

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

October 28, 2016

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

Trustees present: Brian Breslin, Dianne Byrum, Joel Ferguson, Melanie Foster, Mitch Lyons, Brian Mosallam, George Perles, and Diann Woodard.

University officers present: President Simon, Provost and Executive Vice President Youatt, Executive Vice President Udpa, Vice President and Secretary Beekman, Vice President and General Counsel Noto, Vice Presidents Burnham, Gore, Groves, Haas, Hsu, Maybank, and Swain, and Senior Advisor and Director Granberry Russell. Faculty liaisons present: Laura McCabe, Ramona Fernandez, and Phylis Floyd. Student liaisons present: Mariah Hill, Dee Jordan, Lorenzo Santavicca, and Angel Trevino.

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

1. On a motion by Trustee Ferguson, supported by Trustee Breslin, the **BOARD VOTED to approve** the agenda.
2. On a motion by Trustee Foster, supported by Trustee Lyons, the **BOARD VOTED to approve** the minutes of the September 8, 2016 Board of Trustees meeting.
3. President's Report

President Simon provided the following report to the Board.

A. Student Achievements

MSU law student John Mohyi is a finalist for the 2016 Collegiate Inventors Competition. Mohyi will join students from 11 other schools to compete for more than \$100,000 in cash prizes. His invention is a bladeless drone, which could lead to drones that are safer and quieter. A patent is pending on this technology.

B. Faculty and Staff Achievements

Hannah Distinguished Professor Emilio Moran has been appointed by President Barack Obama to serve on the National Science Board of the National Science Foundation. This is the first time an MSU faculty member or administrator has been appointed to the National Science Board.

Anil Jain, University Distinguished Professor of computer science and engineering, has been elected a Foreign Fellow of the Indian National Academy of Engineering. Only five Foreign Fellows are elected each year.

After receiving Awards of Excellence for four out of five entries in the 2016 University and College Designers Association Design Competition, MSU's Communications and Brand Strategy department has been awarded two additional Judge's Choice awards for the 2015 President's Report and the Spartan Virtual Choir singing, "Victory for MSU."

C. University Recognition & Rankings

According to the Wall Street Journal/Times Higher Education College Ranking, MSU is among the highest-ranked schools for engagement. This ranking defines engagement as a measure of how connected the students are with their school, each other, and the outside world. The Wall Street Journal took special notice of the five MSU Neighborhoods and noted the University's strategy to encourage students to engage in communities around the State as part of their classwork and research.

According to U.S. News & World Report, MSU's undergraduate Supply Chain Management program remains first in the nation.

The Broad College of Business Master's degree in Marketing Research has climbed to number seven in the national rankings, according to the TFE Times' Master's of Marketing ranking, the most comprehensive ranking of graduate marketing programs in the United States. Of the programs listed, Broad ranked number one in the U.S. for its masters in marketing research degree.

MSU Extension was honored by the U.S. Department of Agriculture for its quick and comprehensive response to the residents of Flint affected by lead-contaminated drinking water. The prestigious Abraham Lincoln Honor Award for External Partnerships

recognizes groups which have made outstanding contributions that support the USDA's mission and goals.

Jamie Monson, director of the MSU African Studies Center, has reported a successful week of MSU-South Africa partnership activities in Cape Town. More than 100 participants joined in on the events, including the Ubututu Quilt Exhibit, a partnership of MSU and the Desmond & Leah Tutu Legacy Foundation, bringing together quilt artists from the U.S. and South Africa to pay tribute to Archbishop Tutu and his wife, Leah.

D. Athletics

The United States Olympic Committee has selected Glen Bennett, program coordinator for the MSU Demmer Shooting Sports, Education and Training Center, as the individual recipient of the Rings of Gold award. This is an annual award for dedication to helping children develop their Olympic or Paralympic dreams and reach their highest athletic and personal potential. Bennett was one of six award winners celebrated at the 2016 U.S. Olympic and Paralympic Assembly.

E. Societal Issues

President Simon noted that the University has received a good deal of attention as it continues to work on issues of social justice.

MSU will continue the work of being better on a set of broader societal issues. Being at the vortex of those conversations and struggles means that there are many voices and many words. Each voice and each word is important. President Simon said that, at the same time, we need to work together as a community to recognize that our words must be joined in a chorus in order to be able to make the kind of substantial difference that we need to make as a University and as a society.

President Simon pointed out that no letter and no words will be sufficient to address all of the concerns expressed from the community. She told the Trustees that they would hear some of those today from the students and confirmed that the University community will continue to work on those issues collectively, recognizing that no individual action defines the institution.

4. There was no Public Participation on Issues Germane to the Agenda.
5. Personnel Actions

Provost Youatt presented the following personnel actions:

Searl, Jeffrey P, AY – Associate Professor, Department of Communicative Sciences and Disorders, \$115,000, with Tenure, effective January 1, 2017.

Yaruss, Jonathan S, AY- Professor, Department of Communicative Sciences and Disorders, \$135,000, with Tenure, effective March 1, 2017.

Contag, Christopher, AN – John A Hannah Distinguished Professor, Department of Biomedical Engineering; Dean's Office, College of Human Medicine, \$325,000, with Tenure, effective November 1, 2016.

Thomas, Anne C, AN – Associate Professor, College of Nursing, \$200,000, with Tenure, effective January 1, 2017.

Trustee Byrum **moved to approve** the recommendations, with support from Trustee Mosallam.

THE BOARD VOTED to approve the resolution.

6. Gifts, Grants, and Contracts

Vice President Hsu introduced Professor Christina Chan, a member of the Department of Chemical Engineering and Materials Science in the College of Engineering. Professor Chan made a presentation to the Board on technological innovations for biomedicine. (Appendix A)

7. Finance Committee

Trustee Foster presented the Trustee Finance Committee Report and recommendations.

- A. 2017-18 Appropriation Request and Capital Outlay

It was recommended that the Board of Trustees adopt Michigan State University's 2017-18 Operating and Capital Outlay Request, including components for the University General Fund, AgBioResearch, and Michigan State University Extension. (Appendix B)

BE IT RESOLVED, the Board of Trustees hereby adopts the attached 2017-18 Appropriation Request and Capital Outlay.

Trustee Foster **moved to approve** the recommendation, with support from Trustee Ferguson.

THE BOARD VOTED to approve the resolution.

B. Revised Investment Policy (*Endowment Spending Rate Calculation Period*)

It was recommended that the Board of Trustees amend its Investment Policy to change the calculation period for the endowment spending rate from twenty quarters of the five calendar years prior to the beginning of the fiscal year in which the spending is expected to occur to 20 quarters of the five fiscal years ending one year prior to the beginning of the fiscal year in which the spending is expected to occur.

BE IT RESOLVED, that the Board of Trustees of Michigan State University hereby approves the amendment to its Investment Policy, Board Policy 01-07-01. (Appendix C)

Trustee Foster **moved to approve** the recommendation, with support from Trustee Lyons.

THE BOARD VOTED to approve the resolution.

C. Purchase of Lansing Property—4000 Collins Road

It was recommended that the Board of Trustees authorize the purchase of renovated real property owned by the Michigan State University Foundation (the "Foundation") and located near the corner of Dunckel Road and Collins Road in Lansing, Michigan.

BE IT RESOLVED, that the Board of Trustees of Michigan State University hereby authorizes the Administration to purchase the real property located at 4000 Collins Road in Lansing, Michigan, and furniture and equipment therein, for an amount not to exceed \$15,000,000 and upon such other terms and conditions as may be acceptable to the Executive Vice President for Administrative Services.

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

THE BOARD VOTED to approve the resolution.

- D. Authorization to plan—Instructional Space Improvements—Bessey Hall, Natural Science, and Veterinary Medicine

It was recommended that the Board of Trustees authorize the Administration to plan for renovation and technology improvements to various instructional spaces as part of the University's commitment to student success.

BE IT RESOLVED, that the Board of Trustees of Michigan State University hereby authorizes the Administration to plan for the project entitled "Instructional Space Improvements—Bessey Hall, Natural Science, and Veterinary Medicine."

Trustee Foster **moved to approve** the recommendation, with support from Trustee Woodard.

THE BOARD VOTED to approve the resolution.

- E. Parking Lot 63—Reconstruction and Expansion

It was recommended that the Board of Trustees authorize the Administration to plan for reconstruction and expansion of Parking Lot 63 to repair significant deterioration, reduce traffic safety concerns, and expand capacity.

BE IT RESOLVED, that the Board of Trustees of Michigan State University hereby authorizes the Administration to plan for the project entitled "Parking Lot 63—Reconstruction and Expansion.

Trustee Foster **moved to approve** the recommendation, with support from Trustee Mosallam.

THE BOARD VOTED to approve the resolution.

- F. Project Approval—Authorization to Proceed—IM Sports West—Selected Infrastructure System Upgrades (Healthy Campus Initiative)

It was recommended that the Board of Trustees authorize the Administration to proceed with selected infrastructure improvements to the IM West building that support student, staff, and faculty recreation and fitness, as well as Intercollegiate Athletics activities.

BE IT RESOLVED, that the Board of Trustees of Michigan State University hereby authorizes the Administration to proceed with the project entitled "IM Sports West—Selected Infrastructure System Upgrades", with a budget of \$3,995,000.

Trustee Foster **moved to approve** the recommendation, with support from Trustee Ferguson.

THE BOARD VOTED to approve the resolution.

G. Project Approval—Authorization to Proceed—Hubbard Hall—Exterior Masonry Repair (phase II)

It was recommended that the Board of Trustees authorize the Administration to proceed with the second phase of exterior renovations to Hubbard Hall.

BE IT RESOLVED, that the Board of Trustees of Michigan State University hereby authorizes the Administration to proceed with the project entitled "Hubbard Hall—Exterior Masonry Repair (phase II)", with a project budget of \$2,500,000.

Trustee Foster **moved to approve** the recommendation, with support from Trustee Woodard.

THE BOARD VOTED to approve the resolution.

8. Policy Committee

Trustee Byrum presented the Trustee Policy Committee Report and recommendations.

A. Tom Izzo Basketball Hall of History

It was recommended that the Board of Trustees name the new MSU Basketball Hall of History.

BE IT RESOLVED, that the Board of Trustees hereby authorizes the new MSU Basketball Hall of History to be named the Tom Izzo Basketball Hall of History.

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

THE BOARD VOTED to approve the resolution.

B. Approval of Contract Terms

It was recommended that the Board of Trustees approve a contract between Michigan State University and faculty member Dr. Susan J. Bandes.

BE IT RESOLVED, that the Board of Trustees of Michigan State University hereby approves a publishing contract with Dr. Bandes, consistent with earlier public notice given at a Board meeting and with a "Publishing Contract Term Sheet" presented to the Board. (Appendix D)

It was recommended that the Board of Trustees approve a contract between Michigan State University and MSU employee Dr. Janice Beecher.

BE IT RESOLVED, that the Board of Trustees of Michigan State University hereby approves a publishing contract with Dr. Beecher, consistent with earlier public notice given at a Board meeting and with a "Publishing Contract Term Sheet" presented to the Board. (Appendix E)

It was recommended that the Board of Trustees approve a contract between Michigan State University and *Kopess Ag Tech, LLC*, a company in which MSU employees Dr. Kyung-Hwan Han and Okran Han hold a financial interest.

BE IT RESOLVED, that the Board of Trustees of Michigan State University hereby approves a rights allocation agreement with *Kopess Ag Tech, LLC*, consistent with earlier public notice given at a Board meeting and with a "Rights Allocation Agreement Term Sheet" presented to the Board. (Appendix F)

It was recommended that the Board of Trustees approve a contract between Michigan State University and *non sequitur media, LLC*, a company in which faculty member Mark Sullivan holds a financial interest.

BE IT RESOLVED, that the Board of Trustees of Michigan State University hereby approves a license agreement with *non sequitar media, LLC*, consistent with earlier public notice given at a Board meeting and with a "License Agreement Term Sheet" presented to the Board. (Appendix G)

It was recommended that the Board of Trustees approve a contract between Michigan State University and *Photography Associates, Inc.*, a company in which faculty member Peter Glendinning holds a financial interest.

