

Annual Report 2012–2013

WAKE FOREST UNIVERSITY GRADUATE SCHOOL OF ARTS AND SCIENCES

Alcohol Withdrawal Seizure Severity is Reduced by Ethosuximide, a T-type Calcium Channel Antagonist
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INTRODUCTION

- Chronic alcohol abuse depresses the nervous system but abstinence may result in hyperexcitability and seizure. Withdrawal (WD) symptoms, including seizures, drive individuals to relapse and represent a significant barrier to recovery.
- Previous experiments in our lab have identified the thalamic T-type calcium channel (T-channel) isoform $Ca_v3.2$ as a novel target of ethanol. Disruption of T-current may be involved in the generation and propagation of WD seizures.
- We hypothesized that ethosuximide (ETX), a T-channel antagonist used for treatment of generalized epilepsy, might decrease the severity of alcohol WD seizures.

METHODS

- DBA/2J mice were implanted with the Pinnacle, Inc. EEG acquisition system. The EEG headmount was surgically implanted under ketamine/xylazine (100 and 10 mg/kg respectively) anesthesia and mice were allowed 1 week recovery.
- In a vapor chamber, mice were exposed to 4 days of intermittent alcohol. The paradigm consisted of 16 hours of exposure, followed by 8 hours of WD.
- Mice were treated with saline, ETX (50, 100, 250 mg/kg), or lorazepam (1 mg/kg) four and a half hours into each WD period, beginning at peak time of seizure activity (1:30 pm). A separate control group of exposed to air only were treated with 250 mg/kg ETX and evaluated.
- Cortical EEG activity was recorded during an 8 hr baseline period prior to exposure and during each 8 hr WD period. Spike wave discharge (SWD) events (6-16 Hz) were counted for each mouse and averaged.
- Motor ability was evaluated using a rotarod test.

RESULTS

1 ETX Does Not Impair Motor Function

Figure 1. Rotarod tests were conducted to assess motor function prior to and 15, 30, 60 min, and 8 hours after drug administration. ETX did not impair motor ability. Lorazepam decreased rotarod performance 30 minutes postinjection. * $p < 0.017$, Kruskal-Wallis test with Dunnett's Multiple Comparison test ($n = 4-6$).

2 Spike Wave Discharge Events in DBA/2J Mice

Figure 2. The above trace represents a spike and wave discharge (SWD) event. Cortical EEG activity was recorded during each alcohol WD period. SWD events occurred between 6-16 Hz in DBA/2J mice.

3 SWDs increase with successive WD

Figure 3. DBA/2J mice underwent an intermittent alcohol exposure paradigm consisting of 4 exposures (16 hours each) and 4 WDs (8 hours each). SWD events were counted in the last 3 hours of each WD period. In mice treated with saline, we observed an increase in SWD events over successive WD periods. $p < 0.001$, Kruskal-Wallis test with Dunnett's Multiple Comparison test ($n = 6$).

4 ETX reduces SWD Events During WD

Figure 4. During WD, mice were treated at 1:30 pm with saline, ETX (50, 100, 250 mg/kg), or Lorazepam (1 mg/kg). SWD events were counted for the last 3 hours of each WD (2-5 pm) after treatment. There were no differences between groups in baseline values of SWD events. In all WD periods, mice treated with 250 mg/kg ETX had decreased SWD events compared to mice treated with saline. Lower doses of ETX and Lorazepam did not reduce SWDs compared to saline treated mice. ** $p < 0.001$, *** $p < 0.001$, Kruskal-Wallis test with Dunnett's Multiple Comparison test ($n = 3-6$).

5 ETX R

Figure 5. To determine that had developed in treatment (10:30 am - 11:30 am). Analysis revealed a significant decrease in SWD events prior to and during the 4th WD period. Two-way ANOVA test with Dunnett's Multiple Comparison test ($n = 6$).

6 Example

Figure 6. Example spectra during the 4th WD. Power spectrum was recorded during the 4th WD period, supporting the time of treatment.

CONCLUSION

- ETX did not inhibit decrease in SWD events during WD period.
- Seizure activity increased during WD period.
- ETX decreased seizure severity during WD period, consistent with T-type calcium channel antagonism.
- ETX may serve as a potential treatment option during WD period.

