



VISION 2020: RESEARCH CENTERS OF EXCELLENCE

Research Centers of Excellence located around the state will be the functioning arms and hands of the Institute for Interdisciplinary Research (the IIR). The Research Centers will be organized around large-scale opportunities to build high-technology Wisconsin businesses. The Research Centers will focus on applied research that transfers new, public sector science and technology to the private sector to solve unique problems of a particular industry. The Research Centers will identify disruptive technology that can be expected to force changes in the competitive landscape for Wisconsin's leading industries, thereby helping to prepare market leaders for the coming challenges and to create opportunities for new entrants.

Within each Research Center will be a competitive intelligence network that is maintained locally, but one that is globally aware. Each Research Center will manage a worldwide network that routinely collects and analyzes trends in the market, identifies customer preferences, detects the actions of market partici-

pants and watches for development of relevant new technology. This knowledge will benefit those businesses that collaborate with and support each Research Center by helping them identify "breakthrough" technology early and quickly invent new products and services based on it.

The best opportunities for truly breakthrough technologies are usually found while striving to do things that have never been done before. This means attacking "big" problems, the kind of problems that have no known solution and seem unsolvable. The solutions to big problems, if found, can change the basis of competition and create sustainable competitive advantage for those who own the solution. For example, the next big wave of innovation is expected to come in bio-medical industries, where new discoveries abound, based on recent advances in our understanding of the human genome. The demands of the aging U.S. population are creating enormous strain on the present systems of delivering healthcare that call for new



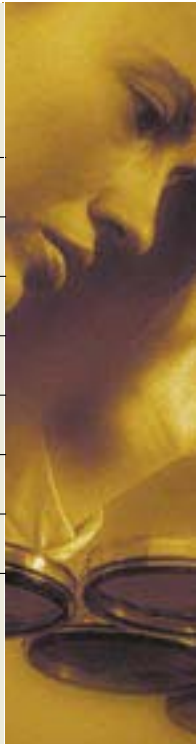
"Through Wisconsin's Research Centers of Excellence, we will think locally and compete globally."

>> *Paul Percy, Dean
College of Engineering
UW-Madison*

VISION 2020

RESEARCH CENTERS OF EXCELLENCE

Agenda	Focused research
Funding	Public and private programs
Mandate	Identify market problems; determine solutions
Scope	Community based, globally oriented
Trustees	Private sector representation on Board
Purpose	Encourage fluidity of ideas and people
Network	Competitive intelligence network
Alliance	Linked to the Institute for Interdisciplinary Research



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technologies to improve treatment and lower the cost of delivery.

The challenge for Wisconsin is to pick a few of the big problems about which we currently have some knowledge-areas of current research within our leading research institutions-and begin to develop Research Centers of Excellence focused on potential applications of that knowledge to real market needs. The Wisconsin Alumni Research Foundation (WARF) is ideally suited to assist with the process of identifying the world-class scientific research from the work being done in the UW System. The Medical College of Wisconsin and the Marshfield Clinic are producing remarkable technologies that offer great opportunity for new products and services. Using market-focused Research Centers around the state, we can begin to invest the

time, talent and money on product development for new, knowledge-rich businesses targeted at these opportunities.

