

09hr_SC-ED_Misc_pt04a



Details: Informational hearing (8/18/2009)

(FORM UPDATED: 08/11/2010)

WISCONSIN STATE LEGISLATURE ... PUBLIC HEARING - COMMITTEE RECORDS

2009-10

(session year)

Senate

(Assembly, Senate or Joint)

Committee on ... Economic Development (SC-ED)

COMMITTEE NOTICES ...

- Committee Reports ... **CR**
- Executive Sessions ... **ES**
- Public Hearings ... **PH**

INFORMATION COLLECTED BY COMMITTEE FOR AND AGAINST PROPOSAL

- Appointments ... **Appt** (w/Record of Comm. Proceedings)
- Clearinghouse Rules ... **CRule** (w/Record of Comm. Proceedings)
- Hearing Records ... bills and resolutions (w/Record of Comm. Proceedings)
(**ab** = Assembly Bill) (**ar** = Assembly Resolution) (**ajr** = Assembly Joint Resolution)
(**sb** = Senate Bill) (**sr** = Senate Resolution) (**sjr** = Senate Joint Resolution)
- Miscellaneous ... **Misc**

* Contents organized for archiving by: Gigi Godwin (LRB) (July/2011)

**Joint Finance Committee Hearing
August 18, 2009**

Agenda

UW comprehensive campuses - WiSys team

- 1) 10:30 - 10:45 a.m. *UW Comprehensives are Emerging as Technology Development Drivers*
Dr. Maliyakal John, Managing Director, WiSys Technology Foundation

- 2) 10:45 – 11:00 a.m. *UW-Stevens Point is at the Forefront of Nanowire development: The industrial and educational implications to Wisconsin*
Dr. Mike Zach, Assistant Professor of Chemistry, UW-Stevens Point

- 3) 11:00 – 11:15 a.m. *Cancer Stem Cell Research at UW-River Falls; Collaboration Opportunity to Benefit UW Undergraduates and Wisconsin Patients*
Dr. Timothy Lyden, Associate Professor of Anatomy & Physiology, UW-River Falls

- 4) 11:15 -11:30 a.m. *Is R&D Important for Botanic Oil Innovations to Grow? How UW Collaborations can Benefit Wisconsin Small Businesses*
Dr. Mark Mueller, President, Botanic Oil Innovations, Inc., Spooner

- 5) 11:30 a.m. - Noon *How Energy Research at the UW-Oshkosh Campus may Impact the Wisconsin Economy and the US*
Dr. Charles Gibson, University Research Professor of Chemistry, UW-Oshkosh

- 6) Noon - 12.15 p.m. *Why Undergraduate Research is Important to Wisconsin*
Dr. William Campbell, Director, Grants & Research, UW-River Falls

UW Comprehensives Emerging as Technology Development Drivers

Maliyakal John
WiSys Technology Foundation

August 18, 2009

Slow Growth in US Innovations and Discoveries Causing Concern

| Countries | Population in | PA in 1980 | PA in 2006 | Fold Increase |
|-----------|---------------|------------|------------|---------------|
| USA | 304 | 62,099 | 221,784 | 3.6 |
| W. Europe | 171 | 24,510 | 68,429 | 2.8 |
| Taiwan | 23 | 367 | 19,301 | 53 |
| China | 1,033 | 7 | 3,768 | 538 |
| Korea | 49 | 33 | 21,685 | 657 |

PA = patent applications to US Patent Office

- 30% of all students are in undergraduate universities versus 28% in research universities
- 52% of Wisconsin undergraduate students in the UW System are in comprehensives
- Nationally, 83% of all research funding is directed to research universities
- 96.6% of UW System GPR research budget is directed to 2 research campuses

To Compete in a Knowledge-based Global Economy We Need to Encourage Technology Research in WI Undergraduate Research Institutions

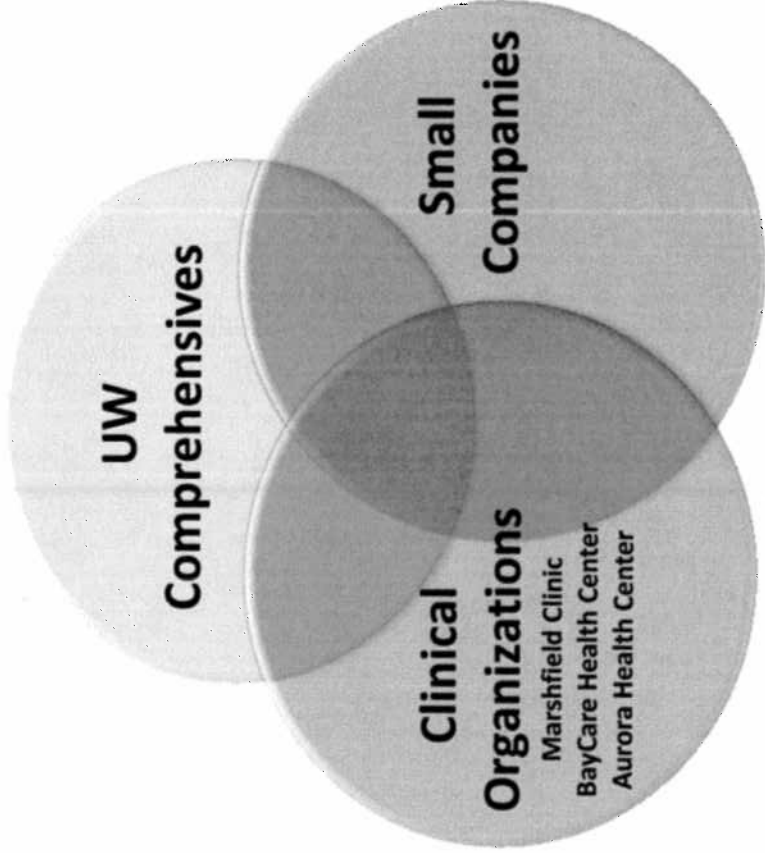
| Campus | High-Impact Technology | # of Discoveries Reported | Target Markets |
|---------------|--|---------------------------|--|
| Platteville | Nanotechnology | 6 | Electronics Renewable energy |
| Stevens Point | Nanotechnology Biofuel Polymer chemistry | 9 | High-tech sensors Energy Medical |
| La Crosse | Therapeutics | 3 | Pharmaceuticals |
| Oshkosh | LED Lighting Super capacity energy storage | 10 | Energy |
| River Falls | Cancer, immunology Cardiovascular | 3 | Medical Biotechnology |

Comprehensives Creating High-Paying Jobs and Startup Companies

- UW-La Crosse, UW-Platteville and UW-Oshkosh have faculty-led startup companies
- Since 2007, nine new high-paying research positions have been created

**It is Unrealistic to Expect Huge Research Infrastructure
Buildups in the Comprehensives**

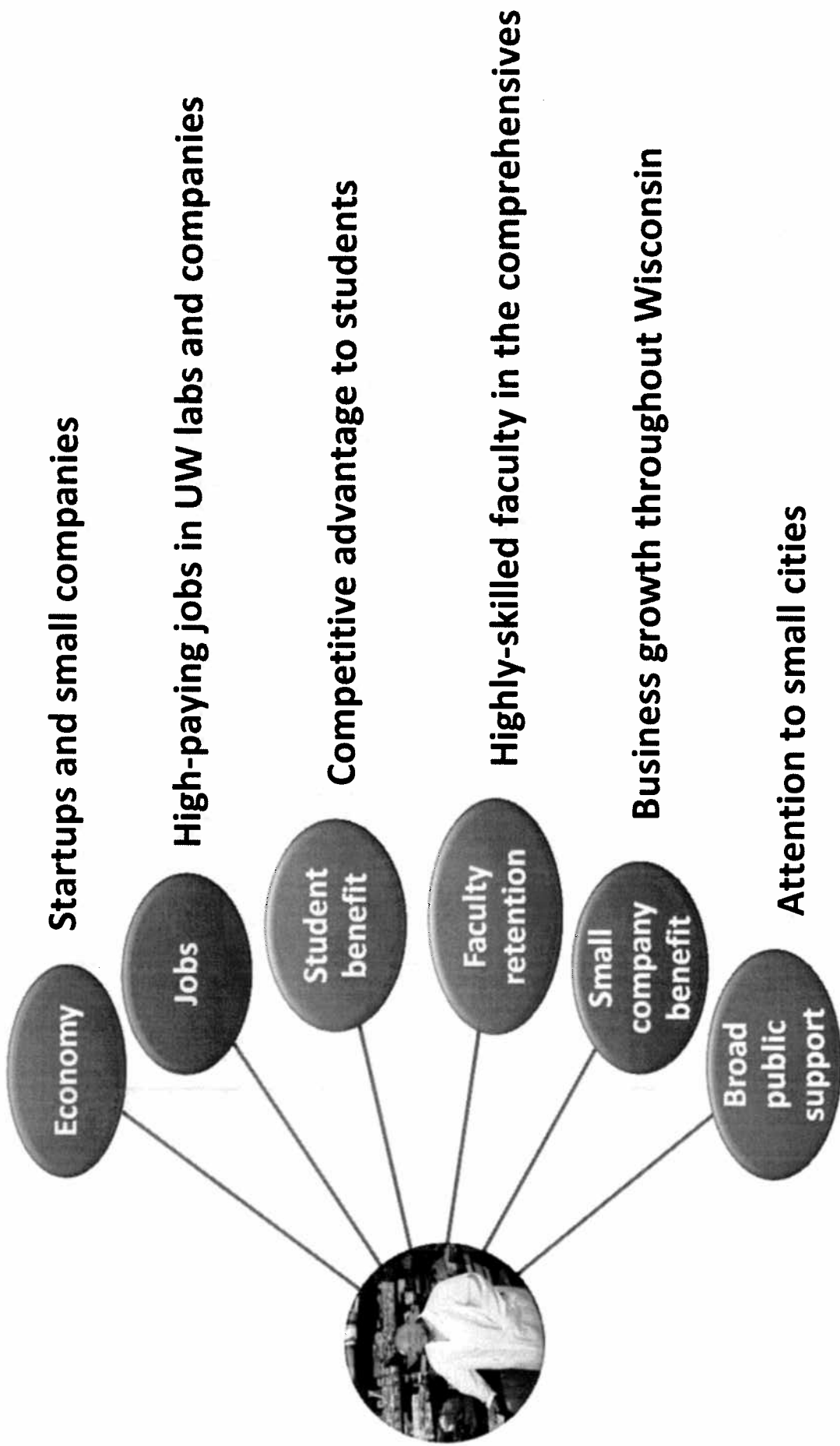
We Have a Better, Cost-Effective Solution



- Partnerships provide**
- Product ideas
 - Better intelligence
 - Resources
 - Ready markets

Superior research outcomes can be obtained through partnerships

Positive Impact of Research in UW System Comprehensive Campuses



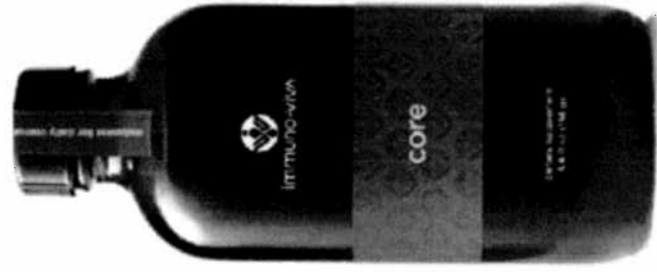
The program benefits the entire state, especially small cities and counties



Small Companies Vital to Growth of Wisconsin Economy

- Small companies are nimble, flexible, close to marketplace of needs and opportunities.
- Most new jobs come from innovation and new products.
- Small companies innovate and create more products than large companies.
- 70%-80% of new jobs in last 20 years came from small companies.
- Small companies frequently lack research and technology resources.

