, at best, a 'problematic' future... if not an impossible one.

Embryonic Stem Cell research is, by all Christian principles, immoral because it allows for the destruction of human life for purely 'experimental' purposes....admittedly by some, to produce normal, healthy, flawless human beings, that someday, by scientific wizardry, could be cloned to produce a superior race of humans. It has all the intentional earmarks of ethnic cleansing. World War II experiments on human life were regarded with horror when they were exposed. So too the Nazis regime's attempt to "cleanse" the population of undesirable and unwanted elements of the population. Research on living embryos can only lead us down the same horrific path.

In the past relatively few years science has made great advances in showing that life begins not at implantation of the developing embryo, nor at the first, second or third trimester...nor even at birth... but at the moment of fertilization. This is a fact that can no longer be denied. It is a scientifically admitted fact. You will have a hard time proving it otherwise to your Christian constituents. When the facts trickle down to the voting population, those who continue to deny these facts will be hard pressed to find a backing. This country still has a strong Christian conscience.

The polls are now showing that 67 percent of the country are now thinking pro-life...and the largest percentage are young people of high school and college age. And it is growing. Eighty percent of the 200, 000 people who took part in the January 22nd pro-life march in Washington D.C. were of this age group. This says only one thing....that the country is waking up to the facts that the scientific world is now bringing to light...that life does indeed begin at fertilization. In the next few years the number of those who recognize these facts will multiply.....and will vote.

Should these facts, then, not be a part of your decision making today as you listen to testimony from your constituents? Statistics, like facts, seldom are reversed. They often come back to haunt us. With all the facts we now have before us from the scientific world, that the embryo is a living being on-the-way to becoming an adult...a living 'human' being...not plant or animal, or any indistinguishable species of plant or animal....but a being with all the necessary human genetic parts, barring none....needing only nutrition to develop what it already possesses.... and nothing morecan we then pretend to harbor doubts as to how to resolve this issue?

There is only one logical resolution....and that is to pass the bills as they are written.

Sincerely.... Rev. Edward M. Griesemer, SCJ
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**TESTIMONEY OF ANDREW COHN
WISCONSIN ALUMNI RESEARCH FOUNDATION
ASSEMBLY PUBLIC HEALTH COMMITTEE
SENATE JUDISCIARY, CORRECTIONS, PRIVACY COMMITTEE
AB 104 & SB 45**

Co-Chair Senator Zien and Assemblyman Hines as well as members of the Public Health Committee and Judiciary Committee, thank you for the opportunity to speak with you today about this important issue.

My name is Andrew Cohn and I am the Government and Public Relations Manager for the Wisconsin Alumni Research Foundation you may know us as WARF. We are an independent non-profit organization that has been providing support for the University of Wisconsin-Madison for over 76 years. WARF exists to support scientific research at UW-Madison. We carry out this mission by moving technology from the laboratory to the marketplace for the benefit of the University, the inventors and humankind. Revenue received from this transfer is invested by WARF and at the end of each year we provide a grant to the University that is primarily used to support research. Last year WARF's provided grants to the University of approximately \$38 million. Warf has contributed or committed over \$650 million since 1925.

In 1999, at the request of the University, WARF created a non-profit, privately financed, research institute called WiCell Research Institute. Dr. James Thomson is the scientific director of WiCell. WiCell's mission is to distribute human embryonic stem cells to researchers all over the world, and to conduct research on human embryonic stem cells. That research is conducted in collaboration with researchers from the University of Wisconsin-Madison. The University and WARF's efforts in furthering this research and in sharing this technology with the rest of the world has been publicly applauded by the National Institutes of Health, Secretary of Health and Human Services, Tommy Thompson, United States Senator Arlen Specter, and a host of scientists throughout the world.

I am here to oppose AB 104 and SB 45 because passage would slow the advance of extremely important technology discovered on the University of Wisconsin-Madison campus and harm the reputation of WiCell as a research institute. Other speakers have described the consequences of these bills to the science and the potential for treatments and cures for the world's most devastating diseases. I would like to remind you that the consequences of this legislation would mean that this research would go to another state and flourish. That is not speculation but a fact. Companies interested in this technology could not locate here and the suppliers to those businesses would also not locate in Wisconsin. The Biotech Industry has made fantastic strides in our state. Passage of these bills would devastate the reputation of our

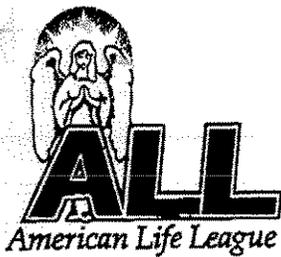
state with companies, highly skilled employees, venture capital firms and the national media.

Mike Shoys, vice president at Wisconsin Manufacturers & Commerce said at a recent news conference. "At WMC, our members' top priority is creating a robust economy. We share Governor Doyle's commitment to job growth, controlling taxes and cutting government spending. "And, we share his commitment to advancing research at the University of Wisconsin. Research and scientific advances will help broaden our economic base to create high-paying, technology-based jobs." Wisconsin needs to cultivate the emerging biotech industry, and our state should not pass laws that restrict scientific research that make it harder to recruit scientists and new companies."

