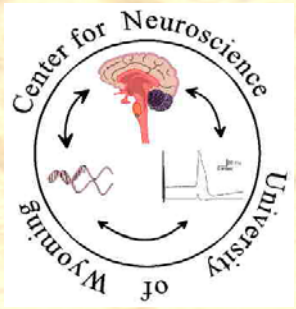


Impact of National Institutes of Health Center grants on UW and the Neuroscience Program

2000-2011

Highlights

2000- 2006 NIH Neuroscience Center of Biomedical Research Excellence (COBRE) Grant awarded P-20 RR15640 Bill Flynn, PI; Involved investigators from 4 colleges (A&S, Engineering; Health Sciences; Agriculture) **~$6 Million**

2006- 2011 NIH Neuroscience Center of Biomedical Research Excellence Grant (COBRE) renewed for 5 years Bill Flynn, PI **~$10.2 Million**

2011- 2016 NIH P30 Neuroscience Center Core Grant, 5 years, Bill Flynn, PI **~$5.2 Million**

Where has $21 Million taken us from 2000- today?

Developed a research focus in Brain plasticity

* Facilitated the recruitment of new faculty in the Neurosciences

Became nationally competitive for P30 Center Core grant from the NIH

Grew Neuroscience education and * established a PhD and masters degree in Neuroscience

Enhanced the grantsmanship of new investigators

* Built a state-of-the-art Microscopy Facility

Faculty involvement- Then (pre 2000) **And NOW**

	Department	Graduate Students
Arts and Sciences:		
• Jim Rose	Zoology and Physiology	√
• Charles Ksir	Psychology	
• Nick Fuzessery	Zoology and Physiology	√
• Bill Flynn	Zoology and Physiology	√
• Donal Skinner (research support)	Zoology and Physiology	√
• Jeff Woodbury (start up support)	Zoology and Physiology	√
• Qian-Quan Sun (start up support)	Zoology and Physiology	√
• Jonathan Prather (start up support)	Zoology and Physiology	√
• Kara Pratt (start up support)	Zoology and Physiology	√
Health Sciences:		
• Bruce Culver	Pharmacy	√
• Mike Zawada (start up support)	Pharmacy (departed)	√
• Suzanne Clark	Pharmacy	√
• Baskaran Thyagarajan (start up support)	Pharmacy	
Engineering:		
• Steve Barrett (research support)	Electrical Engineering	√
• Cameron Wright (research support)	Electrical Engineering	
Agriculture:		
• Jonathan Fox (start up and research support)	Vet Sciences	√
• Brenda Alexander	Animal Sciences	
• Hermann Schatzl (indirect support via Microscopy)	Vet Sciences/Molec Biol	

1. Expansion in Neuroscience Faculty-

(**in bold-** institutional commitments to enable the growth of Neuroscience)

* **Dr. Jun Ren**	start up - ~$120,000	(2002)
* **Dr. C.Jeff Woodbury**	start up - ~$200,000	(2003)
* Dr. Qian-Quan Sun	contributed to start up ~$75,000	(2004)
Dr. Daren Jackson	contributed to start up ~$60,000 (departed UW)	

Asterisk shows that they are now tenured associate or full professors at UW

2000- 2006 NIH Neuroscience Center of Biomedical Research Excellence

(**bold**- commitments to Neuroscience by UW administration)

Dr. Mike Zawada	contributed $150,000	(departed UW)
* Dr. Jonathan Fox-	contributed ~75,000	(2008)
Dr. Jonathan Prather	startup ~$320,000	(2009)
Dr. Kara Pratt	startup ~$250,000	(2011)
Dr. Baski Thyagarajan	contributed $60,000	(2011)

Now searching for Neurotoxicology (replacement for Dr. Zawada)

TOTAL of ~$1.3 Million provided by Neuroscience Center in start up

Impact:

Mentoring plan to work with new investigators in being successful for federal grants.

