



Precipitating Events

Serve as Interim Associate Provost for Research
 Responsible for the UNCW research enterprise
 Challenged to grow research; Why?

Carnegie (CCIHE) reclassified UNCW as
Doctoral University with High Research Activity
 Challenge to campus identity; transition.

Why do universities do research?



Definitions

Primary Research

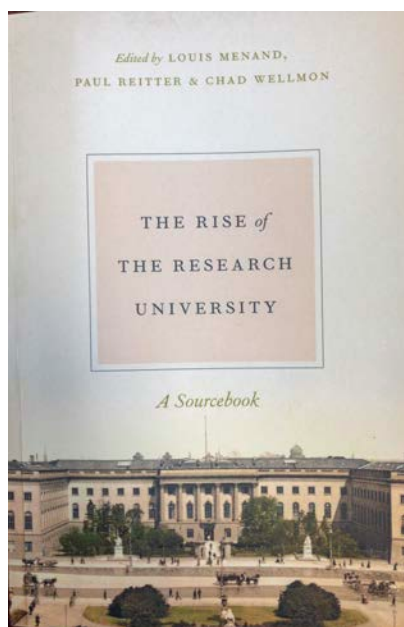
Discovery of new Knowledge

Contrast with Scholarship &
Creative Works



ParkeHarrison

Brief History of the Research University



Earliest European Universities

University of Bologna, 1008

University of Oxford, 1096

University of Paris, 1150

Growing out of
monastic traditions,
medieval scholastic guilds,
higher education



19th Century Germany

Wilhelm von Humboldt

**Vision of the unity of
teaching and research**

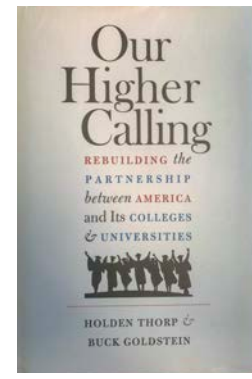
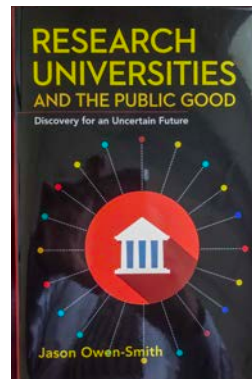
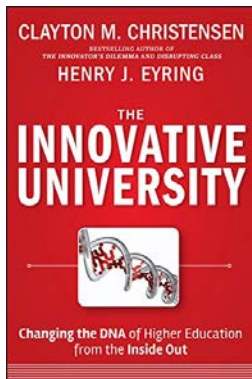
American Universities (e.g., Harvard)

- initially blended German and English models

Continuous Construction

We are still building and reshaping universities

- Morrill Act of 1862 (created Land-Grant universities)
- Truman Commission, 1946 (universities to support democracy)
- Architecture of the National Science Foundation, 1950 (Vannevar Bush)
- Wisconsin Idea, 1971 (“university research should be applied to solve problems and improve health, quality of life, the environment, and agriculture for all citizens of the state”)



Why Research at a University?

Knowledge for Knowledge's Sake is a Good unto Itself

Contemplating, researching, testing, and writing about ideas requires strong *habits of mind*. These habits lead to great works.

“The best minds exercise regularly,” Dan Baden

New Knowledge is a Good unto Itself

“The creation of new knowledge is a *service to society*, and training others in the practice of curating and generating new knowledge is a core part of the academic mission”

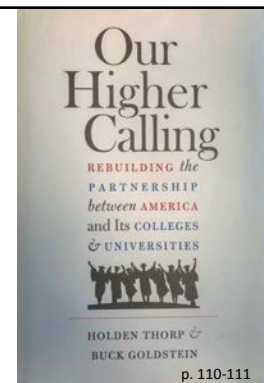
Innovators of the Future Need our Knowledge

Portfolio strategy. Curiosity driven research can lead to unanticipated discoveries whose values is not known *a priori*.