During the summer of 2001, a national biology lesson occurred as every major newspaper including the *New York Times*, *Wall Street Journal*, *The Washington Post* published article after article about the need and promise of research on human embryonic stem cells. Almost every major newspaper in the country editorialized in support of federal funding for this research. Health and Human Services Secretary Tommy Thompson who supported this research as Governor of Wisconsin continued his support when he moved to Washington.

That research, that President Bush concluded was too important for the federal government not to fund, began at the University of Wisconsin-Madison. The research continues here at the University today on many fronts. Our scientists are learning how to cause humane embryonic stem cells to change into nerve cells, heart cells, blood cells and insulin-producing pancreatic cells. Their discoveries will lead to treatments for conditions such as Parkinson's disease, heart disease, diabetes and cancer. Dr. Thomson's discovery and the continuing research here at Madison have raised the stature of the University of Wisconsin-Madison throughout the world. If the research continues it will be a magnet attracting top scientists and companies to locate here in Wisconsin. If AB 104 and SB 45 are passed, however, the prestige of the University will suffer a devastating blow and cures for many debilitating diseases will be delayed, and the economy of this state will be irreparably harmed.

I implore you; please stop AB 104 and SB 45.



Official Statement
American Life League opposes Any Type of Human Cloning

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Judie Brown, President

- **Cloning will destroy the unity of marriage and parenthood.**

Tragically, disruptions to the unity of marriage and parenthood abound in today's culture. Cloning is yet another blow to the unity which should exist in Christian marriage.

- **Cloning turns people into commodities.**

Cloning subjects a human person to being treated as a thing. Cloning a child is an expensive technological project, prone to "quality control." Treating persons as things has become commonplace in our society, but the practice is always destructive and immoral.

- **Cloning is an assault on human life.**

The first argument against human cloning is straightforward and widely shared: it is dangerous. The report of the one successfully cloned sheep in Scotland was preceded by 276 failures. Cloned human embryos have already been killed in research laboratories. In addition, genetic screening will be used with cloned human embryos and any embryo who does not pass will be killed.

- **Cloning assaults the dignity of human procreation.**

Human procreation involves a man and a woman coming together as one, open to new life—the fruit of their union. Assisted reproductive technologies are, without a doubt, affronts to human dignity. And cloning leaves no trace of the dignity of human procreation, as it is completely artificial reproductive technology.

- **Cloning assaults the dignity of the conjugal union.**

Normally, a child is the living expression of the parent's mutual love. To be sure, there are children whose parents

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*Protecting innocent human life
from fertilization to natural death.*



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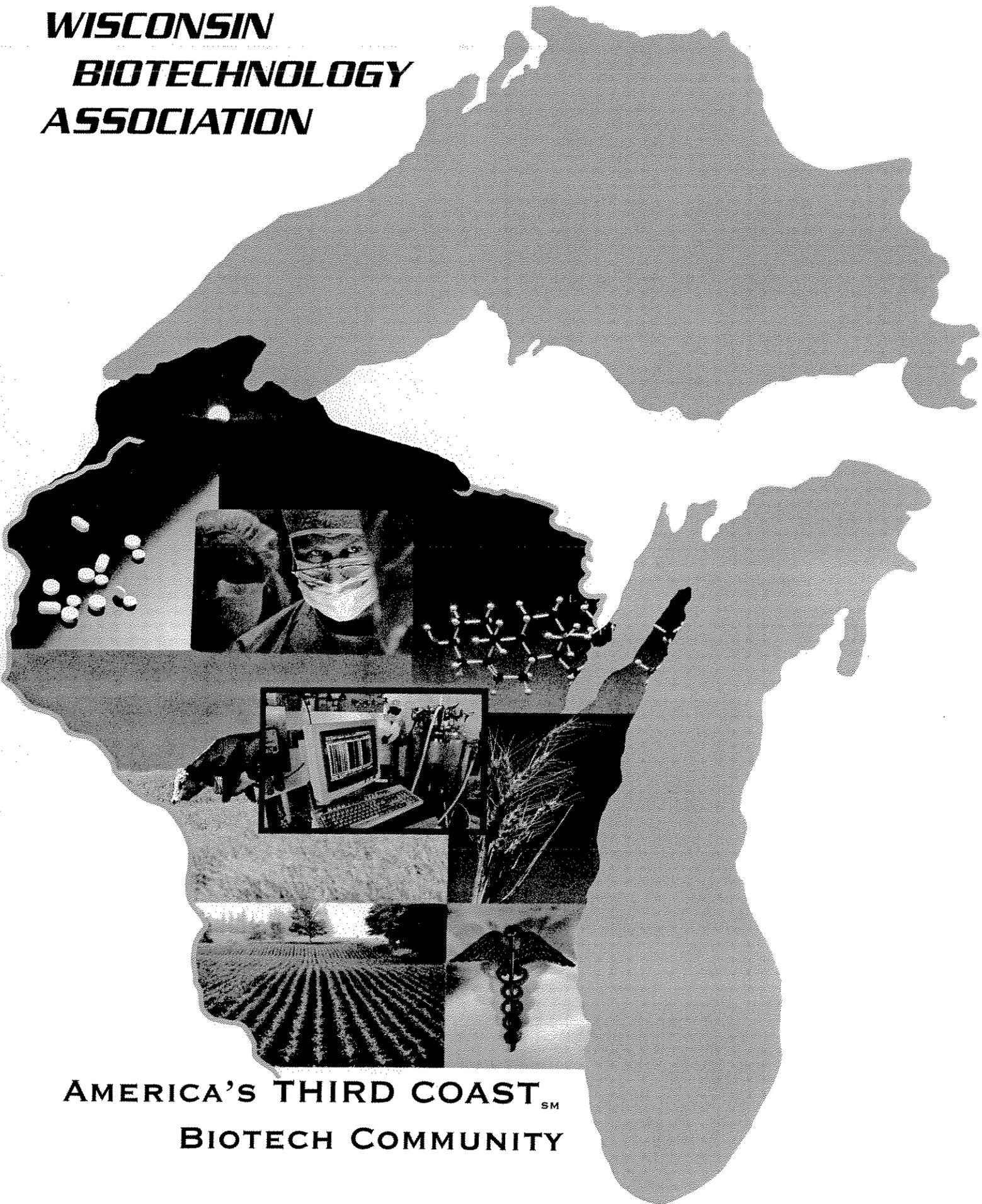
*Protecting innocent human life
from fertilization to natural death.*

