

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

December 16, 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, and George Perles.

Trustees absent: 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, Swain, and Zecher, and Senior Advisor and Director Granberry Russell. Faculty liaisons present: Phylis Floyd, Laura McCabe, and Deborah Moriarty. 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 Lyons, 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 October 28, 2016 Board of Trustees meeting.
3. Board of Trustees Award Presentations

Provost Youatt presented the Board of Trustees Award to the following students:

1. Rachael Acker - Major: Mechanical Engineering; 4.0 GPA
2. Melissa Bucheli - Major: Physiology; Member of the Honors College; 4.0 GPA
3. Michael Morrow - Major: Accounting; Member of the Honors College; 4.0 GPA
4. Adam Schoonmaker - Major: Computer Science; Member of the Honors College; 4.0 GPA

5. Rachel Rolinski – Major: Neuroscience; Member of the Honors College; 4.0 GPA

Provost Youatt acknowledged the Board of Trustees Award recipients who were not able to attend:

1. Andrew Allmon - Major: Music Education; Member of the Honors College; 4.0 GPA
2. Miranda Bunker - Major: Nursing; Member of the Honors College; 4.0 GPA
3. Erin Hand - Major: Food Science; Member of the Honors College; 4.0 GPA
4. Elise Pearl - Major: Psychology; 4.0 GPA

4. President's Report

President Simon provided the following report to the Board.

A. Mitchell Scholars

Cynthia Jackson-Elmoore, Dean of the Honors College, presented the two MSU students who were selected as Mitchell Scholars:

Joel Arnold, a recent MSU graduate with degrees in social relations and policy from James Madison College and urban and regional planning from the College of Social Science.

Margaret Born, an Honors College senior majoring in comparative cultures and politics in James Madison College, and Arabic in the College of Arts and Letters.

President Simon congratulated both recipients for their outstanding accomplishments. She also offered congratulations to each of the Board of Trustees Award scholars. She stated that MSU takes great pride in the accomplishments of this extraordinary class of students, and that she looks forward with anticipation as they begin impactful careers, carrying on Michigan State University's tradition of excellence in advancing knowledge and transforming lives.

B. Commencement, Honorary Degrees

President Simon noted that MSU is pleased to welcome three distinguished speakers to participate in Commencement events and receive honorary degrees.

MSU alumnus John Duffey, president of Six Flags Entertainment Corporation, will address graduates at the 10:00 a.m. ceremony and will receive an honorary doctorate of business.

Also at that ceremony, Dennis Archer, the former mayor of Detroit, will receive an honorary doctorate of laws.

MSU alumna Barbara Ross-Lee, vice president for health sciences and medical affairs at New York Institute of Technology, will speak at the 2:00 p.m. ceremony tomorrow, and will receive an honorary doctorate of science.

Also at that ceremony, Rajmohan Gandhi, MSU Distinguished Visiting Hannah Professor, will receive an honorary doctorate of humanities.

MSU alumnus Michael Longaker, Deane P. and Louise Mitchell Professor in the School of Medicine at Stanford University, will address graduates at the advanced degree ceremony held at 3:30 p.m. He will receive an honorary doctorate of science.

At that ceremony, Natalie Crawford, senior fellow and Distinguished Chair in Air and Space Policy, RAND Corporation, will receive an honorary doctorate of engineering.

C. Faculty, staff, and University achievements

Kristin Parent, assistant professor in the Department of Biochemistry and Molecular Biology in the College of Natural Science, is a recipient of the 2017 ASM Young Investigator Award, which recognizes early career scientists for research excellence and potential in microbiology and infectious diseases.

Natalia Porcek-Hubbs, a Department of Microbiology and Molecular Genetics doctoral student assisting Parent, is a recipient of the 2017 ASM Raymond W. Sarber Award. This award recognizes undergraduate and predoctoral students for research excellence and potential.

College of Music alumna Jenny Heemstra will receive the Secretary of State Award for Outstanding Volunteerism Abroad from John Kerry.

Two MSU scientists have been named AAAS Fellows by the American Association for the Advancement of Science, a national

recognition awarded to researchers for their efforts to advance science or its applications. MSU's AAAS Fellows are chemist Thomas Pinnavaia, for his distinguished contributions to the field of inorganic materials chemistry and James Smith, entomologist and professor in Lyman Briggs College, for his distinguished contributions to the field of entomology evolution and the development of novel evolution pedagogies, along with sustained high excellence as an undergraduate teacher and mentor.

Molecular imaging pioneer Christopher Contag, who recently joined MSU as the inaugural director of the Institute for Quantitative Health Science and Engineering and the chairperson of the new Department of Biomedical Engineering, has been named as recipient of the 2017 Britton Chance Biomedical Optics Award by the Awards Committee for SPIE, the international society for optics and photonics.