BE IT RESOLVED, that the Board of Trustees of Michigan State University hereby approves a rights allocation agreement with *Photography Associates, Inc.*, consistent with earlier public notice given at a Board meeting and with a "License Agreement Term Sheet" presented to the Board. (Appendix H)

It was recommended that the Board of Trustees approve two contracts between Michigan State University and Dr. Theodore S. Ransaw.

BE IT RESOLVED, that the Board of Trustees of Michigan State University hereby approves two publishing contracts with Dr. Ransaw, consistent with earlier public notice given at a Board meeting and with a "Publishing Contract Term Sheet" for each contract presented to the Board. (Appendixes I and J)

It was recommended that the Board of Trustees approve a contract between Michigan State University and *Talapo Therapeutics, Inc.*, a company in which faculty member Dr. Erik Martinez Hackert holds a financial interest.

BE IT RESOLVED, that the Board of Trustees of Michigan State University hereby approves an exclusive license agreement with *Talapo Therapeutics, Inc.*, consistent with earlier public notice given at a Board meeting and with an "Exclusive License Allocation Agreement Term Sheet" presented to the Board. (Appendix K)

Trustee Byrum **moved to approve** the recommendations, with support from Trustee Lyons.

THE BOARD VOTED to approve the resolutions.

C. Notice of Intent to Negotiate Contracts

Pursuant to State law, Trustee Byrum gave public notice of the University's intent to negotiate contracts with Dr. Juan David Cornado.

Pursuant to State law, Trustee Byrum gave public notice of the University's intent to negotiate contracts with *Funite LLC*, a Michigan limited liability company. Dr. Richard Ransom, a Post-Doctoral Fellow in the College of Natural Science, and members of his family have, or have options to buy, an interest in the company.

Pursuant to State law, Trustee Byrum gave public notice of the University's intent to negotiate contracts with Dr. Thomas Summerhill.

9. Audit Committee

Trustee Breslin presented the Trustee Audit Committee Report and recommendations.

The Audit Committee met and reviewed with MSU staff and the Board's external auditors, Plante Moran, the 2015-16 audited financial statements.

The University received a clean opinion from the auditors, which indicates that MSU followed accounting rules appropriately and that its financial reports are an accurate representation of MSU's financial position as of June 30, 2016.

No significant changes were made to Plante Moran's audit approach, which was reviewed by the Audit Committee prior to audit work commencing. No significant adjustments were proposed during the audit, and no material weaknesses in internal controls or accounting policies and procedures were noted.

Based upon this review and report, action was recommended to make official the June 30, 2016 financial statements of the University.

It was recommended that the Board of Trustees approve and make official the financial statements of the University.

RESOLVED, that the Board of Trustees of Michigan State University hereby accepts the audited financial statements for the fiscal year ended June 30, 2016.

Trustee Breslin **moved to approve** the resolution, with support from Trustee Woodard.

THE BOARD VOTED to approve the resolution.

10. Trustee Comments

Trustee Ferguson stated that Michigan State's best years are ahead thanks to the leadership at MSU.

Trustee Woodard spoke of her excitement to be a part of a university that has concern for every person.

Trustee Mosallam welcomed Professor Contag and thanked Trustees Breslin and Foster for their work on the Finance Committee.

Trustee Foster congratulated Vice Presidents Gore and Maybank and their teams on MSU being ranked the top public university in student engagement by the Wall Street Journal. She also expressed her pride that a large number of the students at MSU are Michigan residents.

Trustee Byrum spoke of the excellence of the new Biomedical Engineering building. She congratulated Glen Bennett, MSU archery coach, for his Rings of Gold recognition.

Trustee Perles thanked Trustee Byrum for her contributions to the Board, and spoke of his confidence in the football team in its game against the University of Michigan.

Trustee Breslin welcomed Professor Contag and thanked all those who contributed to him coming to MSU. He thanked the student liaison group for its hard work on behalf of MSU.

Trustee Lyons echoed the excitement of the other Trustees for the Biomedical Engineering building and thanked Professor Chan for her presentation.

11. Public Participation on Issues Not Germane to the Agenda

A. Renewable Electricity at MSU

Joseph Herbst, an undergraduate student and the interim organizer for Climate Reality Project: Campus Corps at MSU, spoke on the dangers of climate change. He emphasized the goal of Climate Reality Project: Campus Corps at MSU, which is to have 100 percent renewable electricity on campus by 2030, and urged the Administration to act on this goal.

Jay Garlapati, an undergraduate student and a member of the Climate Reality Project: Campus Corps at MSU, also spoke on the

issues caused by climate change and urged the Administration and Board of Trustees to work towards MSU having 100 percent renewable electricity by 2030.

Ben Wilson, an undergraduate student and the director of fundraising for Climate Reality Project: Campus Corps at MSU spoke on the impact climate change can have on the global scale. Additionally, he urged President Simon and the Board of Trustees to commit to MSU being powered by 100 percent renewable electricity by 2030.

Natalie Smith, an undergraduate student and the President of the Climate Reality Project: Campus Corps at MSU spoke of the impact that the effects of climate change can have on marginalized populations. She commended the Administration for its decision to switch from coal to natural gas as an energy source at MSU, but urged the Administration to go further and commit to 100 percent renewable electricity by 2030.

B. Historical Struggle of Chicanx Students

Samuel Saldivar, a doctoral candidate, spoke on the important role that the Administration plays in the recognition of issues facing Chicanx students at MSU. He urged the Administration and the Board of Trustees to be proactive and not reactive to these issues in their actions and decisions.

Christian Ramirez, a doctoral student, spoke of the lack of representation for Chicanx students at Michigan State. He challenged the Board of Trustees to create a more inclusive and safe space for Chicanx students at MSU.

Maisie Rodriguez, an undergraduate student, urged the Board of Trustees to change the name of the Justin S. Morrill Hall of Agriculture to the Cesar Chavez Hall of Agriculture. Ms. Rodriguez spoke of the significance that Chavez has to the migrant community and to the Chicanx community as part of her proposal.

C. Which Side MSU

Salman Pervez, an undergraduate student, shared his reflections on the issues of race and equality facing our world today, particularly the concerns of the Black Lives Matter movement.

Jessica Gardener, an undergraduate student, spoke on the issues of race and equality facing the world. Ms. Gardener spoke on

communication issues between the Administration and the students,
and urged the Administration to take a firm stance on these issues.

12. Request to Adjourn

On a motion by Trustee Ferguson, supported by Trustee Lyons, **THE BOARD VOTED to adjourn** at 11:15 a.m.

Respectfully submitted,



William R. Beekman
Vice President and Secretary of the Board of Trustees

TECHNOLOGICAL INNOVATIONS FOR BIOMEDICINE

Molecular to Systems Biology Laboratory

Board of Trustees Meeting
October 28, 2016

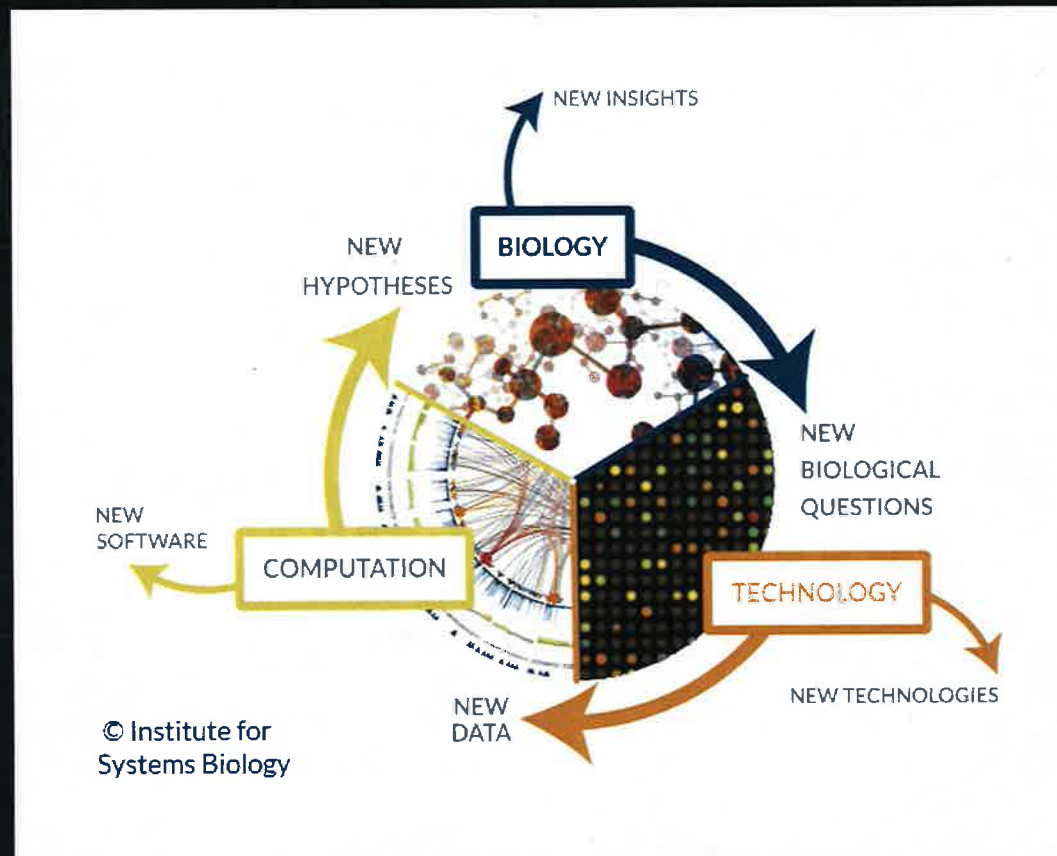


Christina Chan
George W. Bissell Professor

*Department of Chemical Engineering & Material Science
Department of Biochemistry & Molecular Biology
Michigan State University*



Post Genome Era



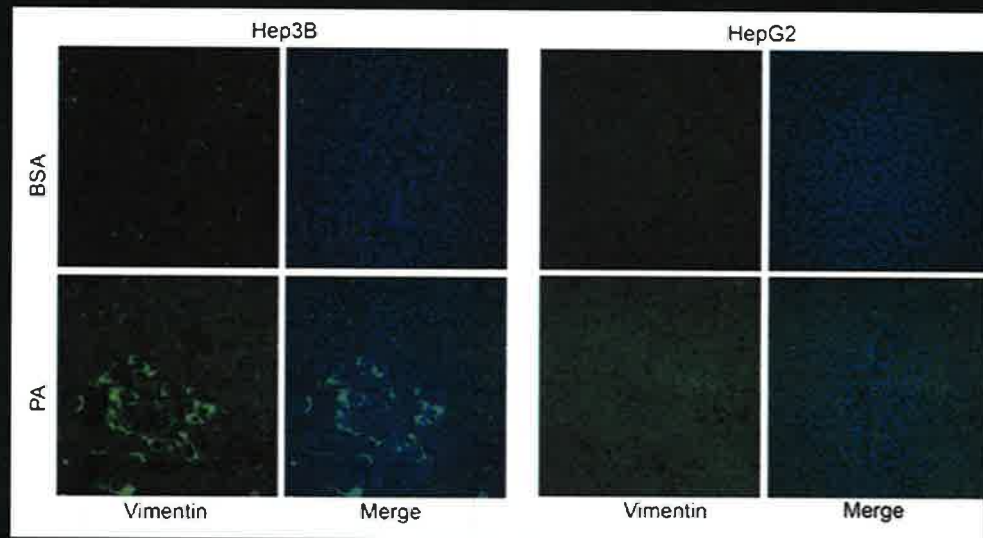
BIOLOGY

DISEASE MECHANISMS

Understand the role of environmental factors on disease development and progression:

Neurodegenerative and

Liver diseases (cancer)