Botanic Oil Innovation's Experience with University Collaboration



- Natural Food Preservative from fruit extract, University of Maryland
- COX-2 Inhibition Studies led to anti inflammatory dietary supplement to relive pain of arthritis
- Immune enhancement research at University of Minnesota led to NEW DRUG application for cancer therapeutic. Phase 1 human clinical trial approved by FDA.
- Anti Viral activity of fruit extracts now being investigated through collaboration with the University of Wisconsin - Oshkosh

Small Company and University Collaboration a Win, Win, Win, Win, Win

- Helps faculty and students apply their knowledge and skills to current market and economy.
- Helps students transition to business and jobs.
- Spurs and abundance of innovation...faster new product innovations.
- Help companies throughout the state, rural communities as well as large.
- Successful collaboration will fund research in years to come through royalty payback.
- WiSYS is well suited to manage the fund. Has a wealth of experience in licensing and commercializing technology.

Cancer Stem Cell Research at UW-River Falls:

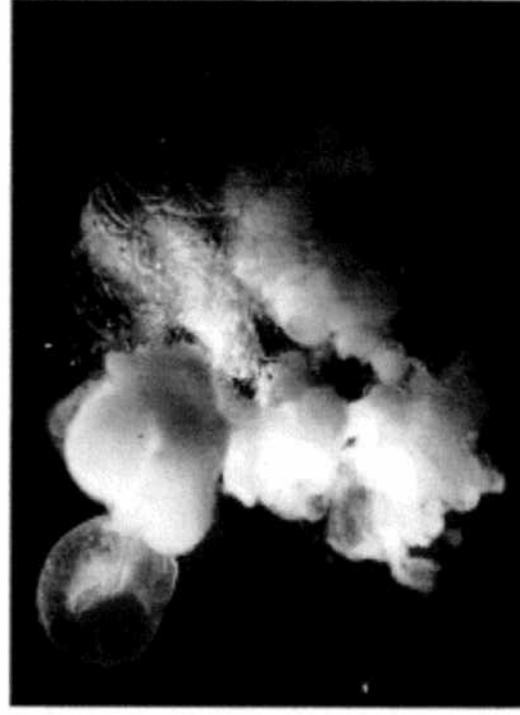
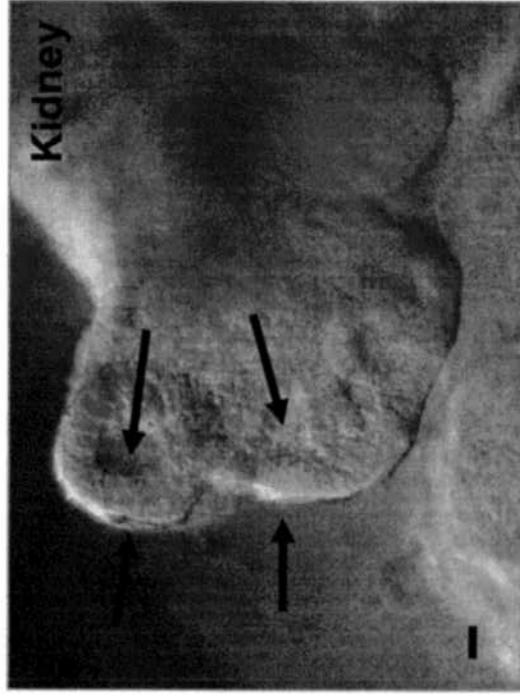
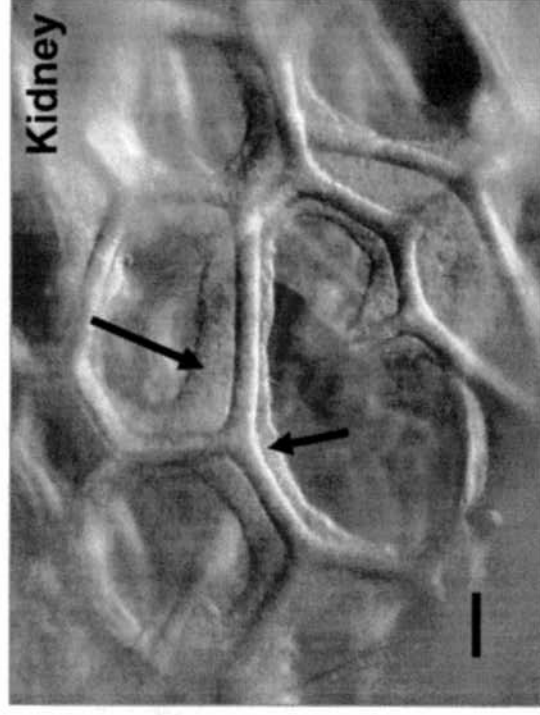
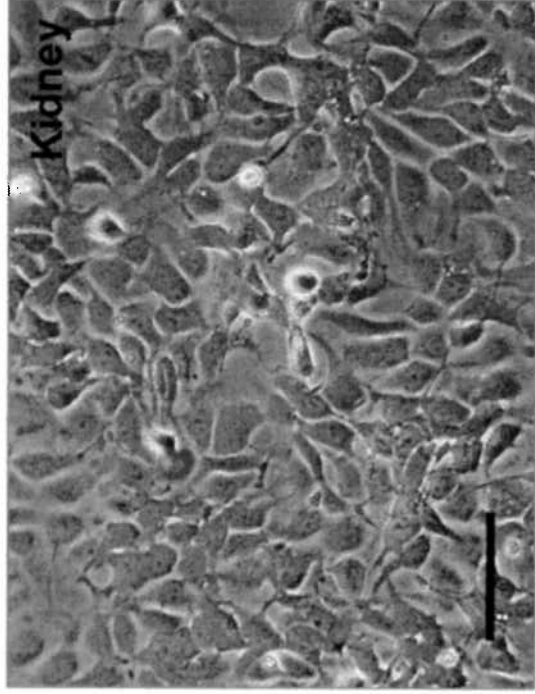
***Collaboration Opportunities to
Benefit UW Undergraduates and
Wisconsin Patients***

Timothy Lyden Ph.D.

**Tissue and Cellular Innovation Center,
University of Wisconsin-River Falls**

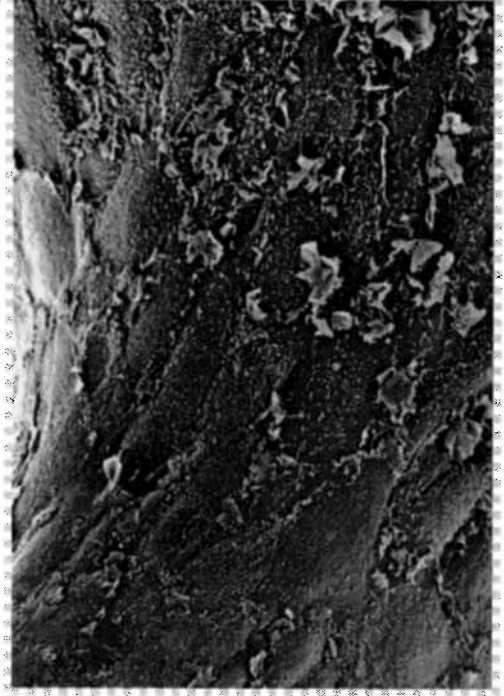
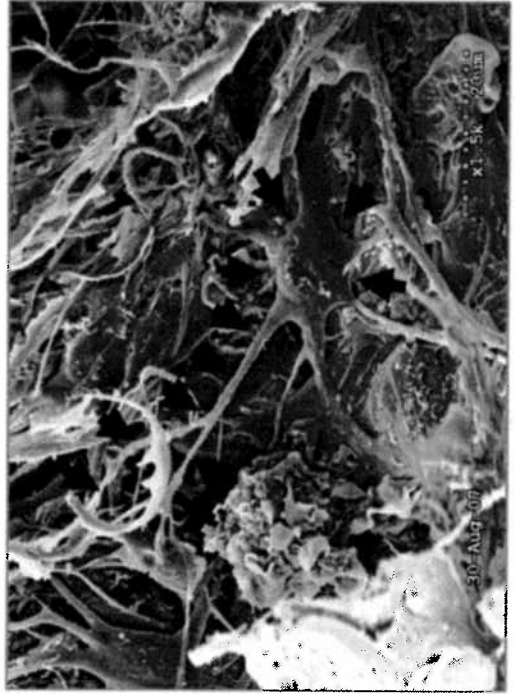
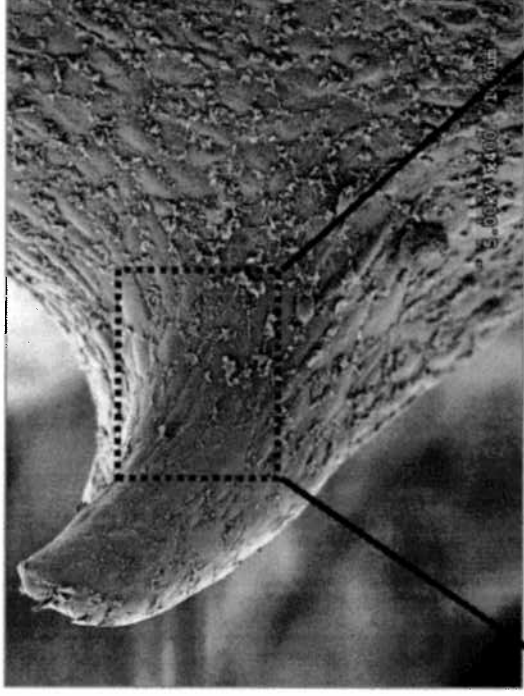
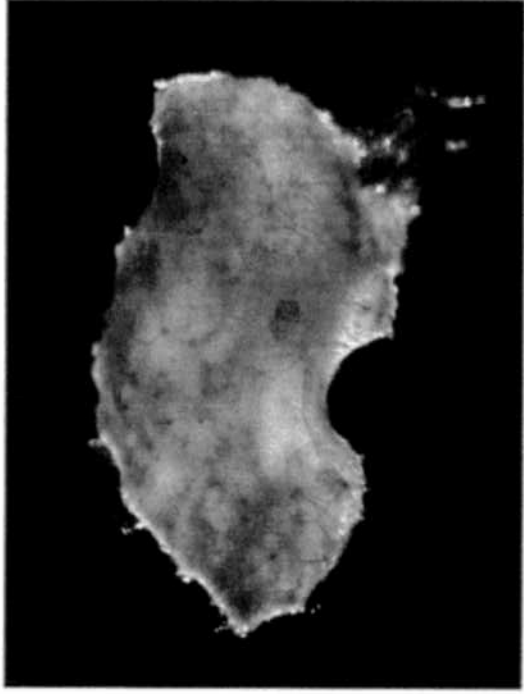
Artificial Tissues from Cell Lines