President Simon congratulated Heather Swain, MSU's vice president of Communications and Brand Strategy, who was named the higher education marketer of the year by the American Marketing Association. This individual award for excellence, given to only one leader per year, follows the 2016 CASE Platinum award for MSU's Office of Communications and Brand Strategy awarded earlier this year.

A cooperative agreement between MSU and the National Science Foundation will result in up to \$122.5 million in continued funding over five years for the National Superconducting Cyclotron Laboratory. The new funding will cover the period until the Facility for Rare Isotope Beams becomes operational, which is expected to be in 2021.

The MasterCard Foundation has approved MSU's \$12.8 million proposal under its Youth Opportunities program.

This month, the two major rating agencies, Moody's and Standard & Poors, affirmed MSU's credit ratings at the higher end of their rating scales. Both agencies cited MSU's strong financial management; along with student demand, stable enrollment, and substantial research activities, as major credit strengths. President Simon indicated that she was pleased that MSU's continuous efforts to strengthen its financial stewardship, while achieving our strategic initiatives, were acknowledged by the rating agencies.

D. Athletics

Last week the #15 ranked Spartan Women's volleyball team fell to Arizona in the second round of the NCAA tournament. Congratulations to the team on an outstanding season, which included a 15-3 record at home.

Spartan Stadium has been named the top collegiate football field for 2016 by the Sports Turf Managers Association (STMA), becoming just the fourth collegiate football field to earn the award twice. Congratulations to Amy Fouty and her team.

E. Facilities and Infrastructure Report

Dan Bollman, Associate Vice President for Strategic Infrastructure Planning and Facilities, presented the Facilities and Infrastructure Report. The report is available at www.ipf.msu.edu.

F. Mobility Planning

Executive Vice President Udpa will lead a small cross-disciplinary team that will explore how to improve campus mobility. From cars and delivery trucks, to bikes and mopeds, to pedestrian traffic, the MSU community travels throughout campus by many means at all hours of day and night. This team will explore how the University can make transit on campus safer and more efficient with the goal of creating an action plan for review by the Board of Trustees late in 2017.

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

6. Personnel Actions

Provost Youatt presented the following personnel actions:

De Araujo, Luis—AY Associate Professor, Department of Economics, \$152,500, with Tenure, effective January 1, 2017.

Veenema, Alexa H, AY—Associate Professor, Department of Psychology, \$111,000, with Tenure, effective January 1, 2017.

The following actions include tenure recommendations which were delayed last spring and which are recommended by the relevant Department Chairpersons/School Directors and Deans, and by the Provost, in accordance with the tenure rules.

The following promotions include the award of tenure and are recommended to be effective January 1, 2017.

Yehuda, Guy, reappointment as Associate Professor, College of Music.

Conroy-Krutz, Jeffery, promotion to Associate Professor, Department of Political Science.

Sapotichne, Joshua, promotion to Associate Professor, Department of Political Science.

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

THE BOARD VOTED to approve the recommendations.

7. Gift, Grant and Contract Report

Vice President Hsu presented the Gifts, Grants, and Contracts Report for the period of August 9, 2016 through November 22, 2016. The report is a compilation of 787 Gifts, Grants and Contracts, plus 67 Consignment/Non-Cash Gifts, with a total value of \$161,088,045.

Trustee Breslin **moved to approve** the report, supported by Trustee Foster.

Vice President Hsu introduced Dr. Amy Ralston, James K. Billman, Jr. Endowed Professor, Department of Biochemistry and Molecular Biology and the Reproductive and Developmental Sciences Program, who presented to the Board on Stem Cells from the Mouse Embryo. (Appendix A)

8. Finance Committee

Trustee Foster presented the Trustee Finance Committee Report and the following recommendations and resolutions.

A. Fund Functioning as an Endowment—Plant, Soil and Microbial Sciences Endowed Graduate Assistantship

It was recommended that the Board of Trustees establish a fund functioning as an endowment to provide support for assistantships in the Department of Plant, Soil and Microbial Sciences ("Department").

BE IT RESOLVED that the Board of Trustees of Michigan State University hereby establishes a fund functioning as an endowment entitled "Plant, Soil and Microbial Sciences Endowed Graduate Assistantship."

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

THE BOARD VOTED to approve the resolution.

B. Fund Functioning as an Endowment—Plant, Soil and Microbial Sciences Endowed Graduate Assistantship in Turfgrass

It was recommended that the Board of Trustees establish a fund functioning as an endowment to provide support for assistantships in the Department of Plant, Soil and Microbial Sciences.