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Table 1. Application Summary
Fall 2012

Degree Program	# Applications	# Accepted	# Enrolled
Bioethics	13	11 (85%)	9 (82%)
Bioethics JD/MA	4	3 (75%)	3 (100%)
Bioethics MD/MA	1	0 (0%)	0 (0%)
Bioethics MDiv/MA	1	0 (0%)	0 (0%)
Biology MS	34	3 (9%)	2 (67%)
Biology PhD	25	3 (12%)	2 (67%)
Chemistry MS	12	1 (8%)	0 (0%)
Chemistry PhD	70	16 (23%)	8 (50%)
Communication	62	16 (26%)	14 (88%)
Computer Science	27	6 (22%)	3 (50%)
Counseling	147	16 (11%)	15 (94%)
Counseling MDiv/MA	3	0 (0%)	0 (0%)
Counseling Online	42	24 (57%)	19 (79%)
Documentary Film MA	12	6 (50%)	2 (33%)
Documentary Film MFA	19	16 (84%)	9 (56%)
Education	32	21 (66%)	14 (67%)
English	35	24 (69%)	13 (54%)
Health & Exercise Science	39	11 (28%)	9 (82%)
Human Services Online	3	1 (33%)	1 (100%)
Interp & Trans Studies	23	14 (61%)	9 (64%)
Liberal Studies	5	3 (60%)	3 (100%)
Mathematics	34	24 (71%)	11 (46%)
Physics MS	4	0 (0%)	0 (0%)
Physics PhD	62	15 (24%)	8 (53%)
Psychology	147	22 (15%)	16 (73%)
Religion	15	11 (73%)	8 (73%)
Religion JD/MA	0	0 (0%)	0 (0%)
TOTAL	871	267 (31%)	178 (67%)

Certificate Program	# Applications	# Accepted	# Enrolled
Audiovisual Trans and Interpreting	0	0 (0%)	0 (0%)
Bioethics	3	1 (33%)	0 (0%)
Biomedical Research Ethics	1	1 (100%)	1 (100%)
Clinical Bioethics	2	2 (100%)	2 (100%)
Intercultural Serv in Healthcare	0	0 (0%)	0 (0%)
Interpreting Studies	1	1 (100%)	0 (0%)
Medieval Studies	0	0 (0%)	0 (0%)
Struc and Computational Biophysics	0	0 (0%)	0 (0%)
Teaching of Interpreting	0	0 (0%)	0 (0%)
Translation Studies	0	0 (0%)	0 (0%)
TOTAL	7	5 (71%)	3 (60%)

Table 2. Applicant Profile
Fall 2012

Degree Program	Male	Female	Not Reported	TOTAL	American Indian/ Alaska Native	Asian	Black or African American	Hispanic/ Latino	Native Hawaiian/ Pacific Islander	White	Two or more races	Non-resident Alien	Not Reported
Bioethics	7	6		13			2			10	1		
Bioethics JD/MA	2	2		4	1					2			1
Bioethics MD/MA	1			1						1			
Bioethics MDiv/MA	1			1						1			
Biology MS	11	23		34		3	4			18		9	
Biology PhD	8	17		25			2			14		8	1
Chemistry MS	7	5		12						3		8	1
Chemistry PhD	42	28		70		2	1	2		22	1	40	2
Communication	20	42		62			6	2		23		27	4
Computer Science	21	6		27		1				6		20	
Counseling	28	119		147	3	3	17	7		105		6	6
Counseling MDiv/MA	0	3		3			1			2			
Counseling Online	7	35		42		2	11	1		26			2
Documentary Film MA	4	8		12		1	2			3		6	
Documentary Film MFA	7	12		19		1	4	1		10		2	1
Education	9	23		32			3	2		26			1
English	8	27		35		1	1	1		28		3	1
Health & Exercise Science	21	18		39	2		4	1		28		2	2
Human Services Online	1	2		3		1	2						
Interp & Trans Studies	6	17		23	1		1	2		11		8	
Liberal Studies	3	2		5			2			2		1	
Mathematics	20	14		34		2	4	2		16		9	1
Physics MS	4			4						1		1	2
Physics PhD	49	13		62		1			1	24		35	1
Psychology	44	103		147	2	4	11	6		97	4	16	7
Religion	11	4		15				2		8		2	3
Religion JD/MA				0									
TOTAL	342	529	0	871	9	22	78	29	1	487	6	203	36

Certificate Program	Male	Female	Not Reported	TOTAL	American Indian/ Alaska Native	Asian	Black or African American	Hispanic/Latino	Native Hawaiian/ Pacific Islander	White	Two or more races	Non-resident Alien	Not Reported
Audiovisual Trans and Interpreting				0									
Bioethics	1	2		3						2			1
Biomedical Research Ethics		1		1						1			
Clinical Bioethics		2		2	1					1			
Intercultural Serv in Healthcare				0									
Interpreting Studies		1		1			1						
Medieval Studies				0									
Struc and Computational Biophysics				0									
Teaching of Interpreting				0									
Translation Studies				0									
TOTAL	1	6	0	7	1	0	1	0	0	4	0	0	1