Epithelial (kidney) and hES Cells



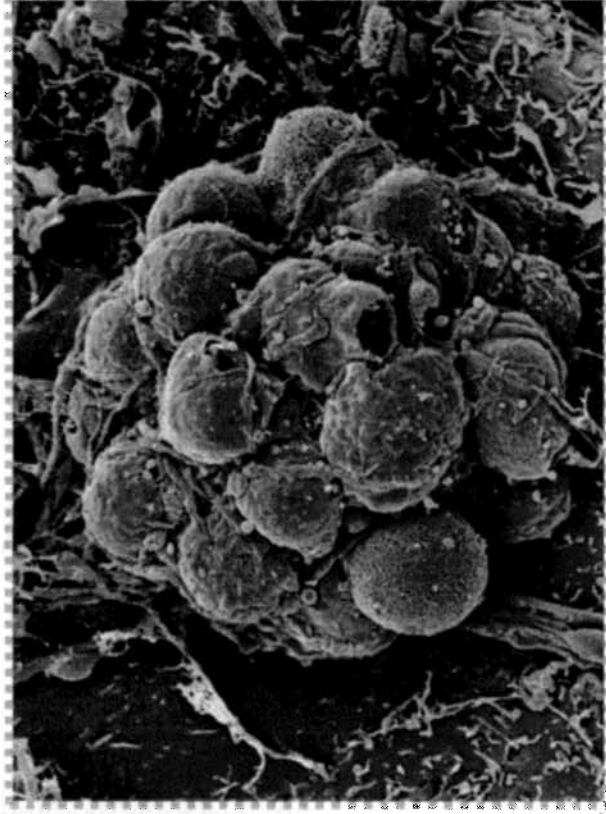
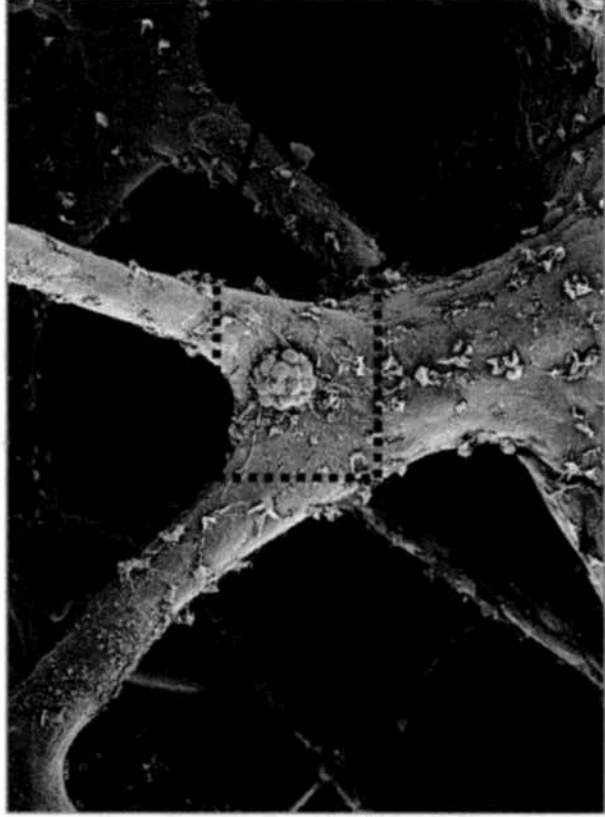
Artificial Neural Tissues

Early Avian Mid-brain Region Tissues



Artificial Neural Tissues

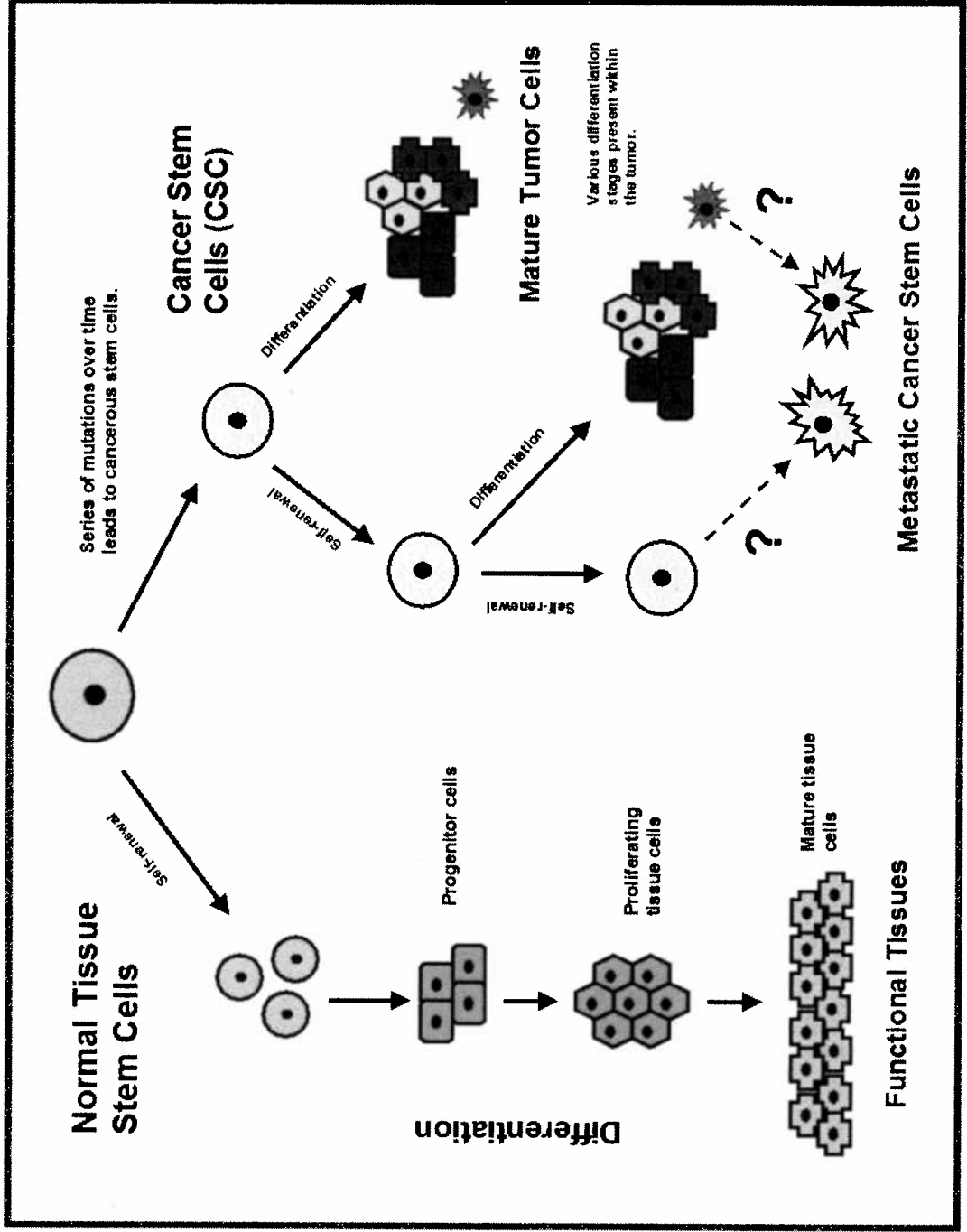
Early Avian Mid-brain Region Tissues



Cluster of neural stem/progenitor cells.

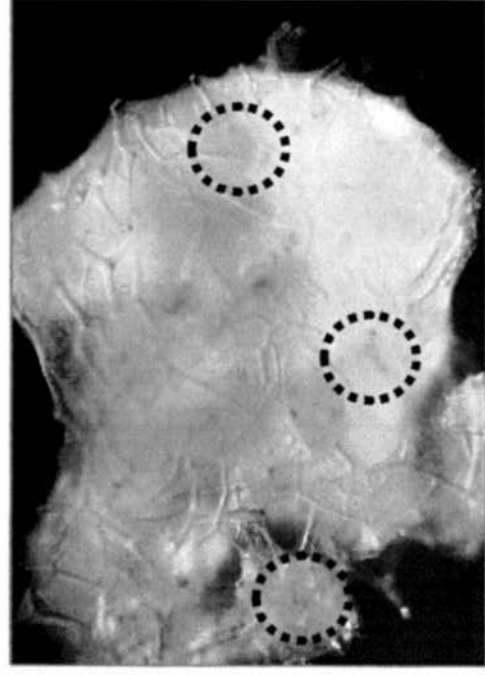
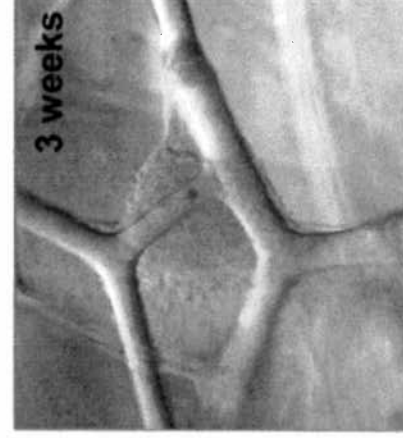
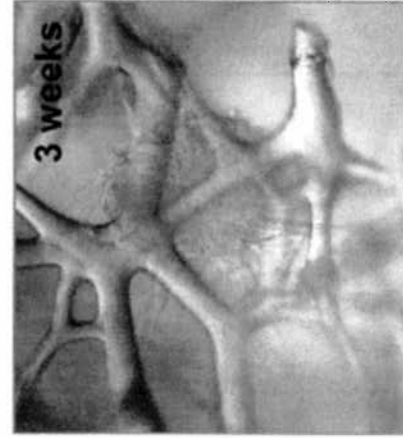
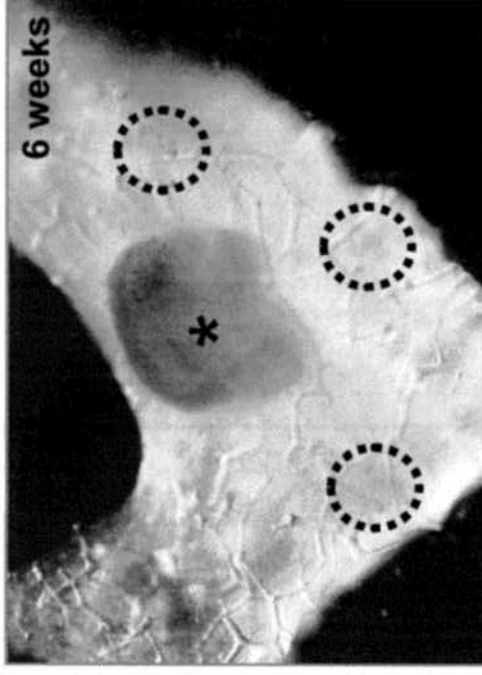
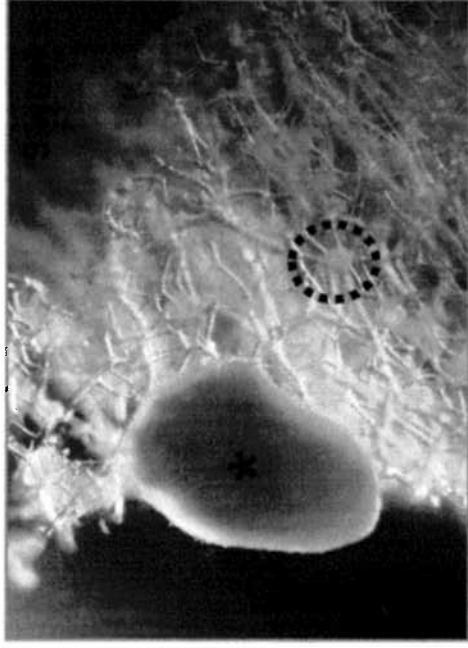
3D Artificial Tumor Tissue