BE IT RESOLVED that the Board of Trustees of Michigan State University hereby establishes a fund functioning as an endowment entitled "Plant, Soil and Microbial Sciences Endowed Graduate Assistantship in Turfgrass."

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

THE BOARD VOTED to approve the resolution.

C. Reappointment of External Investment Advisory Subcommittee Member

It was recommended that the Board of Trustees reappoint Joel Wittenberg to a second term on the Investment Advisory Subcommittee.

BE IT RESOLVED, that the Board of Trustees of Michigan State University hereby reappoints Joel Wittenberg as an external member of the Investment Advisory Subcommittee for a three-year term commencing January 1, 2017.

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

THE BOARD VOTED to approve the resolution.

D. Acceptance of Seevers Property in Iron County, MI

It was recommended that the Board of Trustees accept a gift of real property located in Iron County, Michigan.

BE IT RESOLVED, that the Board of Trustees of Michigan State University hereby authorizes the Administration to accept a gift of real property located on the Paint and Net Rivers in Iron County, Michigan from Gary L. Seevers.

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

THE BOARD VOTED to approve the resolution.

E. Authorization to Plan—Jenison Field House Alterations

It was recommended that the Board of Trustees authorize the Administration to plan for alterations to Jenison Field House to enhance the aesthetics and functionality of selected areas of the building.

BE IT RESOLVED, that the Board of Trustees of Michigan State University hereby authorizes the Administration to plan for the project entitled “Jenison Fieldhouse Alterations.”

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

THE BOARD VOTED to approve the resolution.

F. Authorization to Plan—Spartan Stadium—South End Zone Addition

It was recommended that the Board of Trustees authorize the Administration to plan for an addition to improve fan amenities at Spartan Stadium.

BE IT RESOLVED, that the Board of Trustees of Michigan State University hereby authorizes the Administration to plan for the project entitled “Spartan Stadium—South End Zone Addition.”

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

THE BOARD VOTED to approve the resolution.

G. Authorization to Plan—Water Distribution—Campus Water System Improvements

It was recommended that the Board of Trustees authorize the Administration to plan for improvements to the campus water system.

BE IT RESOLVED, that the Board of Trustees of Michigan State University hereby authorizes the Administration to plan for the project entitled "Water Distribution—Campus Water System Improvements."

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

THE BOARD VOTED to approve the resolution.

H. Project Approval—Authorization to Proceed—Parking—Lot 63—Reconstruction and Expansion

It was recommended that the Board of Trustees authorize the Administration to reconstruct and expand 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 proceed with the project entitled "Parking—Lot 63—Reconstruction and Expansion," with a project budget of \$1,500,000.

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

THE BOARD VOTED to approve the resolution.

I. Project Approval—Authorization to Proceed—Parking—Lot 92—Reconstruction and Expansion

It was recommended that the Board of Trustees authorize the Administration to reconstruct and expand Parking Lot 92 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 proceed to bid with the project entitled "Parking—Lot 92—Reconstruction and Expansion," with a pre-bid budget of \$1,200,000-\$1,600,000.

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

THE BOARD VOTED to approve the resolution.

- J. Project Approval—Authorization to Proceed—Trowbridge Road—Resurfacing *(16-17 major maintenance)*

It was recommended that the Board of Trustees authorize the Administration to resurface Trowbridge Road.

BE IT RESOLVED, that the Board of Trustees of Michigan State University hereby authorizes the Administration to proceed to bid with the project entitled "Trowbridge Road—Resurfacing *(16-17 major maintenance)*," with a pre-bid project budget of \$1,800,000-\$2,200,000.

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

THE BOARD VOTED to approve the resolution.

- K. Project Approval—Authorization to Proceed—Wharton Center—Replace Roofs *(16-17 major maintenance)*

It was recommended that the Board of Trustees authorize the Administration to replace the deteriorated roof sections at the Wharton Center.

BE IT RESOLVED, that the Board of Trustees of Michigan State University hereby authorizes the Administration to proceed to bid with the project entitled "Wharton Center—Replace Roofs *(16-17 major maintenance)*," with a pre-bid project budget of \$1,800,000-\$2,200,000.

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

THE BOARD VOTED to approve the resolution.

- L. Project Approval—Authorization to Proceed—Strategic Academic Development Initiative—Interdisciplinary Science and Technology Building

It was recommended that the Board of Trustees authorize the Administration to proceed with the construction of the Interdisciplinary Science and Technology Building. The building will support faculty recruitment necessary to implement the Global Impact Initiative.