**Table 3. Applicant Average Test Scores and GPA
Fall 2012**

Degree Program	GRE Verbal	GRE Quantitative	(V+Q)	GRE Analytical	GPA	TOEFL	IELTS
Bioethics	157	156	313	4.4	3.3		
Bioethics JD/MA					3.4		
Bioethics MD/MA							
Bioethics MDiv/MA					3.9		
Biology MS	153	154	307	3.8	3.2	97	
Biology PhD	152	153	305	3.7	3.3	95	
Chemistry MS	151	161	312	3.6	3.2	95	
Chemistry PhD	151	158	309	3.5	3.3	94	
Communication	155	154	309	4.0	3.4	99	
Computer Science	155	165	320	3.4	3.4	97	7
Counseling	154	149	303	4.1	3.5	97	
Counseling MDiv/MA	151	146	297	4.0	3.3		
Counseling Online	152	146	298	3.8	3.2		
Documentary Film MA	152	153	305	3.9	3.6	87	
Documentary Film MFA	157	148	305	4.2	3.4	100	
Education	157	152	309	4.4	3.4		
English	160	152	312	4.5	3.5	89	
Health & Exercise Science	152	151	303	3.9	3.3	96	
Human Services Online	154	156	310	4.0	3.6		
Interp & Trans Studies	153	150	303	3.9	3.5	104	6.3
Liberal Studies	151	145	296	5.0	3.0		
Mathematics	155	160	315	3.8	3.5	93	
Physics MS	154	156	310	3.6	2.8	100	
Physics PhD	154	161	315	3.6	3.4	93	6.5
Psychology	158	154	312	4.1	3.5	98	
Religion	156	150	306	4.5	3.4		
Religion JD/MA							
AVERAGE	154	153	308	4.0	3.4	96	7

Certificate Program	GRE Verbal	GRE Quantitative	(V+Q)	GRE Analytical	GPA	TOEFL	IELTS
AV Trans and Interpreting							
Bioethics					2.7		
Biomed Research Ethics					2.3		
Clinical Bioethics					3.4		
Intercul Serv in Healthcare							
Interpreting Studies	156	143	299	4.5	2.6		
Medieval Studies							
Struc and Comp Biophysics							
Teaching of Interpreting							
Translation Studies							
AVERAGE	156	143	299	4.5	2.8		

Table 4. Accepted Student Profile
Fall 2012

Degree Program	Male	Female	Not Reported	TOTAL	American Indian/ Alaska Native	Asian	Black or African American	Hispanic / Latino	Native Hawaiian / Pacific Islander	White	Two or more races	Non-resident Alien	Not Reported
Bioethics	6	5		11			1			9	1		
Bioethics JD/MA	2	1		3	1					1			1
Bioethics MD/MA				0									
Bioethics MDiv/MA				0									
Biology MS		3		3						3			
Biology PhD		3		3						2			1
Chemistry MS	1			1						1			
Chemistry PhD	9	7		16		1	1			5	1	8	
Communication	9	7		16			3			11		2	
Computer Science	5	1		6						4		2	
Counseling	6	10		16			3	1		10			2
Counseling MDiv/MA				0									
Counseling Online	5	19		24			6			16			2
Documentary Film MA	1	5		6			1			3		2	
Documentary Film MFA	5	11		16		1	3	1		9		1	1
Education	5	16		21			2	1		18			
English	4	20		24		1		1		20		1	1
Health & Exercise Science	7	4		11						9		1	1
Human Services Online		1		1		1							
Interp & Trans Studies	3	11		14	1			1		8		4	
Liberal Studies	2	1		3			1			2			
Mathematics	12	12		24		1	3	2		13		4	1
Physics MS				0									
Physics PhD	11	4		15		1				8		5	1
Psychology	9	13		22		1		1		16	2	1	1
Religion	10	1		11				2		6		2	1
Religion JD/MA				0									
TOTAL	112	155	0	267	2	7	24	10	0	174	4	33	13

