

MINUTES OF THE MEETING  
OF THE  
MICHIGAN STATE UNIVERSITY  
BOARD OF TRUSTEES

September 17, 2010

President Simon called the meeting of the Board of Trustees to order at 9:30 a.m. in the Board Room.

Trustees present: Dianne Byrum, Joel Ferguson, Melanie Foster, Colleen McNamara, Don Nugent, Faylene Owen and George Perles.

Trustees absent: Diann Woodard.

University officers present: President Simon, Provost Wilcox, Vice President Poston, Secretary Beekman, Vice President and General Counsel Noto, Vice Presidents Gray, Groves and June, and Interim Vice President Swain and Senior Advisor and Director Granberry Russell. Faculty liaisons present: Marsha MacDowell, Deborah Moriarty, Mary Noel, and John Powell. Student liaisons present: Justin Epstein, Stefan Fletcher, Emeka Igwe and Christopher Schotten.

All actions taken were by unanimous vote of the Trustees present, unless otherwise noted.

1. On a motion by Trustee Owen, supported by Trustee Foster, the **BOARD VOTED to approve** the agenda.
2. On a motion by Trustee Foster, supported by Trustee Byrum, the **BOARD VOTED to approve** the minutes of the Board meeting of April 16, 2010.
3. President's Report

President Simon provided the following report to the Board.

A. New Academic Year

Provost Wilcox and Vice President June will provide a report on the start of the new academic year. President Simon stated she was confident that students and faculty have experienced a good start to the academic year.

B. George Perles Honored

George Perles was honored with this year's Hank Aguirre Memorial award at the Father Vincent Welch Memorial Dinner in support of scholarships at Loyola Academy in Detroit and the University of Detroit-Mercy. "Amazing" was the adjective most frequently used throughout the evening to describe Trustee Perles and his accomplishments.

C. Relations with the City of East Lansing

The Trustees had the opportunity to have lunch yesterday with members of the East Lansing City Council and City administrators at Brody Hall. The Board of Trustees and the City Council had a very positive conversation about how our collective leadership team can continue to work together to strengthen both the University and the City.

E. One Book One Community

*Zeitoun*, by Dave Eggers, was a very meaningful book. A series of community and campus gatherings around themes in *Zeitoun* are scheduled through the end of September.

F. Habitat for Humanity Build

The Habitat for Humanity Build is under way as part of the National Service Day. It will be completed on October 15, with a presentation of keys to the new homeowners taking place during the October 16 Homecoming football game.

G. FRIB Marches Forward

MSU's Facility for Rare Isotope Beams passed an important milestone when it earned CD-1, or Critical Decision 1, approval from the U.S. Department of Energy. This allows work to continue on the preliminary design of the project.

H. David J. Morrissey Receives Award

David J. Morrissey, University Distinguished Professor of Chemistry and associate director for research at the National Superconducting Cyclotron Laboratory, will receive the 2011 Glenn T. Seaborg Award for Nuclear Chemistry sponsored by the ACS division of Nuclear Chemistry and Technology.

I. College of Human Medicine Secchia Center Opens

President Simon asked Trustee Foster to comment on the grand opening of the Secchia Center in Grand Rapids.

Trustee Foster said that the Ribbon Cutting event on September 10 was well attended. The community open house attracted over 2,000 people to tour the facility. The Gala on September 14 was a spectacular event which showed great support for MSU's presence in Grand Rapids.

J. Terry Denbow Retirement

Trustee Foster presented a Board of Trustees resolution to former Vice President for University Relations Terry Denbow honoring him for his service to MSU. (Appendix A)

4. There was no public participation on issues germane to the agenda.

5. Personnel Actions

Provost Kim Wilcox presented the following personnel actions:

Porter, William F., AY—Professor, Boone and Crockett Endowed Chair, Department of Fisheries and Wildlife, \$180,000, with Tenure, effective August 16, 2010.

Kramer, David M., AN—John A. Hannah Distinguished Professor, Plant Research Laboratory; Department of Biochemistry and Molecular Biology, \$160,000, with Tenure, effective August 16, 2010.

Durbin, Catherine E., AY—Associate Professor, Department of Psychology, \$100,000, with Tenure, effective August 16, 2010.

Swain, Heather C., AN—Assistant Vice President, University Relations; Director, Public Relations, for a change in title to Interim Vice President, University Relations, effective August 16, 2010.

Trustee Nugent **moved to approve** the recommendation, with support from Trustee Owen.

Provost Wilcox said that Professor Porter served as the Director of the Roosevelt Wild Life Station at the State University of New York. His research interests include behavior in wildlife populations and conflicts between wildlife and humans.

Provost Wilcox said that Professor Kramer served as an Associate Professor at Washington State University. His research interests include

the energetics and control of photosynthesis, electron transfer reactions, coupling of electron transfer reactions to proton pumping and to ATP synthesis, and the evolution of bioenergetics.

Provost Wilcox said that Professor Durbin served at Northwestern University since 2003. Her research interests include developmental psychopathology, mood disorders, and personality disorders.