The Work We Do Is Useful Now

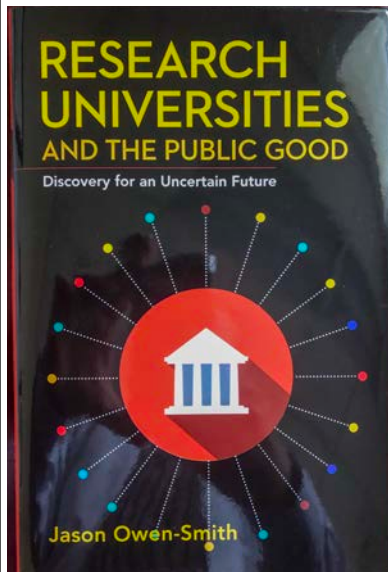
Some research leads to commercial developments and intellectual property. Thus, university research can be an economic engine.

Solving problems (e.g., shoreline stabilization, weather prediction, medicine)



Coupling the
education and
research
missions
strengthens
both

Why Research at a University?



The purpose of the university
is knowledge.

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Network **Sources**

key inputs

Community **Anchors**

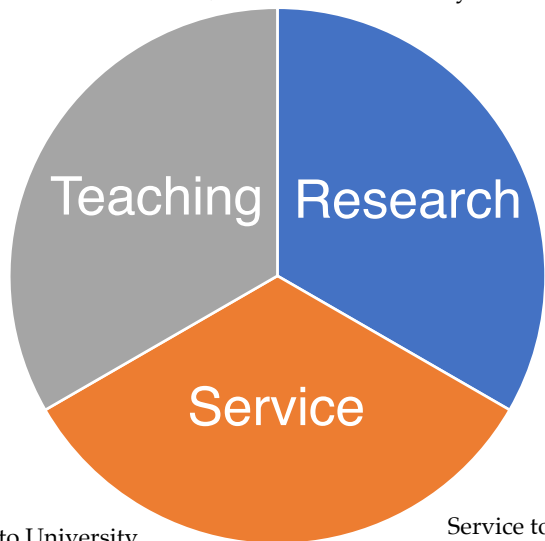
regional resilience
& responsiveness

Connecting **Hubs**

connect knowledge
community and society

Faculty Role

Traditional, Tenure Track Faculty

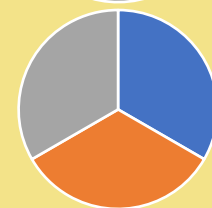
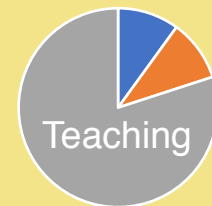