Certificate Program	Male	Female	Not Reported	TOTAL	American Indian/ Alaska Native	Asian	Black or African American	Hispanic / Latino	Native Hawaiian / Pacific Islander	White	Two or more races	Non-resident Alien	Not Reported
Audiovisual Trans and Interpreting				0									
Bioethics	1			1						1			
Biomedical Research Ethics		1		1						1			
Clinical Bioethics		2		2	1					1			
Intercultural Serv in Healthcare				0									
Interpreting Studies		1		1			1						
Medieval Studies				0									
Struc and Computational Biophysics				0									
Teaching of Interpreting				0									
Translation Studies				0									
TOTAL	1	4	0	5	1	0	1	0	0	3	0	0	0

**Table 5. Accepted Student Average Test Scores and GPA
Fall 2012**

Degree Program	GRE Verbal	GRE Quantitative	(V+Q)	GRE Analytical	GPA	TOEFL	IELTS
Bioethics	163	160	323	4.5	3.3		
Bioethics JD/MA					3.5		
Bioethics MD/MA							
Bioethics MDiv/MA							
Biology MS	160	155	315	4.5	3.6		
Biology PhD	157	156	313	4.3	3.3		
Chemistry MS	163	158	321	5.5	3.2		
Chemistry PhD	153	158	311	3.7	3.3	99	
Communication	156	149	305	4.3	3.3		
Computer Science	160	165	325	3.8	3.5	93	7
Counseling	157	150	307	4.3	3.6		
Counseling MDiv/MA							
Counseling Online	155	147	302	3.9	3.2		
Documentary Film MA	153	149	302	4.2	3.7	102	
Documentary Film MFA	158	149	307	4.2	3.3	104	
Education	157	154	311	4.4	3.5		
English	161	152	313	4.5	3.5	85	
Health & Exercise Science	153	153	306	4.1	3.5		
Human Services Online	154	156	310	4.0	3.6		
Interp & Trans Studies	155	153	308	4.2	3.5	104	
Liberal Studies	154	146	300	5.0	3.0		
Mathematics	155	161	316	4.1	3.6	101	
Physics MS							
Physics PhD	159	164	323	4.1	3.5	91	
Psychology	160	155	315	4.5	3.6		
Religion	156	151	307	4.6	3.4		
Religion JD/MA							
AVERAGE	157	154	311	4.3	3.4	97	7

Certificate Program	GRE Verbal	GRE Quantitative	(V+Q)	GRE Analytical	GPA	TOEFL	IELTS
AV Trans and Interpreting							
Bioethics					2.7		
Biomed Research Ethics					2.3		
Clinical Bioethics					3.4		
Intercul Serv in Healthcare							
Interpreting Studies	156	143	299	4.5	2.6		
Medieval Studies							
Struc and Comp Biophysics							
Teaching of Interpreting							
Translation Studies							
AVERAGE	156	143	299	4.5	2.8		

**Table 6. Enrolled New Student Profile
Fall 2012**

Degree Program	Male	Female	Not Reported	TOTAL	American Indian/ Alaska Native	Asian	Black or African American	Hispanic/Latino	Native Hawaiian/ Pacific Islander	White	Two or more races	Non-resident Alien*	Not Reported
Bioethics	5	4		9			1			7	1		
Bioethics JD/MA	2	1		3	1			1		1			
Bioethics MD/MA				0									
Bioethics MDiv/MA				0									
Biology MS	0	2		2						2			
Biology PhD	0	2		2						2			
Chemistry MS				0									
Chemistry PhD	5	3		8		1	1			1	1	4	
Communication	8	6		14			3			9		2	
Computer Science	3	0		3						3			
Counseling	5	10		15			3	1		10		1	
Counseling MDiv/MA				0									
Counseling Online	4	15		19			5			14			
Documentary Film MA		2		2			1					1	
Documentary Film MFA	2	7		9			3			5		1	
Education	4	10		14			2	1		11			
English	2	11		13						12		1	
Health & Exercise Science	6	3		9						8		1	
Human Services Online		1		1		1							
Interp & Trans Studies	2	7		9	1					5		3	
Liberal Studies	2	1		3			1			2			
Mathematics	4	7		11			2	1		7		1	
Physics MS				0									
Physics PhD	7	1		8						5		3	
Psychology	7	9		16				1		13	2		
Religion	8	0		8				1		6		1	
Religion JD/MA				0									
TOTAL	76	102	0	178	2	2	22	6	0	123	4	19	0

Certificate Program	Male	Female	Not Reported	TOTAL	American Indian/ Alaska Native	Asian	Black or African American	Hispanic/Latino	Native Hawaiian/ Pacific Islander	White	Two or more races	Non-resident Alien*	Not Reported
Audiovisual Trans and Interpreting				0									
Bioethics				0									
Biomedical Research Ethics		1		1						1			
Clinical Bioethics		2		2	1					1			
Intercultural Serv in Healthcare				0									
Interpreting Studies				0									
Medieval Studies				0									
Struc and Computational Biophysics				0									
Teaching of Interpreting				0									
Translation Studies				0									
TOTALS	0	3	0	3	1	0	0	0	0	2	0	0	0