**THE BOARD VOTED to approve** the recommendation.

6. Gifts, Grants, and Contracts

Vice President Gray presented the Gifts, Grants, and Contracts Report for the period of June 2, 2010 through September 2, 2010. The report is a compilation of 597 Gifts, Grants, and Contracts, and 96 Consignment/Non-Cash Gifts, with a total value of \$136,841,439.

Trustee Foster **moved to approve** the report, with support from Trustee Owen.

**THE BOARD VOTED to approve** the report.

Vice President Gray introduced Dr. Sandra Haslam, Professor of Physiology and Human Medicine. Dr. Haslam made a presentation to the Board on the Breast Cancer and the Environment Research Center. (Appendix B)

7. Finance Committee

Trustee Owen presented the Trustee Finance Committee Report and recommendations.

A. Fund Functioning as an Endowment—Rose Marie D'Aloisio Endowment for the College of Arts and Letters

It was recommended that the Board of Trustees establish a fund functioning as an endowment entitled Rose Marie D'Aloisio Endowment for the College of Arts and Letters.

Trustee Owen **moved to approve** the recommendation, with support from Trustee Byrum.

**THE BOARD VOTED to approve** the recommendation.

B. Fund Functioning as an Endowment—Royer-Webb Art Scholarship

It was recommended that the Board of Trustees establish a fund functioning as an endowment entitled Royer-Webb Art Scholarship.

Trustee Owen **moved to approve** the recommendation, with support from Trustee Byrum.

**THE BOARD VOTED to approve** the recommendation.

C. Revised Asset Allocation for the Common Investment Fund

It was recommended that the Board of Trustees amend Investment Policy Number 01-07-01 to revise the asset allocation target, range and rationale for Michigan State University's Common Investment Fund by replacing Table No. 2 of Exhibit A of the Investment Policy. (Appendix C)

Trustee Owen **moved to approve** the recommendation, with support from Trustee Byrum.

**THE BOARD VOTED to approve** the recommendation.

D. New Investment Manager—Meritech Capital Partners

It was recommended that the Board of Trustees authorize the Administration to select Meritech Capital Partners as an investment manager.

Trustee Owen **moved to approve** the recommendation, with support from Trustee Byrum.

**THE BOARD VOTED to approve** the recommendation.

E. Michigan State University Federal Credit Union Long-Term Ground Lease and Permission to Build

It was recommended that the Board of Trustees approve granting a 99-year ground lease of approximately 4.0 acres to the Michigan State University Federal Credit Union (MSUFCU) and grant permission for MSUFCU to build a branch office on the leased property, upon such other terms and conditions as may be acceptable to the Vice President for Finance and Operations and Treasurer.

Trustee Owen **moved to approve** the recommendation, with support from Trustee Byrum.

Trustee McNamara said that she did not think the proposed location was appropriate for a commercial bank. She acknowledged that MSUFCU is an important partner to MSU and supports moving the Crescent Road branch to a new location on campus, but does not support locating the building at the recommended site.

**Trustee McNamara voted no.**

**THE BOARD VOTED to approve** the recommendation.

F. Authorization to Plan—Library—Chiller Replacement

It was recommended that the Board of Trustees authorize the Administration to plan for the project entitled Library—Chiller Replacement.

Trustee Owen **moved to approve** the recommendation, with support from Trustee Byrum.

**THE BOARD VOTED to approve** the recommendation.

G. Project Approval—Authorization to Proceed—Cyclotron Building—New High Bay Addition

It was recommended that the Board of Trustees authorize the Administration to proceed with the project entitled Cyclotron Building—New High Bay Addition, and to approve a budget of \$5,400,000.

Trustee Owen **moved to approve** the recommendation, with support from Trustee Byrum.

**THE BOARD VOTED to approve** the recommendation.

8. Policy Committee

Trustee McNamara presented the Trustee Policy Committee Report and recommendations.

A. Approval of Contract Terms

It was recommended that the Board of Trustees approve the execution of a restated and amended license agreement with *InPore Technologies, Inc.*, consistent with earlier public notice given at a Board meeting and with the “License Amendment Term Sheet” presented to the Board. (Appendix D)

It was recommended that the Board of Trustees approve the execution of a contract with *Claytec, Inc.*, consistent with earlier public notice given at a Board meeting and with the "License Agreement Term Sheet" presented to the Board. (Appendix E)

It was recommended that the Board of Trustees approve the execution of a research contract with *XG Sciences, Inc.*, consistent with earlier public notice given at a Board meeting and with the "Research Contract Term Sheet" presented to the Board. (Appendix F)

It was recommended that the Board of Trustees approve the execution of an amendment to a restated and amended license agreement with *XG Sciences, Inc.*, consistent with earlier public notice given at a Board meeting and with the "First Amendment of Restated and Amended Exclusive License Agreement Term Sheet" presented to the Board. (Appendix G)

It was recommended that the Board of Trustees approve the execution of an agreement with *ZuvaChem, Inc.*, consistent with earlier public notice given at a Board meeting and with the "Research Contract Term Sheet" presented to the Board. (Appendix H)

B. Notice of Intent to Negotiate Contracts

Trustee McNamara announced the University's intent to negotiate publishing contracts between the MSU Press and the following faculty:

Dr. Charles L. Ballard, a faculty member in the Department of Economics.