Cancer Stem Cell Hypothesis



3D Artificial Tumor Tissue

Lung, Bronchogenic Carcinoma



Tissue and Cellular Innovation Center

Undergraduate RSCA

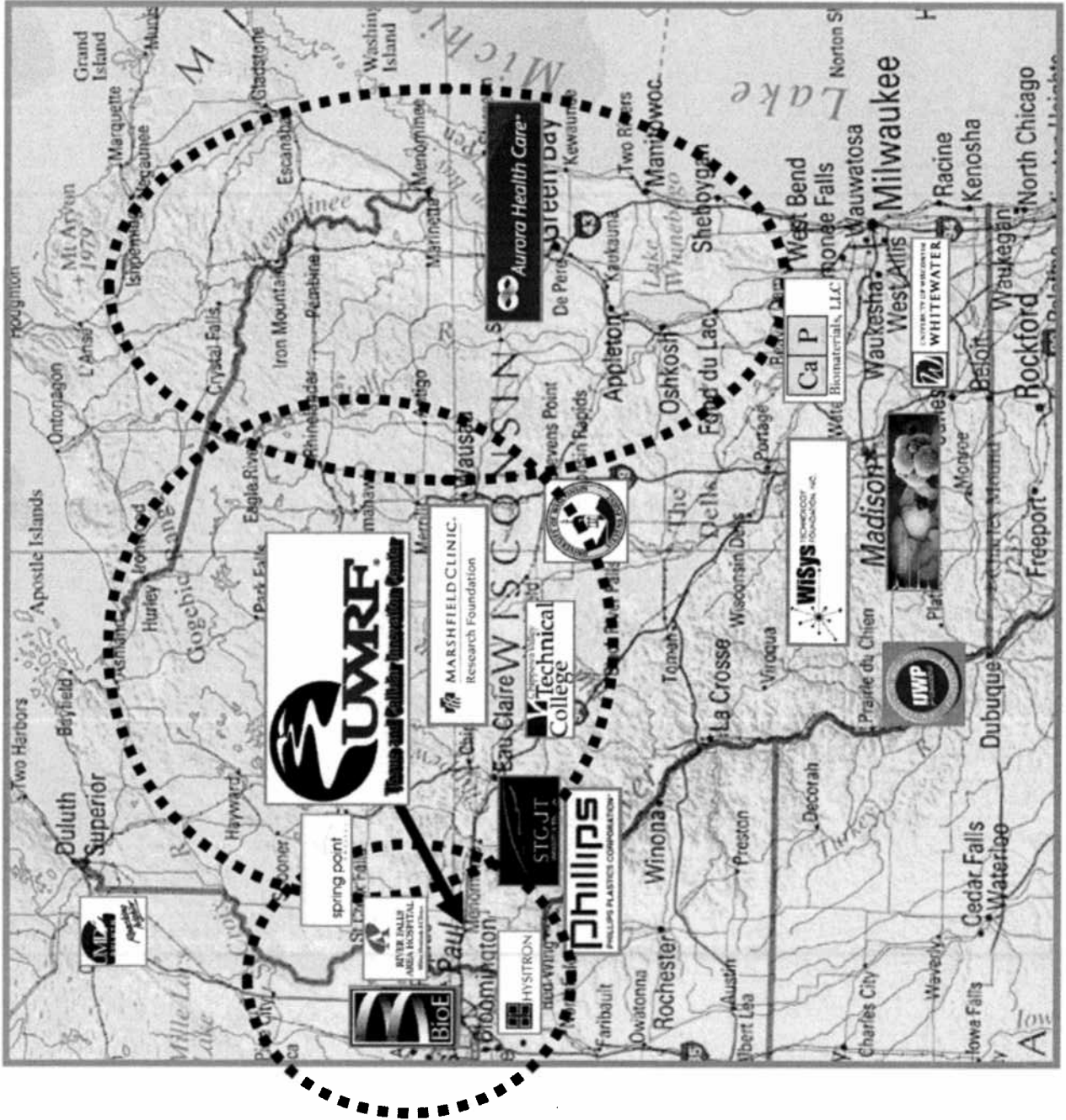


UWRF Students Present Research

Local, State and National Meetings



Partnered for Discovery

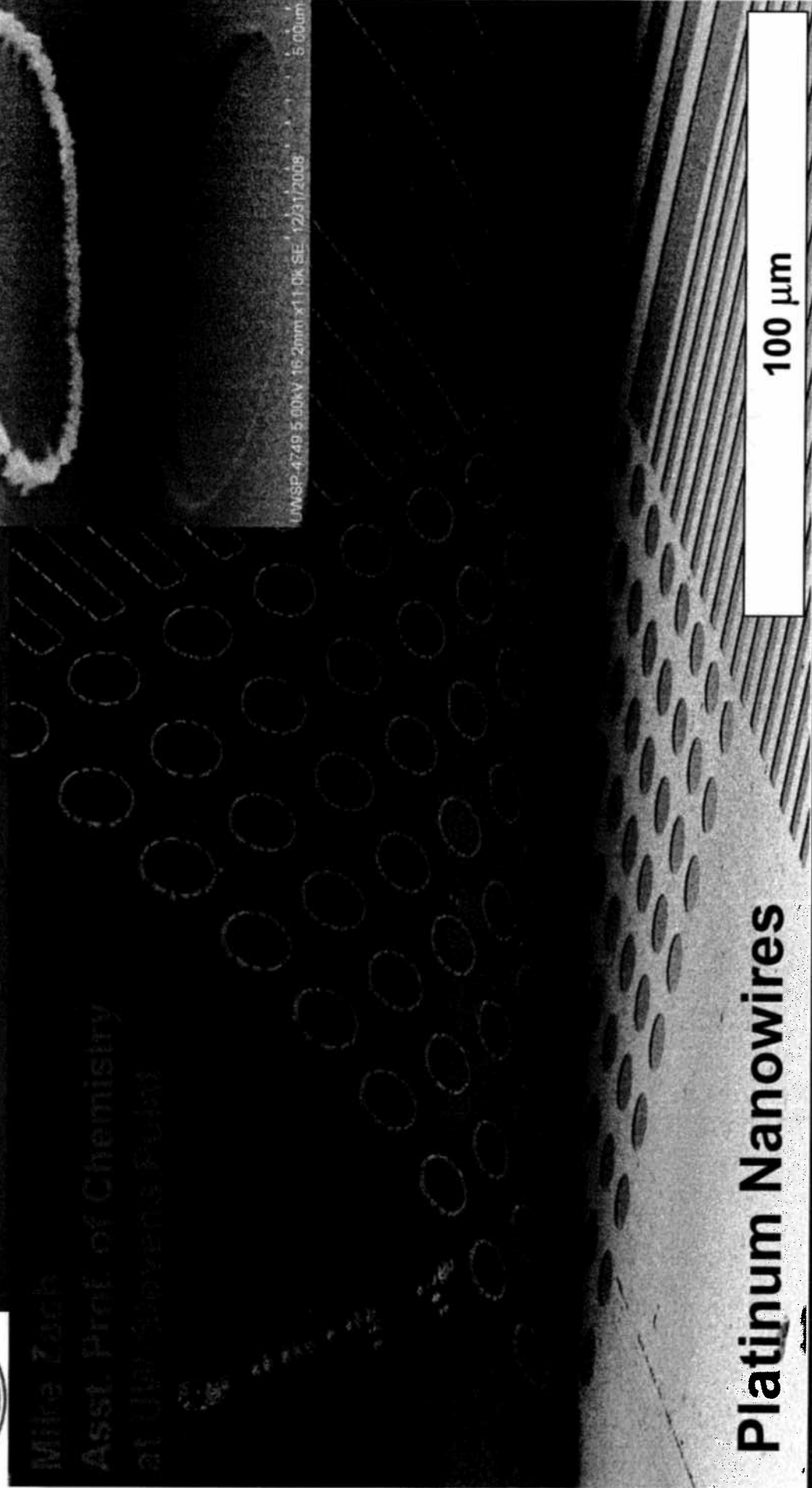
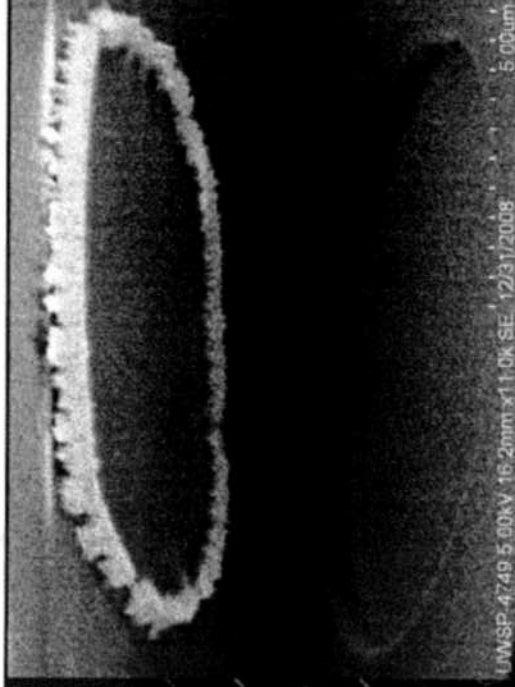




UW-Stevens Point is at the Forefront of Nanowire Development: *The industrial and educational implications to Wisconsin*