do not love each other, as there are married couples who love each other and do not have children. Still, the existence of children is a persistent sign of parents' mutual love. The potent and universal sign of God's gift of life is lost when the child's life begins in a laboratory.

• **Cloning is unprecedented human arrogance**

If making people in your laboratory isn't "playing God," the phrase has no meaning.

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BIOTECHNOLOGY
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**AMERICA'S THIRD COASTSM
BIOTECH COMMUNITY**

Presenting the

WISCONSIN BIOTECHNOLOGY ASSOCIATION

AMERICA'S THIRD COAST BIOTECH COMMUNITY

The Voice of Wisconsin's Biotechnology Community

For more than a decade the Wisconsin Biotechnology Association (WBA) has been the voice of Wisconsin biotechnology. We have an acclaimed industrial and service business sector that has begun to recognize the economic and scientific contributions of this community of biotechnology businesses.

Biotech Enterprise Expansion in Wisconsin

About 100 Wisconsin companies are currently members of the Wisconsin Biotechnology Association. This Third Coast biotech community is located in Wisconsin, whose borders are formed in large part by Lakes Superior and Michigan as well as the Mississippi River. Biotech companies are locating, relocating and expanding their businesses every day in this dynamic Midwestern research center.

Internationally Acclaimed Research Universities

The Third Coast state has an international reputation for the quality of its public and private university systems. Our great research universities are producing the science, and the scientists, fueling biotechnology transfer to private enterprise. A business- and biotech-friendly state government encourages biotech growth. Significant state funding is expanding the educational facilities necessary to nurture biotech research.

Capital Resources are Growing

The WBA is the place for innovators to share their ideas and collectively develop the private and public policy initiatives that promote biotech growth. Capital resources continue to grow. New and expanding capital sources support both new and established biotech businesses. The WBA is committed to identifying and encouraging new sources of capital for its member companies.

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The Role of the Wisconsin Biotechnology Association

The WBA is dedicated to...

Influencing Public Policy

Building public sector support for scientific research and technology transfer is essential for success. Initiatives promoted by state and federal legislators and other public officials can make or break the scientific community. The WBA provides these policy makers with reliable information in support of biotech research and business community development. The WBA walks the halls of our state's and nation's Capitols, telling the biotech story. Public officials are responding with their support.

Developing Biotech's Image

The WBA is dedicated to developing the image of the biotech community so that it is recognized as Wisconsin's new economic force. Wisconsin has the educational, research and financial resources needed for biotech companies to grow. Our state has a diverse population offering a wide range of cultural experiences. We also have nearly boundless water and forest resources that offer world-class recreational opportunities. The WBA is focused on helping the Third Coast become a world-class biotech center.

Increasing Biotech Research Funding

The WBA is committed to maintaining and expanding state and federal biotech funding. Many scientific advances are simply not possible without research grants from state and federal agencies. The WBA is committed to maintaining existing and identifying new government grant sources. The WBA is the biotech business community's voice in these state and federal budget deliberations.

Providing Member Services

Providing services to our members is a critical role of the WBA. As a private trade association, the WBA offers services that are vitally important to biotech, biotech-related companies and associate member companies and organizations.

The WBA Purchasing Consortium saved our members over \$1.4 million dollars last year alone. Biotech suppliers also provide important revenue support for the WBA. Both biotech and associate members have the opportunity to purchase goods and services from selected vendors at discounted prices. The WBA is constantly developing new Consortium partnerships.

Seminars and Other Social and Professional Events offer our members important opportunities for learning and networking. Each fall the WBA/Third Coast Biotech Community's annual conference brings to Wisconsin nationally and internationally renowned speakers to address a variety of biotech topics. In 2001, the WBA joined with the Wisconsin Innovation Network (WIN) Foundation to give our members access to WIN's Life Sciences Venture Fair, which was attended by venture capitalists from around the country. The WBA will provide a similar opportunity in 2002. Periodically the WBA offers members seminars and luncheons with programs designed to help them build their biotech companies. Program topics include such issues as how to design a biotech facility from day one to final development and how to identify and evaluate research park locations and opportunities.