Dr. Hiram E. Fitzgerald, Associate Provost for University Outreach & Engagement and a faculty member in the Department of Psychology.

Dr. Ruben O. Martinez, Director of the Julian Samora Research Institute and a faculty member in the Department of Sociology.

Dr. Douglas Noverr, a faculty member in the Department of Writing, Rhetoric, and American Cultures.

Professor Anita C. Skeen, a faculty member and Arts Coordinator in the Residential College in Arts & Humanities.

Trustee McNamara announced the University's intent to negotiate contracts with *Spartan Crystal Works, LLC*. As indicated in documentation provided to the Committee, Dr. Timothy Grotjohn, a Professor and Chairperson in the Department of Electrical and Computer Engineering, Dr. Donnie Reinhard, a Professor in the Department of Electrical and Computer Engineering, and Dr. Jes Asmussen, a Professor in the Department of Electrical and Computer Engineering, each own or have options to buy an ownership interest of more than 1 percent of the company. Drs. Grotjohn and Asmussen are also officers of *Spartan Crystal Works, LLC*.

C. Naming Opportunity

It was recommended to the Board of Trustees that the softball stadium at Old College Field, presented to the Board of Trustees for authorization to proceed on October 30, 2009, be named Secchia Stadium.

Trustee McNamara **moved to approve** the recommendation, with support from Trustee Nugent.

D. Report on Opening of Academic Year

Provost Wilcox said that 47,200 students have enrolled for the academic year. He noted that approximately 7,200 freshmen were admitted, in addition to 1,400 transfer students. The entering class includes 1,300 students of color, with 80.5 percent of freshmen coming from Michigan.

Dr. Doug Estry, Dean of Undergraduate Studies, said that freshman seminars continue to be an important part of the curriculum. There are approximately 12,000 students currently involved in undergraduate research at MSU. A new sustainability specialization is beginning this year. It is a very interesting and creative curriculum model. One of the most exciting additions to the curriculum is the new entrepreneurship network for undergraduate students, many of whom have serious entrepreneurial business start-up ideas.

Dr. Denise Maybank, Senior Associate Vice President for Student Affairs and Services, said that the neighborhood pilot program for Hubbard Hall has begun. The program has been very successful and is receiving a lot of attention from students, based on activities and opportunities to come together. MSU's relationship with the East Lansing community continues to grow. MSU has gone green



in the experience. All information for new community members can be found online, rather than through flyers and pamphlets. The Spartan Life booklet is also now available online.

Mr. Vennie Gore, Assistant Vice President for Residential and Hospitality Services, said that space for the Hubbard Hall pilot program and phase one of the Brody Complex renovation are now open. The Brody Square cafeteria will redefine campus dining across the country. Approximately 7,000 freshmen moved onto campus with much positive feedback related to the move-in process.

#### 9. Audit Committee

Trustee Perles said that the Audit Committee received an overview of the Internal Audit Office functions and a review of the audit plan for this coming year, which the Committee had received in June 2010. The Director of Internal Audit, Tom Luccock, reviewed the areas of risk for the University, as well as audit foci for this year.

In addition, the Committee received the annual report on athletics compliance. The athletics compliance unit is led by Associate Athletic Director Jennifer Smith. Her position not only reports to the Athletic Director, but is further strengthened by the compliance unit's ability to report directly to the General Counsel. The athletic compliance unit leads with a strong proactive and educational approach.

#### 10. Shaping the Future Report

Provost Wilcox said that the University announced the intention to review up to 42 programs for possible discontinuance. The programs are being reviewed, and, thus far a moratorium has been placed on admission to 25 programs. Two of these programs have been discontinued, while nine are now under review. Moratoria are under consideration for the remainder. The process is deliberately slow to allow for careful consideration of all issues before decisions are made.

#### 11. Trustees Comments

Trustee Ferguson said that the Brody Square cafeteria is outstanding. He commended Vennie Gore for his work and noted that the updated spaces on campus do a great job of attracting students.

Trustee Nugent said that the campus looked great and he was excited about the beginning of another academic year.

Trustee Byrum said that it was exciting to see all the students back on campus. She stated that the Hoophouse Gala was wonderful fun, and she thanked Vennie Gore for his work with the project.

Trustee Owen thanked Vennie Gore for his work with the Hoophouse Gala and noted that the event had doubled in size from the previous year. She stated that Brody Square is an outstanding space.

Trustee Perles thanked Terry Denbow for his service to MSU and Tom Luccock for his audit team.

Trustee Foster thanked Terry Denbow for his service to MSU. She thanked Vennie Gore for his contributions and noted that Brody Square is the best new restaurant in East Lansing.