*See Table 10

**Table 7. Enrolled New Student Average Test Scores and GPA
Fall 2012**

Degree Program	GRE Verbal	GRE Quantitative	(V+Q)	GRE Analytical	GPA	TOEFL	IELTS
Bioethics	163	160	323	4.5	3.3		
Bioethics JD/MA					3.5		
Bioethics MD/MA							
Bioethics MDiv/MA							
Biology MS	156	153	309	4.3	3.8		
Biology PhD	157	156	313	4.3	3.4		
Chemistry MS							
Chemistry PhD	152	155	307	3.7	3.0	93	
Communication	155	149	304	4.3	3.3		
Computer Science	164	164	328	4.0	3.4		
Counseling	156	151	307	4.4	3.7		
Counseling MDiv/MA							
Counseling Online	154	147	301	3.9	3.2		
Documentary Film MA	150	147	297	3.8	3.4		
Documentary Film MFA	157	149	306	4.4	3.1	106	
Education	155	152	307	4.4	3.6		
English	161	153	314	4.5	3.4	85	
Health & Exercise Science	151	152	303	4.0	3.6		
Human Services Online	154	156	310	4.0	3.6		
Interp & Trans Studies	154	152	306	4.0	3.6	105	
Liberal Studies	154	146	300	5.0	3.0		
Mathematics	152	159	311	4.0	3.7	96	
Physics MS							
Physics PhD	159	164	323	3.7	3.3	85	
Psychology	159	155	314	4.3	3.6		
Religion	155	151	306	4.4	3.3		
Religion JD/MA							
AVERAGE	156	154	310	4.2	3.4	95	

Certificate Program	GRE Verbal	GRE Quantitative	(V+Q)	GRE Analytical	GPA	TOEFL	IELTS
AV Trans and Interpreting							
Bioethics							
Biomed Research Ethics					2.3		
Clinical Bioethics					3.4		
Intercul Serv in Healthcare							
Interpreting Studies							
Medieval Studies							
Struc and Comp Biophysics							
Teaching of Interpreting							
Translation Studies							
AVERAGE					2.9		

Table 8. Registered Student Summary
Fall 2012

Degree Program	Certificate	MA	MAED	MALS	MFA	MS	PhD	TOTAL
Bioethics		21						21
Bioethics JD/MA		3						3
Bioethics MD/MA		0						0
Bioethics MDiv/MA		0						0
Biology						5	34	39
Chemistry						0	36	36
Communication		28						28
Computer Science						12		12
Counseling		31						31
Counseling MDiv/MA		1						1
Counseling Online		19						19
Documentary Film		8			27			35
Education			14					14
English		32						32
Health & Exercise Science						15		15
Human Services Online		1						1
Interp & Trans Studies		10						10
Liberal Studies		3		18				21
Mathematics		37						37
Physics						2	34	36
Psychology		32						32
Religion		10						10
Religion JD/MA		0						0
TOTAL		236	14	18	27	34	104	433

Certificate Program	Certificate	MA	MAED	MALS	MFA	MS	PhD	TOTAL
AV Trans and Interpreting	0							0
Bioethics	0							0
Biomed Research Ethics	1							1
Clinical Bioethics	3							3
Intercul Serv in Healthcare	0							0
Interpreting Studies	1							1
Medieval Studies	0							0
Struc and Comp Biophysics	0							0
Teaching of Interpreting	0							0
Translation Studies	0							0
TOTAL	5							5

Unclassified								7
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**Table 9. Registered Student Profile
Fall 2012**