Mike Ziegler
Asst. Prof. of Chemistry
at UW-Stevens Point



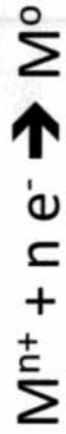
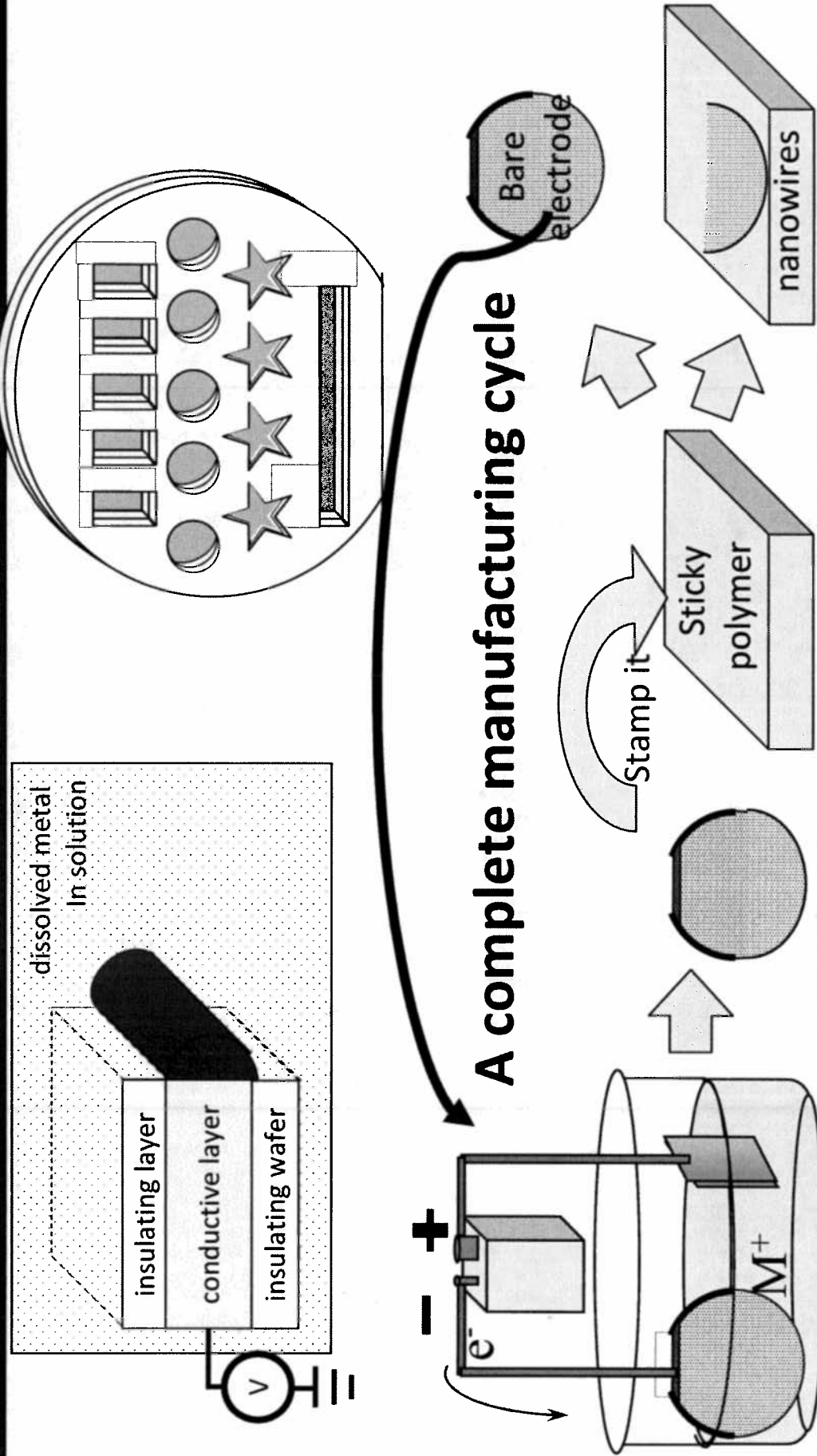
Platinum Nanowires

100 μm

University of Wisconsin-Stevens Point



New Concept for Easily Making Reproducible Nanowires!





Why here in Wisconsin?

... and why UW-System & UWSP?

(It's the students!)



17 year old Mike Zach
The future professor and
nanotechnology expert.



3 years
after
UWSP



9 years
after UWSP graduation

Bringing ^{graduation} opportunities to Wisconsin!

University of Wisconsin-Stevens Point



Cutting edge high-tech research for UWSP students



- 20 students
- 15 projects
- UWSP projects
- Argonne - student collaborations
- Future WI workforce

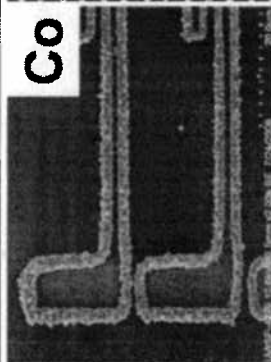
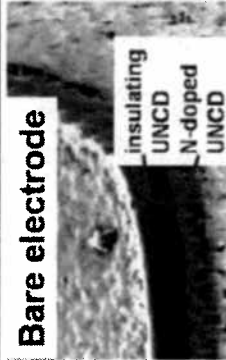


University of Wisconsin-Stevens Point

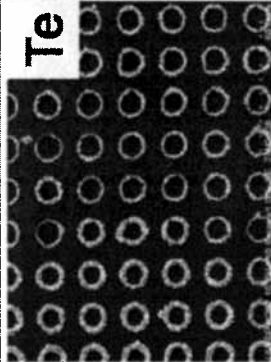


Limits and the future of this technique

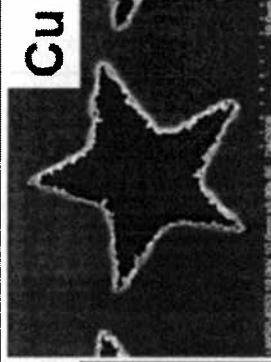
Bare electrode



Co



Te



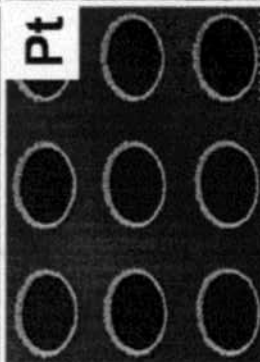
Cu

Now:

- 10 elements
- 3 semiconductors
- Complex patterns



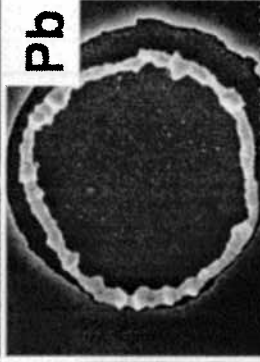
Pd



Pt



CdTe



Pb

Soon:

- Solar cells
- Complex electronics
- Self-sharpening tools



UWSP-4291 5.00kV 10.6mm x40 SE 5/21/2009 16:48 1.00mm
 UWSP-6284 5.00kV 10.5mm x60 SE 5/21/2009 16:31 500um
 UWSP-6288 5.00kV 10.6mm x50 SE 5/21/2009 16:39 1.00mm

University of Wisconsin-Stevens Point

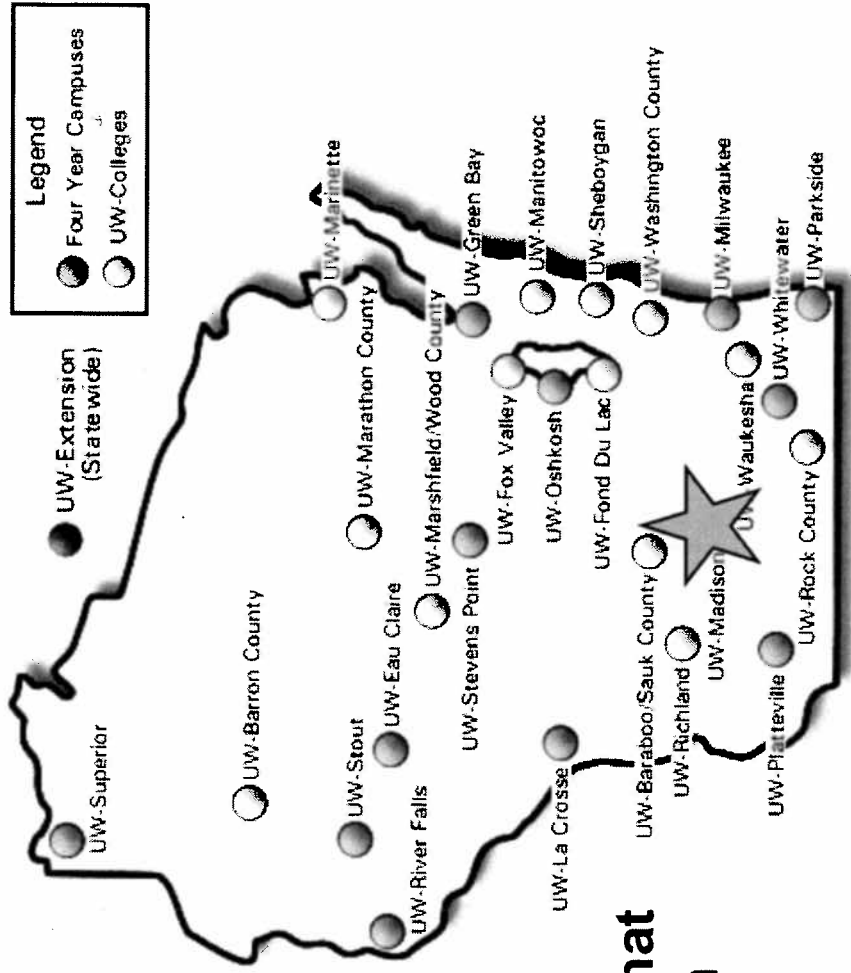


Wisconsin Small Company Advancement Program

“To raise per capita income to the national average we need to create 140,000 high paying jobs.”

• “The university’s real impact is the economic benefits from new ideas and research.”

• “New ideas and research create high-growth business clusters that will drive economic prosperity in the 21st century.”