12. There was no public participation on Issues not germane to the agenda.
13. Request to Adjourn

On a motion by Trustee Ferguson, supported by Trustee Nugent, **THE BOARD VOTED to adjourn** at 11:20 a.m.

Respectfully submitted,



William R. Beekman  
Secretary of the Board of Trustees

**RESOLUTION  
HONORING TERRY DENBOW**

Michigan State University Board of Trustees  
September 17, 2010

The Board of Trustees of Michigan State University today extends to Terry Denbow its deep gratitude, support and very best wishes as he embarks on a new phase of an already distinguished career.

As MSU's vice president for University Relations since 1992, Mr. Denbow has been a tireless advocate for the mission, policies and practices of Michigan State. In his role as vice president, he oversaw the university's public relations, media communications, marketing and creative services, and sports information functions.

Prior to assuming the vice president's role, Mr. Denbow was MSU's director of public relations from 1982 to 1985 and assistant vice president for University Relations from 1985 until 1992.

No stranger to higher education upon his arrival at MSU, Mr. Denbow had also served as director of University Relations at the University of Alabama, and, prior to that, worked in the news bureau at Penn State.

In all, Mr. Denbow has served as the chief public relations officer for eight presidential administrations at MSU and Alabama.

He has been a frequent speaker on issues of management, crisis communication, and the role of a communications office in helping to create, support, and promote the identity, image, and reputation of a college or university.

Mr. Denbow will now take his talents into the classroom, where he is teaching a graduate course in public relations in higher education. He also continues to serve his university by serving as MSU's liaison to the Association of Public and Land-grant Universities.

A proud veteran of the Vietnam War, Mr. Denbow earned his B.A. in journalism from George Washington University, which he attended on a tennis scholarship, and his M.A. in journalism from Penn State.

It is with much respect, admiration and gratitude that the MSU Board of Trustees offers Terry Denbow its best wishes for the future.

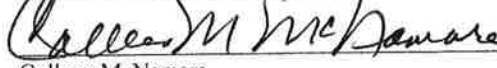
  
Joel Ferguson, Chairman

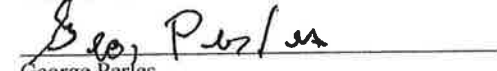
  
Donald Nugent

  
Faylene Owen

  
Dianne Byrum

  
Melanie Foster, Vice Chairperson

  
Colleen McNamara

  
George Perles


\_\_\_\_\_  
Diann Woodard

**RESEARCH  
PRESENTATION  
TO THE MSU BOARD OF TRUSTEES**

**SEPTEMBER 17, 2010**

**DR. SANDRA HASLAM  
COLLEGE OF HUMAN MEDICINE**

Facilitated by the Office of the Vice President for  
Research and Graduate Studies




**Breast Cancer and the Environment Research Center**


Sandra Z. Haslam, Ph.D., Professor of Physiology  
Principal Investigator and Center Director

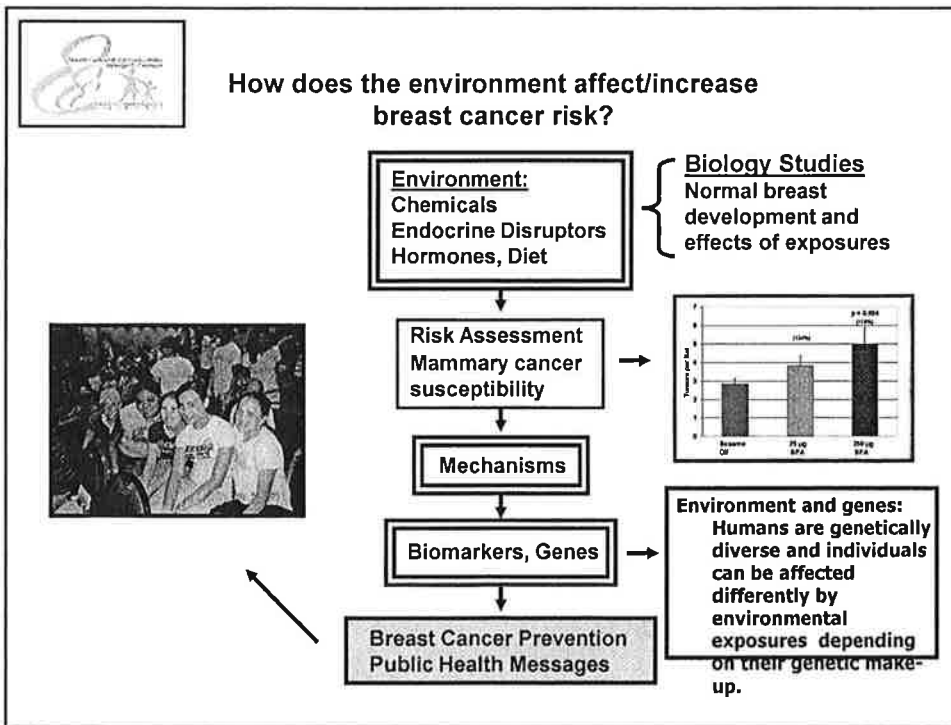
**National Network of Centers:**  
Michigan State University  
University of Cincinnati  
University of Pennsylvania  
University of California, San Francisco