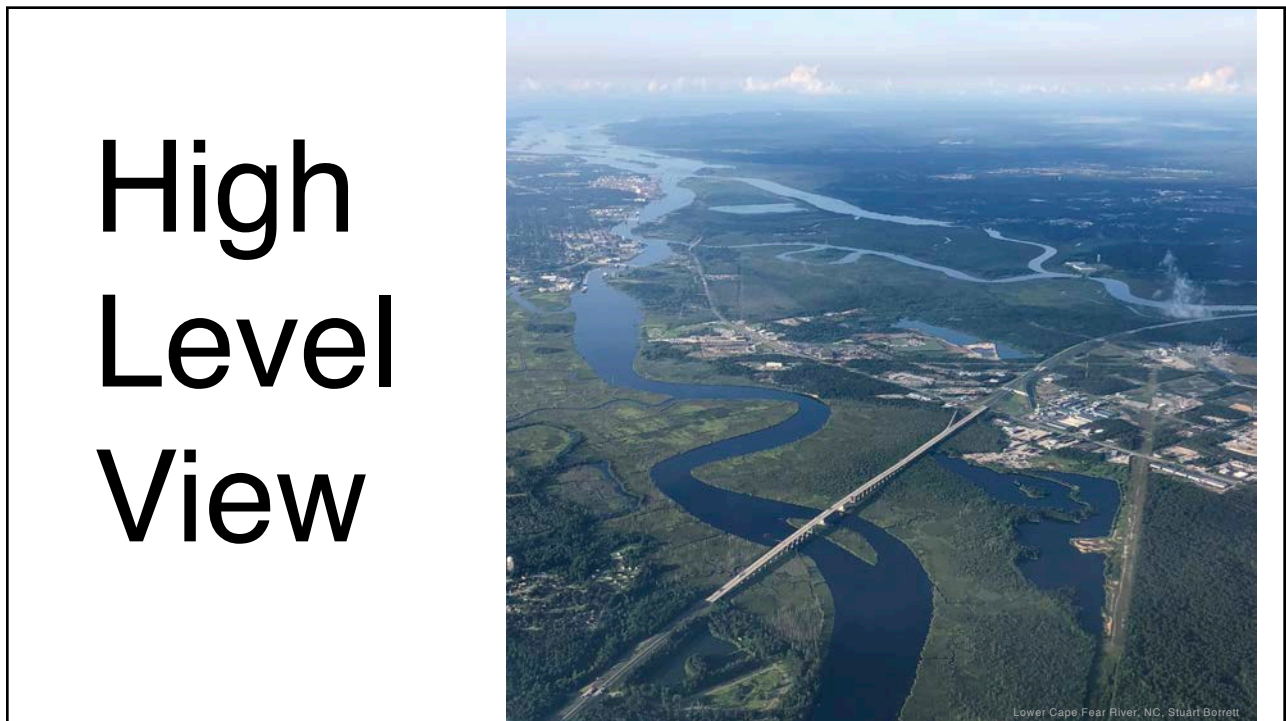
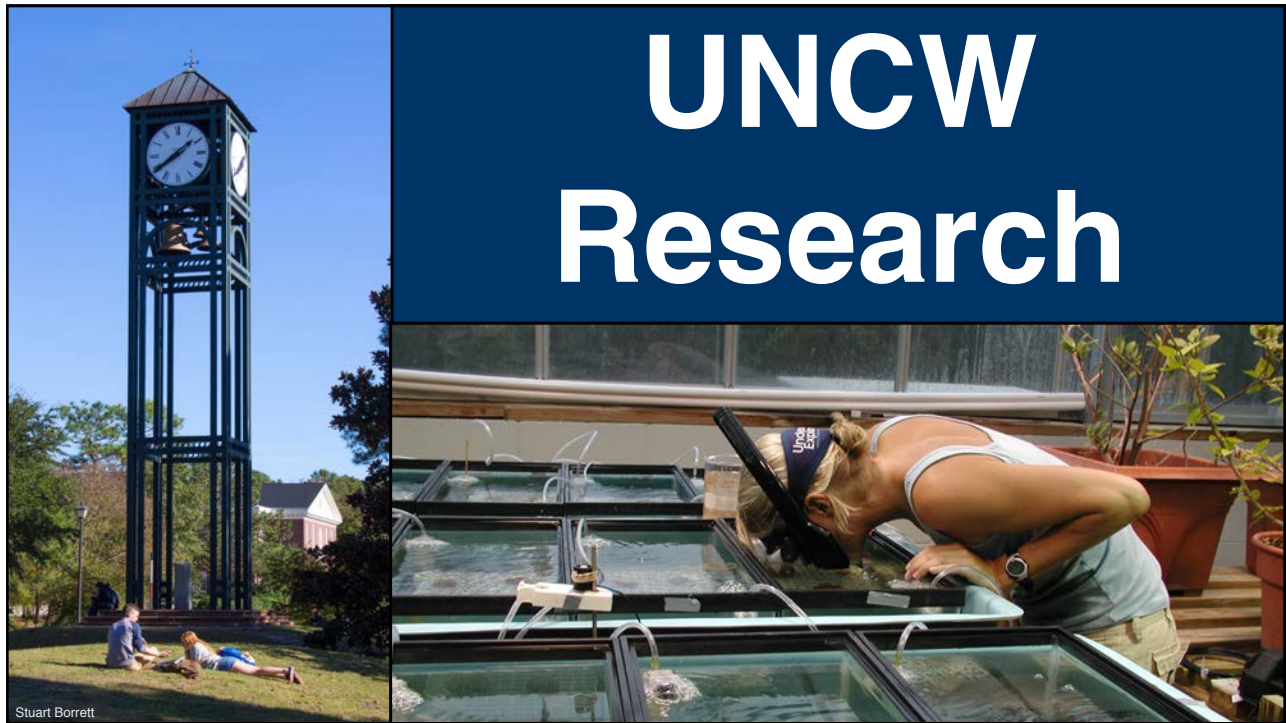
Service to University
(Shared Governance)

