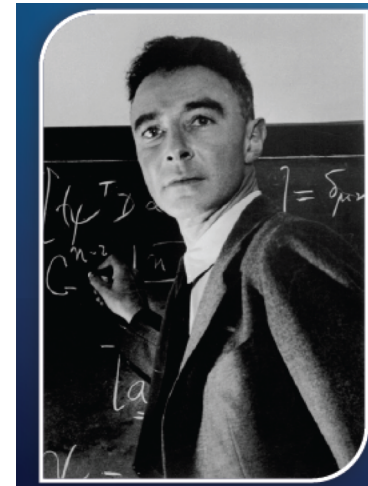
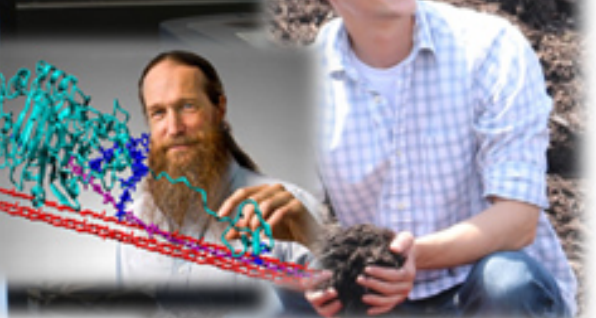


## McCann – a brief history

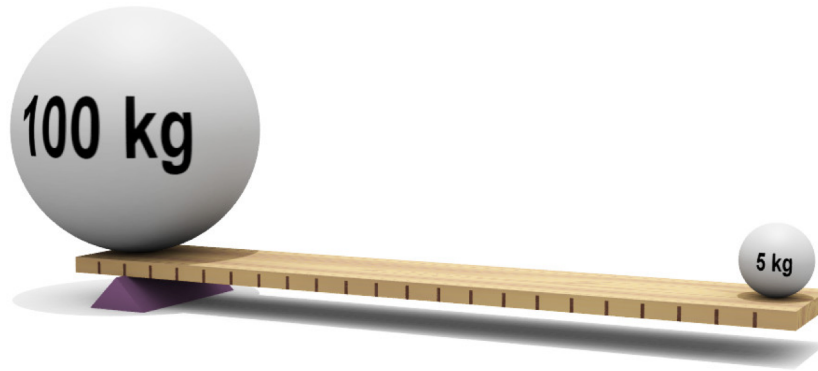
- BA, MA University of Cambridge; PhD University of East Anglia and post-doc at the John Innes Center, Norwich UK
- Royal Society University Research Fellowship
- 104 publications, h-index 54 (Google Scholar); over 13000 citations
- Professor and former Assistant Head of Biological Sciences, Purdue University
- \$45M in research funding plus \$36M in additional grants to Energy Center – affiliated faculty
- US DOE Oppenheimer Science and Energy Leadership Program, 2<sup>nd</sup> cohort





---

# OSU CAS: the lever, the place to stand



Maureen C McCann

25<sup>th</sup> April 2018

---



# The future is Vague, Ambiguous, Complex and Unknown (VACU)



**70% INCREASE IN  
FOOD PRODUCTION  
BY 2030**

Increasing need for water, urbanized population, land use and production capability, climate change



**9.6 BILLION  
PEOPLE  
BY 2050**

Aging populations, rising cost of healthcare, global pandemics



**60% OF  
GLOBAL POPULATION  
MIDDLE CLASS BY 2030**

Shift to Megacities, rising demand for energy, food, water



**40-60% INCREASED  
ENERGY DEMAND  
BY 2050**

Fossil fuel based economy, increased integration of renewables, energy affordability and accessibility

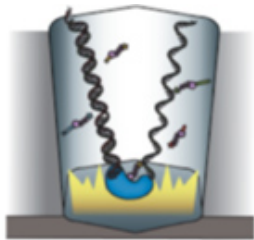
# How can we build resilience and sustainable prosperity for Oregon?