BE IT RESOLVED, that the Board of Trustees of Michigan State University hereby authorizes the Administration to proceed with the project entitled "Strategic Academic Development Initiative—Interdisciplinary Science and Technology Building."

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

THE BOARD VOTED to approve the resolution.

9. Policy Committee

Trustee Byrum presented the Trustee Policy Committee Report and the following recommendations and resolutions.

A. Gilbert Pavilion

It was recommended that the Board of Trustees name the facility on the southeast side of the Breslin Center between the arena and the Berkowitz Basketball Complex the Gilbert Pavilion.

BE IT RESOLVED, that the facility on the southeast side of the Breslin Center between the arena and the Berkowitz Basketball Complex be named the Gilbert Pavilion.

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

THE BOARD VOTED to approve the resolution.

B. Appointments to the MSU College of Law Board of Trustees

It was recommended that the Board of Trustees approve the following appointments to the MSU College of Law Board of Trustees:

Colleen McNamara for a term of three years, commencing January 1, 2017, and ending December 31, 2019.

Mayer Morganroth for a term of three years, commencing January 1, 2017, and ending December 31, 2019.

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

THE BOARD VOTED to approve the resolution.

C. Approval of Contract Terms

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 sponsored research agreement with *Kopess Ag Tech, LLC*, consistent with earlier public notice given at a Board meeting and with a "Sponsored Research Agreement Term Sheet" presented to the Board. (Appendix B)

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 a sponsored research agreement with *Talapo Therapeutics, Inc.*, consistent with earlier public notice given at a Board meeting and with the "Sponsored Research Agreement Term Sheet" presented to the Board. (Appendix C)

It was recommended that the Board of Trustees approve a contract between Michigan State University and *Black Pine Engineering LLC*, a company in which faculty member Dr. Norbert H. Mueller and employees Andy VanderKlok, Black Gower, and Thomas J. Qualman hold a financial interest.

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

Trustee Byrum **moved to approve** the resolutions, with support from Trustee Ferguson.

THE BOARD VOTED to approve the resolutions.

G. Notice of Intent to Negotiate Contracts

Pursuant to State law, Trustee Byrum gave public notice of the University's intent to negotiate contracts with *Hibiscus BioPharma, Inc.*, a Michigan corporation. Dr. Andre S. Bachmann, a Professor in the Department of Pediatrics and Human Development in the College of Human Medicine, and members of his family own, 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 *Toolbox, LLC*, a Michigan limited liability company. Dr. Michael O'Rourke, a Professor in the Department of Philosophy, and Dr. Stephanie E. Vasko, Post-Doctoral Research Fellow in the Department of Philosophy, and members of their families own, or have options to buy, an interest in the company.

10. Compensation Committee

Trustee Mosallam presented the Trustee Compensation Committee Report.

Each year at this time the Board of Trustees considers the President's compensation consistent with section 4a of the employment agreement between President Simon and the Board. The Compensation Committee has met for that purpose.

In June of this year the Board conducted its annual evaluation of the President. At that time, the Board conveyed to President Simon its uniform support of her leadership of Michigan State University. President Simon's leadership and dedication are widely recognized both within and beyond the MSU community, and she continues to excel on the Board-established performance criteria. As a result, the Board continues to believe that the retention of President Simon is critical to the University's future.

At her request, the Compensation Committee recommends to the Board of Trustees that President Simon not receive a salary increase this year. President Simon received a salary increase in 2007 and again in 2014. With the exception of 2014, in the nine years since 2007 (including this year) she has asked, and the Board has agreed, that her salary be maintained at the amount she received in the preceding year.

Last year, in recognition of President Simon's extraordinary and lifelong commitment to Michigan State University, the Board established a scholarship in honor of President Lou Anna K. Simon and her spouse, Dr. Roy J. Simon.

The Compensation Committee recommends that unrestricted gift income in the amount of \$100,000 be transferred in to the Roy J. and Lou Anna K. Simon Scholarship Fund in recognition of their continuing contributions to Michigan State University to be administered as a scholarship for first-generation college students by the Office of Financial Aid.

Finally, the Board applauds the commitment that Drs. Roy J. and Lou Anna K. Simon have made to give back to the University through generous, regular, and substantial financial contributions. Based on their current level of cash and estate giving, the Simons are members of MSU's Wharton Society and Kedzie Society. The Simons' current cash gifts to MSU exceed \$1 million. They provide a tremendous example of philanthropy for Team MSU and the Spartan Community.