Service to Academy
(Peer Review, Academic Societies)


Service to Community
(Public Lectures, etc.)

Different Kinds of Universities
Shifting Responsibilities






Fueling Research: Sponsored Programs



UNIVERSITY of NORTH CAROLINA WILMINGTON

	FY15	FY16	FY17	FY18
Awards				
Awarded	\$ 12,862,694	\$ 9,463,116	\$ 11,414,279	\$ 9,328,856
Number	224	197	161	219
Proposals				
Requested	\$ 70,851,151	\$ 47,788,292	\$ 57,344,087	\$ 39,853,612
Number	263	269	282	250
Research Expenditures	\$15.56M	\$15.72M	\$16.02M	\$16.83M

- Mean annual award total over last 5 years is \$10 million (± \$2 million SD)
- Sponsors Include: NSF, NIH, NOAA, SeaGrant, Z Smith Reynolds, Betty and Gordon More Foundation, IKA Works, A1 Biochem Labs, Duke Energy.
- Approximately 63% of Sponsored Programs in last 5 years is for marine science.

Innovation, Commercialization, & Entrepreneurship			 UNIVERSITY of NORTH CAROLINA WILMINGTON	
	FY17+FY18	Current		
Disclosures	12	Lessees at MARBIONC		
Licenses	19	8		
License Income	\$216,827	CIE Mentees		
	2	89		
	5			
	Patents Filed			
	Start-ups			

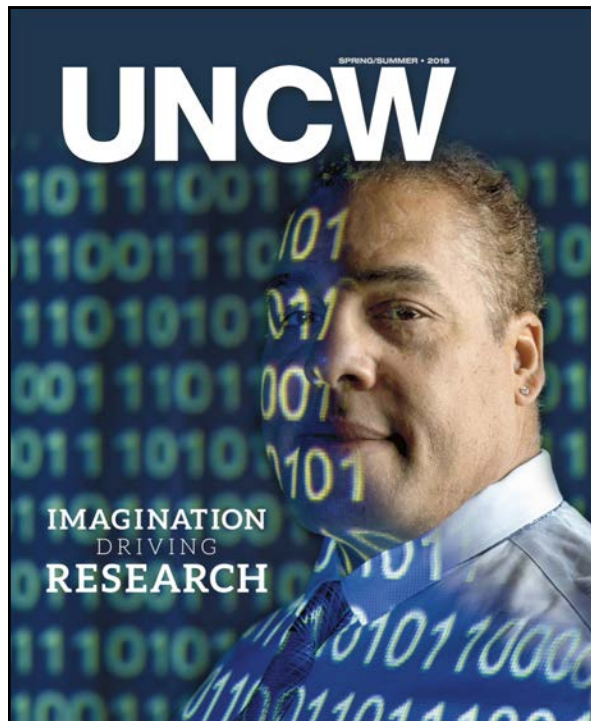
Closer Look



Buck Moth Family

Davis Borrelli, Hanging Rock State Park, NC, Stuart Borrelli, 2017

Examples of UNCW Research



Dr. Karl Ricanek

Facing Aging Research

Assess and improve face-based biometric systems

Director of I3S



Lapetus Solutions, Inc.