Your membership in the WBA would bring these benefits to your company or organization. Likewise, the participation of members in the WBA is critical to our continuing success. We thank you for your support.



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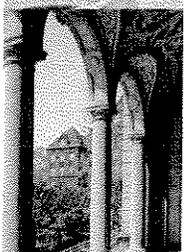
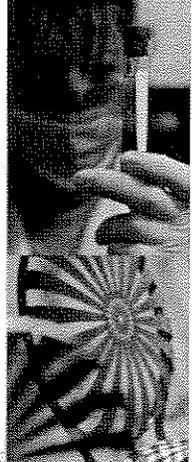
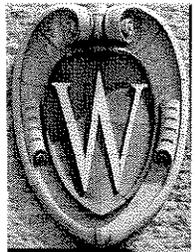
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BioPharmaceutical Technology Center Institute (BTCI)
Bio-Technical Resources
The Blood Center of Southeastern Wisconsin
Celebrus Consulting Group

Clasmann BioHoods & Cleanrooms
Columbus Chemical Industries
ConjuGon, Inc.
Covance Laboratories, Inc. (<i>Sustaining Member</i>)
DNASTAR, Inc.
Earth Tech Consulting, Inc.
Eli Lilly & Company
EPICENTRE Technologies
EraGen Biosciences Inc.
Fisher Scientific (<i>Platinum Sponsor</i>)
Flynn Creek BioConsulting
Four Lakes Scientific, Inc.
Gala Design, Inc.
Genencor International, Inc. (Enzyme BioSystems LTD)
Genetel Laboratories, LLC
GenTel, Inc.
GeriGene Medical Corporation
GlaxoSmithKline
Harlan Bioproducts for Science
Imago Scientific Instruments Corp.
Infigen, Inc.
Kendrick Laboratories, Inc.
KiwiChem International, Inc.
LabTech Midwest, Inc.
LifeScience Partners LLC
Lucigen (formerly Microgen)

Madison Area Technical College
Madison Skin & Research, Inc.
Marshfield Clinic (<i>Sustaining Member</i>)
Medic Group, Inc.
Medical College of Wisconsin Research Foundation
Midwest PhRMA (<i>Platinum Sponsor</i>)
Milwaukee County Research Park
Mirus Corporation
Molecular Chimerics Corporation
Monsanto Company-Agracetus Campus (<i>Sustaining Member</i>)
NeoClone Biotechnology International LLC
nPoint
Next Generation Clinical Research Consulting, Inc.
NimbleGen Systems, Inc.
Novartis
Nutra-Park Inc.
Ortho Biotech Products, L.P. (<i>Sustaining Member</i>)
PanVera Corporation
Paradocs Consulting
Paul F. Umbeck & Associates, LLC
Pel-Freez Clinical Systems, Inc.
Pfizer
Pierce Milwaukee LLC
Platypus Technologies, LLC
Powderject Vaccines, Inc.
PPD Development

Prodesse, Inc.
Promega Corporation (<i>Sustaining Member</i>)
ProtoPROBE, Inc.
Quintessence Biosciences, Inc.
rlQ Inc.
Schering-Plough
Schwarz Pharma USA, Inc. (<i>Sustaining Member</i>)
Scientific Protein Labs
Soft Flow, Inc.
Stratatech Corporation
The Strategy Factory
Susan E. Atkins + Associates
Tetrionics, Inc.
Third Wave Technologies, Inc.
University of Wisconsin Biotechnology Center
University of Wisconsin-Madison, MS in Biotechnology
University of Wisconsin-Madison, University-Industry Relations
University of Wisconsin-Madison, Waisman Center
University Research Park, Inc.
Wisconsin Alumni Research Foundation (WARF)
Wisconsin Viral Research Group
Wyeth-Ayerst



—Thomas Edison

“The
value of an idea
lies in the using of it.”

Wisconsin Alumni Research Foundation

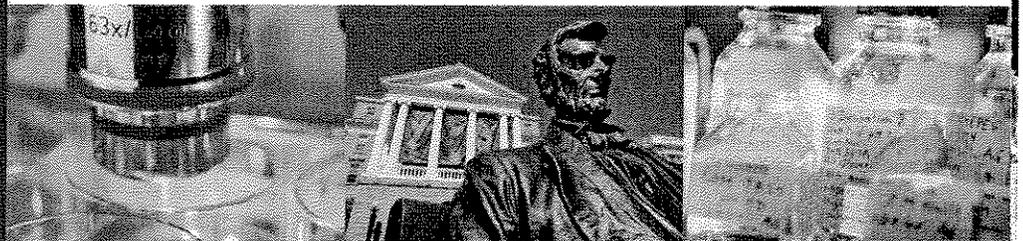
Great ideas are conceived every day, but they lack economic value until applied. WARF, the Wisconsin Alumni Research Foundation, has been creating economic value from great ideas for over 75 years for the benefit of the University, its inventors and society as a whole. We are a world leader in patenting and licensing breakthrough innovations from the University of Wisconsin-Madison that can help you capitalize on the future today.