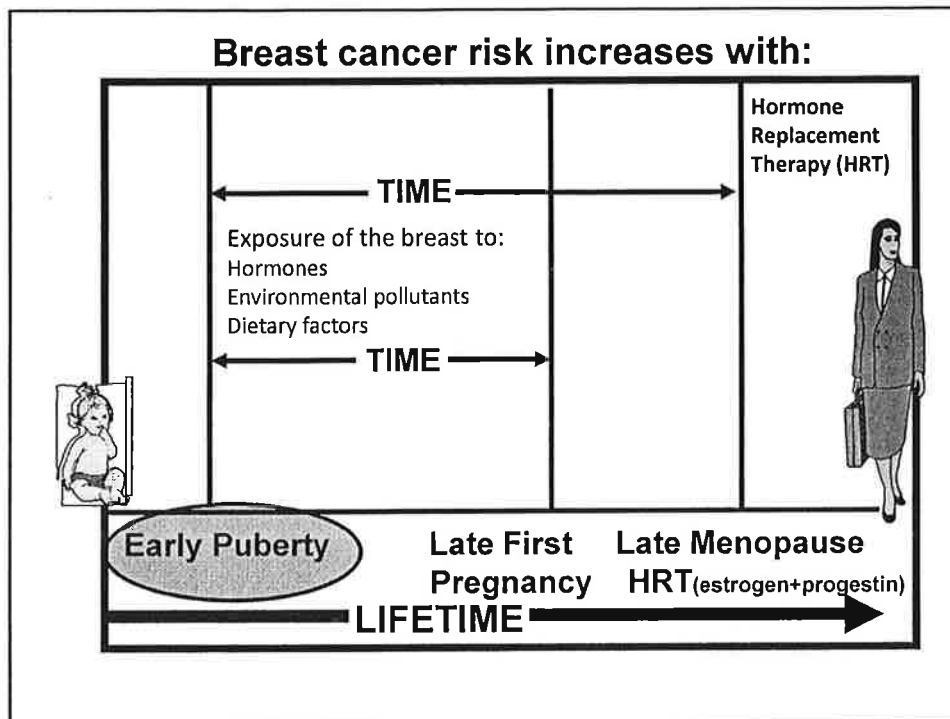
Funded by:  
National Institute of Environmental Health Sciences  
National Cancer Institute 7years (2003-2010)  
MSU Foundation



MSU: Biology Project  
Community Outreach & Translation Core  
Administrative Core





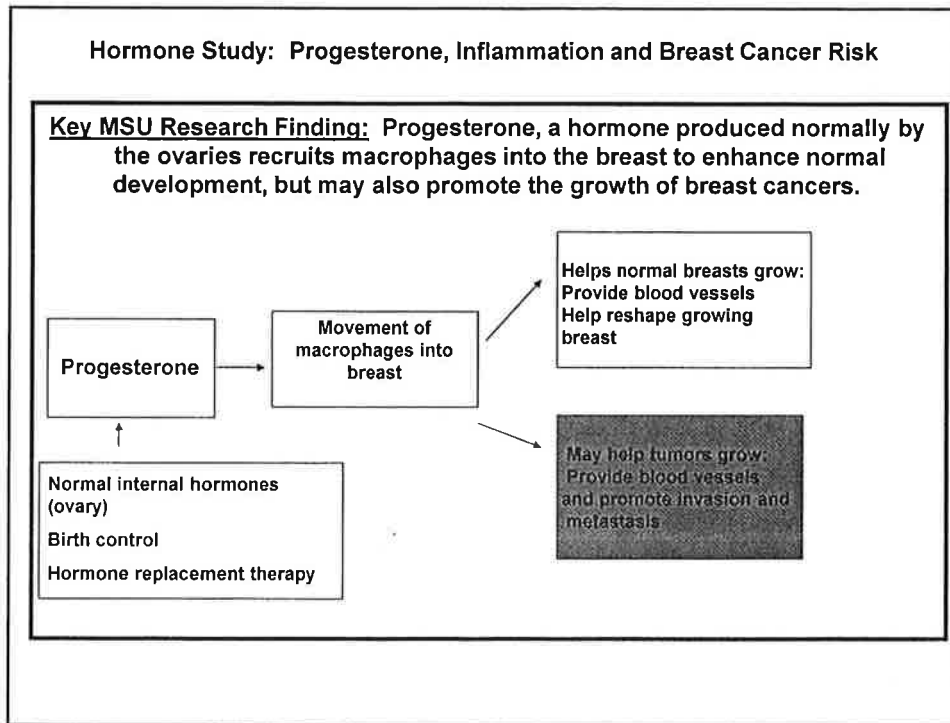


### Focus on puberty


1. Known to be a life period of high sensitivity to cancer-causing agents (based on previous human and animal research).
2. Knowledge gained from this research can provide strategies in early life for prevention of breast cancer.