- Climate change threatens Pinot noir production
- Pests and pathogens are global travellers
- Synthetic biology could impact hops producers
- Ocean plastics disrupt marine ecosystems

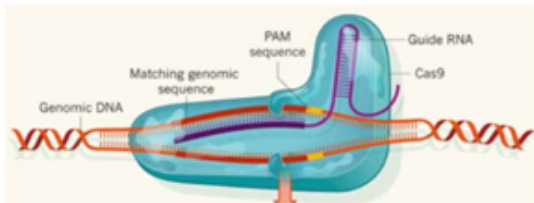
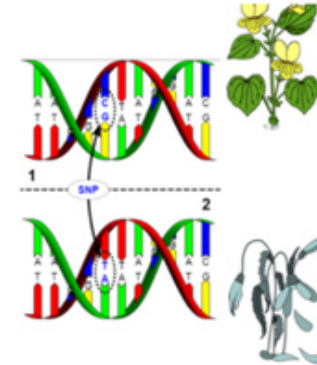


# Can we entrain the revolution in life sciences to serve our communities and stakeholders?



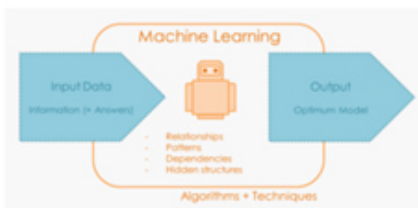
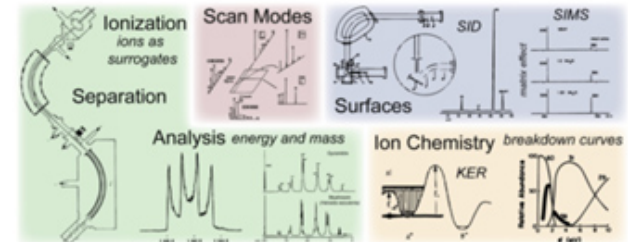
- Faster, cheaper DNA reading and writing

- Genome-wide associations beyond model organisms



- Accelerated capacity for genome editing

- Ultra-sensitive mass spectrometry for structural characterization



- Supercomputers, machine learning and computational modeling

---

# Challenges for Agricultural Sciences and the land-grant mission

- Flat federal and state funding
  - Aging infrastructure
  - Half-life of training
  - Increasing global competition
  - Public perception
-