Nath, Li, Roberts, Chan (2015) *Scientific Reports*, 5: 14752

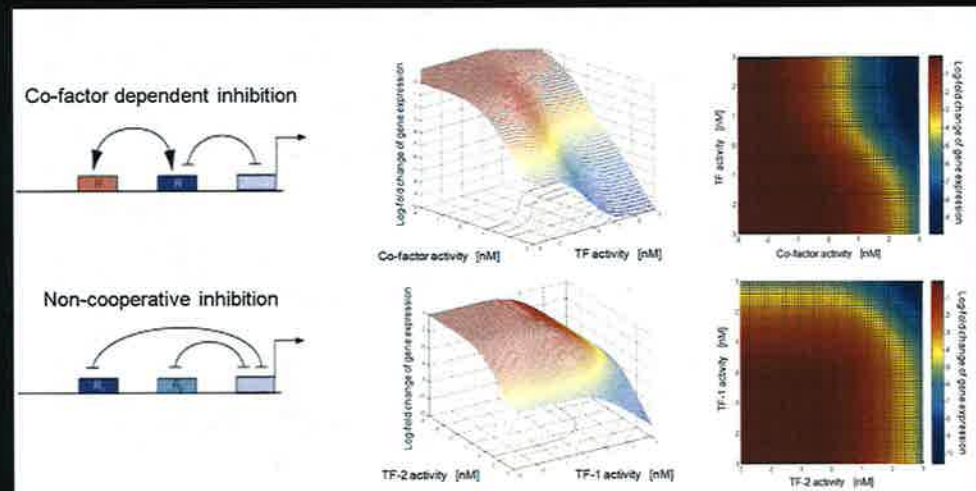
COMPUTATION

SYSTEMS BIOLOGY

Computational models capturing biological and medical information:

Identify drug targets

Disease markers (HDL/LDL)



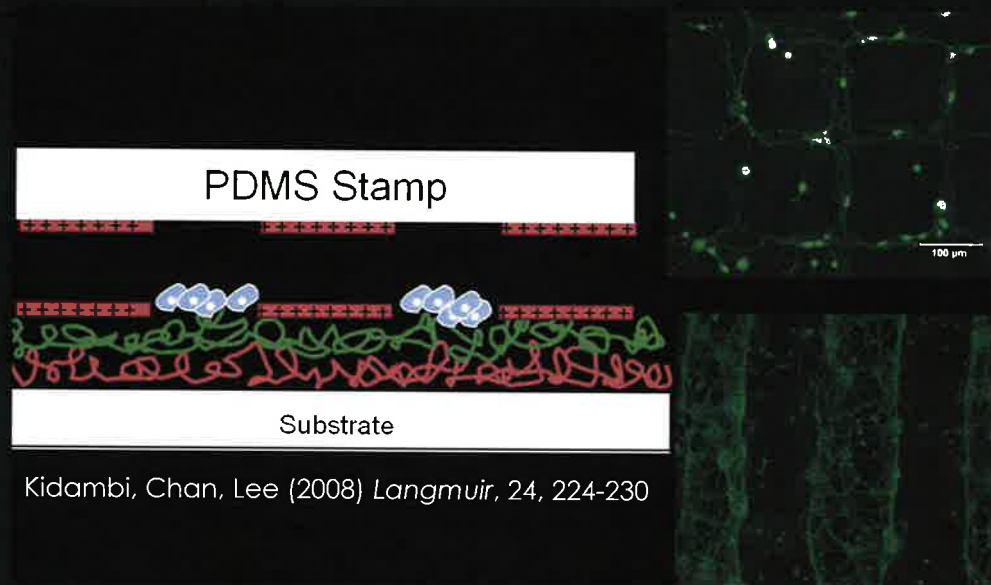
Wu and Chan (2011) *Briefings in Bioinformatics*, 13(2): 150-161

TECHNOLOGY

TISSUE ENGINEERING AND DRUG DELIVERY

Develop platforms to regenerate diseased or damaged tissues & organs

Approaches to deliver drugs to intended organ with minimal side effects



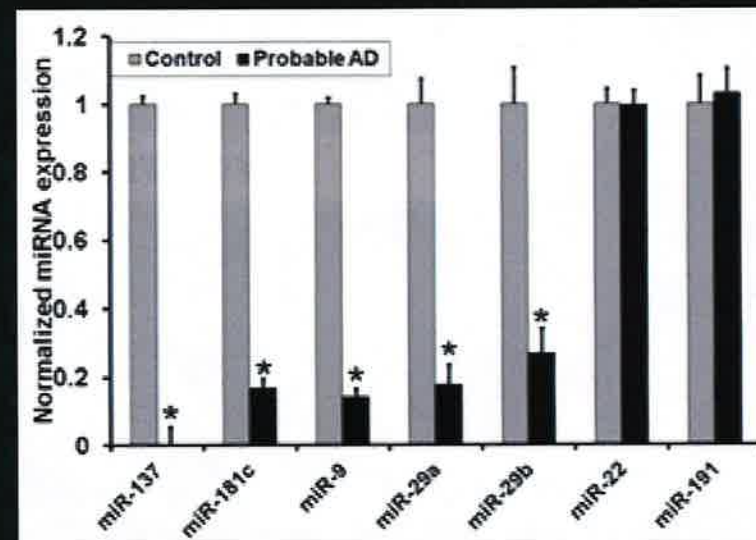
Kidambi, Chan, Lee (2008) *Langmuir*, 24, 224-230

Alzheimer's Disease (AD)

Diagnosis

- Mini Mental State Examination (MMSE) tests person's memory, attention and language
- Markers in cerebrospinal fluid
- Our goal: Detect diagnostic biomarkers with blood tests

Serum miRNA

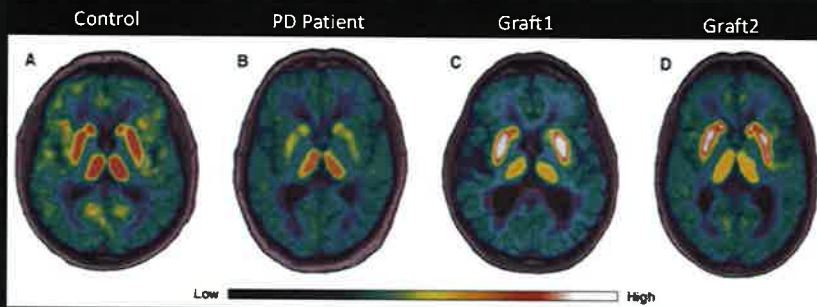


Geekiyana, Nelson, Chan (2012) *Experimental Neurology*, 235: 491

Tissue Engineering

Parkinson's Disease (PD)
Graft-induced dyskinesias

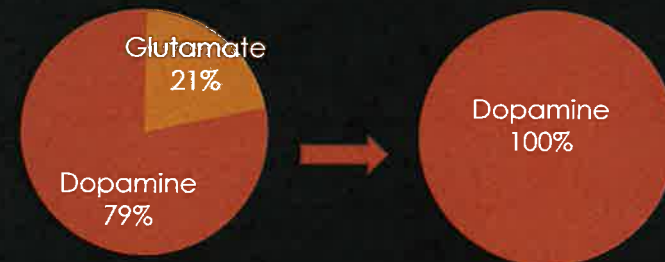
Heterogeneous Cell Population



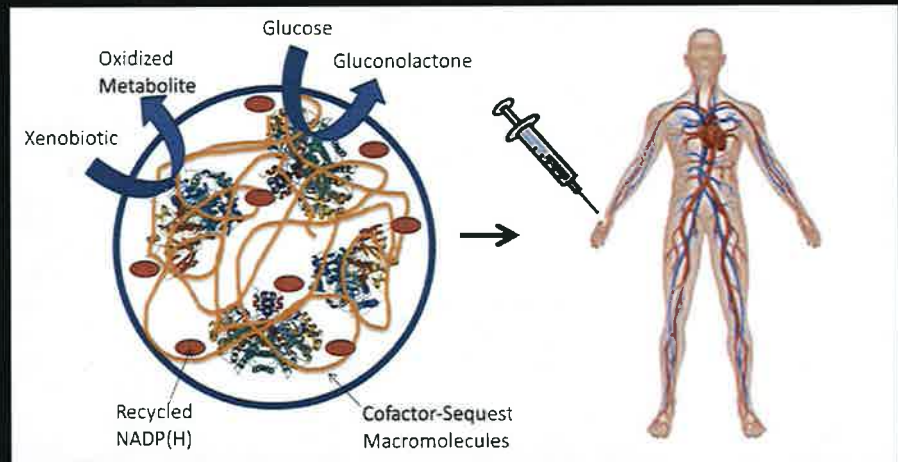
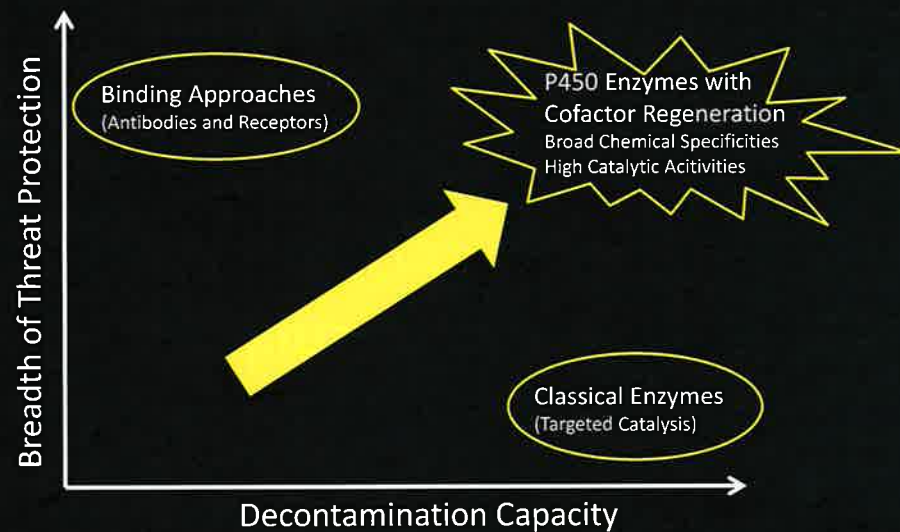
Politis et al. (2011) *Mov. Disord.*, 26: 1997



Zhang et al. (2011) *CMLS*, 68: 863



Prophylactic for toxins, chemical overexposure



Collaborators

Medicine

William Atchison
(Pharm/Tox)
Kurt Hankeson (VetMed)
Peter Nelson (Kentucky)
Lewis Roberts
(Mayo Clinic)
Robert Roth (Pharm/Tox)
Mark Tuszynski (UCSD)

David Arnosti (BMB)
Sarat Dass (Stat)
Micheal Feig (BMB)
Di Liu (Math)
Michael Thomashow
(Plant bio)
Timothy Zacharewski
(BMB)

Natural Science

Engineering

Scott Banta (Columbia)
Seungik Baek (ME)
Rong Jin (CSE)
Jeffrey Sakamoto (UM)
Amadeu Sum (CSM)
Yanni Sun (CSE)
S. Patrick Walton (ChEMS)
Tim Whitehead (ChEMS)
Neil Wright (ME)

James Pestka
(Food Sci/Hum Nut)
Keith Latham
(Animal Science)

CANR

Acknowledgements

Systems Biology & ME

Zheng Li (Tianjin University, faculty)
Shireesh Srivastava (ICGEB faculty)
Xueui Yang (Tsinghua Univ, faculty)
Ertugrul Dalkic (Bulent Ecevit U, faculty)
Ming Wu (Illumina)
Xuewei Wang (Mayo Clinic)
[Undergraduate Students \(>60\)](#)
Irene Li (Stanford)
Purva Shanker (U Michigan)
Josh Schwallier

Disease Mechanism

Sachin Patil (Widener Univ, faculty)
Hirosha Geekiyanage (U Mass Med.)
Li Liu (Frontage Laboratories)
Hyun Ju Cho (Caltech)
Amanda Malefyt (Trine Univ, faculty)
Aritro Nath (U Chicago)
Amrita Oak
Linsey Seitz (Stanford)
Catherine Nezich (Oxford/NIH)
Rebecca Martin (U Washington)
Grace Jansen

Tissue Engineering and Drug Delivery

Srivatsan Kidambi (U Nebraska, faculty)
Sumit Mehrotra (Intel)
Linxia Zhang (Regeneron)
Chun Liu (U Michigan)
Ryan Thompson
Daniel Vocelle
Kevin Chen
Jenna Strickland
Kendall Pawelec (Cambridge)
Natasha Upda (UM/Cornell)
Elizabeth Sutara



2017-18 Appropriation Request

MICHIGAN STATE UNIVERSITY

INTRODUCTION

Since the mid-1960s MSU has been recognized as a top academic institution and is a member of the prestigious Association of American Universities, consisting of a group elite research universities in the United States and Canada. Our value proposition is to make high-quality education accessible to qualified students, ensuring access and investing in Michigan's future. In fact, MSU enrolls more Michigan students than any public university in the state.