#### MSU Research Projects:


1. How is pubertal breast development regulated by hormones? ( progesterone)
2. How does dietary fat during puberty affect breast development and breast cancer risk in adulthood ?
3. How does exposure during puberty to a pervasive environmental pollutant (PFOA) affect breast development and breast cancer risk in adulthood ?
4. How does genetic background impact the effects of hormones, diet and PFOA?




**Chemical Exposure During Puberty :**




teflon



PFOA ( perfluorooctanoic acid) is one of the most common man-made long-lasting pollutants. Found in foods, drinking water, some cookware and industrial products.



**We analyzed 2 types of mice with different genetic makeups.**




**Key MSU Research Findings:**

In one type of mice – PFOA made breasts grow larger and faster.  
**\*\*\* This effect was linked to increased production of the hormone, progesterone.**


In the other type of mice – PFOA caused the breasts to grow more slowly or not at all.

This finding indicates that a person’s genetic make-up is critical in determining the effect of PFOA.


**Breast cancer risk assessment: Effects of contact with PFOA by itself and when combined with an agent that is known to cause breast cancer.**



### Effects of High Fat Diet During Puberty



We tested a diet high in animal fat in two types of mice with different genetic makeups.





**Key MSU Research Findings:**

In one type of mice – high fat diet during puberty caused weight gain, and caused the breasts to grow more slowly.

In the other type of mice – high fat diet did not cause weight gain, but caused the breasts to grow larger and faster.  
 These mice developed more breast cancers at a faster rate than the other mice.

This finding indicates that a person's genetic make-up is critical in determining the effect of high fat diet on breast cancer risk.  
 \*\*\*\*A high fat diet can increase breast cancer risk without causing weight gain or obesity.

**Interactions Among Genetic Background, Puberty, and Environment**

Mice	Response to Hormones	Effects of High Fat Diet	Effects of PFOA (Low Dose)
	Progesterone promotes inflammation	No significant weight gain Increases breast cancer	Stops breast growth Breast cancer risk?
	Less sensitive to progesterone	High body weight Slows breast growth Breast cancer risk?	Promotes breast growth (increases progesterone level) Breast cancer risk?



**Acknowledgments**

**Faculty Investigators:**

Department of Physiology – Drs. Karl Olson, Richard Miksicek, **Chengfeng Yang, Hua Xiao, Eran Andrechek**

Department of Microbiology and Molecular Genetics - Drs. S. Conrad, Richard Schwartz.

Department of Biochemistry and Molecular Biology - Dr. T. Zacharewski

Department of Communication – Drs. C. Atkin, S. Smith, K. Silk, P. Whitten

**Education:**

Undergrads, Graduate Students, and Postdoctoral Trainees

**Community Outreach Partners:**

Lansing Area Susan G. Komen Chapter  
American Cancer Society (Great Lakes Division)  
Michigan Department of Community Health  
Faith Access to Community Economic Development  
Michigan Environmental Council

**New Grant Funding:**

**3 NIH R01, 1 NIH R21, 6 Department of Defense Breast Cancer Grants**

MICHIGAN STATE  
UNIVERSITY

**Funded Ongoing and Future Research (2010-2015):**

**Breast Cancer and the Environment Research Program**

Sandra Z. Haslam, Ph.D., Professor of Physiology  
Richard C. Schwartz, Ph.D. Professor of Microbiology & Molecular Genetics  
Co-Principal Investigators

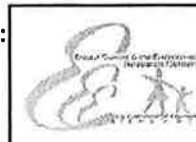
**Federal Granting Agencies:**

National Institute of Environmental Health Sciences  
National Cancer Institute  
Funded for 5years (2010-2015)

**MSU Biology Project: Puberty, high fat diet,  
inflammation and breast cancer**



**Community Outreach & Translation Partners:  
MSU Dept. of Communication and Michigan  
Breast Cancer Coalition.**



# MICHIGAN STATE UNIVERSITY

September 8, 2010

## MEMORANDUM

**To:** Trustee Finance Committee

**From:** Fred L. Poston *F.L.P.*

**Subject:** Revised Asset Allocation for the Common Investment Fund

## RECOMMENDATION

BE IT RESOLVED that the Trustee Finance Committee recommends that the Board of Trustees amend Investment Policy Number 01-07-01 to revise the asset allocation target, range and rationale for Michigan State University's Common Investment Fund ("CIF") by replacing Table No. 2 of Exhibit A of the Investment Policy with the following:

Major Asset Class	Target	Range	Rationale
U.S. Equity	17.0%	12.0%-23.0%	Maximize real returns
Global ex U.S. Equity (includes emerging markets)	18.0%	12.0%-23.0%	Maximize real returns & diversification
Inflation Hedge (real estate & natural resources)	10.0%	7.5% - 12.5%	Inflation hedge & diversification
Non-Marketable Investments (includes distressed, private equity and venture capital)	15.0%	7.0% - 20.0%	Higher returns than equities & diversification
Absolute Return	25.0%	20.0% - 30.0%	Low volatility & moderate correlation with equities
Fixed Income	15.0%	10.0% - 25.0%	Deflation hedge & diversification