Therefore, the Compensation Committee recommends that the Board of Trustees authorize the Vice President for University Advancement to supplement the Roy J. and Lou Anna K. Simon Scholarship Fund in the amount of \$100,000 in recognition of their lifelong commitment to Michigan State University and that all amounts transferred to that Fund be administered as a fund functioning as an endowment in accordance with this resolution and the standard procedures for the award of scholarships through the Office of Financial Aid.

Trustee Mosallam **moved to approve** the motion, with support from Trustee Lyons.

THE BOARD VOTED to approve the motion.

11. Trustee Comments

Trustee Ferguson commented on the cohesiveness and effectiveness of Team MSU.

Trustee Mosallam congratulated the GPA awardees and wished everyone happy holidays. He also thanked Trustee Woodard for her service and complimented the student government groups on their accomplishments for the semester. Trustee Mosallam also recognized the efforts of the ASMSU President, Lorenzo Santaviccina, and the COGS President, Dee Jordan.

Trustee Foster congratulated Associate Vice President Bollman and Barb Kranz on their work on campus. She also congratulated Vice President Swain for being named the Higher Education Marketer of the year. Trustee Foster also recognized the accomplishments of ASMSU, COGS, and RHA over the past semester. She also thanked Trustee Woodard for her contributions to the Board.

Trustee Byrum extended her congratulations to the students graduating at the Fall Commencement, as well as to the GPA Award recipients. She also wished everyone happy holidays, and remarked on the quality of the conversations held with the faculty liaison group that morning.

Trustee Perles congratulated Trustee Byrum for being reelected and wished everyone happy holidays.

Trustee Breslin thanked Trustee Woodard for her work as a trustee. He also thanked Professor Ralston for her presentation and her research.

Trustee Lyons thanked Trustee Woodard for her work and congratulated Trustee Byrum on her reelection. He also congratulated those students graduating.

12. Public Participation on Issues Not Germane to the Agenda.

A. Stories Behind the Spartans

Lorenzo Santaviccina, an MSU undergraduate student and the President of Associated Students for Michigan State University, spoke about The Stories Behind the Spartans, a project initiated by ASMSU. This project hopes to showcase the true meaning of "Spartans Will" through the diverse narratives of Spartan students.

13. Request to Adjourn

On a motion by Trustee Ferguson, supported by Trustee Mosallam, **THE BOARD VOTED to adjourn** at 11:05 a.m.

Respectfully submitted,



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

RESEARCH PRESENTATION

TO THE MSU BOARD OF TRUSTEES

DECEMBER 16, 2016

AMY RALSTON

DEPARTMENT OF BIOCHEMISTRY AND
MOLECULAR BIOLOGY

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

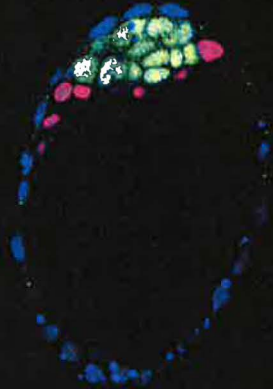
Dr. Amy Ralston

Dr. Amy Ralston earned her bachelor's degree in biochemistry from Oberlin College (Oberlin, OH) in 1995, and her Ph.D. in fruit fly genetics from the University of Wisconsin (Madison, WI) in 2004. Dr. Ralston then pursued postdoctoral studies of mammalian stem cells, embryology, and genomics at the Hospital for Sick Children Research Institute (Toronto, ON). After completing her postdoctoral studies in 2009, Dr. Ralston started her independent research career as a tenure-track assistant professor of molecular, cell, and developmental biology at the University of California Santa Cruz (Santa Cruz, CA).

In 2014, Dr. Ralston was recruited to Michigan State University, where she is the James K. Billman, Jr., M.D. Endowed Professor and Associate Professor in the Department of Biochemistry and Molecular Biology. At MSU, Dr. Ralston teaches introductory biology to 250 undergraduates per year. Dr. Ralston also supervises an NIH-funded research laboratory, where she supervises undergraduate, graduate student, and postdoctoral trainees in their experimental research.

The goal of Dr. Ralston's research is to discover how mouse embryos make and use stem cells and apply this to treating human health problems, such as infertility and birth defects. Dr. Ralston is the instructor of the NIH-funded summer lab course in Mouse Development, Stem Cells, and Cancer at Cold Spring Harbor Laboratory (Cold Spring Harbor, NY), which has trained graduate students and postdoctoral fellows in the use of mouse models of human disease since 1982. Dr. Ralston's scholarly achievements led to her selection to receive a Presidential Early Career Award for Scientists and Engineers from Barack Obama in 2016.