# Building the bioeconomy to deliver sustainable prosperity

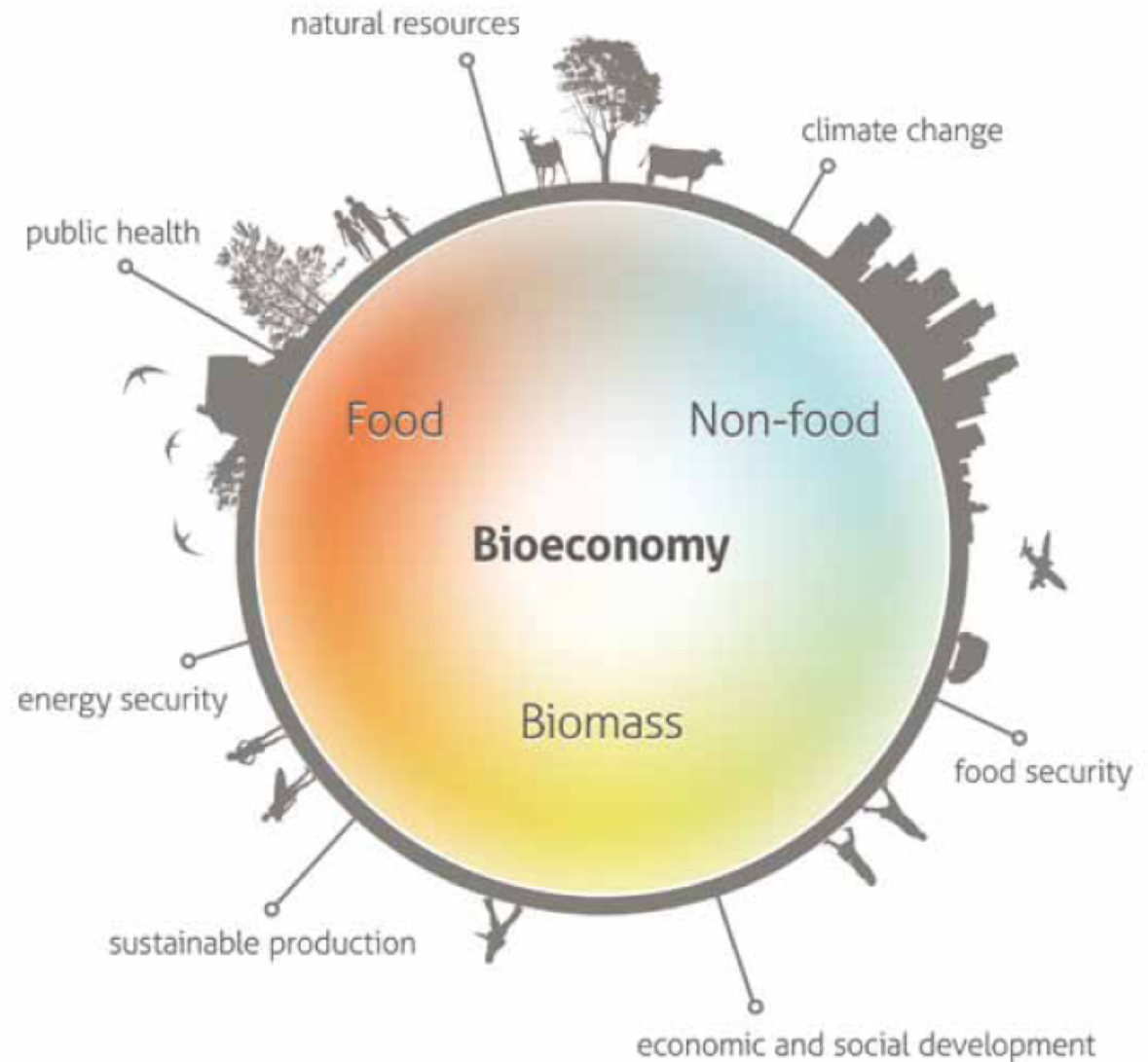


Figure from: The European bioeconomy in 2030: Delivering sustainable growth by addressing the grand societal challenges. White paper, [www.becoteps.org](http://www.becoteps.org)



# Implications for student education

Drivers	Impact on Bioeconomy Industries	Skills Implication
Increasing Global Population	<ul style="list-style-type: none"><li>• Increased and diversified product demands</li></ul>	<ul style="list-style-type: none"><li>• Awareness of sustainability issues, environmental and economic</li></ul>
Mitigate Climate Change	<ul style="list-style-type: none"><li>• Transition from fossil to bio-based products</li></ul>	<ul style="list-style-type: none"><li>• Deep disciplinary knowledge and skills</li><li>• Innovation and business acumen to identify alternative products and markets</li><li>• Capacity to be creative, willingness to push boundaries</li></ul>
Globalization	<ul style="list-style-type: none"><li>• Emerging markets and competition</li></ul>	<ul style="list-style-type: none"><li>• Intercultural skills</li></ul>
Convergent Technologies	<ul style="list-style-type: none"><li>• Products are the result of the intersection and combination of more than one platform, eg biotech, nanotech and IT, and the business risks are additive</li></ul>	<ul style="list-style-type: none"><li>• Ability to work in multidisciplinary teams</li><li>• Strong communications skills</li></ul>
International and Complex Regulatory Frameworks	<ul style="list-style-type: none"><li>• Technical experts need awareness of regulatory hurdles</li></ul>	<ul style="list-style-type: none"><li>• Regulatory knowledge, policy acumen</li></ul>
Big Data and Information Flows	<ul style="list-style-type: none"><li>• Maintaining a competitive edge depends on extracting useful knowledge from ever-increasing volumes of data</li></ul>	<ul style="list-style-type: none"><li>• Able to navigate and manage information flows, comfort with big data management</li></ul>

---

# Purdue's Discovery Park as an integrative model for Agricultural Sciences, policy and entrepreneurship



*Discovery Park is Purdue's hub for interdisciplinary and translational research, conceived as a place where scholars from all disciplines could work together to define whole new areas of research and solve grand challenges.*

---

---

# What is the value of CAS to Oregon, the Nation, the world?

- A shining example of diversity, inclusion, respect and kindness
- A provider of end-to-end solutions through convergent research
- A trusted source of knowledge
- Training of a resilient future workforce for the bioeconomy
- Delivery of a pipeline of STEM leadership in agricultural sciences
- Recognized leadership for the national research agenda
- An engine of innovation and IP

## MISSION

Define grand challenges in research, education and extension

Configure assets and integrate interdisciplinary capabilities

Position to lead the national agenda in agricultural sciences

Position CAS at the heart of OSU's innovation engine

## FUNDING AND GROWTH

Build strategic partnerships with key stakeholders

Develop the value and values proposition for fund-raising

Articulate five-year growth plan integrated with OSU's growth plan

Identify long-term needs for state-of-the-art facilities and instrumentation

## PEOPLE AND INFRASTRUCTURE

Recruit and retain diverse faculty, staff and students

Convince stakeholders to become our advocates and ambassadors

Address space and infrastructure priorities

Career paths for staff and faculty are rich and rewarding

***CAS delivers on the new promise of the land-grant mission to meet the grand challenges of the 21<sup>st</sup> century for Oregon and the Nation***



***“Give me a lever, and a place to stand, and I will move the earth”***

*Archimedes (attrib.)*



**OSU**  
**Oregon State**  
UNIVERSITY

**College of  
Agricultural Sciences**