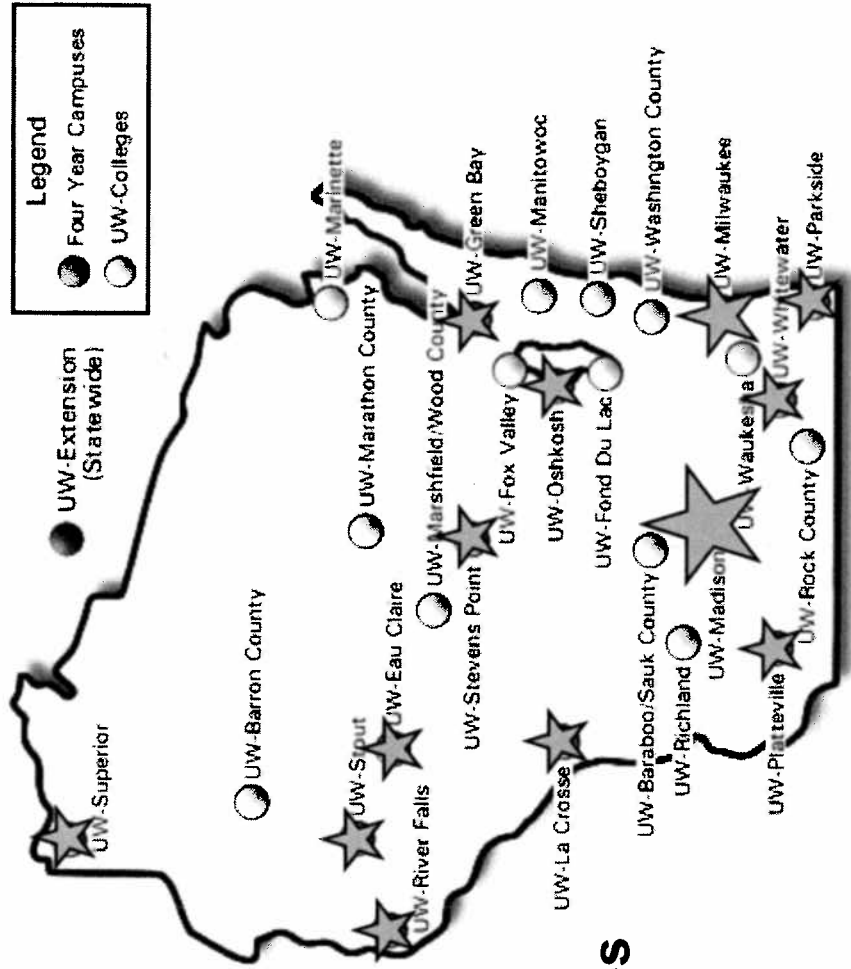
The New Economy and the University of Wisconsin-Madison. (NorthStar Economics Inc., 2003).

Wisconsin Small Company Advancement Program

- High-tech research takes place at all UW comprehensive campuses.

• **Supporting partnerships between campuses and small businesses will aid in the growth of small business throughout the state.**

• **High tech is not always high cost. Researchers at the comprehensive tend to focus on “cost effective” research - a good match for small business.**



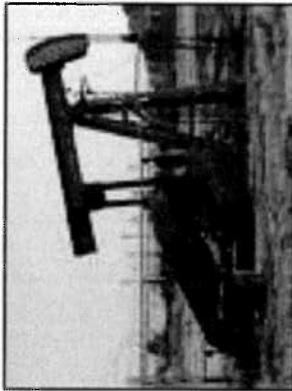
Wisconsin Small Company Advancement Program

Emerging Energy Markets.

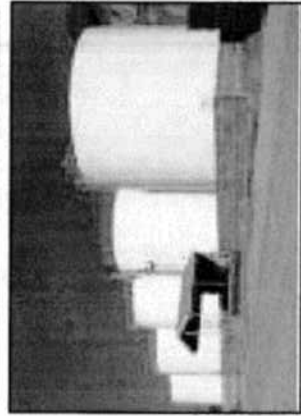
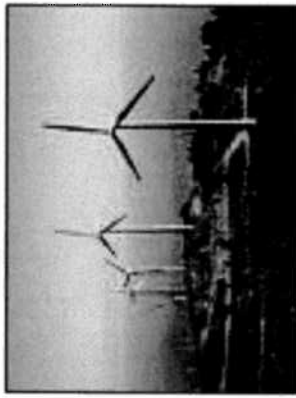
- One of society's biggest challenges is to develop sustainable energy technologies. These include development of...



→ Improved energy efficiencies →



→ Green energy sources →



→ New ways to store energy →

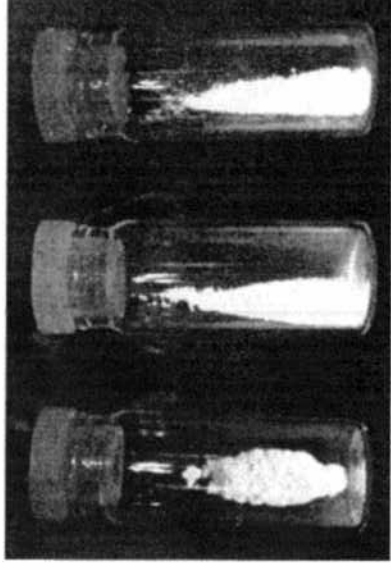


Wisconsin Small Company Advancement Program

Cost-Effective Nanotechnology for Emerging Energy Markets.

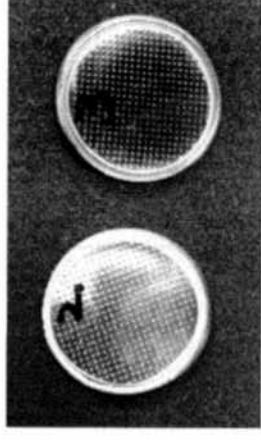
Improved energy efficiencies:

We developed a novel nanophosphor for high-efficiency LED lamps. (Pat. Pending/BPC finalist.)



New ways to store energy:

We recently developed a new class of nanomaterials for energy storage devices. Our material offers superior energy density. (Pat. Pending.)



This technology is currently being developed by Oshkosh Nanotechnology LLC, under NSF-STTR contract IIP-0930029

Wisconsin Small Company Advancement Program

Cost-Effective Nanotechnology for Emerging Energy Markets.

We offer small businesses the opportunity to...

- Partner with us to commercialize energy-related nanotechnology developed at UW-Oshkosh.
 - Rely on our nanomaterials expertise to help develop new and/or improved products.
-

- Supporting partnerships between UW-Oshkosh and small business will support business growth and high-tech job creation in the Fox Valley.
- ***Wisconsin can be a player in emerging energy markets!***



Research in Comprehensive Campuses is Creating Business Growth and High-Paying Jobs

By

WiSys Technology Foundation

Contact Info:

Maliyakal John

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614 Walnut Street, 13th Floor, Madison, WI 53726

Telephone 608.265-2135 • Fax 608.263.1064 • maliyakal@wisys.org

www.wisys.org

WiSys Technology Foundation and the University of Wisconsin System are leading the way to exciting opportunities in economic growth through technology development in the comprehensive campuses. Since its inception in 2000, WiSys, an affiliate of the Wisconsin Alumni Research Foundation (WARF), has been working with the eleven UW System comprehensive campuses in three main areas:

1. **Technology transfer** – protecting patentable discoveries
2. **Research facilitation** – facilitating cutting-edge research programs to generate discoveries
3. **Economic development** – facilitating technology based business growth



To thrive in these three areas, a strong research base must exist. The key for a strong research base in the comprehensives is to support innovative faculty and students to advance their discoveries and also to build collaborations among UW institutions, clinical organizations, and Wisconsin industry to provide further ideas, resources, and expertise. This strategy will avoid building and duplicating the huge research infrastructure as found in our research campuses of UW-Madison and UW-Milwaukee.

This document provides specific examples of innovations from comprehensives that have economic implications for Wisconsin, as well as successful partnerships that are being built to bring together research institutions for the common good.

1) Comprehensives are becoming emerging technology drivers

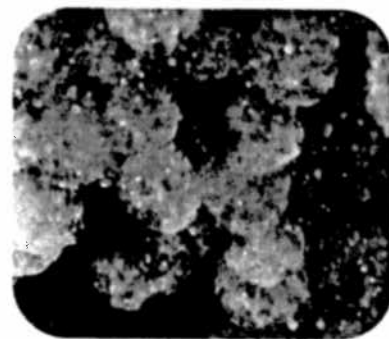
As shown by the limited examples below, the technologies currently being researched by the UW comprehensive campuses since 2005 are targeted to **large market segments**, will generate **new** economic growth, and will be the basis of startup companies.

| UW Campus | Discoveries | Field of Research | Potential Markets |
|---------------|-------------|---|---|
| Platteville | 6 | Carbon nanotubes Machine tooling | Electronic industry Manufacturing |
| Stevens Point | 9 | Nanowires Bioenergy Polymers for clinical use | Automobile Sustainable energy Medical |
| Whitewater | 1 1 | Nanopolymer composites Interactive media | Biotechnology Education, entertainment |
| River Falls | 2 1 | Tissue engineering and cancer stem cells Cardiovascular therapeutics | Medical Biotechnology |
| Eau Claire | 4 | Design of therapeutic drugs | Medical |
| Stout | 1 1 | Nanomaterials for solar energy Hydrogen fuel cell | Sustainable energy Clean energy |
| La Crosse | 3 | Therapeutics from natural sources | Medical |
| Oshkosh | 10 | LED Lighting Super capacity energy storage | Energy |

Research programs result in new high-paying jobs (\$50 - \$65K) in these and other campuses. Eleven new high-paying jobs have been created due to the projects described and more will be available as additional projects are initiated.

Comprehensive campus researchers are national leaders in their fields

Charlie Gibson, UW-Oshkosh, focuses his research on the development of nanophase materials for use in energy-saving devices for the LED and supercapacitor/battery industries. Dr. Gibson received federal funding for his research.



Jim Hamilton, UW-Platteville, is the director of the Nanotechnology Center for Collaborative Research and Development. His breakthrough research led to the conversion of one of the least expensive substances, graphite, to one of the most expensive nanomaterials, graphene, with applications in electronics, solar energy, fuel cells, biotechnology and medicine.

Tim Lyden, UW-River Falls, leads the Tissue and Cellular Innovation Center (TCIC), which focuses on 3D scaffolding technology (tissue engineering) and the modeling of various cells and tissues. Current projects in his lab include:



- Tissue engineering methods for pharmaceutical applications
- Cancer and human embryonic stem cell biology in 3D cultures

TCIC has active interactions with multiple UW System campuses, regional and national companies, and clinical organizations.

Mike Zach, UW-Stevens Point, is developing a new method for making large numbers of patterned nanowires. To date, patterned nanowires of ten different materials have been deposited. **Argonne National Laboratory** has established a collaboration with Dr. Zach.

- Dr. Zach's process will revitalize the manufacturing of nanowires.
- The technique is scalable, allowing for kilogram quantities of patterned nanowires. Collaborations with Hysitron, Inc. (Minneapolis, MN) are in place to utilize a newly developed transmission electron microscope.

Research in the comprehensives is leading to formation of startup companies

The following startups are a direct result of research in the comprehensives:

- **Mycophyte Discovery LLC, UW-La Crosse** – creates therapeutic compounds from native plants
- **Graphene Solutions LLC, UW-Platteville** – a leader in emerging nanotechnology, developed breakthrough technology in nanomaterials
- **Oshkosh Nanotechnology LLC, UW-Oshkosh** – develops nanophosphors for solid state lighting

2) Collaborations with clinical organizations

Innovation, the key to growth in a knowledge-based economy, works best when brilliant minds come together. Wisconsin will benefit when research organizations in the state collaborate and jointly develop products. WiSys is at the forefront in facilitating partnerships between UW and other research organizations.