**OFFICE OF THE  
VICE PRESIDENT FOR  
FINANCE AND  
OPERATIONS**

Fred L. Poston  
Vice President and  
Treasurer

Michigan State University  
412 Administration Building  
East Lansing, Michigan  
48824-1046

Phone 517.355.5014  
Fax 517.353.6772  
www.vpfo.msu.edu

## BACKGROUND

Cambridge Associates advises, and the Investment Advisory Subcommittee and Administration concur, that both the recent and anticipated future market conditions warrant a revised asset allocation that will provide greater flexibility in investment strategy for the CIF. Recommended changes to the data found in the current Table No. 2 are shown below:

<b>Table No. 2 Asset Allocation</b>			
<b>Major Asset Class</b>	<b>Target</b>	<b>Range</b>	<b>Rationale</b>
U.S. Equity	19.0% 17.0%	14.0%-24.0% 12.0%-23.0%	Maximize real returns
Global ex U.S. Equity (includes emerging markets)	19.0% 18.0%	14.0%-24.0% 12.0%-23.0%	Maximize real returns & diversification
Non-Marketable Investments (includes distressed, private equity and venture capital)	12.0% 15.0%	17.0% 7.0% - 20.0%	Higher returns than common stocks & diversification Higher returns than equities & diversification
Absolute Return	25.0%	20.0% - 30.0%	Low volatility & low correlation with equities Low volatility & moderate correlation with equities

cc: D. Brower, N. Carter, G. Klein, K. Lindahl

**LICENSE AMENDMENT TERM SHEET**

- Party:** InPore Technologies, Inc. (formerly Claytec, Inc.)
- License:** Restated and Amended Exclusive License for commercial purposes
- Term:** Ending at the expiration of the last to expire Patent.
- Technology:** U.S. Patent Numbers: 5,712,402; 5,785,946; 5,800,800; 5,855,864; 6,162,414; 6,193,943; 6,410,473; 6,413,902 (MSU TEC1994-0069); 5,622,684; 5,795,559; 5,726,113; 5,800,799; 6,649,083; 6,465,387; 6,946,109; 7,132,165; 6,800,266; 6,506,485; 6,641,657; 6,607,705; 6,585,952; 6,746,659; 6,702,993; 6,770,258; 6,706,169; 6,869,906; 7,128,892; 6,843,977; 6,713,643; 7,067,687; 7,166,265; 7,485,282; 7,449,164; 7,714,156; and U.S. Patent Application Numbers: 11/799,159; 12/520,960; and European Union Patent Application No. 8724423.2; Korean Patent Application No. 10-2009-7016387; and Japan Patent Application No. 2009-544944.
- Technology's Potential Commercial Utilization:**  
Mesostructures-based materials
- Terms:** Payment of \$11,000 within 30 days of signing; a running royalty ranging from 2.0% to 5.0% and 50% of revenue from sublicensing. The agreement includes annual minimums and commercialization milestones.
- Services Provided:** By MSU to InPore Technologies, Inc.: None under contemplated agreement.  
By InPore Technologies, Inc. to MSU: None under contemplated agreement.
- Use of University Facilities/Personnel:**  
No use of MSU facilities/personnel by InPore Technologies, Inc. under the Restated and Amended Exclusive License
- Organization Type:** Incorporated Michigan-based small business.
- Personnel Interest:** Dr. Thomas J. Pinnavaia, a Professor in the Department of Chemistry, and his immediate family own or have an option to buy an equity interest of more than 1% of the company. Dr. Pinnavaia is also an officer of InPore Technologies, Inc.

**LICENSE AGREEMENT TERM SHEET**

**Party:** Claytec, Inc.

**License:** Exclusive license for commercial purposes

**Term:** Ending at the expiration of the last to expire patent

**Technology:** MSU Invention Disclosure No. TEC2007-0088, entitled "Mesoporous Metal Oxide - Polymer Mesocomposites," and any continuation, continuation-in-part, and divisional patent applications and issued patents derived from any of the foregoing.

**Technology's Potential Commercial Utilization:**  
Mesostructures-based materials

**Payment Terms:** Payment of \$1,000 upon signing; a running royalty ranging from 3.0% to 4.0%. The agreement includes annual minimums and commercialization milestones.

**Use of University Facilities/Services/Personnel:**  
No University facilities, services, or personnel will be utilized by Claytec, Inc. under the terms of the License Agreement.

**Organization Type:** Incorporated Michigan-based small business

**Personnel Interest:** Dr. Thomas J. Pinnavaia, a Professor in the Department of Chemistry, and his immediate family own or have an option to buy an equity interest of more than 1% of the company. Dr. Pinnavaia is also an officer of Claytec, Inc.