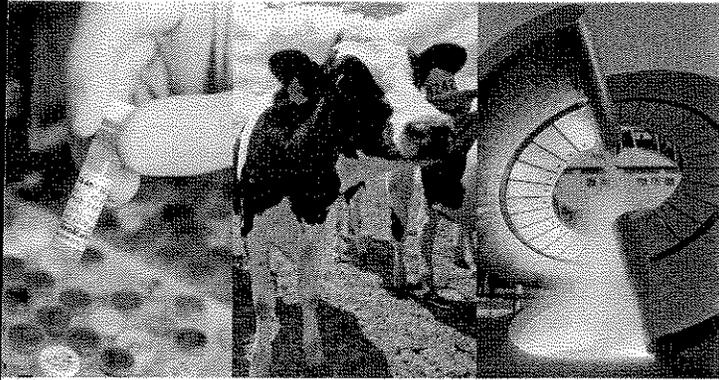
CONNECTING INVENTORS AND MARKETS

Academic research is now a critical asset to businesses around the world. The transfer of new technologies from academia to the marketplace is an economic boost. It infuses money and creates jobs as well as brings dollars back to the University of Wisconsin-Madison to fund further research.

WARF bridges the gap between research and application – between the idea and the using of it. We help UW-Madison inventors navigate the patent process. Businesses turn to us for the necessary innovations to stay viable in ever-changing markets. The circle is completed when royalties paid by companies for inventions are given by WARF to the University to fund further scientific research.

Technology transfer is connecting ideas, people and business — relationships we develop and nurture.





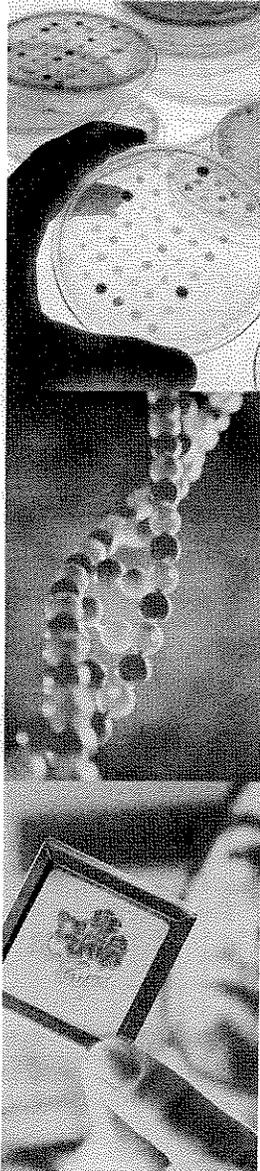
TECHNOLOGY TRANSFER

Technology transfer is not a new idea. In Wisconsin, it was sparked in 1925 by Professor Harry G. Steenbock's discovery that sunlight increased the vitamin-D content of food and by his belief that licensing this and other ideas from university research could help provide critical research funds for the University. On that premise, Dr. Steenbock and a group of forward-thinking alumni formed WARF to protect and license his as well as other inventions arising at UW-Madison. The millions of dollars generated from Steenbock's first patent spawned an endowment that still exists to secure the future of scientific research at the University of Wisconsin-Madison.

Annually, WARF:

- Receives about 300 invention disclosures
- Accepts about 60% of disclosures for patent applications
- Licenses over 90 technologies
- Returns royalties to over 200 UW-Madison researchers
- Builds relationships in over 20 foreign countries
- Provides millions of dollars to fund research, fellowships, scholarships and other critical programs at UW-Madison

FUNDING THE CYCLE OF DISCOVERY



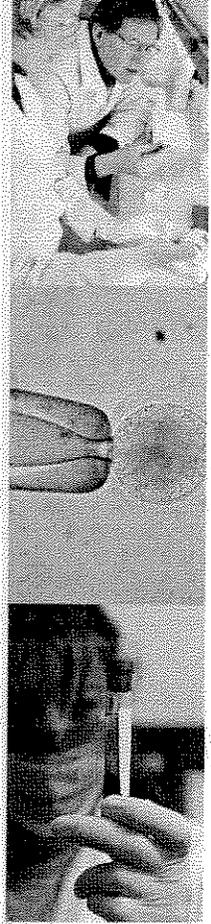
The following inventions have provided significant improvements in the human condition and new products to numerous businesses. WARF provides the generated revenues to the UW-Madison which supports research in a wide variety of departments and disciplines.

- Vitamin-D analogs for the treatment of osteoporosis, cancer, psoriasis and multiple sclerosis
- Magnetic Resonance Imaging (MRI) for early detection of disease
- Belzer/Southard/UW Solution for preserving organs and extending their viability for transplantation
- Human Embryonic Stem Cells for research in human development and therapies for presently untreatable diseases ranging from Parkinson's to birth defects
- New genetic discoveries for the treatment of human genetic disorders such as cancer and diabetes

A LONG HISTORY OF SUCCESS

WARF's accomplishments are staggering:

- Over 3,000 discoveries have been disclosed to WARF
- Over 1,000 U.S. patents and over 1,500 foreign equivalents have been secured by WARF
- Over \$500 million has been returned by WARF to the University primarily for funding additional scientific research



SECURING THE FUTURE ONE PARTNERSHIP AT A TIME

Business needs innovation to survive in an increasingly competitive global economy. One proven source is through marketplace partnerships. For over 75 years, WARF has earned its reputation as a recognized leader in forging strong marketplace partnerships that match breakthrough innovations developed by UW-Madison faculty with businesses looking for cutting-edge technology.