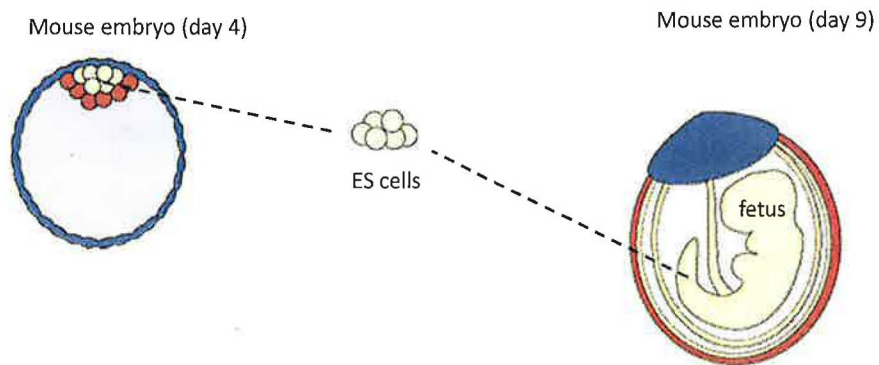
Stem Cells from the Mouse Embryo



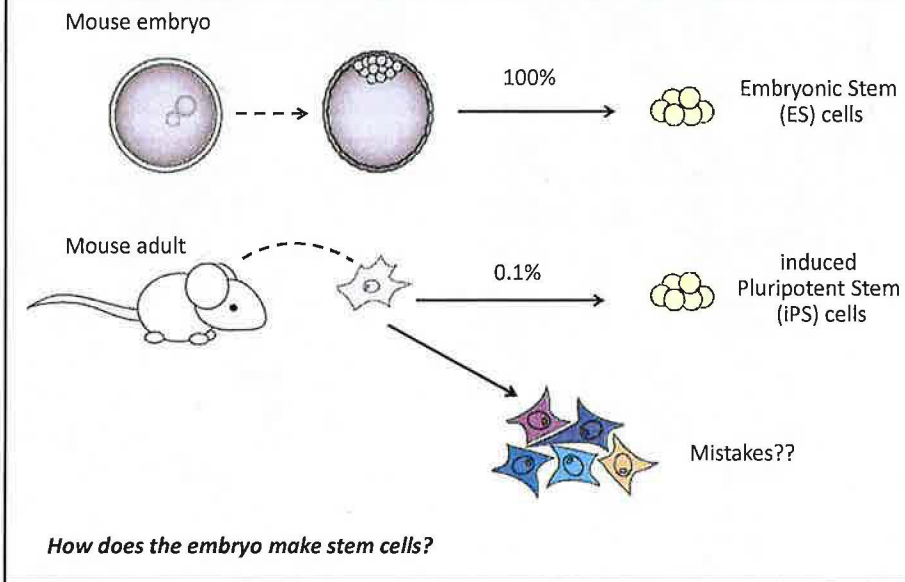
Amy Ralston, Ph.D.

James K. Billman, Jr., M.D. Endowed Professor
and Associate Professor of Biochemistry and Molecular Biology
Reproductive and Developmental Sciences Program
Michigan State University

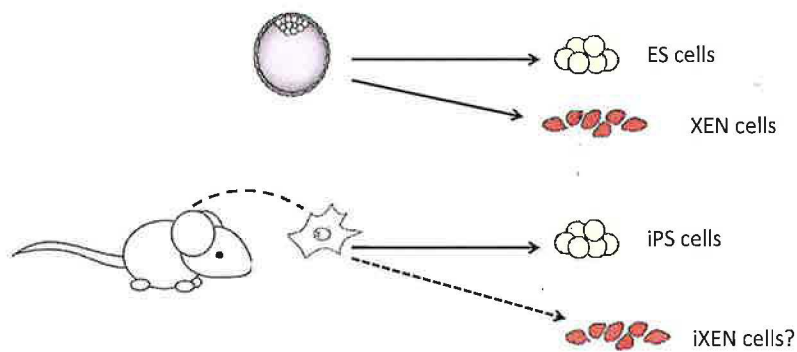
Pluripotent stem cells can become any part of the body



Pluripotent stem cells can be made by reprogramming

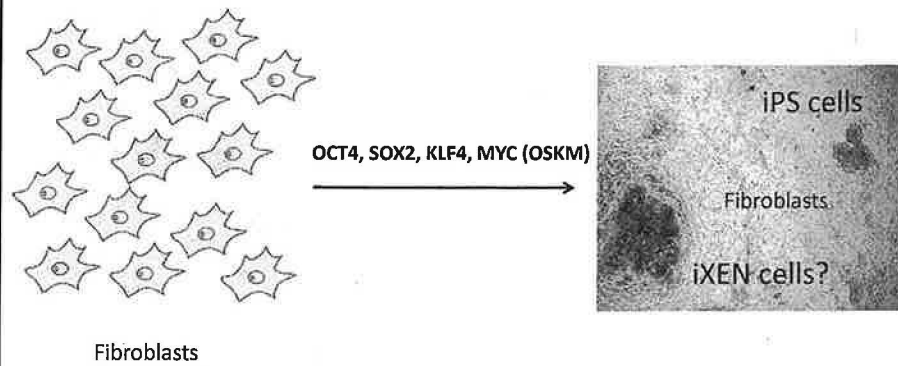


Can mouse embryo teach us about making stem cells?