Dr. Kate Nooner

Collaborated with the New Hanover County Department of Social Services to identify biomarkers of binge drinking in underage youth



UNIVERSITY of NORTH CAROLINA WILMINGTON

Psychology



Dr. John Morrison

Nanosatellite
Marine Science
from Space!



UNIVERSITY of NORTH CAROLINA WILMINGTON

Physics and Physical Oceanography



Drs. Ann Pabst and Bill McLellan

Marine Conservation
Research LTD

Secrets of the Deepest Diving Whales: Acoustic Monitoring
Marine Mammal Stranding Network
\$10 Million Dollar Club

Dr. John Lothes II

Assessments of PED101 students finds curriculum being
used is enhancing overall student wellness



UNIVERSITY of NORTH CAROLINA WILMINGTON

School of Health and Applied
Human Sciences

Dr. Elham Ebrahimi

Virtual Reality



- Collaborating with NHRMC on a virtual reality experience designed to prepare children for surgery
- Creating a virtual reality simulation for athletic trainers to enhance their skill in determining heat illness



UNIVERSITY of NORTH CAROLINA WILMINGTON

Computer Science



Dr. Joseph Pawlik

Chemical Ecology; Marine Biology

Recently discovered that changes to coral reefs cause an invasion of sponges that are better adapted to reefs at a time of coral loss due to climate change



UNIVERSITY of NORTH CAROLINA WILMINGTON

Biology and Marine Biology



Dr. Bill Sterrett

Explained project-based-learning to middle school science teachers in Pakistan in key areas such as water and natural resource management



Dr. Scott Nooner

Placed instruments on the seafloor to measure colliding tectonic plates. Measurements help estimate hazards from large earthquakes

Research in Response to Hurricane Florence

National Science Foundation – RAPID Awards (Grants for Rapid Response Research)

Mechanisms of Seagrass Community Injury and Resilience Post Hurricane Florence: Implications for Increasingly Stormy Coasts

Jessie Jarvis and W Kenworthy

\$90,046

Assessment of Coastal & Offshore Change Due to Hurricane Florence: Wrightsville Beach, NC

Joni Backstrom

\$18,304

The Response and Recovery of Adjacent natural and built coastlines impacted by Hurricane Florence

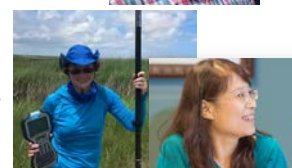
Joseph Long, Devon Eulie, Eman Ghoneim, Andrea Hawkes, Lynn Leonard

\$48,543

Evaluation of the Resilience of Shoreline Protection Methods to Hurricane Florence

Devon Eulie and Huili Hao

\$43,317



Dr. Jennifer McCall

Drug Discovery and Bioassay Development

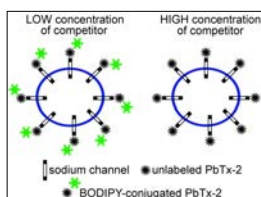


Asst Prof Clinical Research
(SON/CHHS)
CEO SeaTox Research
(UNCW spinout)

Marine algae
as sources of:

- Toxins
- Pharmacotherapeutics

Design bioassays (test kits)
to detect toxins in seafood



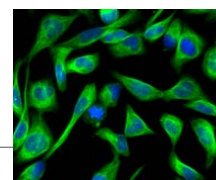
SeaTox Research Inc

- Collaborative grants with UNCW (~\$1.7M)
- Kits sold by UNCW

Antibiotics and anti-fungal drugs

Immune modulators

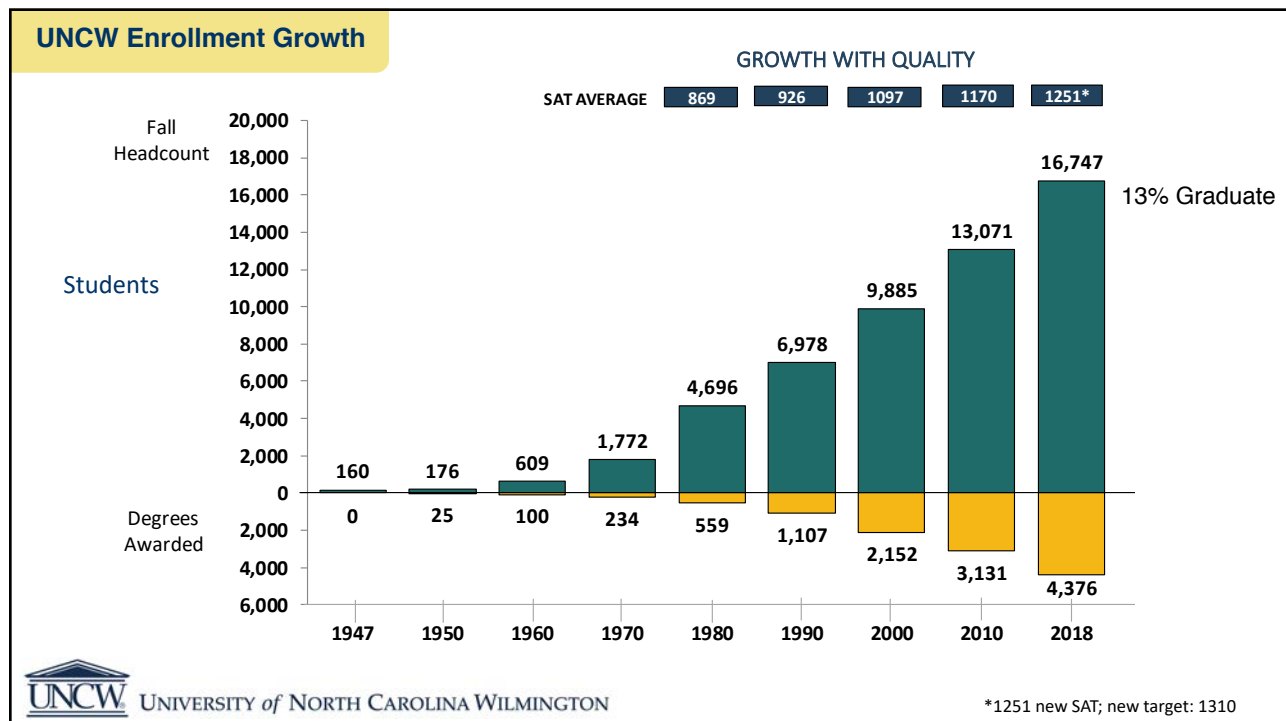
- Anti-inflammatory drugs
- Compounds to increase efficacy of anti-cancer treatments and vaccines





Todd McLellan

Piecing it Together



Future of UNCW Research

UNCW 2016-2021 Strategic Plan

strategic
PRIORITY 2

UNCW CENTER FOR
MARINE SCIENCE

EDUCATE + ADVANCE/RESEARCH

ENHANCE LEARNING EXPERIENCES AND EDUCATIONAL PROGRAMS;
AND ADVANCE RESEARCH AND SCHOLARLY ACTIVITIES

GOALS

- ✦ Advance university academic programming
- ✦ Enhance applied learning
- ✦ **Advance research and scholarly activities**
- ✦ Foster global learning and research
- ✦ Pursue excellence in everything we do – teaching, research and service

Advance Research & Scholarly Activities

Stated Goal

Triple Sponsored Research Funding

\$9.3 million → \$30 million

FY 2018 FY 2021

Challenge to Dream Bigger!

Take Home Points

Carnegie has reclassified UNCW as a *Doctoral University with High Research Activity* (R2)

Research expenditures of \$16.8 million

- Strength in Marine Science
- Diversity of research areas growing including Psychology, Computer Science, Human Health, and Education
- Solving Problems

Graduating 20+ doctoral students per year

- Education Leadership, Marine Biology, Psychology (starting)

Why Universities do Research

- Building the knowledge base, inventing the future, economic engine

Education is improved by coupling it to research activities