ENTREPRENEURIAL ECOSYSTEM

Michigan State University is a vital engine for Michigan's prosperity and provides value for students and stakeholders across Michigan. MSU maintains a presence in each of the state's 83 counties and is deeply engaged in Flint, Detroit, and Grand Rapids, working collaboratively to provide expertise and a network of resources with skills in food safety, water, health, education, and sustainability.

Michigan State University has an annual economic impact of more than \$5 billion and seeks to instill an entrepreneurial and high performance mind-set in its students, faculty, and staff. That spirit of entrepreneurialism permeates the university at all levels, through numerous direct opportunities for students or the extensive efforts and impact the university's outreach efforts make across the state. Examples of student opportunities include the Innovate State speaker series, business plan competitions, the entrepreneurship minor, student business incubators, and numerous additional opportunities available across campus.

In fact, approximately two-thirds of MSU's seniors reported participating in an internship, co-op, field placement, student teaching, or clinical placement during their degree program. In addition, approximately 19,000 students work on campus in some capacity each year.

The entrepreneurial ethos fits hand-in-glove with our progressive pedagogy and overall approach to developing "citizen scholars" and what we and our partners at IBM call "T-shaped" scholars: students who are prepared for real-world careers demanding both technical and disciplinary expertise along with connective soft skills.

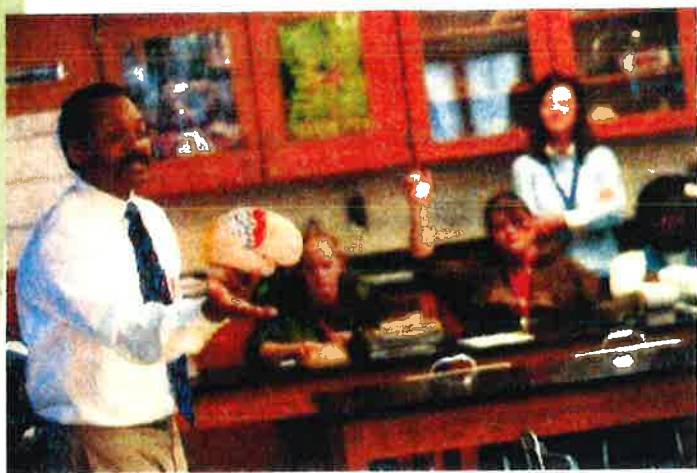
Finally, MSU Extension's presence touches all 83 Michigan counties, availing all Michigan residents to the resources and expertise they need to advance the state and its economy. One example; the MSU Product Center's efforts have resulted in 480 new businesses since 2004 with increased first-year sales of \$331 million and more than 1,300 jobs created.

MSU's Programmatic and Strategic Commitment

MSU's programmatic strategy is premised on the Bolder by Design strategic framework and seeks to further education and research in Science, Technology, Engineering, and Math as well as other curricular priorities in order to expand economic impact locally, regionally, and internationally advancing the common global good.

MSU routinely receives in excess of \$500 million in sponsored awards annually, focused in areas such as food systems; plant sciences; health sciences; computational sciences emphasizing biology and food/food-chain; and population and the environment, including food, water, and energy.

Additionally, MSU's programmatic investments seek to improve technology and teaching, prioritize interdisciplinary study, the narrowing of graduation gaps amongst various student groups, and fostering a healthier campus.



At MSU, student credit hours in Science, Technology, Engineering and Math have increased by more than 40 percent over ten years, representing an additional \$35 million in additional instructional costs.

MSU is consistently ranked as one of the top institutions nationally for internationalization while also enrolling a larger percentage of resident students than Big Ten peers.

At MSU, student credit hours in Science, Technology, Engineering, and Math have increased by more than 40% over ten years, representing an additional \$35 million in costs

In fact, MSU's approximately 75 percent resident undergraduate population exceeds the Big Ten average by 10 percent, making it among the most home-state centric in the conference.

MSU's success is evidenced by its consistent inclusion among the top 100 universities in the world and in its acclaimed programs with 29 featured in the top 25 nationally, including six rated number one. Additionally, MSU's graduation rate exceeds the *U.S. News & World Report* predicted rate by 10 percentage points, an indicator of educational quality and high performance.

MSU also routinely enrolls in excess of 8,500 Pell Grant recipients, representing more than 22 percent of the undergraduate population while at the same time keeping both the average debt amount and the proportion of students graduating with debt below state and national averages. MSU administers in excess of \$640 million in financial aid annually, with more than 65 percent of students receiving some form of aid. Budgetary increases to financial aid routinely outpace increases to tuition as MSU carefully monitors family income distribution, financial aid distribution, debt measures, and other financial aid metrics.

It is no surprise that more than 90 percent of MSU's graduates were employed or continuing their education within six months of graduation, and a similar percentage rated their educational experience as excellent and would choose MSU again if starting their experience over. Of 2014 graduates with employment, more than 60 percent remained in Michigan, with an additional 15 percent employed in other regional states.



MSU Resources and Performance Funding Model

MSU's reputation as a renowned public research university despite the most difficult financial circumstances ever experienced in higher education, with significant reductions in state support for its students and programs.

In fact, Michigan ranks 47th of 48 states reporting for rate of change to higher education appropriations for the ten-year period ending fiscal 2016. Additionally, MSU operates with approximately \$3,800 less per student in state appropriations support than its Big Ten peers, an amount that represents approximately \$174 million in lost resources across the institution. When adjusted for inflation, MSU's appropriation per student has declined by more than 50 percent since 2000-01.

Further, since the inception of the performance funding model in 2011, MSU's appropriations have been more adversely impacted than any other state institution that complied with all tuition restraint provisions over the period, a loss of nearly \$8 million. However, at the same time, MSU enrolls more resident students and total undergraduates than any state institution, conducts approximately half of the total research and development activity in the state, and produces the second most critical skills degrees annually next to the University of Michigan. As a result, it is imperative that new incremental funding appropriated to higher education this coming year goes to restoring the funding of complying institutions to at least the 2011 levels. In addition, it is important that the model be modified to better reflect the performance of all institutions. This would include addition of the IPEDS marker for community engagement, proportion of undergraduates graduating with debt, and the number of Pell students, or combinations of the above.

**Michigan ranks 47th
of 48 reporting states
for changes to higher
education
appropriations over
ten years**

Finally, additional consideration should be provided to those institutions that feature the combination of significant numbers of Pell students, high graduation rates, and a low proportion of students graduating with debt.

MSU continues to do more with less for public higher education, despite the disinvestment by state legislators. MSU expends approximately \$6,300 less per student than

its AAU peers, making MSU among the most efficient institutions in the group. Additionally, MSU is among the most efficient in the Big Ten as measured by the number of students per employee while simultaneously approximating the Big Ten average for student-to-faculty ratio.

MSU also ranks among peer leaders for grounds maintenance and custodial efficiency. The university has reduced greenhouse gas emissions by 25 percent since 2010 and uses 10 percent less heating units (BTU) per person than it did in 2006.

MSU has successfully navigated the most challenging economic reality in higher education history. As a result of MSU's efficient and high-performing focus, we have been able to maintain our leading-edge faculty and research enterprise while also improving innovation, entrepreneurship, and state economics. In order to assure ongoing and improving performance, MSU continually assesses itself against relevant industry metrics and benchmarks as well as understanding best practices from other industries to inform operations, processes, and systems.

MSU AgBioResearch & MSU Extension

As the nation's pioneer land-grant university, MSU is especially committed to working with Michigan stakeholders to meet the needs of agriculture and natural resources stakeholders through a variety of means, including a programmatic presence in communities across the state. With annual economic impact of more than \$102 billion, Michigan's food and agriculture sectors are a leading force for economic stability in Michigan. Agribusiness is among the fastest growing economic sectors in the state, and MSU AgBioResearch and MSU Extension contribute to Michigan's economy with significant research, educational programs and a community presence to boost economic development and growth related to agriculture and natural resources, community vitality, entrepreneurship, and career preparation for young people. Therefore, it is essential that full recurring support be provided to both MSU AgBioResearch and MSU Extension, including inflationary increases.



MSU Extension is focusing on:

- Developing youth and communities
- Ensuring safe and secure food
- Ensuring strong communities
- Keeping businesses strong
- Keeping people healthy
- Making the most of Michigan's natural assets
- Supporting food and agriculture

MSU AgBioResearch is focusing on key research areas in:

- Food, energy, and the environment
- Natural resources policy and management
- Enhanced profitability in agriculture and natural resources
- Secure and safe food systems
- Families and community vitality
- Making the most of Michigan's natural assets
- Supporting food and agriculture

To maximize its impact and fiscal responsibility, MSU continues to build on its partnerships with local, state and federal government agencies and with the private sector while maintaining its core values and commitments. Leadership continues to balance increasing the value of MSU's work and ensuring it matches the high quality expected of MSU. We engage our partners, our students, our faculty and the stakeholders and communities we serve, both locally and globally, to shape a shared future of sustainable prosperity.





Capital Outlay Request

The capital outlay requests support programs that have strong national reputations, expanding research bases, and high enrollment demand that will sustain the university and its contributions to Michigan. Funding of these requests will provide economic development in the state, now and in the long term.

Our capital outlay top priority is the construction of a STEM teaching and learning facility that aligns with state and national priorities.

Over the past 10 years, student credit hours in STEM have increased by more than 40 percent. Construction of a new instructional facility used on supporting education in science, technology, engineering, and mathematics (STEM) disciplines is necessary to continue this programmatic direction. Such a facility would address the continued state and national priority to educate increasing numbers of students in STEM disciplines. A new STEM teaching and learning facility would include modern wet bench teaching laboratories that incorporate active learning principles, foster cross-disciplinary teaching and learning, and support developing and evolving changes in curriculum and its delivery. The facility would bring together a number of teaching laboratories that are currently dispersed across campus to create a central hub for STEM teaching and learning.

New construction

New construction is needed to support high-priority instructional and research programs. The facilities are necessary to support current and future programmatic initiatives in the STEM disciplines including, biomedical, biological, and engineering sciences; computation and data sciences; water and energy; and economic development of Michigan.

New construction is needed to support high priority instructional and research programs

Renovations and additions

Requests for renovations and/or additions address extensive programmatic and maintenance improvements required by buildings previously funded by the state. Renovations and/or additions are necessary to reconfigure and or expand space in order to support the work of the programs housed in those facilities, and in some instances, modernization of aging building systems and alignment with current codes and provisions for accessibility. In other cases, due to programmatic requirements, condition, age, and long-term value, full renovation of a building is warranted.

Requests for major renovations and/or additions include the plant sciences-bioeconomy, biological sciences, and music facilities.

Major systems replacement

Current forecasts anticipate general fund facility, instructional, and infrastructure needs of approximately \$304.6 million over the next five years. In view of the extensive facility needs it faces, MSU has drawn upon an increasing amount of internal university resources to address the most critical facility maintenance and programmatic requirements. Self-funding these capital improvements is not sustainable without negative impacts on other programs.

The university seeks funding for more targeted and specific building systems maintenance and instructional space facility modernization. Examples of systems in need of repair or replacement include roofing, windows, electrical, mechanical, chiller, refrigeration, steam, fire, security, and barrier-free access. Instructional space upgrades today extend beyond simply replacing room infrastructure and furnishings, and include new and expanded room layouts and more sophisticated technology installations to support a range of active-learning environments.