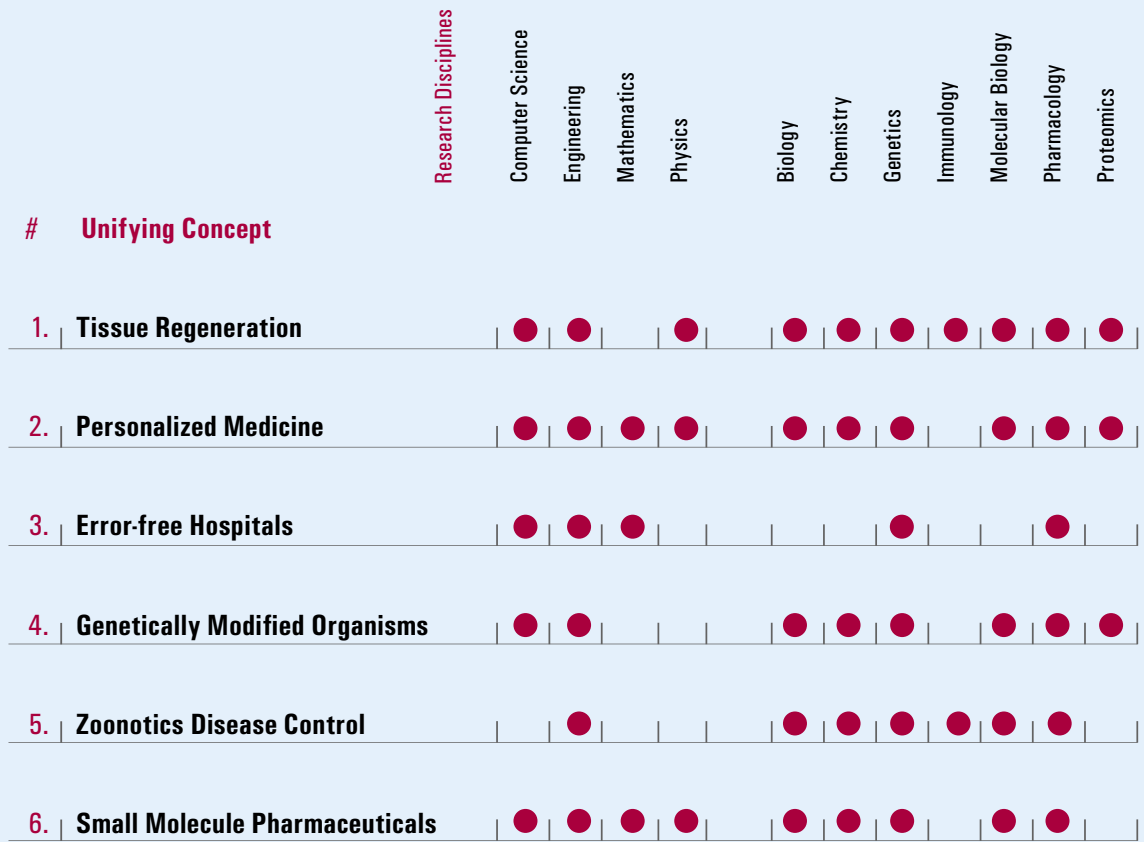
Numerous ideas are set forth on the following pages to stimulate thinking about possibilities for Wisconsin Research Centers of Excellence. The ideas are not intended to be either exclusive or exhaustive. They are merely a sampling of some of the leading ideas that have been proposed for such Research Centers. It remains for the local community and business leaders to select areas of research that are most appropriate for their situation. They must select problems that are big enough to inspire cooperation among local businesses, yet small enough to be attainable through a sustained collaborative effort of local partners. ■

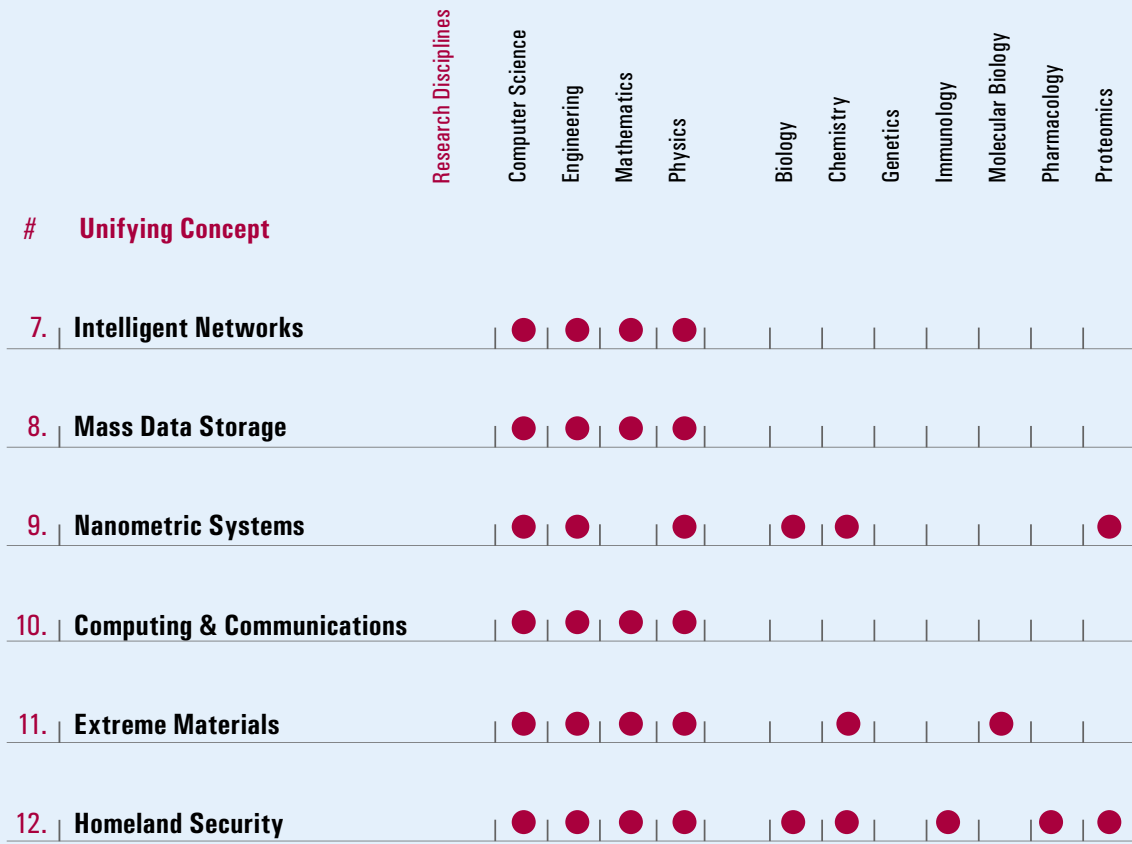
Potential Research Centers of Excellence