Impact: Grant success

Investigators	grant activites:
Francis W. Flynn, PD/PI	**1/2007- 12/2012 NIH R01 NS57823 (PI)** **7/2007- 6/2011 NIH P20 RR15640 (COBRE) role PI** **7/2011-6/2016 P30 RR32128 Neuroscience Center Core**
Jun Ren - COBRE hire & investigator	**5/2009- 4/2014. NIH Wyoming IDeA Network of Biomedical Research Excellence (INBRE) role PI** **7/2008- 6/2011 American Diabetes Assoc. role PI** **4/2004- 3/2010 NIH R01 AA013412 role PI**
Mark Gomelsky - investigator	**3/2007-2/2011 NSF MCB 0645876 role PI** **4/2009-3/2014 NIH R01 AI025098 role subcotract**
Donal Skinner - investigator	**05/2008- 04/2011 NSF 0745084 role PI**
Charles J. Woodbury - COBRE hire and investigator	**12/2008- 11/2013 NIH RO1 NS44094 role PI**
Qian-Quan Sun - COBRE hire and investigator	**07/2007 - 06/2011. NIH R01 NS057415 role PI**
Steve F. Barrett - investigator	**2008- 2013 DODAF41613BVS and DODAF41613BVSOP (NUSE2), Joint Robotics Program, role PI**
Jonathan Fox- COBRE assisted hire and investigator	**12/2009—6/2011 WYO-438-09 Hatch/AES competitive grant. role PI; NIH R21 NS072372**
Jonathan Prather - COBRE hire- 2009 and investigator	**NIH 1 R01 DC011815-01, submitted, Resubmission in preparation.** **National Science Foundation, Proposal Number: 1052263, submitted**
Kara Pratt - COBRE hire 2011 and investigator	**Joined UW June 2011**

Impact on Neuroscience Education: Graduate students are the backbone of a research program

Then:

1978- Interdisciplinary neuroscience program formed- students admitted and awarded degrees from home department

1980's and 1990's- approximately 3 students and ~ 5 faculty

Now:

2001- PhD in Neuroscience approved; students admitted to the Neuroscience Program and the Doctor of Philosophy in Neuroscience was approved. Admitted students in 2002

2005- Master's degree in Neuroscience approved.

Awarded 8 PhD in Neuroscience, 5 Masters in Neuroscience

Currently 14 students - 8 PhD (2 new students admitted this year), 6 Masters (1 admitted this year)

Support of graduate students

2009-2010 Neuroscience graduate student support from Center grant = ~$210,000

4- Graduate student assistantships from Academic Affairs to support Neuroscience graduate students

Quality: National/International recognition of Neuroscience Students

UW's Jensen Wins Awards, Sees the World

March 17, 2008 -- Until a few years ago, Dane Jensen hadn't done much traveling. The University of Wyoming doctoral student in neuroscience had seen the many wondrous sights of the Cowboy State and, well, not much else. "The farthest east I'd ever been was Sidney, Neb.," says Jensen, who grew up in the tiny western Wyoming town of Grover, near Afton. He adds, "My family vacation, we would take the horses and spend a week in the Wind River Range and go backpacking. That was what we did. It was never one of my goals to travel, but now that I have, it's been a blast." Jensen's latest trip took him to Breckenridge, Colo., to accept a prestigious award at the Winter Neuropeptide Conference, an annual meeting of prominent neuroscientists from around the world. There, Jensen received a Young Investigator Award for his work on how certain receptors that are found on neurons in the brain respond to chemical signals. His findings have helped show that a class of receptors found on the surface of neurons, or their membrane, are transported to the nucleus of neurons -- a process that was previously unknown. Also, Jensen presented his research to conference participants and pocketed a $600 award check from Wyeth, a global leader in pharmaceuticals, consumer health care products and animal health care products. The conference also paid for his travel, lodging and meals. "Dane is the youngest person, by far, to ever receive this award," says UW Graduate Neuroscience Program Director Bill Flynn, his faculty adviser. "That award, over the past 10 or 15 years, has usually been reserved for postdoctoral students and young faculty. And he's only midway through his postdoctoral program."