THE WARF MISSION

WARF exists to support world-class research at UW-Madison. We carry out this mission by protecting the intellectual property of University faculty, staff and students, and by licensing inventions resulting from their work. Through our licensing efforts, University ideas benefit the public and bring resources back to the University to continue the cycle of investment, research and invention.



EXPERIENCE AND EXPERTISE

At WARF, our people make the difference! We attract top-notch, experienced talent to work for the Foundation, brilliant academics to work with us, and innovative businesses to use our technologies. Our staff is well trained and highly qualified. They know the intricacies of patenting, have worked with researchers in diverse disciplines, understand industries and markets, and have mastered innovative licensing strategies to meet the individual needs of business clients. Our grasp of the marketplace for technology transfer makes our staff a valued asset for everyone involved.

WARF can structure deals that accommodate the unique needs of individual companies, specific technologies, and changing market conditions. Our experts are available throughout the process continuum. We have a rich history of results. We can help you capitalize on tomorrow's technology today.

WARF's scientific areas of expertise include:

- Biotechnology
 - Medical Biotech, Agricultural Biotech
- Small Molecule Pharmaceuticals
- Advanced Materials
- Microelectronic Machines
- Medical Physics
 - Radiotherapy, Dynamic Medical Imaging
- Information Technology
- Engineering Innovations
 - Photonics, Microfluidics, Power Electronics

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M A D I S O N

"Wisconsin's pioneering legacy continues through partnerships such as the one between WARF and the UW.

WARF's financial support provides the margin of excellence for research at UW-Madison."

*- Chancellor John Wiley,
University of Wisconsin*

ANDREW COHN
GOVERNMENT & PUBLIC
RELATIONS MANAGER

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 **WARF**

WISCONSIN ALUMNI RESEARCH FOUNDATION



Wisconsin Alumni Research Foundation

Photo credit: Jeff Miller/UW-Madison University Communications

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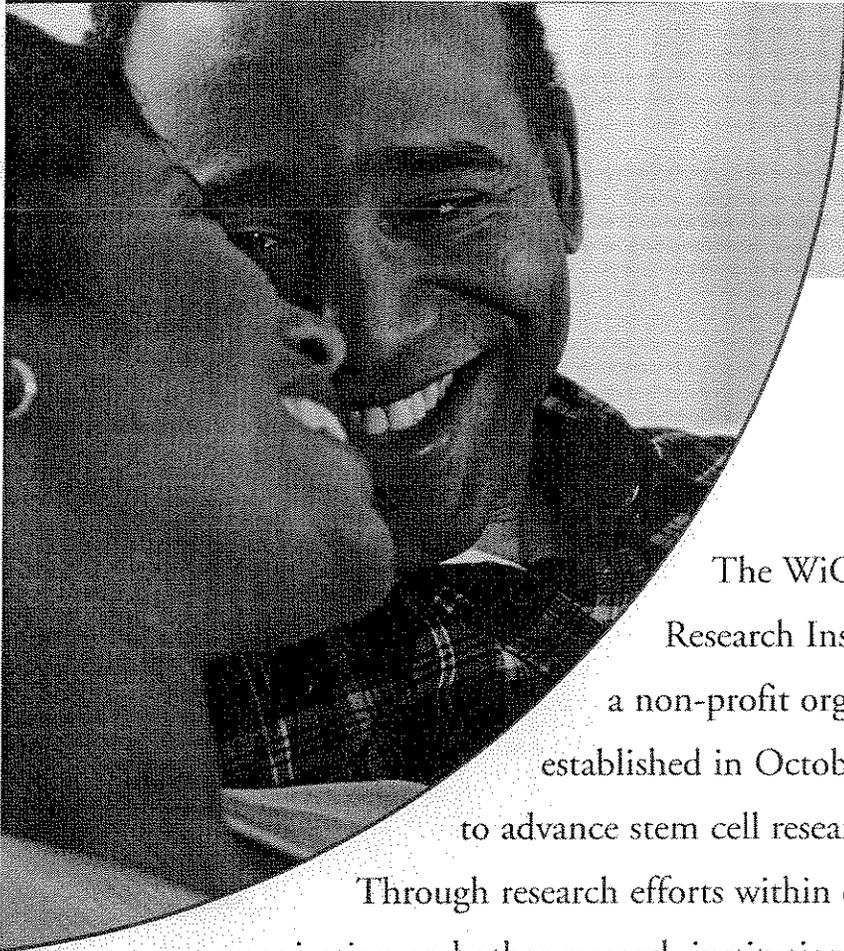
breakthrough

a major accomplishment
or success that permits
further progress



WiCell

Research Institute

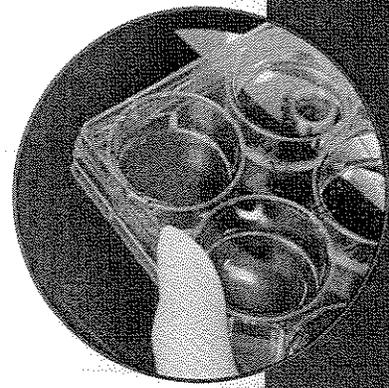


The WiCell
Research Institute is
a non-profit organization
established in October 1999
to advance stem cell research.