Discipline	Research to discover ways to:
Tissue Regeneration	Grow cells and tissues to replace diseased or damaged tissues in animals and humans.
Personalized Medicine	Use an individual's genetic code to predict likely diseases and develop unique treatments based on individual genetic predispositions.
Error-Free Hospitals	Reduce, and ultimately eliminate, medical accidents in hospitals that result from avoidable mistakes in patient information processing, diagnostic procedures, medication delivery, and treatment regimes.
Genetically Modified Organisms	Modify the genetic code of an organism to eliminate disease and improve the useful characteristics of plants and animals and to improve the quality and length of life of humans.
Zoonotic Disease Control	Prevent animal-born diseases from spreading to human populations and to control and eliminate those that do.
Small Molecule Pharmaceuticals	Discover new drugs using traditional biochemistry and molecular biology.
Intelligent Networks	Engineer high-speed communication networks that monitor traffic and automatically re-configure to accommodate demand based on user needs.
Mass Data Storage	Cost effectively capture, cleanse, condense, store, retrieve, analyze and deliver mission-critical data on demand through secure networks.
Nanotechnology Systems	Engineer materials and devices at the atomic and molecular level for making ultra-small devices that can perform work at a molecular level in microelectronic and biomedical applications.
Extreme Materials	Make new materials with properties that can meet very demanding structural specifications and/or withstand extremely harsh environments for long periods.
Homeland Security	Protect against terrorist attacks, respond to the emergencies created by such attacks, and restore normalcy to the community.
Computing and Communications	Develop the knowledge and technology to advance ultra-high performance computing and communication and accelerate the convergence of computing and communication.