Degree Program	Amer Indian/ Alaska Native		Asian		Black or African American		Hispanic/ Latino		Native Hawaiian/ Pacific Islander		White		Two or more races		Non-resident Alien*		TOTAL
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
Bioethics						1	1				8	10		1			21
Bioethics JD/MA	1							1			1						3
Bioethics MD/MA																	0
Bioethics MDiv/MA																	0
Biology MS											1	3			1		5
Biology PhD				1				2			12	16			2	1	34
Chemistry MS																	0
Chemistry PhD			1	3	1	0					5	9	1	0	11	5	36
Communication					2	2		1			9	6			2	6	28
Computer Science							1				9				2		12
Counseling				1		4		1			11	13				1	31
Counseling MDiv/MA											1						1
Counseling Online					1	4					3	11					19
Documentary Film MA						1					2	2			1	2	8
Documentary Film MFA				1	1	3					11	10				1	27
Education						2		1			4	7					14
English				1		1					9	20				1	32
Health & Exercise Science											7	7			1		15
Human Services Online				1													1
Interp & Trans Studies		1									2	4			1	2	10
Liberal Studies - MA					1						1	1					3
Liberal Studies - MALS					1						7	10					18
Mathematics			1	2	2	3	1				7	17			2	2	37
Physics MS											2						2
Physics PhD											17	5			9	3	34
Psychology			1	3		2		1			10	13	2				32
Religion							1				7	1			1		10
Religion JD/MA																	0
TOTAL	1	1	3	13	9	23	4	7	0	0	146	165	3	1	33	24	433

Certificate Program	Amer Indian/ Alaska Native		Asian		Black or African American		Hispanic/ Latino		Native Hawaiian/ Pacific Islander		White		Two or more races		Non-resident Alien		TOTAL
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
AV Trans and Interpreting																	0
Bioethics																	0
Biomed Research Ethics												1					1
Clinical Bioethics		1				1						1					3
Intercul Serv in Healthcare												1					1
Interpreting Studies																	0
Medieval Studies																	0
Struc and Comp Biophysics																	0
Teaching of Interpreting																	0
Translation Studies																	0
TOTAL	0	1	0	0	0	1	0	0	0	0	0	3	0	0	0	0	5

Table 10. International Enrolled New Student Profile
Fall 2012

Degree Program	Australia	Bulgaria	Brazil	China	Colombia	Costa Rica	Ecuador	Germany	Ghana	India	Iran	Japan	Mexico	Pakistan	Peru	Russian Federation	South Africa	Trinidad and Tobago	Ukraine	Venezuela	Total
Bioethics																					0
Bioethics JD/MA																					0
Bioethics MD/MA																					0
Bioethics MDiv/MA																					0
Biology MS																					0
Biology PhD																					0
Chemistry MS																					0
Chemistry PhD				2							1						1				4
Communication		1		1																	2
Computer Science																					0
Counseling			1																		1
Counseling MDiv/MA																					0
Counseling Online																					0
Documentary Film MA																			1		1
Documentary Film MFA														1							1
Education																					0
English				1																	1
Health & Exer Science	1																				1
Human Services Online																					0
Interp & Trans Studies				2									1								3
Liberal Studies - MA																					0
Mathematics				1																	1
Physics MS																					0
Physics PhD				3																	3
Psychology																					0
Religion																				1	1
Religion JD/MA											1										0
TOTAL	1	1	1	10	0	0	0	0	0	0	1	0	1	1	0	0	1	0	1	1	19

**Table 11. International Registered Student Profile
Fall 2012**

Degree Program	Australia	Bulgaria	Brazil	China	Colombia	Costa Rica	Ecuador	Germany	Ghana	India	Iran	Japan	Mexico	Pakistan	Peru	Russian Federation	South Africa	Trinidad and Tobago	Ukraine	Venezuela	Total
Bioethics																					0
Bioethics JD/MA																					0
Bioethics MD/MA																					0
Bioethics MDiv/MA																					0
Biology MS							1														1
Biology PhD					1										2						3
Chemistry MS																					0
Chemistry PhD			1	9						4	1						1				16
Communication		1		5				1				1									8
Computer Science						1			1												2
Counseling			1																		1
Counseling MDiv/MA																					0
Counseling Online																					0
Documentary Film MA						1												1	1		3
Documentary Film MFA														1							1
Education																					0
English				1																	1
Health & Exer Science	1																				1
Human Services Online																					0
Interp & Trans Studies				2									1								3
Liberal Studies - MA																					0
Liberal Studies - MALS																					0
Mathematics				3														1			4
Physics MS																					0
Physics PhD				11												1					12
Psychology																					0
Religion																				1	1
Religion JD/MA																					
TOTAL	1	1	2	31	1	2	1	1	1	4	1	1	1	1	2	1	1	2	1	1	57