Through research efforts within our
organization and other research institutions,
we look to uncover the full potential of stem cells.

The University of Wisconsin-Madison and the WiCell
Research Institute operate under a collaboration
agreement, which ensures that the expertise of both
entities will be available to advance research relating to
human embryonic stem cells. This collaboration
combines into a single effort the talents of investigators
with diverse research and clinical expertise.

The unique resources available at the WiCell
Research Institute, the Wisconsin Regional
Primate Center, the University of Wisconsin
Hospital Transplant Program, and the Waisman
Clinical BioManufacturing Facility will enable
the rapid development of common strategies for
stem cell-based therapies for a range of diseases.



Stem cells. A breakthrough in modern medicine. Through the discovery of ways to isolate and culture embryonic stem cells at the University of Wisconsin-Madison, and through critical ongoing research at the WiCell Research Institute, we've learned that stem cells possess the potential to cure some of today's most prevalent diseases.

To fully understand the impact of stem cell research on medicine today, it's important to know the basics of stem cells and their origin.

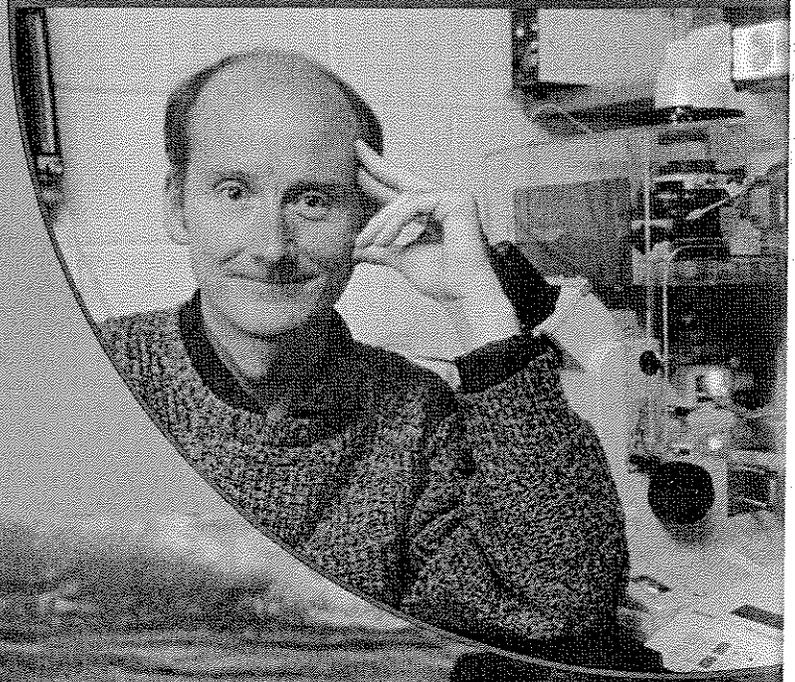
Embryonic Stem Cells and Their Importance

Embryonic stem cells are undifferentiated cells that have the ability to divide for indefinite periods in culture and then undergo differentiation into specialized cells, such as bone, muscle, blood or liver cells. These stem cells have great potential because of their ability to replicate themselves. They are available in an unlimited supply, and they can form virtually any other cell made by the human body. A critical next step is to determine the process that controls specialization.

UNIVERSITY OF
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MADISON

"The University of Wisconsin takes pride in Professor James Thomson's research on human embryonic stem cells, a source of hope for millions of Americans afflicted with diseases previously thought to be untreatable or intractable. This partnership between WiCell Research Institute and the University of Wisconsin is making this hope a reality."

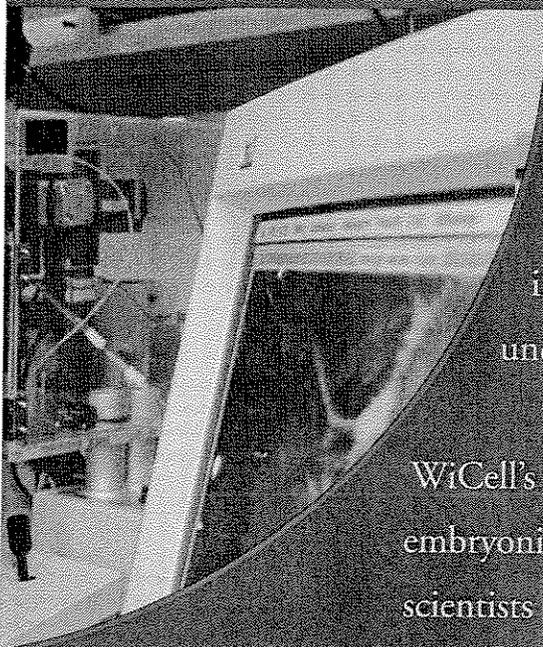
Dr. Virginia Hinshaw
Dean Graduate School, Senior Researcher
Board of Directors, WiCell Research Institute





*n-Madison
and his groundbreaking
his research provides real
with diseases that were
urable. The collaboration
e University is critical to
ility.”*

Research Officer
Institute, Inc.