INVESTMENT POLICY

APPENDIX C

01-07-01

I. General Statement

As stated in the Constitution of the State of Michigan and in the Bylaws of the Board of Trustees of Michigan State University (Board), the Board is responsible for the "control and direction of all expenditures from the institution's funds." In carrying out this responsibility with respect to the University's investments, the Board has established a framework for active, professional investment management. This policy states the responsibilities of the parties involved in carrying out the investment program.

The Board will establish an investment program for the investment of University funds for maximum return with an acceptable degree of risk. Within the context of its fiduciary responsibilities, the Board will exhibit social conscience in the administration of the University's investments.

All institutional funds available for long-term investment (generally at least five years), with the exception of funds limited by law or by special donor restrictions, will be consolidated into the Board's Common Investment Fund (CIF). (See Exhibit A for the CIF Statement of Investment Objectives.) All institutional cash except as otherwise required by contract or by another legal constraint, will be consolidated into the Board's Pooled Cash Fund for investment purposes. The Pooled Cash Fund shall consist of i) the Liquidity Pool (short and intermediate-term commercially available funds) and ii) the Liquidity Reserve Pool. (See Exhibit B for the Pooled Cash Fund Statement of Investment Objectives.) The CIF, Liquidity Pool, and Liquidity Reserve Pool may be referred to in this Policy as the University's investment portfolios.

II. Nature of Assets

Three distinct types of assets are covered by this policy:

1. Institutional Funds - Assets owned and held for long-term investment by the University, such as employee retirement funds and endowment funds, which include endowment trusts and funds functioning as endowments.
2. Annuity and Life Income Funds - Assets held for permanent investment by the University as trustee for the benefit of named beneficiaries, to revert to the University upon the demise of the last beneficiary or after a specified period of time, which should be invested to produce annual returns at least equal to contractually required payments to beneficiaries.
3. Institutional Cash – Cash being pooled and invested pending its intended use.

III. Role of Board of Trustees

The Board:

1. Shall, upon the recommendation of the Finance Committee and the President, approve (a) investment policies relating to the administration of its investment portfolios, including, but not limited to, investment objectives, which will include, but not be limited to, performance goals, strategic asset allocation, and risk budgets, (b) endowment spending

rates, and (c) institutional liquidity targets;

2. Shall approve the appointment of the Chief Investment Officer (CIO); and
3. Shall receive periodic reports on investment results through the Finance Committee and the CIO and, through the President, on the performance of the CIO.

IV. Role of Finance Committee

The Finance Committee:

1. Shall, in consultation with the Investment Advisory Subcommittee and the President, make recommendations to the Board about policies relating to the administration of the University's investment portfolios;
2. Shall, in consultation with the Investment Advisory Subcommittee, consult with the President regarding the annual performance review of the CIO; and
3. Shall receive periodic reports on the investment status of the portfolios from the CIO and shall transmit relevant information from such reports to the Board.

V. Role of the Investment Advisory Subcommittee

The Investment Advisory Subcommittee:

1. Shall advise the CIO in the review and evaluation of investment opportunities and strategies;
2. Shall provide knowledgeable, objective, and independent advice to the members of the Finance Committee and the CIO on investment policies and objectives, strategic investment planning and policy, investment opportunities, and such other matters as shall be determined by the Board;
3. Shall review policies recommended by the President relating to the administration of the University's investment portfolio and, when appropriate, shall advise the Finance Committee about such policies;
4. Shall, in consultation with the CIO, annually review the performance and investment objectives of the portfolios of Institutional Funds investments;
5. Shall, in consultation with the Vice President for Finance and Treasurer (VPFT), annually review the performance and investment objectives of the Pooled Cash Fund;
6. Shall advise the CIO concerning the investment consultant and investment managers for the Institutional Funds and advise the VPFT concerning the investment consultant and investment managers for the Pooled Cash Fund;
7. Shall usually meet with the CIO quarterly, but in no case less frequently than three times a year, to receive reports on the performance of the Institutional Funds, the investment consultant(s), and investment managers; and

8. Shall consult and advise the President regarding the appointment and performance evaluation of a CIO.

VI. Role of the President

The President:

1. Shall recommend to the Finance Committee, upon the recommendation of the CIO, investment policies relating to the administration of the CIF;
2. Shall recommend to the Finance Committee, upon the recommendation of the VPFT, investment policies relating to the administration of the Pooled Cash Fund;
3. Shall recommend to the Finance Committee, upon recommendation of the CIO, an appropriate strategy to meet the Board's long-term investment objectives, which will include, but not be limited to, performance goals, strategic asset allocation, and risk budgets for the Institutional Funds;
4. Shall recommend a CIO for appointment by the Board of Trustees and shall appoint an interim CIO when the position is vacant;
5. Shall assume supervisory responsibility for the CIO position, including, but not limited to:
 - a. developing, with advice from with the Investment Advisory Subcommittee and in consultation with Investment Consultant, CIO performance standards; and
 - b. conducting, with advice from the Finance Committee and Investment Advisory Subcommittee and in consultation with Investment Consultant, the CIO's performance evaluation.
6. Shall provide broad administrative oversight of the University's investment activities, including, but not limited to:
 - a. General oversight of the CIO's selection of Investment Consultants;
 - b. General oversight of the CIO's tactical asset allocation, rebalancing, and hedging within ranges and risk budgets established by the Board;
 - c. General oversight of the CIO's implementation of traditional asset class investment strategies, including investment manager selection;
 - d. General oversight and monitoring of the CIO's implementation of private equity and long-term illiquid asset class strategies, including investment manager selection (which selection shall require the approval of the VPFT);
 - e. General oversight and monitoring of CIF performance measurement and evaluation;
 - f. General oversight of the Pooled Cash Fund performance measurement and evaluation;
 - g. General oversight of the Pooled Cash Fund investment manager selection; and
 - h. General oversight of Investment Custodian selection.

VII. Role of the Chief Investment Officer

The Chief Investment Officer:

1. Shall develop and recommend to the President, through consultation with the Investment Advisory Subcommittee, investment policies relating to the administration of the Institutional Funds;
2. Shall develop and recommend to the President, through consultation with the Investment Advisory Subcommittee, an appropriate strategy to meet the Board's long-term investment objectives, which will include, but not be limited to, liquidity available for investments, performance goals, strategic asset allocation, and risk budgets, for Institutional Funds;
3. Shall, after considering advice from the Investment Advisory Subcommittee, President, and VPFT, be responsible for the selection, retention, and termination of the Investment Consultant(s);
4. Shall be responsible for tactical asset allocation, portfolio rebalancing, and hedging within ranges and risk budgets established by the Board;
5. Shall manage the day-to-day activities of the University's CIF investment portfolios within the broad guidelines established by the policies adopted by the Board;
6. Shall monitor capital markets and economic forecasts, and provide the Board and President with an ongoing analysis of the global economic situation as it relates to the University's investment policies and objectives;
7. Shall seek the advice of the Investment Consultant(s), Investment Advisory Subcommittee, and President on issues related to the management of the CIF investment portfolios;
8. With respect to traditional liquid asset classes:
 - a. Shall appoint new investment managers, make follow-on investments with existing managers, and have authority to allocate funds through use of a joint investment vehicle entity, such as a limited liability entity, and authority to take all actions and execute all documents in connection with the formation, management, operation, and dissolution of any such joint investment vehicle entity;
 - b. Shall approve the dollar value of assets allocated to new and existing investment managers and reallocate assets among such managers in accordance with long-term strategic targets;
 - c. Shall approve individual investment manager guidelines; and
 - d. Shall monitor individual investment managers on a regular basis to ensure that performance expectations are met.
9. With respect to private equity and long-term illiquid assets:
 - a. Shall consult with the VPFT on strategy implementation;
 - b. Shall, with the approval of the VPFT, appoint new investment managers, make follow-

on investments with existing managers, and have authority to allocate funds through use of a joint investment vehicle entity, such as a limited liability entity, and authority to take all actions and execute all documents in connection with the formation, management, operation, and dissolution of any such joint investment vehicle entity;

- c. Shall, with approval of the VPFT, approve the dollar value of assets allocated to new and existing investment managers and reallocate assets among such managers in accordance with long-term strategic targets;
 - d. Shall, in consultation with the VPFT, approve individual investment manager guidelines; and
 - e. Shall monitor individual investment managers on a regular basis to ensure that performance expectations are met.
10. Shall consult with the IAS and have the discretion and authority to terminate CIF investment managers for reasons including, but not limited to, performance concerns, organizational changes, deviation from investment mandate, investment mandate is inconsistent with the current market environment, or restructuring of the relevant investment portfolio;
 11. Shall provide a monitoring and measurement program that will permit evaluation of the performance of the CIF portfolio, asset classes within the portfolio, and investment managers in comparison with applicable investment market benchmarks and with other managers;
 12. Shall report to the Investment Advisory Subcommittee, President, and VPFT on a periodic basis, but not less than quarterly, rebalancing transactions and all new financial commitments to private investments completed during the quarter, and shall provide quarterly reports to the President and Investment Advisory Subcommittee showing potential rebalancing transactions that are likely to occur over the ensuing quarter;
 13. Shall report monthly to the Investment Advisory Subcommittee, the President, and VPFT any market value decline of 10 percent or greater in the value of the CIF;
 14. Shall report quarterly to the Investment Advisory Subcommittee, the President, and the VPFT any market value decline with respect to an investment manager that is in excess of two standard deviations of the long-term volatility of the applicable benchmark listed in Exhibit A;
 15. Shall continuously monitor and review each investment consultant's reports, the actions of the investment managers, and the status of the University's investment portfolios; and
 16. Shall maintain communications, as appropriate, among the Board, the Finance Committee, the Investment Advisory Subcommittee, the investment consultant(s), and the investment managers.

VIII. Role of the Vice President for Finance and Treasurer

The Vice President for Finance and Treasurer:

1. Shall advise the President and CIO on investment policies relating to the CIF and Pooled

Cash Fund;

2. Shall develop and recommend to the President, through consultation with the Investment Advisory Subcommittee, investment policies relating to the administration of the Board's Pooled Cash Fund;
3. Shall consult with the CIO with respect to private equity and long-term illiquid strategy and asset commitments and shall approve, in conjunction with the CIO, new private equity and long-term illiquid investment managers and make follow-on investments with existing managers;
4. Shall have the authority to appoint the investment custodians for the CIF and Pooled Cash Fund;
5. Shall have the authority to appoint, or may act in the role of, an investment manager for the Pooled Cash Fund and shall report any such appointments to the Finance Committee, the Investment Advisory Subcommittee, and the Board;
6. Shall consult with the IAS and have the discretion and authority to terminate Pooled Cash Fund investment managers for reasons including, but not limited to, performance concerns, organizational changes, deviation from investment mandate, investment mandate is inconsistent with the current market environment, or restructuring of the relevant investment portfolio;
7. Shall provide a monitoring and measurement program that will permit evaluation of the performance of the Liquidity Reserve Pool and investment managers in comparison with applicable investment market benchmarks and with other managers; and
8. Shall provide a monitoring and measurement program that will permit evaluation of the performance of the Liquidity Pool and investment managers in comparison with applicable investment market benchmarks and with other managers.

IX. Role of Investment Consultants

An Investment Consultant:

1. Shall provide advice and consultation to the CIO in the areas of policy development, asset allocation, investment structure and analysis, investment manager selection, risk parameters, and investment performance review with respect to the CIF;
2. Shall provide advice and consultation to the VPFT in the areas of policy development, asset allocation, investment structure and analysis, investment manager selection, investment custodian selection, risk parameters, and investment performance review with respect to the Pooled Cash Fund, and regarding endowment spending rates;
3. Shall provide, as requested by the President, advice and consultation in developing CIO performance standards and evaluations; and
4. Shall provide such other information pertaining to the Board's investment program as may reasonably be required and shall report immediately to the CIO any major change in its confidence regarding the investments, investment managers, sector, or securities markets

for which it is providing advice to the University.