WiSys has brought together **Marshfield Clinic, BayCare Health Systems, and Aurora Health Care Systems** to jointly develop better technologies and products for patient care and health of Wisconsinites.

Below are some of the research collaborations currently in progress:

- **Development of safer warfarin to treat blood clotting.** This joint development by Marshfield Clinic and UW-Eau Claire uses the latest knowledge in rational drug design and genetics.
- **Anticancer drug development.** UW-River Falls researchers are working with Marshfield Clinic to design anticancer therapeutics.
- **Multiple sclerosis research.** UW-Milwaukee experts are working with Marshfield Clinic multiple sclerosis experts to understand the basis of this disease.
- **Medical instrument design.** UW-Milwaukee faculty is working with BayCare physicians on seminal medical devices.



3) Partnership between UW and Wisconsin industry is of utmost importance for the state's economic viability

Several hundred small- and medium-sized Wisconsin companies lack the critical research and development resources needed to maintain the competitiveness required in this global economy. Small companies are unlikely to receive attention from the UW-Madison or UW-Milwaukee campuses, whose attention is often focused on large multinational corporations. Thus a **unique opportunity** exists to assist small- to medium-sized Wisconsin companies by engaging the enormous intellectual potential within the comprehensive campuses.

These partnerships will **contribute directly to the growth of the state's economy.**

The following Wisconsin-based companies are partnering with UW System campuses to bring discoveries to life:

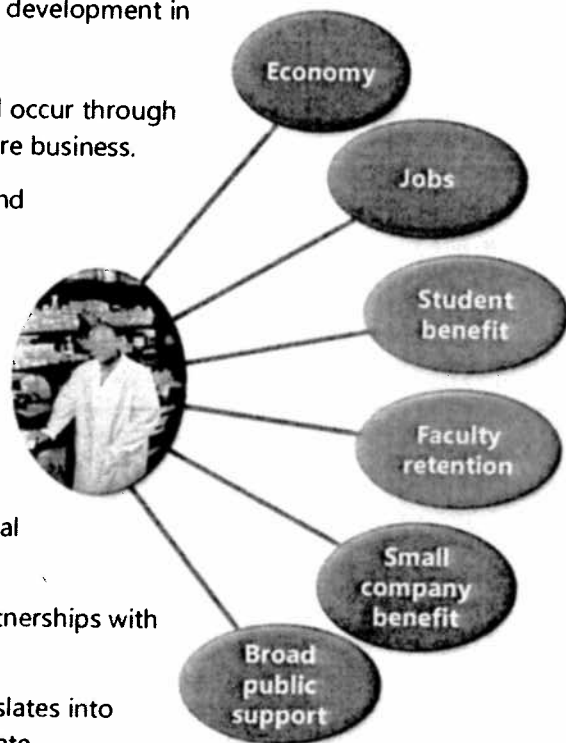


- **BioDiagnostics and Brownseed Genetics** - increased oil content in corn - **UW-River Falls**
- **Botanic Oil Innovations, Inc.** - natural raw ingredient processing, dietary supplements, and a biotherapy cancer treatment drug - **UW-Oshkosh**
- **Bubbling Springs Solar** - superior solar panels for water heaters - **UW-Stout**
- **OEM Fabricators** - osteoporosis treatment device - **UW-Milwaukee**
- **Ergo360** - Active balance seat - **UW-Platteville**
- **Phillips Plastics** – Tissue engineering - **UW-River Falls**
- **Spectrum Industries, Inc.** - science laboratory workstation for disabled students - **UW-Stout**
- **Weinbrenner Shoe Company** - superior design of fire boot soles - **UW-Eau Claire**

WiSys is forging campus-industry collaborations and campus-clinical organization partnerships to develop next-generation technologies and products, but also providing opportunities for our undergraduate students for high-paying jobs, and finding productive outlets for the creative talents of our faculty and students.

Thus, there is a clear, **positive impact** of research and development in the UW System comprehensive campuses.

1. Growth of the knowledge-based economy will occur through startup companies and the expansion of mature business.
2. High-paying jobs will be created in UW labs and participating companies and organizations.
3. Students involved in collaborative research will have a competitive advantage for jobs and higher education.
4. Another advantage is the retention of highly-skilled faculty in the comprehensive campuses and recruitment of highly skilled faculty and motivated national and international students.
5. Small companies benefit through research partnerships with comprehensive campuses.
6. Support for the comprehensive campuses translates into broad public support from all regions of the state.



UW Comprehensives Emerging as Technology Development Drivers

Maliyakal John
WiSys Technology Foundation

August 18, 2009

Slow Growth in US Innovations and Discoveries Causing Concern

| Countries | Population in millions | PA in 1980 | PA in 2006 | Fold Increase |
|-----------|---------------------------|------------|------------|------------------|
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**To Compete in a Knowledge-based Global Economy
We Need to Encourage Technology Research in
WI Undergraduate Research Institutions**

| Campus | High-Impact Technology | # of Discoveries Reported | Target Markets |
|---------------|--|---------------------------|--|
| Platteville | Nanotechnology | 6 | Electronics Renewable energy |
| Stevens Point | Nanotechnology Biofuel Polymer chemistry | 9 | High-tech sensors Energy Medical |
| La Crosse | Therapeutics | 3 | Pharmaceuticals |
| Oshkosh | LED Lighting Super capacity energy storage | 10 | Energy |
| River Falls | Cancer, immunology Cardiovascular | 3 | Medical Biotechnology |

**Comprehensives Creating High-Paying
Jobs and Startup Companies**

- UW-La Crosse, UW-Platteville and UW-Oshkosh have faculty-led startup companies
- Since 2007, nine new high-paying research positions have been created

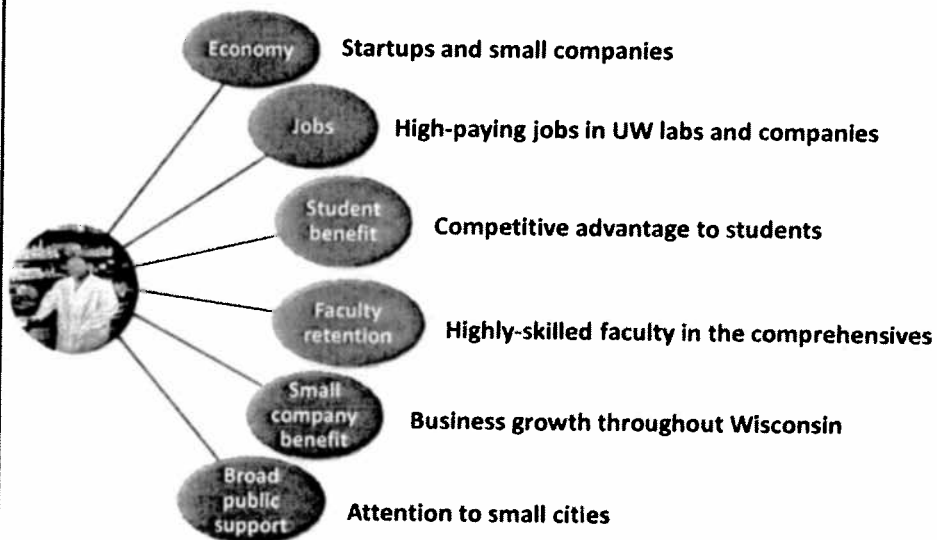
It is Unrealistic to Expect Huge Research Infrastructure Buildups in the Comprehensives We Have a Better, Cost-Effective Solution



- Partnerships provide
- Product ideas
 - Better intelligence
 - Resources
 - Ready markets

Superior research outcomes can be obtained through partnerships

Positive Impact of Research in UW System Comprehensive Campuses



The program benefits the entire state, especially small cities and counties

UW-Stevens Point is at the Forefront of Nanowire Development:
The industrial and educational implications to Wisconsin

Platinum Nanowires 100 μm

University of Wisconsin-Stevens Point

New Concept for Easily Making Reproducible Nanowires!

insulating layer
 conductive layer
 insulating wafer

dissolved metal in solution

V

M^+

e^-

M^0

A complete manufacturing cycle

Stamp it

Sticky polymer

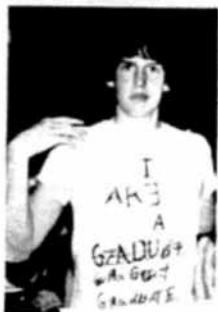
nanowires

Bare electrode

$M^{n+} + n e^- \rightarrow M^0$



Why here in Wisconsin?
... and why UW-System & UWSP?
(It's the students!)



17 year old Mike Zach
The future professor and
nanotechnology expert.



3 years
after UWSP
graduation



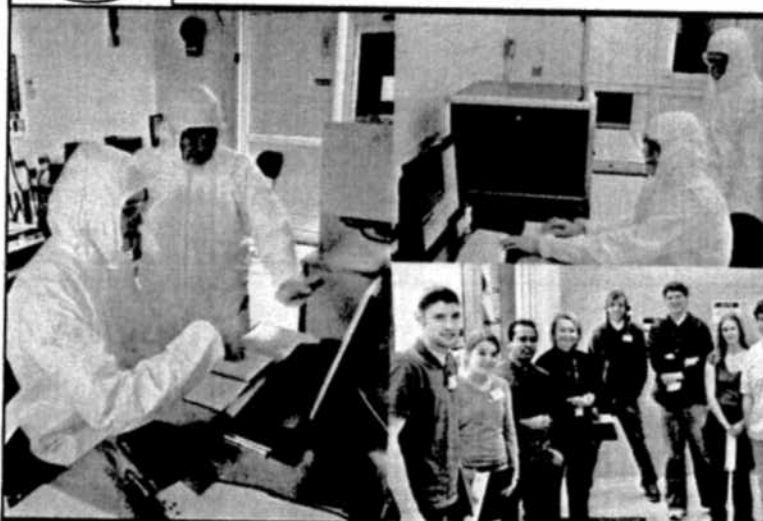
9 years
after UWSP graduation

Bringing opportunities to Wisconsin!

University of Wisconsin-Stevens Point




**Cutting edge high-tech
research for UWSP students**




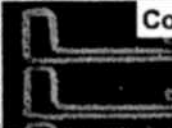



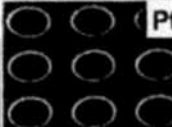

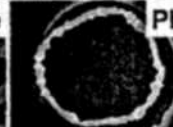
- 20 students
- 15 projects
- UWSP projects
- Argonne - student collaborations
- Future WI workforce

University of Wisconsin-Stevens Point





Limits and the future of this technique

| | | | | |
|---|---|---|--|--|
|  <p>Bare electrode</p> |  <p>Co</p> |  <p>Te</p> |  <p>Cu</p> | <p>Now: 10 elements 3 semiconductors Complex patterns</p> |
|  <p>Pd</p> |  <p>Pt</p> |  <p>CdTe</p> |  <p>Pb</p> | <p>Soon: Solar cells Complex electronics Self-sharpening tools</p> |

UNIVERSITY OF WISCONSIN SYSTEMS
WISYS TECHNOLOGY FOUNDATION, INC.