Neuroscience students have won awards at regional and national Neuroscience Conferences

- **Gwen Haley**
- **Dane Jensen,**
- **Andrew Young,**
- **Arik Smith,**

Students publish in top tier journals:

- **Neuron**
- **Journal of Neuroscience**
- **Neuroscience**

Placement of recent graduates-

Fellowships at-

Oregon Health Sciences University
MIT
National Institutes of Health
Monash University, Australia
UW
UCLA

3 students entered medical school (WWAMI and Univ Alabama [MD/PhD program])

Developed an Undergraduate focus in Neuroscience

2009- Minor in neuroscience

Research opportunities for undergraduates (NEUR 5800)
Undergraduates are highlighted in bold

Thakar, A., Jensen,D.D., **Elise Sylar,** Kellee Sundstrom and Francis W. Flynn. (2011) NK3R Mediates Changes in Chromatin Structure via Post Translational Modifications. *Society for Neuroscience*, Washington DC.

Razak KA**, Richardson MD**, Fuzessery ZM (2008) Experience is required for the maintenance and refinement of FM sweep selectivity in the developing auditory cortex. PNAS 105 (11) 4465-4470.

Fuzessery ZM, **Richardson MD, Coburn MS** (2006) Neural mechanisms underlying selectivity for the rate and direction of frequency-modulated sweeps in the inferior colliculus of the pallid bat. J Neurophysiol 96:1320-1336.

Dave Jost, **Cayleigh Brown** and Francis W. Flynn (2011) Role of the neurokinin 3 receptor in hypertensive Dahl rats. Society for Neuroscience, Washington DC.

Jake McGrath, Jonathan Prather (2011) Role of Auditory Feedback in the Bengalese Finch Animal Model of Human Speech *U Wyoming Undergraduate Research Day*.

Rachel Bernard, Jonathan Prather (2011) *Influence of Photoperiod on Reproductive Success in House Sparrows. U Wyoming Undergraduate Research Day*

We have been able to provide undergraduates with a unique educational opportunity: Neuroscience sends these students to national conferences.

Established a Neuroscience Weekly Seminar Series-

$8,500- ~$15,000/ year to support this seminar series since 2005.

Outside speakers (national and international)

On campus faculty are also invited speakers (recent speakers)

- ✓ **Brenda Alexander (Animal Sci)**
- ✓ **Hermann Schatzl (Vet Sci)**
- ✓ **Matt McEchron (WWAMI)**
- ✓ **Steve Barrett (Engineering)**

Graduate students are expected to present a research seminar during their second year and are encouraged to provide a research seminar to introduce their dissertation project.

The social side of the Neuroscience Program - coordinated by the graduate students

"Neuroscience Shoot"

"Neuroscience Ski Day"

Annual Neuroscience Halloween Party

Neuroscience DH Bike Day

The Neuroscience Program has flourished since 2000- it is well rounded, dynamic, we provide a top notch education, the faculty are nationally competitive and care about education.

Microscopy at UW prior to NIH funding in 2000 …

An Hitachi transmission electron microscope that didn't work

A Leica confocal laser scanning microscope purchased in 1988

No support staff for training or to fix problems

And Now

Laser scanning confocal microscope

Build a state of the art Microscopy Facility

Serviced and updated Hitachi transmission electron microscope

Hired a director

Center purchased a scanning electron microscope

2010-2016 Neuroscience has $50,000 obligated for service contracts to ensure that the microscopes are operational.

Explosion in the use of the Robert Jenkins Microscopy Facility

Faculty: 35

Students (including post-doc and staff): 75

offered free training to 67 faculty/students
in September, 2010 for the new Zeiss
confocal.

The facility charges for use in accord with NIH guidelines:
total income = $32,150.49

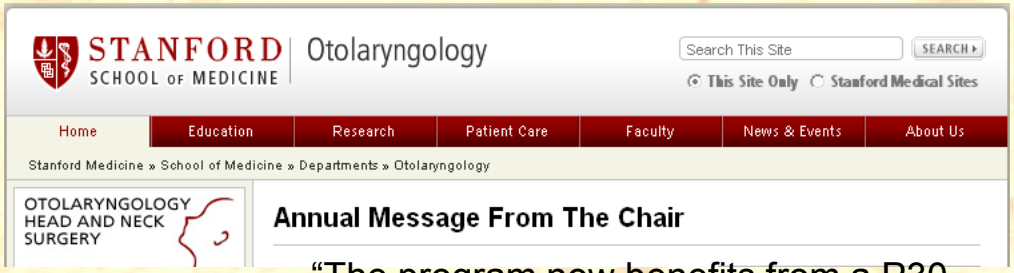
OK- the Neuroscience Center of Biomedical Research Excellence was about to end (July 2011)..