X. Role of the Investment Managers

Each investment manager:

1. Shall report at least quarterly to the CIO and/or VPFT, as applicable, on its performance and other appropriate matters;
2. Is authorized to execute investment transactions within its established guidelines, subject to any restrictions established by the Board and/or CIO and/or VPFT as applicable;
3. Shall provide other necessary information for the development of interim reports and shall meet, as necessary, with the CIO and/or VPFT, as applicable; and
4. Shall vote all proxies in a manner most likely to preserve or enhance the value of the underlying investments and normally to support management on routine matters.

XI. Role of the Investment Custodians

Each investment custodian:

1. Shall hold all securities in an agreed-upon nominee name and form;
2. Shall execute all transactions as directed by the relevant investment manager;
3. Shall collect all income pertaining to the securities held, and shall temporarily invest such income in cash equivalents;
4. Shall periodically remit accumulated income to the University, for credit to the appropriate funds or trusts, pursuant to instructions received from the VPFT;
5. Shall provide the University with a full monthly accounting of all transactions, together with a listing of all holdings at cost and market; and
6. Shall provide such other information as may reasonably be required.

XII. Endowment Spending

1. In fulfillment of its fiduciary duties as trustee of the University's endowment and other Institutional Funds, the Board causes those Funds to be invested to generate amounts that may be expended for the purposes for which those Funds were established ("programmatically spending") and amounts that may be accumulated for reinvestment to preserve the value of those Funds, and their purchasing power, against inflation. These are the priorities for the use of the University's endowment and other Institutional Funds. The Board may also permit reasonable and appropriate costs to be charged to the endowment and other Institutional Funds. These charges may include reasonable and appropriate costs of administering and managing the Institutional Funds, such as reasonable and appropriate internal and external investment costs and, for certain Institutional Funds, fund-raising costs. Additional returns, if any, generated by the investment of the Institutional Funds may be used to add real principal growth to such

Funds, to better preserve their long-term value, to improve and further diversify the investment options for such Funds, and, thus, to enhance opportunities to stabilize and increase annual expenditure for such Funds.

2. In accordance with these precepts:

- a. (i) The University will make available for programmatic spending ~~4.84.6~~ percent of the average market value of the CIF as calculated for the period comprising 20 quarters of the five ~~calendar~~fiscal years ending one year prior to the beginning of the fiscal year in which the spending is expected to occur, expressed as a dollar per unit annual distribution amount based on the number of units in the CIF at the time of the calculation ~~for fiscal year 2017 and 4.6% for subsequent fiscal years.~~ Programmatic spending distributions will be made to CIF unit holders on a periodic basis during the fiscal year based on the number of units in the CIF held when each periodic programmatic spending distribution is made.¹ The VPFT will determine when the periodic programmatic spending distributions will occur.
- (ii) This programmatic spending rate shall be approved annually by the Board, upon the recommendation of the Finance Committee, in consultation with the Investment Advisory Subcommittee and President. The VPFT shall develop, in consultation with the CIO and Investment Consultant(s), and recommend to the President the programmatic spending rate. In connection with each of these ~~reviews~~recommendations, the University's ~~investment~~financial staff shall present an analysis of the projected impact of inflation on the University's endowment and other Institutional Funds, including how inflation is expected to affect their purchasing power (i.e., the expenditures of amounts for the purposes for which those funds were established).
- b. Reasonable and appropriate internal and external investment costs for the CIF, including the costs of the investment consultant, the investment managers, and the investment custodians and the University's own investment management costs (staff and support), shall be deducted in determining the average market value of the CIF available for programmatic spending pursuant to Section XII (2)(a)(i) of this policy.
- c. The President, in consultation with the CIO and the VPFT, is authorized to establish annual assessments for endowment stewardship, including fund raising, against those of the University's endowment and other Institutional Funds established entirely or primarily with private donations. The amount of the assessments must be reasonable and appropriate, particularly when considered in the context of the University's priorities for the use of its endowment and other Institutional Funds. In any event, the amount assessed may not, without further Board action, exceed 1 percent of the average market value of the CIF units held by such Funds. The calculation of the amount assessed and its allocation to the Funds subject to assessment shall be conceptually consistent with the

¹ The per unit annual distribution amount will be allocated evenly over the periodic programmatic spending distributions during the fiscal year. The amount of the periodic programmatic spending distributions will not be reduced if the number of units in the CIF increases between when the per unit annual distribution amount is calculated and when the periodic programmatic spending distributions occur.

methodology by which programmatic spending distributions are calculated and allocated under Section XII (2)(a)(i) of this policy. Assessments will be made periodically during the fiscal year, as jointly determined by the CIO and VPFT. Not less than 30 days prior to the annual review of the programmatic spending rate pursuant to Section XII (2)(a)(ii) of this policy, the President and the VPFT shall provide a written report to the Finance Committee and other members of the Board stating the amount, if any, of the assessment for the following fiscal year and how it was determined.

3. If the University has accepted a gift to an endowment fund documented by a gift instrument in which the donor gives legally binding instructions for the investment of, or expenditures from, that fund which are inconsistent with the foregoing, the University will comply with those special instructions. The VPFT shall calculate the annual programmatic spending distribution and assessment for each endowment fund which is not invested in the CIF in accordance with applicable law and report the programmatic spending rate and assessment amount for each such fund to the Finance Committee. Insofar as possible, given each such fund's investments and the instructions of its donor, the priorities for the use of such funds should be the same as those for endowment funds invested in the CIF.

Enacted: 1/26/79

Amended: 4/15/83, 6/8/84, 2/6/87, 10/14/88, 12/6/91, 4/10/98, 9/22/00, 6/5/03, 5/7/04, 11/12/04, 5/18/07, 12/05/08, 4/24/09, 4/16/10, 9/17/10, 12/10/10, 10/21/11, 12/14/12, 1/25/13, 4/12/13, 6/21/13, 9/11/15; 12/18/15; 4/15/16, 10/28/16

Statement of Investment Objectives

Exhibit A: Michigan State University's Common Investment Fund

INTRODUCTION

This statement defines the investment objectives of Michigan State University's Common Investment Fund ("CIF"), which is composed primarily of the University's endowment funds. While other Institutional Funds (e.g., the Retirement Fund) may use the CIF as an investment vehicle, the separate statements of investment objectives for these funds shall govern their investment if their investment objectives are materially different from those of the endowment funds.

INVESTMENT OBJECTIVES

The investment objectives of the CIF are:

1. to achieve a total rate of return sufficient to generate the amount annually made available for spending² by the University's programs supported by endowment funds and still provide a modest increase in the inflation-adjusted unit value, and
2. to achieve the desired return while assuming only moderate risk.

The University will seek to achieve these investment objectives by diversifying across major asset classes (e.g., marketable equities, private investments, hedge funds, fixed income) as well as within each asset class (e.g., by investment style, capitalization, industry).

SHORT-TERM PERFORMANCE GOALS

Short-term performance goals for the CIF and for individual managers will be to outperform appropriate market and peer benchmarks over rolling three and five-year periods. Furthermore, adherence to the investment style for which individual managers were selected will be monitored. Private investments will be expected to outperform their respective median vintage year benchmarks.

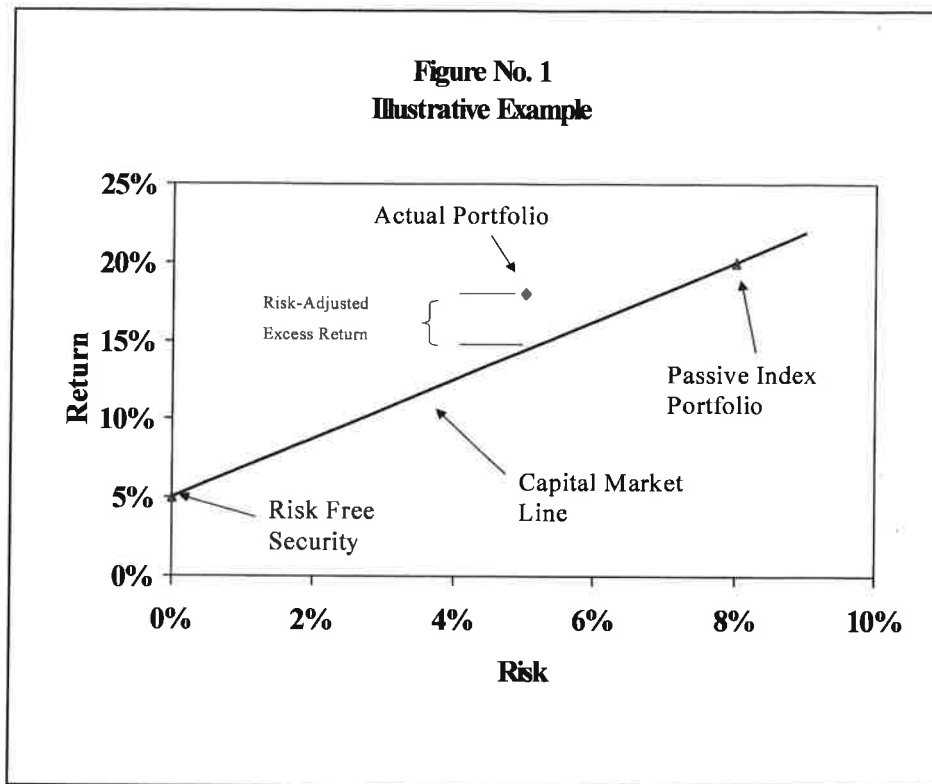
LONG-TERM PERFORMANCE GOALS

The following long-term performance goals of the CIF are expected to be achieved over rolling ten-year periods:

1. A total annual return greater than the rate of inflation plus 6.0%, after fees and expenses.
2. To the extent an actively managed strategy is used, a risk-adjusted, excess annual return greater than 1.0%, after fees and expenses. Risk-adjusted, excess return is defined as a portfolio's actual return over and above that of the benchmark portfolio as predicted by the Capital Asset Pricing Model. (See Figure No. 1.) The Jensen measure is used to calculate the risk-adjusted return.

²The current endowment spending policy authorizes the University to make available 5.0% of the average market value of the endowment as calculated for the twenty quarters of the five calendar years prior to the beginning of the fiscal year in which the spending is expected to occur.

**Figure No. 1
Illustrative Example**



The passive index portfolio will be composed of benchmark indices, for which passive index funds exist, and weighted to reflect the CIF's asset allocation. It should be noted, however, for private investments for which passive index funds do not exist, well-established indices corresponding to marketable securities will be used.

Table No. 1 lists the benchmark indices and long-term performance goals for each major asset class. The long-term performance goal for each individual manager will be based on the asset class and investment style for which the manager was selected.

Table No. 1 Benchmarks & Long-Term Performance Goals		
Major Asset Class	Benchmark	Long-Term Performance Goals
U.S. Equity	Russell 3000	If passive, benchmark. If active, risk-adjusted excess return of 1.0% after fees
Developed Global ex U.S. Equity	MSCI EAFE	If passive, benchmark. If active, risk-adjusted excess return of 1.0% after fees
Emerging Markets Equity	MSCI Emerging Markets	If passive, benchmark. If active, risk-adjusted excess return of 1.0% after fees

Marketable Real Estate	FTSE NAREIT Equity Index	If passive, benchmark. If active, risk-adjusted excess return of 1.0% after fees
Other Marketable Real Assets	Real Asset Blended Benchmark (67% MSCI U.S. Natural Resources // 33% S&P GSCI)	If passive, benchmark. If active, risk-adjusted excess return of 1.0% after fees
Private Real Estate and Real Assets	Vintage year median IRR for asset class	Meet or exceed benchmark
Private Investments	Vintage year median IRR for asset class	Meet or exceed benchmark
Hedge Funds	HFRI Fund of Funds Diversified Index	Meet or exceed benchmark
Fixed Income	Barclays Aggregate	If passive, benchmark. If active, risk-adjusted excess return of 0.50% after fees

ASSET ALLOCATION

Table No. 2 sets forth the policy targets and ranges for each major asset class:

Table No. 2 Asset Allocation			
Major Asset Class*	Target	Range	Rationale*
U.S. Equity	16.0%	11.0% - 27.0%	Maximize real returns
Developed Global ex U.S. Equity	10.0%	8.0% - 20.0%	Maximize real returns & diversification
Emerging Markets Equity	8.0%	4.0% - 12.0%	Maximize real returns & diversification
Real Estate	2.5%	1.0% - 5.0%	Real Asset & diversification
Other Real Assets	7.5%	5.0% - 12.0%	Real Asset & diversification
Private Investments	26.0%	12.0% - 32.0%	Higher returns than equities & diversification
Hedge Funds	22.0%	17.0% - 30.0%	Low volatility & moderate correlation with equities
Fixed Income	8.0%	3.0% - 17.0%	Deflation hedge & diversification

* See detailed descriptions of each asset class listed below.