Table 12. Financial Aid Summary

	Institutional Support					External Support				Other	
Degree Program	Assistantship	Dean's Fellowship	Graduate Fellowship	Non-grad Institutional	Tuition Scholarship	Hearst	Indiv Award	Research Grant	Training Grant	Self	TOTAL
Bioethics			1		2					18	21
Bioethics JD/MA										3	3
Bioethics MD/MA											0
Bioethics MDiv/MA											0
Biology MS	2							1		2	5
Biology - PhD	21	1		1			2	6		3	34
Chemistry MS											0
Chemistry PhD	22	1		2				7	1	3	36
Communication	19				7					2	28
Computer Science	6			2				1		3	12
Counseling	4			8	18		1				31
Counseling MDiv/MA					1						1
Counseling Online										19	19
Documentary Film MA	1		1		6						8
Documentary Film MFA	6				21						27
Education	4		10								14
English	5		2		16					9	32
Health & Ex Science	14							1			15
Human Services Online										1	1
Interp & Trans Studies			1		6					3	10
Liberal Studies - MA				1	1					1	3
Liberal Studies - MALS				8						10	18
Mathematics	20			4	9					4	37
Physics MS				1						1	2
Physics PhD	13	1		8	2			8	1	1	34
Psychology	17			7	4			1		3	32
Religion	2				8						10
Religion JD/MA											0
Unclassified										7	7
TOTAL	156	3	15	42	101	0	3	25	2	93	440

	Institutional Support					External Support				Other	
Certificate Program	Assistantship	Dean's Fellowship	Graduate Fellowship	Non-grad Institutional	Tuition Scholarship	Hearst	Indiv Award	Research Grant	Training Grant	Self	TOTAL
Audiovisual Trans and Interpreting											0
Bioethics											0
Biomedical Research Ethics										1	1
Clinical Bioethics										3	3
Intercultural Serv in Healthcare											0
Interpreting Studies										1	1
Medieval Studies											0
Struc and Computational Biophysics											0
Teaching of Interpreting											0
Translation Studies											0
TOTAL					0					5	5

**Table 13. Graduate School Scholarships, Fellowships and Assistantships
2012-13**

GRADUATE SCHOLARSHIPS: Scholarships cover tuition for any size, but do not provide cash payment for either full-time or part-time students. Full-time Scholarship value is \$33,174. Part-time scholarship value is \$1,181 per hour.

PARTIAL SCHOLARSHIPS: Partial scholarships are offered to students who are enrolled full-time. Partial Scholarship value is \$27,870. Student responsible for \$5,304.

PARTIAL SCHOLARSHIPS for 1st year Counseling students and Master Teacher Fellows: Partial scholarships are offered to students who are enrolled full-time. Partial Scholarship value is \$26,840. Student responsible for \$6,334.

DOCUMENTARY FILM PROGRAM: Full-time tuition amount is \$33,174 during the academic year.

INTERPRETING & TRANSLATION STUDIES PROGRAM: Full-time tuition amount is \$33,174 during the academic year.

LIBERAL STUDIES PROGRAM: Part-time tuition amount is \$392 per hour for students currently enrolled in the MALS program. New students starting the program Fall 2012 or after will follow the Graduate School tuition rates (both full and part time).

SUMMER TUITION: \$748 per hour.

VIF PROGRAM: Tuition amount is \$198 per hour.

All Stipends are Taxable:

HEARST ASSISTANTSHIPS include tuition for the academic year and an additional \$5,000 stipend.

MASTER TEACHER GRADUATE FELLOWSHIPS and ASSISTANTSHIPS: Assistants may be awarded a scholarship of \$8,976 during the summer and a full scholarship of \$33,174 during the academic year. Assistants will receive \$535.50 per month for twelve months. Stipend Amount \$6,426. Total award is \$48,576.

1st year Biology MS assistantships are valued at \$51,174 from which tuition is deducted. Each assistant will receive \$1,500 per month for twelve months. Stipend amount \$18,000.

2nd year Biology MS assistant are valued at \$48,174 from which tuition is deducted. Each assistant will receive \$1,500 per month for ten months (August – May). Stipend amount \$15,000.

Biology Doctoral assistantships are valued at \$54,174 from which tuition is deducted. Each Biology Ph.D. assistant will receive \$1,750 per month for twelve months. Stipend amount \$21,000.

Biology Dean's Fellowship is valued at \$56,174 from which tuition is deducted. Each fellow will receive \$1,916.66 per month for twelve months. Stipend amount \$23,000.

Chemistry assistantships are valued at \$54,674 from which tuition is deducted. Each chemistry assistant will receive \$1,791.67 for twelve months. Stipend amount \$21,500.

Chemistry Dean's Fellowship is valued at \$56,674 from which tuition is deducted. Each fellow will receive \$1,958.33 per month for twelve months. Stipend amount \$23,500.

Chemistry GlaxoSmithKline Assistantship is valued at \$56,674 from which tuition is deducted. Assistant will receive \$1,958.33 per month for twelve months. Stipend amount \$23,500.