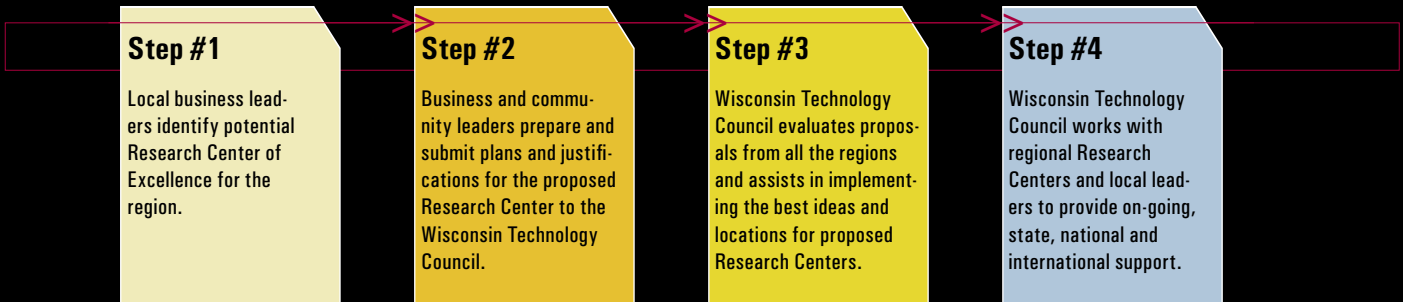


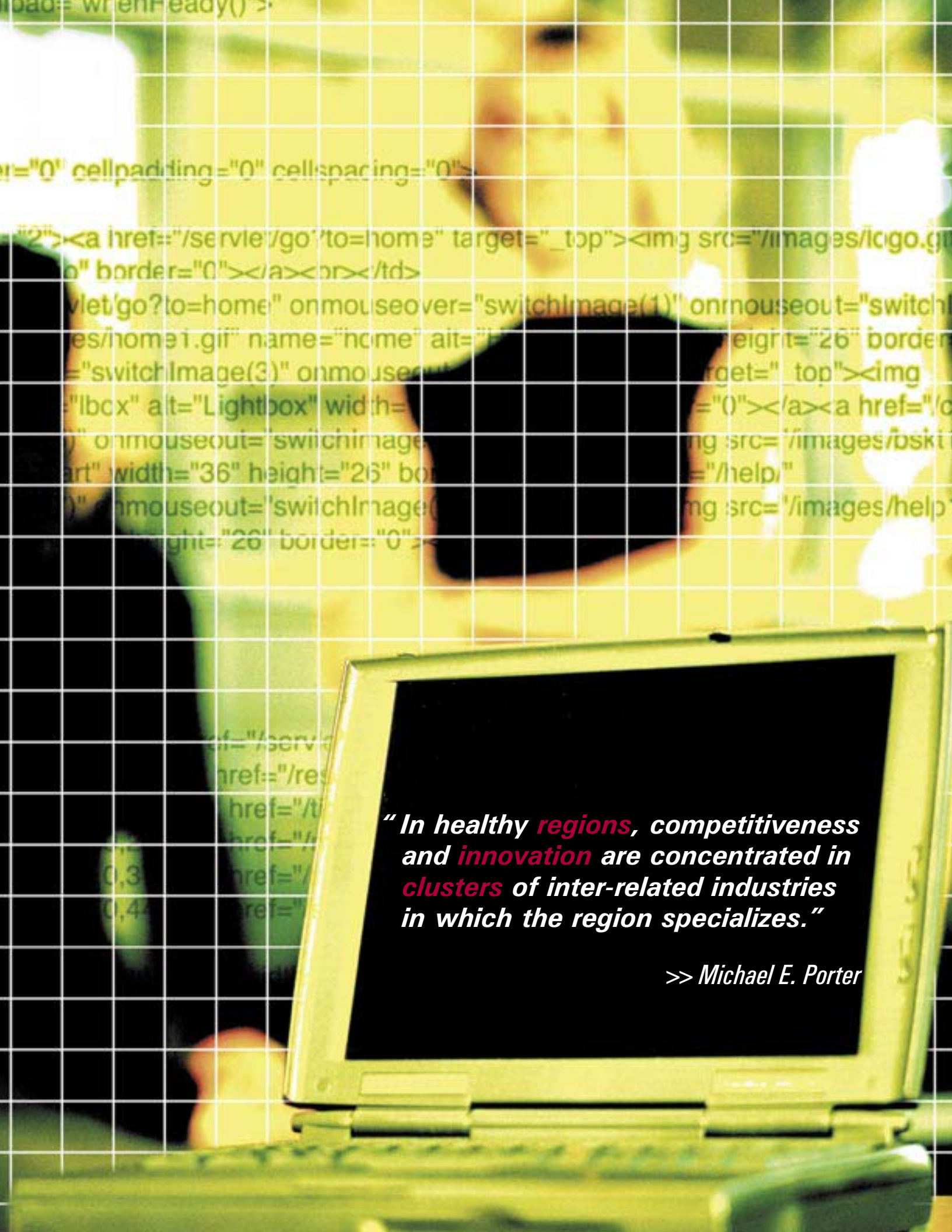
POTENTIAL HIGH-TECH RESEARCH CENTERS OF EXCELLENCE





Creating Centers of Excellence





*“In healthy **regions**, competitiveness and **innovation** are concentrated in **clusters** of inter-related industries in which the region specializes.”*

>> Michael E. Porter