U.S. Equity. This asset class consists of marketable equity securities of primarily U.S.-based companies. Managers may hold equity securities of non-U.S.-based companies which are traded as American depository receipts ("ADR's") on U.S. stock exchanges. Equity investments historically have provided investors with (1) a real return of about 7% subject to potential price volatility and (2) secondarily may hedge against inflation over longer time periods. Several sub-categories of this asset class include: large capitalization companies, small capitalization companies, value-style investing and growth-style investing. While the

benchmark for this entire class is the Russell 3000 Index, individual managers may have specific benchmarks corresponding to their investment style and capitalization category.

Developed Global ex U.S. Equity. This asset class consists of marketable equity securities in developed countries outside the U.S. It is intended to provide long-term performance and volatility similar to U.S. equities, but will provide some diversification due to imperfect correlation. This class will be diversified geographically.

Emerging Markets Equity. This asset class consists of marketable equity securities in emerging markets. It is intended to provide long-term performance and volatility similar to or slightly higher than U.S. equities, and will provide some diversification due to imperfect correlation. This class will be diversified geographically.

Real Estate. The University will seek to reduce the volatility of the CIF and provide a hedge against sudden, unanticipated inflation by investing a portion of its available funds in both public and private real estate. Risks related to the real estate investments will be minimized by diversifying through use of real estate investment pools or partnerships that are varied as to property type, location, investment life cycle and investment manager. This core real estate portfolio may be supplemented with less diversified specialty funds or direct investments.

Other Real Assets. The University will seek to reduce the volatility of the CIF and provide a hedge against sudden, unanticipated inflation by investing a portion of its available funds in both public and private natural resource investments, such as oil, gas, timber and minerals oriented investments. Risks related to natural resource investments will be controlled by diversifying among operators and acquisition prospects and by geography. This core real asset portfolio may be supplemented with less diversified specialty funds or direct investments.

Private Investments. The University will seek to enhance the total return of the CIF by investing a portion of its funds in private investments, which include distressed, private equity and venture capital investments. These investments are illiquid and higher risk/return assets than marketable securities. Risk will be controlled by diversifying across a number of fund managers and by geographic focus, industry emphasis, financing stage and vintage year. This core private investments portfolio may be supplemented with less diversified specialty funds or direct investments.

Hedge Funds. The University will seek equity-like returns while reducing the volatility of the CIF. The University will consider funds with a diversifier mandate (lower expected volatility and lower correlation to broad market trends) as well as funds with a growth oriented mandate (higher expected volatility and higher correlation to broad market trends). Managers with either type of mandate will employ risk management techniques intended to reduce downside potential, to a degree considered appropriate for their respective strategy. Managers employing "long/short" strategies invest primarily in equities and mitigate market risk by purchasing equity shares that are expected to appreciate in value and selling short equity shares that are expected to decline in value. Managers employing event-driven and arbitrage strategies seek to maximize returns by investing in publicly announced corporate transactions, such as mergers, tender offers, liquidations, bankruptcies and reorganizations or in arbitraging temporary discrepancies in securities pricing in the equity and fixed income markets. Distressed security managers invest primarily in bonds and bank loans trading at a significant discount to par value as a result of the debtor's troubled financial condition.

Fixed Income. This asset class is intended to reduce the portfolio's exposure to market risk and provide a hedge against sudden, unanticipated deflation. Foreign currency bonds may be held to enhance total return and provide diversification.

INVESTMENT GUIDELINES

- 1) Investment guidelines are provided in Exhibit C.
- 2) Additional guidelines may be adopted by separate Board action. They will be communicated to the affected investment managers.

Updated: 10/14/88, 6/8/90, 12/6/91, 12/11/92, 3/31/94, 7/14/95, 11/8/96, 9/22/00, 6/5/03,
11/14/03, 11/12/04, 6/17/05, 2/10/06, 5/18/07, 12/5/08, 6/19/09, 9/17/10, 10/21/11,
12/14/12, 4/12/13, 9/11/15, 12/18/15, 10/28/16

Statement of Investment Objectives
Exhibit B: Michigan State University's Pooled Cash Fund

INTRODUCTION

This statement sets forth the investment objectives of Michigan State University's Pooled Cash Fund ("PCF"), which is a subset of the University's overall cash pool. (See Figure No. 1.)

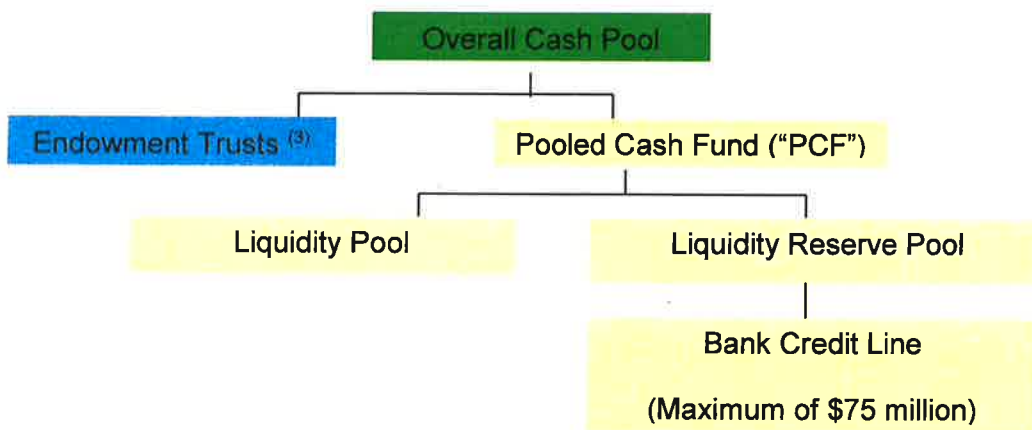
PCF ASSETS

The PCF has two components -- the Liquidity Pool and the Liquidity Reserve Pool. The Liquidity Pool shall be composed of short-term (less than one-year maturity) and intermediate-term (maximum ten-year maturity) commercially available funds (three-year maximum average portfolio duration). These funds shall be available on a daily basis. The target range for the Liquidity Pool shall be 30 - 60 days of operating cash ⁽¹⁾.

The Liquidity Reserve Pool shall be composed of commercially available funds (six-year maximum average portfolio duration) and up to a \$75 million bank line of credit or its equivalent. (See Figure No. 1.) The target amount for the Liquidity Reserve Pool shall be 30 days of operating cash. ⁽¹⁾⁽²⁾

The PCF minimum amount shall be the greater of (1) 45 days of operating cash or (2) the minimum daily liquidity to support five days of maximum commercial paper maturities.

Figure No. 1
Structure of MSU's Overall Cash Pool



- (1) One day of operating cash equals the daily average of operating expenses less depreciation as reported in MSU's Audited Financial Statements for the prior fiscal year.
- (2) See also footnote 1 to Table No. 1 in the event the University employs a bank line of credit in the Liquidity Reserve Pool.
- (3) Overall Cash Pool amounts in excess of 60 days of operating cash may be invested on a long-term basis with other Institutional Funds in the University's Common Investment Fund (CIF).
- (4) The PCF minimum amount shall be the greater of (1) 45 days of operating cash or (2) the minimum daily liquidity to support five days of maximum commercial paper maturities.

Table No. 1 summarizes the target allocations for each component of the PCF.

Table No. 1 PCF Composition		
	Target Allocation	
	Minimum Amount	Target Amount/Range
Liquidity Pool	The greater of (1) 45 days of operating cash or (2) the minimum daily liquidity to support 5 days of maximum commercial paper maturities	30-60 days of operating cash
Liquidity Reserve Pool		30 days of operating cash ⁽¹⁾

1. Up to \$75 million of this amount may be represented by a bank line of credit or its equivalent. Any Liquidity Reserve Pool target amount for which the bank line of credit would substitute would count towards satisfying the PCF minimum amount.

INVESTMENT OBJECTIVES

The investment objectives for each component of the PCF are:

Liquidity Pool. The primary objective is to provide a liquid source of funds to meet the University's daily cash requirements. A secondary objective is to yield a competitive investment return while bearing minimal principal risk.

Liquidity Reserve Pool. The primary objective is to provide a source of funds in the event the Liquidity Pool is insufficient to meet the University's cash needs. A secondary objective is to earn a higher investment return than the Liquidity Pool. Because of the very low likelihood that these funds would be needed to meet cash flow requirements, a greater degree of principal risk is acceptable in order to obtain a higher return.

SHORT-TERM PERFORMANCE GOALS

Short-term performance goals for each component of the PCF, and for individual managers, will be to outperform (if actively managed) net of fees appropriate market and peer benchmarks over rolling one, three and five-year periods. Furthermore, adherence to the investment style for which individual managers were selected will also be monitored.

LONG-TERM PERFORMANCE GOALS

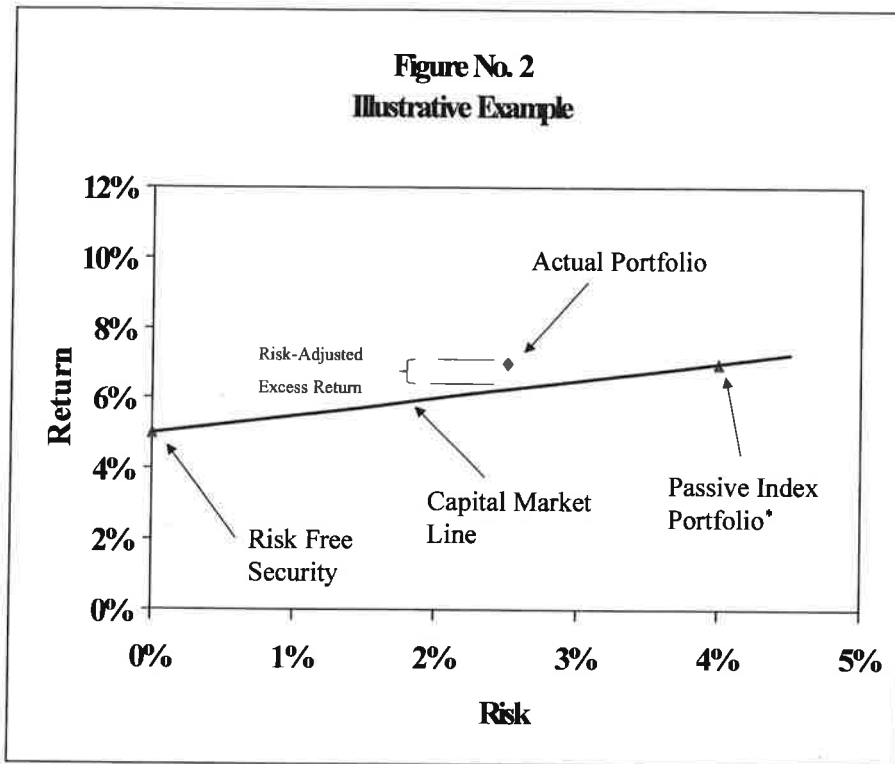
The following long-term performance goals of the PCF are expected to be achieved over a ten-year period, measured on a ten-year rolling basis.

- 1) A total annual return net of fees greater than the rate of inflation
 - a. plus 1.5% for the Liquidity Pool, and
 - b. plus 3.0% for the Liquidity Reserve Pool.
- 2) To the extent an actively managed strategy is used, a risk-adjusted, excess annual

return net of fees greater than

- a. 0.25% for the Liquidity Pool, and
- b. 0.50% for the Liquidity Reserve Pool.

Risk-adjusted, excess return is defined as a portfolio's actual return less the capital market line return corresponding to the same risk level. (See Figure No. 2.)