The Wisconsin Discovery

For over a decade, scientists tried to isolate and proliferate human embryonic stem cells. In 1998, Dr. James Thomson, a University of Wisconsin researcher, was successful in establishing and sustaining several independent cell lines in culture. These human embryonic stem cells were derived from embryos developed in vitro, in excess of clinical need, and donated by informed consent from couples who had undergone in vitro fertility treatment.

WiCell's mission is twofold: 1) to provide human embryonic stem cells for research purposes to academic scientists all over the world, and 2) to engage in research utilizing the expertise of the University of Wisconsin-Madison scientific community.



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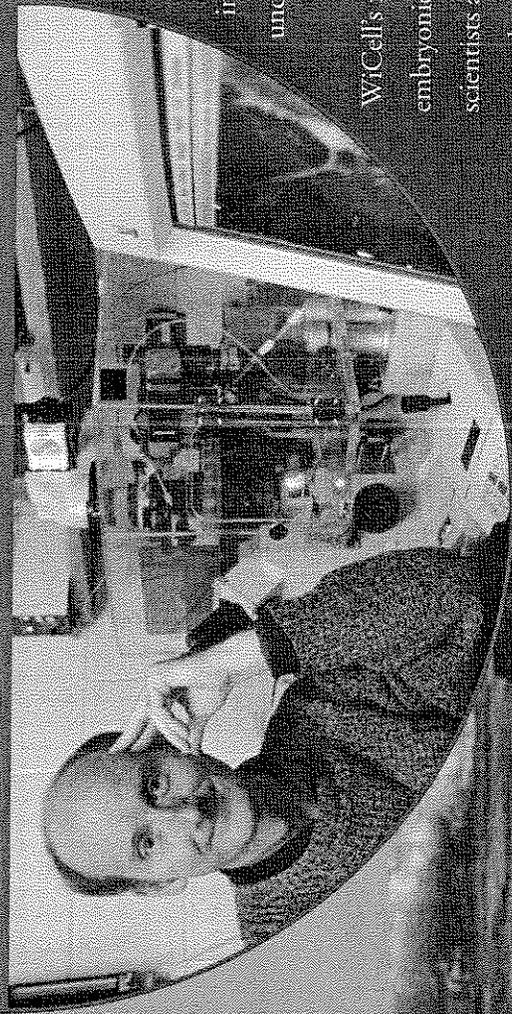
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"The University of Wisconsin-Madison takes pride in Professor James Thomson and his groundbreaking research on human embryonic stem cells. This research provides real hope for millions of Americans afflicted with diseases that were previously thought to be untreatable or incurable. The collaboration between WiCell Research Institute and the University is critical to making this hope a reality."

Dr. Virginia Hinshaw
Dean Graduate School, Senior Research Officer,
Board of Directors, WiCell Research Institute, Inc.



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The Big Picture

The ability to grow a variety of human tissues using stem cells gives scientists the tools to fight, and possibly cure, a range of cell-based diseases. For example, diseases like Parkinson's, diabetes, heart disease, ALS, Alzheimer's — all of which occur because of cell defects — can possibly be treated by replacing damaged cells with healthy ones. Also, stem cell technology can aid in drug discovery, where populations of pure stem cells can serve as a rapid and efficient testing ground for chemicals that may prove medically effective. Lastly, human embryonic stem cells can help us more thoroughly understand the early stages of human development, so we might one day treat, and even prevent, birth defects.

From left to right:

*Ren-He Xu M.D. Ph.D.
Developmental Biology*

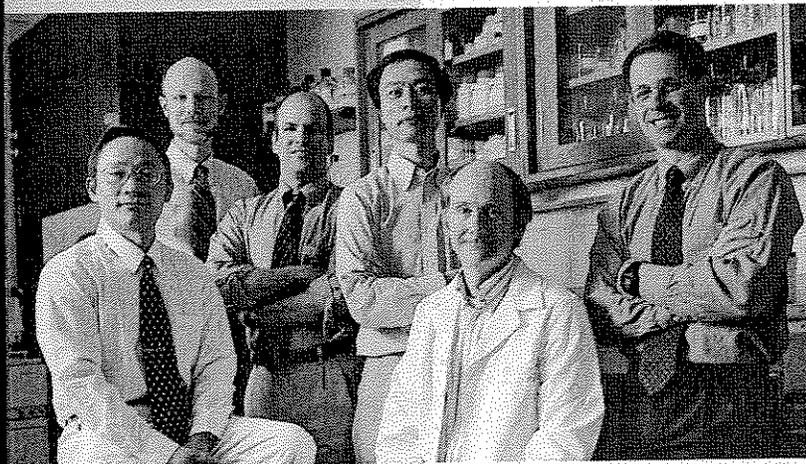
*Tim Kamp M.D. Ph.D.
Cardiology*

*Dan Kaufman M.D. Ph.D.
Hematology/Bone Marrow Transplantation*

*Sue-Chen Zhang M.D. Ph.D.
Neurodevelopmental Biology*

*James Thomson V.M.D. Ph.D.
Scientific Director, WiCell Research Institute*

*Jon Odorico M.D.
Transplant Surgery*



608-263-2500
info@wicell.org

We have just opened the door to this important area of science. We can imagine a day in which our research will help combat all diseases. Stem cells have the potential to change the face of medicine and improve the quality of every life, which is the promise that drives each of us at WiCell.