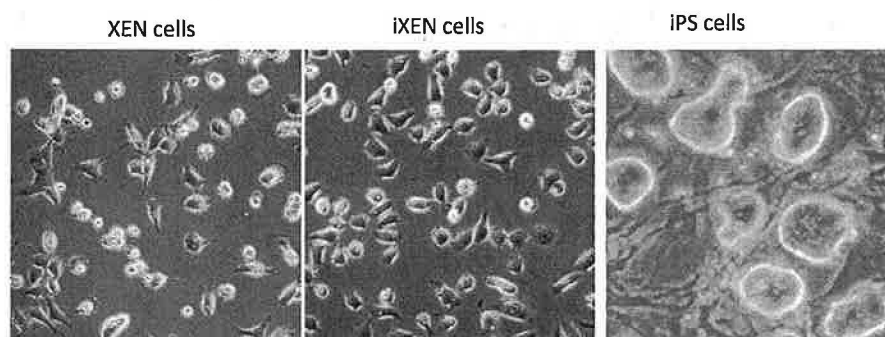
Hypothesis: Reprogramming produces 2 kinds of stem cell

Reprogramming produces two kinds of stem cell



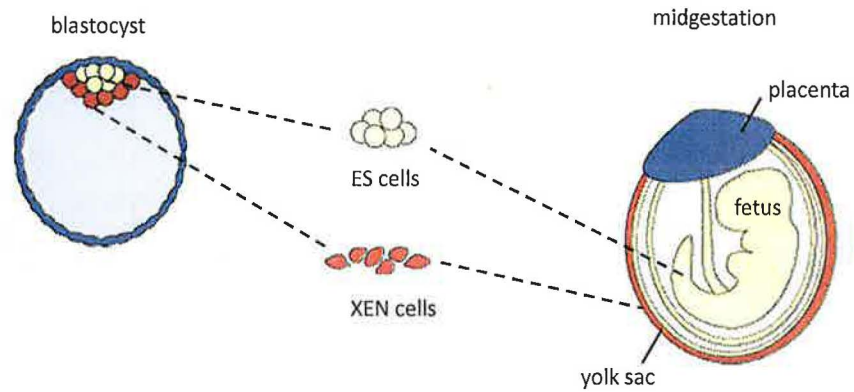
Parenti et al., Stem Cell Reports 2016

Reprogramming produces 2 kinds of stem cell



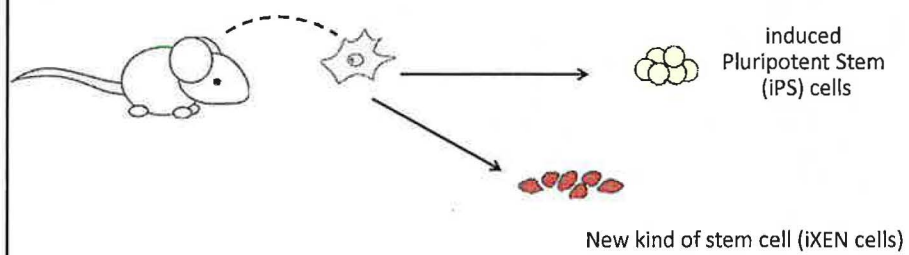
Parenti et al., Stem Cell Reports 2016

XEN = an extraembryonic tissue



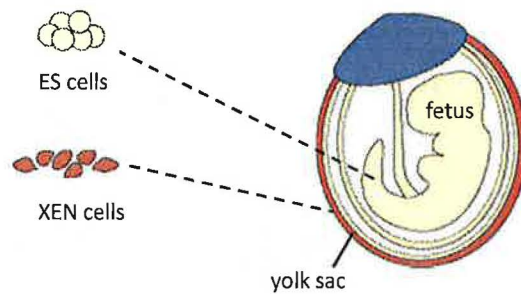
Take home messages:

1. These are not mistakes



Take home messages:

1. These are not mistakes
2. New models to study birth defects, Zika infection



My Undergraduate Researchers



Allie Mohr



Mary Allsheikh



Matthew Walny



Sreya Modepalli



Kayla Matheny



Eli Falk



Hannah Guider

The Ralston Lab



Tristan Frum, Ph.D. Postdoc



Alyson Lokken, Ph.D. Postdoc



Fang Xie, Ph.D. Postdoc



Michael Halbisen, Ph.D.
Bioinformatics Guy



Jenn Watts
PhD Rotation Student



Erika Sarno
DO/PhD Rotation Student

Collaborators and Facilities:

- Paul Robson – Jackson Laboratory
- Keith Latham – Michigan State University
- Hiroshi Sasaki – Osaka University
- Eric Fearon – University of Michigan
- MSU Center for Advanced Microscopy
- MSU Research Technology Support Facility
- MSU ICER Facility
- MSU Flow Cytometry Facility
- MSU Transgenic Animal and Genome Editing Facility
- MSU Animal Care Program

Funding:

- NIH R01 GM104009
- NIH T32 GM008646
- CIRM TG2-00157
- Ellison Medical Foundation AG-NS-0731-10
- James K. Billman, Jr., M.D. Endowment, MSU

SPONSORED RESEARCH AGREEMENT TERM SHEET

Party: Kopess Ag Tech, LLC

Agreement: Subcontract under National Science Foundation (grant number TBD, prime award from Grant Application No. 150282):
Sponsored Research Agreement Subcontract: "(STTR Phase I) XERICO Drought Tolerance Technology"

Term: January 1, 2017 to December 31, 2017

Payment Terms: \$102,743 in reimbursements under the grant for services provided

Services Provided:
By MSU to Kopess Ag Tech, LLC: Genetic modification of corn for anticipated increased resistance to drought. Establishment of test fields for survival and growth of transgenic plants under field conditions.

By Kopess Ag Tech, LLC to MSU: None contemplated under agreement

Use of University Facilities/ Personnel: Testing will be conducted under the supervision of Dr. Kyung-Hwan Han. Plant material will be planted and field tested on the south campus at 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.

SPONSORED RESEARCH AGREEMENT TERM SHEET

Party:	Talapo Therapeutics, Inc.
Term:	One year from the effective date of the agreement
Related Technology:	MSU Invention Disclosure No. TEC2015-0018, "Cryptic Peptide Derivatives and Uses Thereof"
Potential Commercial Application:	Therapeutic for human disorders such as osteoporosis and obesity
Payment Terms:	\$100,000 payable in two installments of \$50,000, at commencement and completion of the research project
Services Provided:	By MSU to Talapo Therapeutics, Inc.: efficacy test of compound in animal obesity model By Talapo Therapeutics, Inc. to MSU: None contemplated under this agreement
Use of University Facilities/Personnel:	Testing to be completed under the supervision and in the laboratory of Dr. Eric Martinez Hackert
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.

EXCLUSIVE LICENSE AGREEMENT TERM SHEET

Party:	Black Pine Engineering, LLC
License:	Exclusive license on patent rights
Term:	From the effective date of the agreement until expiration or abandonment of the patents
Technology:	<p>MSU Invention Disclosure Nos. TEC2011-0071; US Patent Application 14/001,820; "Rotor Apparatus"</p> <p>MSU TEC2004-0084; US Pat. Nos. 7938627, 8449258, and 8506245 and foreign equivalents; "Woven Turbomachine Impeller" and</p> <p>MSU TEC 2017-0022 "Modular Turbo-Compressor with Integrated Hub-Motor"</p> <p>The parties may add or remove technologies provided that the change does not affect the financial consideration or the nature of the pecuniary interest of MSU personnel.</p>
Technology's Potential Commercial Utilization:	High volume mechanical compressors, including non-condensable gas removal compressors for geothermal electric generating plants
Payment Terms:	\$10,000 license fee, royalty of 3.0% on net sales, and reimbursement of patent costs; equity in licensee of 10% of common shares upon transfer of equity to qualified investor(s)
Services Provided:	<p>By MSU to Black Pine Engineering, LLC: None contemplated under this agreement</p> <p>By Black Pine Engineering, LLC to MSU: None contemplated under this agreement</p>
Use of University Facilities/Personnel:	None
Organization Type:	Michigan limited liability company
Personnel Interest:	Dr. Norbert H. Mueller, an Associate Professor in the Department of Mechanical Engineering, Blake Gower, a Teaching Assistant in the College of Engineering, Thomas Qualman, a Teaching Assistant in the Department of Mechanical

Engineering, Andrew VanderKlok, a Research Assistant in the Department of Mechanical Engineering, and members of their families own or have options to buy an ownership interest of more than 1% of the company.