Communication, Counseling, Documentary Film assistantships are valued at \$41,742 from which tuition is deducted. Each assistant will receive \$856.80 per month for ten months. Stipend amount \$8,568.

Computer Science assistantships are valued at \$46,174 from which tuition is deducted. Each assistant will receive \$1,300 per month for ten months. Stipend amount \$13,000.

English Graduate Fellowships are valued at \$37,458 from which tuition is deducted. Each fellow will receive \$428.40 per month for ten months. Stipend amount \$4,284.

English Graduate Assistantships are valued at \$41,742 from which tuition is deducted. Each assistant will receive \$856.80 per month for the months. Stipend amount \$8,568.

Health and Exercise Science assistantships are valued at \$43,174 from which tuition is deducted. Each assistant will receive \$1,000 for 10 months. Stipend amount \$10,000.

Math assistantships are valued at \$44,174 from which tuition is deducted. Each assistant will receive \$1,100 per month for ten months. Stipend amount \$11,000.

Physics assistantships are valued at \$53,174 from which tuition is deducted. Each assistant will receive \$1,666.67 per month for twelve months. Stipend amount \$20,000.

Physics Dean's Fellowship is valued at \$55,174 from which tuition is deducted. Each fellow will receive \$1,833.33 per month for twelve months. Stipend amount \$22,000.

Psychology assistantships are valued at \$42,174 from which tuition is deducted. Each assistant will receive \$900 for 10 months. Stipend amount \$9,000.

Religion Graduate Fellowships are valued at \$37,374 from which tuition is deducted. Each fellow will receive \$420 per month for ten months. Stipend amount \$4,200.

Religion assistantships are valued at \$41,574 from which tuition is deducted. Each assistant will receive \$840 per month for ten months. Stipend amount \$8,400.

Table 14. Degrees and Certificates Awarded Summary
Class of 2012-2013

Degree Program	Certificate	MA	MAED	MALS	MFA	MS	PhD	TOTAL
Bioethics		4						4
Bioethics JD/MA		5						5
Bioethics MD/MA		0						0
Bioethics MDiv/MA		0						0
Biology						2	1	3
Chemistry						0	4	4
Communication		11						11
Computer Science						6		6
Counseling		14						14
Counseling MDiv/MA		1						1
Counseling Online		0						0
Documentary Film		3			12			15
Education			25					25
Education (VIF)			7					7
English		15						15
Health & Exercise Science						5		5
Human Services Online		0						0
Interp & Trans Studies		9						9
Liberal Studies		0		11				11
Mathematics		20						20
Physics						1	5	6
Psychology		15						15
Religion		3						3
Religion JD/MA		0						0
TOTAL		100	32	11	12	14	10	179

Certificate Program	Certificate	MA	MAED	MALS	MFA	MS	PhD	TOTAL
AV Trans and Interpreting	0							0
Bioethics	1							1
Biomed Research Ethics	0							0
Clinical Bioethics	0							0
Intercul Serv in Healthcare	0							0
Interpreting Studies	0							0
Medieval Studies	0							0
Struc and Comp Biophysics	0							0
Teaching of Interpreting	0							0
Translation Studies	0							0
TOTAL	1							1

**Table 15. Time to Degree/Certificate
Class of 2012-2013**

Degree Program	Certificate	MA	MAED	MALS	MFA	MS	PhD
Bioethics		2.9					
Bioethics JD/MA		2.2					
Bioethics MD/MA							
Bioethics MDiv/MA							
Biology						2.3	5.3
Chemistry							6.0
Communication		2.1					
Computer Science						2.0	
Counseling		2.2					
Counseling MDiv/MA		2.0					
Counseling Online							
Documentary Film		2.0			3.0		
Education			1.3				
Education (VIF)			2.7*				
English		2.3					
Health & Exercise Science						2.0	
Human Services Online							
Interp & Trans Studies		1.1					
Liberal Studies				5.0			
Mathematics		2.1					
Physics						5.3	5.7
Psychology		2.1					
Religion		4.7					
Religion JD/MA							
AVERAGE		2.3	1.3	5.0	3.0	2.9	5.7

Certificate Program	Certificate	MA	MAED	MALS	MFA	MS	PhD
AV Trans and Interpreting							
Bioethics	1.0						
Biomed Research Ethics							
Clinical Bioethics							
Intercul Serv in Healthcare							
Interpreting Studies							
Medieval Studies							
Struc and Comp Biophysics							
Teaching of Interpreting							
Translation Studies							
AVERAGE	1.0						

*Summer Only Program (not included in average)