*The passive index portfolio would be the appropriate fixed income benchmark index.

Table No. 2 lists the benchmark indices and long-term performance goals for each PCF component. Similarly, the long-term performance goal for each individual manager will be for it to contribute a risk-adjusted return corresponding to its respective component of the PCF.

Table No. 2 Benchmarks & Long-Term Performance Goals		
PCF Component	Benchmark	Long-Term Performance Goals
Liquidity Pool	Merrill Lynch 1-3 year Treasury Index	If passive, benchmark. If active, risk-adjusted excess return of 0.25% after fees
Liquidity Reserve Pool	Barclays Aggregate	If passive, benchmark. If active, risk-adjusted excess return of 0.50% after fees

INVESTMENT GUIDELINES

- 1) Liquidity Pool - Investment guidelines are provided in Exhibit C.
- 2) Liquidity Reserve Pool – Investment guidelines are provided in Exhibit C.
- 3) Additional guidelines may be adopted by separate Board action. They will be communicated to the affected investment managers.

Updated: 6/24/83, 2/3/89, 2/7/92, 6/10/94, 10/24/97, 12/8/00, 11/12/04, 12/5/08, 4/16/10,
12/14/12, 6/21/13

Statement of Investment Objectives
Exhibit C: Investment Guidelines

<u>Liquidity Pool</u>		<u>Liquidity Reserve Pool</u>		<u>Common Investment Fund</u>	
Separately Managed Funds					
Permitted Securities					
<p>Marketable fixed income securities such as: U.S. government and agency issues; corporate debt; certificates of deposit; time deposits; repurchase and reverse repurchase agreements; mortgage-backed; asset-backed; securities issued under Rule 144A; dollar denominated U.S. and foreign issuers; derivatives for hedging purposes and creating portfolio risk profiles that could otherwise have been achieved using fixed income instruments authorized in these guidelines; commingled and global funds that invest in securities authorized in these guidelines.</p>		<p>Marketable fixed income securities such as: U.S. government and agency issues; U.S and non-U.S. corporate debt; certificates of deposit; time deposits; repurchase and reverse repurchase agreements; inflation indexed bonds; mortgage-backed; asset-backed; securities issued under Rule 144A; obligations of state and local governments and non-U.S. government and agency issues; derivatives for hedging purposes and creating risk portfolio profiles that could otherwise have been achieved using fixed income instruments authorized in these guidelines.</p>		<p>Marketable securities. Non-marketable securities may be held in the Real Assets , Private Investments and Absolute Return asset classes.</p>	
Diversification:					
<p>No more than 15% of the portfolio's market value may be invested in dollar denominated foreign securities of developed countries. No more than 10% of the portfolio's market value will be invested in securities of any single issuer, except those which are obligations of, or fully guaranteed as to both principal and interest by, the U.S. government or its agencies.</p>		<p>No more than 10% of the portfolio's market value may be invested in securities below BBB. No more than 30% of the portfolio's market value may be invested in securities denominated in foreign currencies. No more than 10% of the portfolio's market value will be invested in securities of any single issuer, except those which are obligations of, or fully guaranteed as to both principal and interest by, the U.S. government or its agencies.</p>		<p>In accordance with asset allocation guidelines.</p> <p>Individual investment managers' guidelines at time of manager appointment or as later amended by agreement of both parties.</p>	
Fixed Income:					
Minimum Quality:					
Portfolio:					
AA		AA		AA	
Security (at purchase):					
Short-term	Long-term	Short-term	Long-term	Short-term	Long-term
A1/P1	BBB	A2/P2	B	A2/P2	BB
Maturity/Duration:					
10 year maximum maturity of any security.		No maximum maturity of any security.		No maximum maturity of any security.	
3 year maximum average duration of the portfolio.		6 year maximum average duration of the portfolio.		6 year maximum average duration of the portfolio.	

Commingled Funds: Funds' investment guidelines at time of manager appointment or as later amended prevail.

Statement of Investment Objectives

Exhibit C: Investment Guidelines

Continued

Updated: 11/12/04, 5/18/07, 4/16/10, 10/21/11, 9/11/15, 12/18/15

PUBLISHING CONTRACT TERM SHEET

Party: Dr. Susan J. Bandes

Project Description: Authorship of a book, *Mid-Michigan Modern: From Frank Lloyd Wright to Googie*

Term: Immediate publication

Agreement: The author will receive 5% of net revenue from net copies sold of all editions, plus ten free copies and additional copies at a 40% discount from the retail price.

Services Provided:
By MSU to Dr. Bandes (as author): Publication of book under standard MSU Press terms and conditions
By Dr. Bandes (as author) to MSU: Delivery of manuscript for publication under standard MSU Press terms and conditions

Use of University Facilities/ Personnel: Not applicable

Organization Type: Dr. Bandes is acting as an individual.

Personnel Interest: Dr. Susan J. Bandes is a Professor in the Department of Art, Art History, and Design, and the Director of the MSU Museum Studies Program.

PUBLISHING CONTRACT TERM SHEET

Party: Dr. Janice Beecher

Project Description: Co-authorship of a book, *Risk Principles for Public Utility Regulators*

Term: Immediate publication

Agreement: Each co-author will receive 2.5% of net revenue from net copies sold of all editions, plus five free copies and additional copies at a 40% discount from the retail price.

Services Provided: By MSU to Dr. Beecher (as co-author): Publication of book under standard MSU Press terms and conditions
By Dr. Beecher (as co-author) to MSU: Delivery of manuscript for publication under standard MSU Press terms and conditions

Use of University Facilities/ Personnel: Not applicable

Organization Type: Dr. Beecher is acting as an individual.

Personnel Interest: Dr. Janice Beecher is Director of the MSU Public Utilities Institute.

RIGHTS ALLOCATION AGREEMENT TERM SHEET

Party: Kopess Ag Tech, LLC

Agreement: Allocation of rights in intellectual property and rights to carry out follow-on research, development, or commercialization. This agreement is required by the National Science Foundation under the Prime Award (grant number TBD) from Grant Proposal No. 1648805 and relates to Sponsored Research Agreement Subcontract: "(STTR Phase I) XERICO Drought Tolerance Technology".

Term: Effective date to December 31, 2017

Rights Allocation: Ownership of intellectual property rights created under the Subcontract described above shall be consistent with MSU's Patent and Development of Copyrighted Materials Policies. Kopess will have an option to acquire rights to MSU technology developed with the STTR funds provided under the Subcontract. Kopess shall disclose to MSU any potential conflicts of interest between MSU and MSU employees who may also be employees, consultants, shareholders, or directors of Kopess. The company shall cooperate with MSU with respect to the MSU Faculty Conflict of Interest Policy and Outside Work for Pay Policy, and shall work constructively with MSU to manage and mitigate any conflicts that may arise in the course of this and related agreements between it and MSU.

Organization Type: Michigan limited liability company

Personnel Interest: Dr. Kyung-Hwan Han, a Professor in the Department of Horticulture, and Okran Han, an employee in the Department of Horticulture, and members of their families own or have options to buy an ownership interest of more than 1% of the company.

LICENSE AGREEMENT TERM SHEET

Party: non sequitur media, LLC

License: Non-exclusive use of copyrighted material granted to MSU

Subject Matter: 596 photographs used in the Coursera Specialization courses one through five entitled: "Photography Basics and Beyond: from Smartphone to DSLR"

Agreement: Non-exclusive rights to use and reproduce 596 lesson photographs

Term: Life of the copyright

Payment: \$5,960 payment to Photography Associates, Inc. by MSU*

Organization Type: Michigan limited liability company

Personnel Interest: Dr. Mark Sullivan, an Associate Professor in the Department of Music, and members of his family own or have options to buy an equity interest of more than 1% of the company.

* Additional sources, for example Getty Images, of appropriate photographs were either not available, or available for this purpose at an average cost of \$450 per photograph. Rights were obtained from the MSU employee's company for \$10 per photograph.

LICENSE AGREEMENT TERM SHEET

Party: Photography Associates, Inc.

License: Non-exclusive use of copyrighted material granted to MSU

Subject Matter: 796 photographs used in the Coursera Specialization courses one through five entitled: "Photography Basics and Beyond: from Smartphone to DSLR"

Agreement: Non-exclusive rights to use and reproduce one logo photograph used as part of the course promotional activities through the Coursera platform and non-exclusive rights to use and reproduce 795 lesson photographs

Term: Life of the copyright

Payment: \$8,150 payment to Photography Associates, Inc. by MSU*

Organization Type: Michigan corporation

Personnel Interest: Dr. Peter Glendinning, a Professor in the Department of Art, Art History, and Design, and members of his family own or have options to buy an equity interest of more than 1% of the company.

* Additional sources, for example Getty Images, of appropriate photographs were either not available, or available for this purpose at an average cost of \$450 per photograph. Rights from the MSU employee's company were obtained for \$200 for the logo photograph and \$10 per photo for the lesson photographs.

PUBLISHING CONTRACT TERM SHEET

Party: Dr. Theodore S. Ransaw

Project Description: Co-editing a book, *The Art of Being Cool II: Emerging Trends and Directions to Help Close Achievement Gaps for African American Males*

Term: Immediate publication

Agreement: Each co-editor will receive 2.5% of net revenue from net copies sold of all editions, plus five free copies each and additional copies at a 40% discount from the retail price.

Services Provided:
By MSU to Dr. Ransaw (as co-editor): Publication of book under standard MSU Press terms and conditions
By Dr. Ransaw (as co-editor) to MSU: Delivery of manuscript for publication under standard MSU Press terms and conditions

Use of University Facilities/ Personnel: Not applicable

Organization Type: Dr. Ransaw is acting as an individual.

Personnel Interest: Dr. Theodore S. Ransaw is a Specialist in the Residential College in Arts & Humanities.

PUBLISHING CONTRACT TERM SHEET

Party: Dr. Theodore S. Ransaw

Project Description: Editing a book, *International Race and Education: Emerging Issues and Trends in Education*

Term: Immediate publication

Agreement: The editor will receive 2.5% of net revenue from net copies sold of all editions, plus five free copies each and additional copies at a 40% discount from the retail price.

Services Provided: By MSU to Dr. Ransaw (as editor): Publication of book under standard MSU Press terms and conditions
By Dr. Ransaw (as editor) to MSU: Delivery of manuscript for publication under standard MSU Press terms and conditions

Use of University Facilities/ Personnel: Not applicable

Organization Type: Dr. Ransaw is acting as an individual.

Personnel Interest: Dr. Theodore S. Ransaw is a Specialist in the Residential College in Arts & Humanities.

EXCLUSIVE LICENSE AGREEMENT TERM SHEET

Party: Talapo Therapeutics, Inc.

License: Exclusive license on patent rights

Term: From the effective date of the agreement until expiration or abandonment of the patents

Technology: MSU Invention Disclosure No. TEC2015-0018, "Cryptic Peptide Derivatives and Uses Thereof"

Technology's Potential Commercial Utilization: Therapeutic for human disorders such as osteoporosis and obesity

Payment Terms: One and half (1½) percent royalty payable to MSU on products sold by licensee and sublicensee(s), plus royalties from other sublicense income to vary based on development milestones achieved at the time of sublicense (15% if sublicense is executed prior to initiation of Phase I clinical trial, 5% if sublicense is executed after initiation of Phase I clinical trial). Annual minimum payment of \$5,000 beginning in 2018, through year of first commercial sale and \$25,000 thereafter. Milestone payments:
Completion of Phase I clinical trial: \$100,000
Completion of Phase II clinical trial: \$250,000
Completion of Phase III clinical trial: \$500,000
Cumulative Product sales exceeding \$100M: \$1M
Cumulative Product sales exceeding \$500M: \$1M

Services Provided: By MSU to Talapo Therapeutics, Inc.: None contemplated under this agreement
By Talapo Therapeutics, Inc. to MSU: None contemplated under this agreement

Use of University Facilities/Personnel: None

Organization Type: Delaware corporation

Personnel Interest: Dr. Eric Martinez Hackert, an Assistant Professor in the Department of Biochemistry, and members of his family own or have options to buy an ownership interest of more than 1% of the company.