University of Wisconsin-Stevens Point

Cancer Stem Cell Research at UW-River Falls:

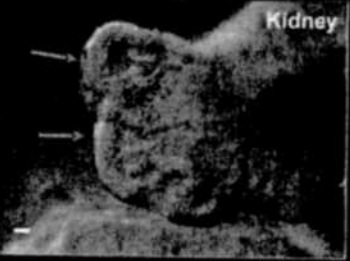
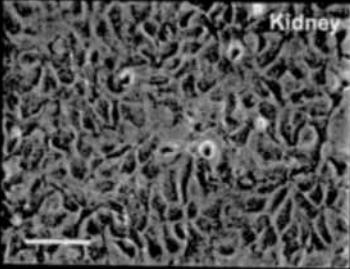
*Collaboration Opportunities to
Benefit UW Undergraduates and
Wisconsin Patients*

Timothy Lyden Ph.D.

Tissue and Cellular Innovation Center,
University of Wisconsin-River Falls

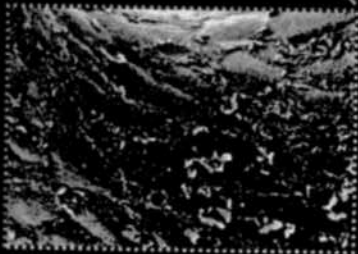
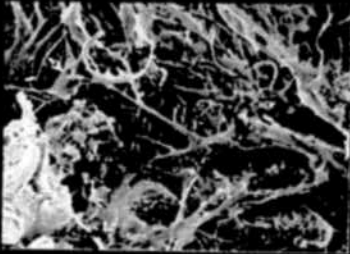
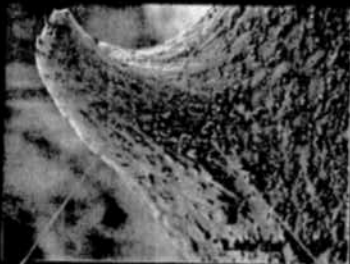
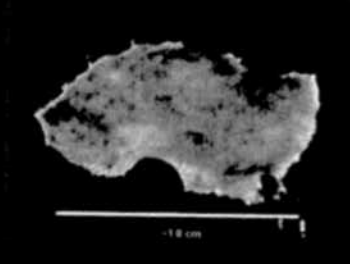
Artificial Tissues from Cell Lines

Epithelial (kidney) and hES Cells



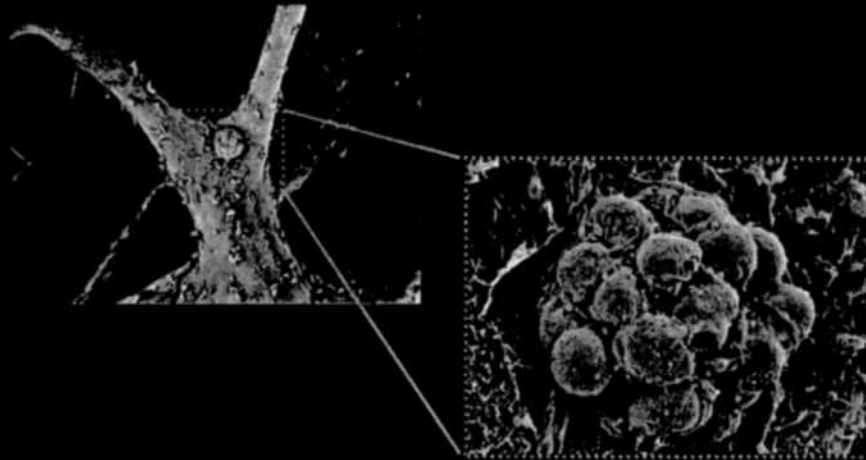
Artificial Neural Tissues

Early Avian Mid-brain Region Tissues



Artificial Neural Tissues

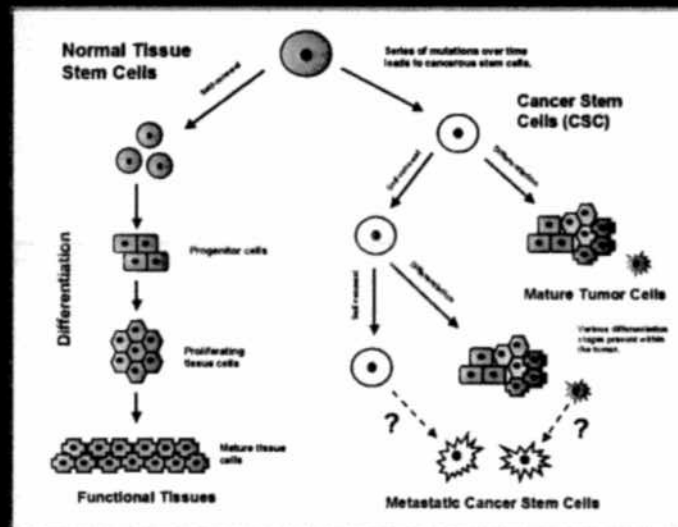
Early Avian Mid-brain Region Tissues



Cluster of neural stem/progenitor cells.

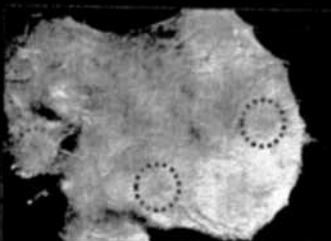
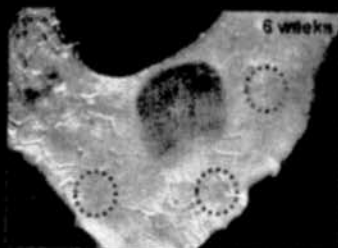
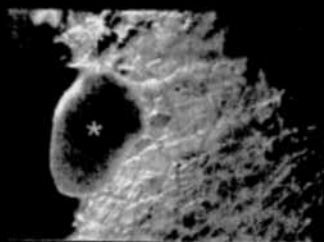
3D Artificial Tumor Tissue

Cancer Stem Cell Hypothesis



3D Artificial Tumor Tissue

Lung, Bronchogenic Carcinoma



Tissue and Cellular Innovation Center

Undergraduate RSCA



UWRF Students Present Research

Local, State and National Meetings



Partnered for Discovery



Mark Mueller, Botanic Oil Innovations

Small Companies Vital to Growth of Wisconsin Economy

- Small companies are nimble, flexible, close to marketplace of needs and opportunities.
- Most new jobs come from innovation and new products.
- Small companies innovate and create more products than large companies.
- 70%-80% of new jobs in last 20 years came from small companies.
- Small companies frequently lack research and technology resources.

Botanic Oil Innovation's Experience with University Collaboration



- Natural Food Preservative from fruit extract, University of Maryland
- COX-2 Inhibition Studies led to anti inflammatory dietary supplement to relive pain of arthritis
- Immune enhancement research at University of Minnesota led to NEW DRUG application for cancer therapeutic. Phase I human clinical trial approved by FDA.
- Anti Viral activity of fruit extracts now being investigated through collaboration with the University of Wisconsin - Oshkosh

**Small Company and University
Collaboration a Win, Win , Win, Win, Win**

- **Helps faculty and students apply their knowledge and skills to current market and economy.**
- **Helps students transition to business and jobs.**
- **Spurs and abundance of innovation...faster new product innovations.**
- **Help companies throughout the state, rural communities as well as large.**
- **Successful collaboration will fund research in years to come through royalty payback.**
- **WiSYS is well suited to manage the fund. Has a wealth of experience in licensing and commercializing technology.**

Wisconsin Small Company Advancement Program

Charles Gibson

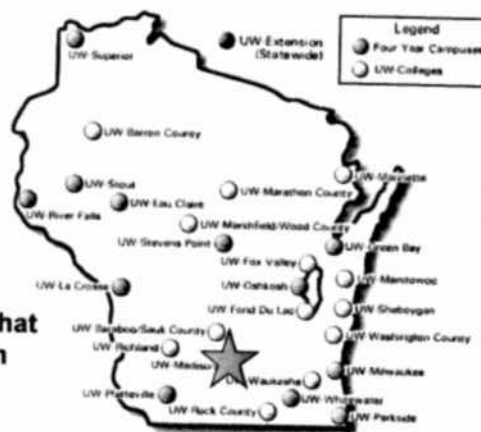
UW-Oshkosh

Wisconsin Small Company Advancement Program

"To raise per capita income to the national average we need to create 140,000 high paying jobs."

"The university's real impact is the economic benefits from new ideas and research."

"New ideas and research create high-growth business clusters that will drive economic prosperity in the 21st century."



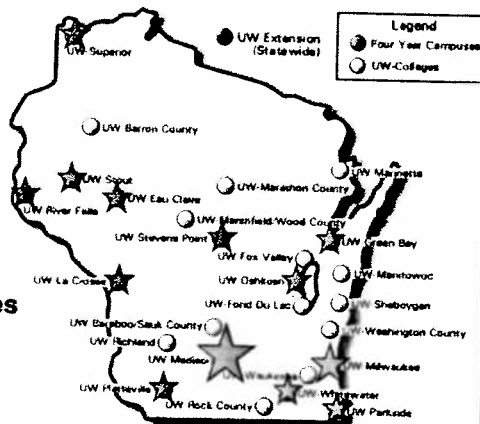
The New Economy and the University of Wisconsin-Madison. (NorthStar Economics Inc., 2003).

Wisconsin Small Company Advancement Program

• High-tech research takes place at all UW comprehensive campuses.

• Supporting partnerships between campuses and small businesses will aid in the growth of small business throughout the state.

• High tech is not always high cost. Researchers at the comprehensives tend to focus on "cost effective" research - a good match for small business.



Wisconsin Small Company Advancement Program

Emerging Energy Markets.

- One of society's biggest challenges is to develop sustainable energy technologies. These include development of...



→ Improved energy efficiencies →



→ Green energy sources →



→ New ways to store energy →



Wisconsin Small Company Advancement Program

Cost-Effective Nanotechnology for Emerging Energy Markets.

Improved energy efficiencies:

We developed a novel nanophosphor for high-efficiency LED lamps. (Pat. Pending/BPC finalist.)



gpus business plan
worked with Wisys

New ways to store energy:

We recently developed a new class of nanomaterials for energy storage devices. Our material offers superior energy density. (Pat. Pending.)



Proteolysis

This technology is currently being developed by Oshkosh Nanotechnology LLC, under NSF-STTR contract IIP-0930029

Wisconsin Small Company Advancement Program

Cost-Effective Nanotechnology for Emerging Energy Markets.

We offer small businesses the opportunity to...

- Partner with us to commercialize energy-related nanotechnology developed at UW-Oshkosh.
 - Rely on our nanomaterials expertise to help develop new and/or improved products.
-
- Supporting partnerships between UW-Oshkosh and small business will support business growth and high-tech job creation in the Fox Valley.
 - *Wisconsin can be a player in emerging energy markets!*