**RESEARCH CONTRACT TERM SHEET**

**Party:** XG Sciences, Inc.

**Contract:** Sponsored Research Agreement from XG Sciences to MSU  
“Identification and alteration of the surface chemistry of exfoliated graphite nanoplatelets (eGnP)”

**Term:** November 1, 2010 through October 30, 2014

**Payment Terms:** \$350,000 total: \$45,000 for Phase 1 (November 1, 2010 through April 30, 2011), remaining \$305,000 to be paid based on contractual milestones.

**Services Provided:** By MSU to XG Sciences: research, testing and evaluation related to surface chemistry of eGnP  
  
By XG Sciences to MSU: none

**Use of University Facilities/Personnel:**  
  
Use of MSU facilities/personnel by XG Sciences provided at prevailing rates for industrial research.

**Organization Type:** Incorporated Michigan-based small business.

**Personnel Interest:** Dr. Lawrence T. Drzal, a University Distinguished Professor in the Department of Chemical Engineering and Material Science, Dr. Hiroyuki Fukushima, a Research Specialist in the Composite Materials and Structures Center, and Dr. InHwan Do, a Research Specialist in the Composite Materials and Structures Center, and their immediate families each own or have options to buy an equity interest of more than 1% of the company. Dr. Drzal is also an officer of XG Sciences, Inc.

Dr. Terry May  
Deputy General Counsel Kristine Zayko  
Assistant General Counsel Lee Bollinger

**FIRST AMENDMENT OF RESTATED AND AMENDED  
EXCLUSIVE LICENSE TERM SHEET**

- Party:** XG Sciences, Inc.
- License:** First Amendment of Restated and Amended Exclusive License to add two additional Technologies and to record Technology elections under the Restated and Amended Exclusive License Agreement.
- Term:** From the effective date of the Agreement extending to the expiration of the last to expire of the patents or 25 years, whichever comes first.
- Technology:** U.S. Patent Application No. 12/072,460; U.S. Patent Application No. 11/897,723; U.S. Patent Application No. 12/587,645; MSU Invention Disclosures: TEC2010-0114 “Pi Coupling Agents for Dispersion of Exfoliated Graphene nanoplatelets in polymers”; TEC2011-0002 “Novel Thermoelectric Materials Based on Exfoliated Graphite Nanoplatelets”; TEC2008-0038 “Metal Nanoparticle and Conducting Polymer Nanocomposites for Energy Devices”; TEC2008-0074 “Single Graphene Sheets Decorated With Metal Nanoparticles; TEC2009-0029 “MetalOxide Nanosheet Monolayer Film Synthesis for Electrochemical Energy Storage and Photocatalytic Applications”; TEC2009-0113 “Exfoliated Graphite Nano Platelet (xGnP) anodes for Li-ion batteries”; TEC2010-0027 “Nanostructured Electrodes for Exfoliated Graphite Nanoplateletes for Supercapacitor Applications”; and TEC2010-0047 “Simple Dry Process for Scalable Production of High Surface Area, Graphene Nanoplatelets”.
- Technology’s Potential Commercial Utilization:**
- Broad applications involving composite materials and components.
- Payment Terms:** Payment of \$6,000 for the addition of new Technologies.
- Services Provided:** By MSU to XG Sciences: None under contemplated agreement.



By XG Sciences to MSU: None under contemplated agreement.

**Use of University Facilities/Personnel:**

No use of MSU facilities/personnel by XG Sciences under the contemplated agreement.

**Organization Type:** Incorporated, Michigan-based small business.

**Personnel Interest:** Dr. Lawrence T. Drzal, a University Distinguished Professor in the Department of Chemical Engineering and Material Science, Dr. Hiroyuki Fukushima, a Research Specialist in the Composite Materials and Structures Center, and Dr. InHwan Do, a Research Specialist in the Composite Materials and Structures Center, and their immediate families each own or have options to buy an equity interest of more than 1% of the company. Dr. Drzal is also an officer of XG Sciences, Inc.

**RESEARCH CONTRACT TERM SHEET**

- Party:** ZuvaChem, Inc.
- Contract:** Sponsored Research Agreement between ZuvaChem and MSU (“Identification of an isoprene synthase that will increase the production of isoprene in genetically engineered cyanobacteria”)
- Term:** October 1, 2010 through March 31, 2011
- Potential Commercial Utilization:**
- Improved and sustainable production of Isoprene via an engineered organism.
- Payment Terms:** ZuvaChem will sponsor research at and pay MSU \$45,000, \$15,000 at inception, and \$30,000 at conclusion of project.
- Services Provided:** By MSU to ZuvaChem: research regarding isoprene synthase genes and protein expression.
- By ZuvaChem to MSU: None under contemplated agreement.
- Use of University Facilities/Personnel:**
- Use of MSU facilities and personnel provided at prevailing rates for sponsored research.
- Organization Type:** Delaware corporation with principal place of business in Baltimore, Maryland.
- Personnel Interest:** Dr. Thomas Sharkey, a Professor in the Department of Biochemistry and Molecular Biology, and his immediate family hold an ownership interest which exceeds 1% of the company.