Next BIG step- NIH P30 Center Core Grant

What is a P-30 grant?

- **P30, Center Core Grants**, To support shared use of resources and facilities …by **investigators from the same discipline** who focus on a common research problem. The core grant is … expected to assure greater productivity than that provided through the separate projects and Program Projects.

Institutions with P30 Core Center grants



"The program now benefits from a P30 center core grant.."

REQUIREMENTS

- PI must be an established biomedical or behavioral research scientist with demonstrated administrative leadership skills.

- at least five qualifying research projects all of which will use the Center

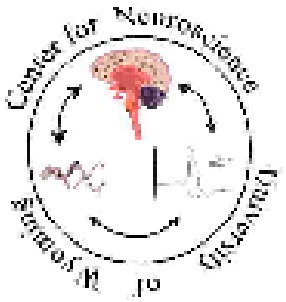
- Qualifying research projects include only NIH-funded Research Project (R01),

Progress made in the Neuroscience Program from 2000 to 2010- namely expansion in faculty, increased NIH grant success, and the development of a Microscopy Core enabled us to meet the minimum requirements to even submit a P30 application.

2011- 2016

The Neuroscience Center Core grant is the first such grant from NIH to the University of Wyoming and is the culmination of 11 years of (hard, but productive!) work

UNIVERSITY OF WYOMING



NIH Awards UW $5Million P30 Core Center grant to Continue Neuroscience Research

Understanding how the brain changes during development and in response to the environment, the development of drugs to treat chronic pain and new insights into the treatment of Huntingtons disease are among neuroscience advances at the University of Wyoming that will be bolstered by a five-year, $5million grant from the National Institutes of Health.

(NIH RR 32128, Francis W. Flynn, PI)

P30 Goal- continue to strengthen Neuroscience and support infrastructure

- Pilot Projects (total of $250,000/ year)- to facilitate grant success of new investigators and promote collaborative research teams in the neurosciences

- Provide significant support for the Microscopy Facility
  $181,000/ year- benefits neuroscience investigators and the entire campus

- Scientific Development and Visiting Scientist Series
  $300,000/ year

Success opens new grant opportunities

- NIH Instrumentation grant
  S10-RR26321 “Purchase of a Hitachi Transmission Electron Microscope” (Flynn, PI) $578,215 scored 30 (out of 100)

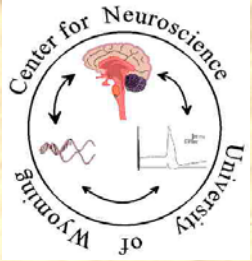
Requirements to be eligible to submit grant:

1- a core of NIH-funded users- neuroscience faculty were the core

2- a support structure in place- that was provided by the Neuroscience Center Core grant

Progress made in the Neuroscience Program from 2000 to 2010- namely expansion in faculty, increased NIH grant success, the P30 Neuroscience Center Core grant enabled us to meet and even exceed the minimum requirements to even submit an application.

2000- 2016:



- ☑ **Increased the depth and breadth of faculty in Neuroscience.**
- ☑ **Obtained significant competitive NIH grant support for Neuroscience at UW and generated the 4th highest amount of Indirect Costs at UW.**
- ☑ **Neuroscience Center grants have built the Microscopy Facility**
- ☑ **Grew the Graduate Neuroscience Program**
- ☑ **New grant opportunities have arisen-**

  P30 Center Core grants

  S10 NIH Instrumentation grant

  T32 Training Grants.

UW would not be competitive for these grant opportunities were it not for the foundation built starting in 2000 with the initial Neuroscience COBRE grant

Building toward the future-

burden falls on you- UW leadership, as well as the neuroscience faculty:

Institutional commitment to maintain the neuroscience strength; faculty retirements and replacement in a timely and assured manner.

We are already planning for the continuation of the P30 Center Core grant.

Develop incentives for younger investigators to become involved in grants that impact the institution and the Neuroscience Program.

Remain vigilant to new grant opportunities, particularly a **NIH T32 Training Grant** to support graduate education. (our next objective)

Perhaps most important- Make sure this remains fun and rewarding to those involved…