

# **Cell and Molecular Biology Graduate Program**

## **Annual Report**

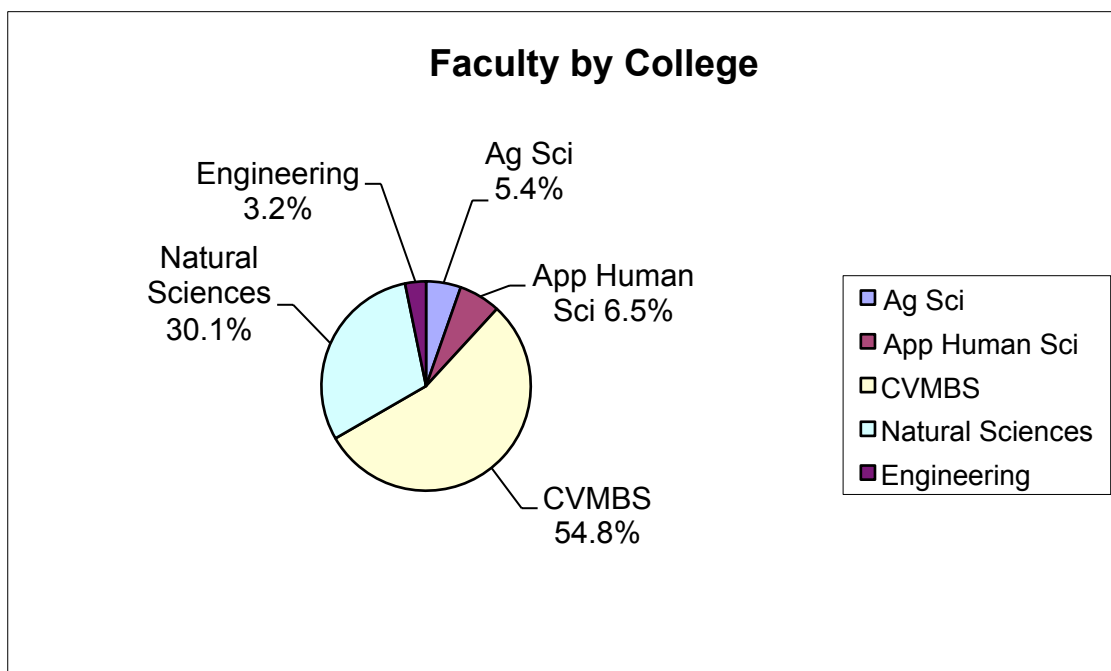
July 1, 2010 to June 30, 2011

## **FACULTY**

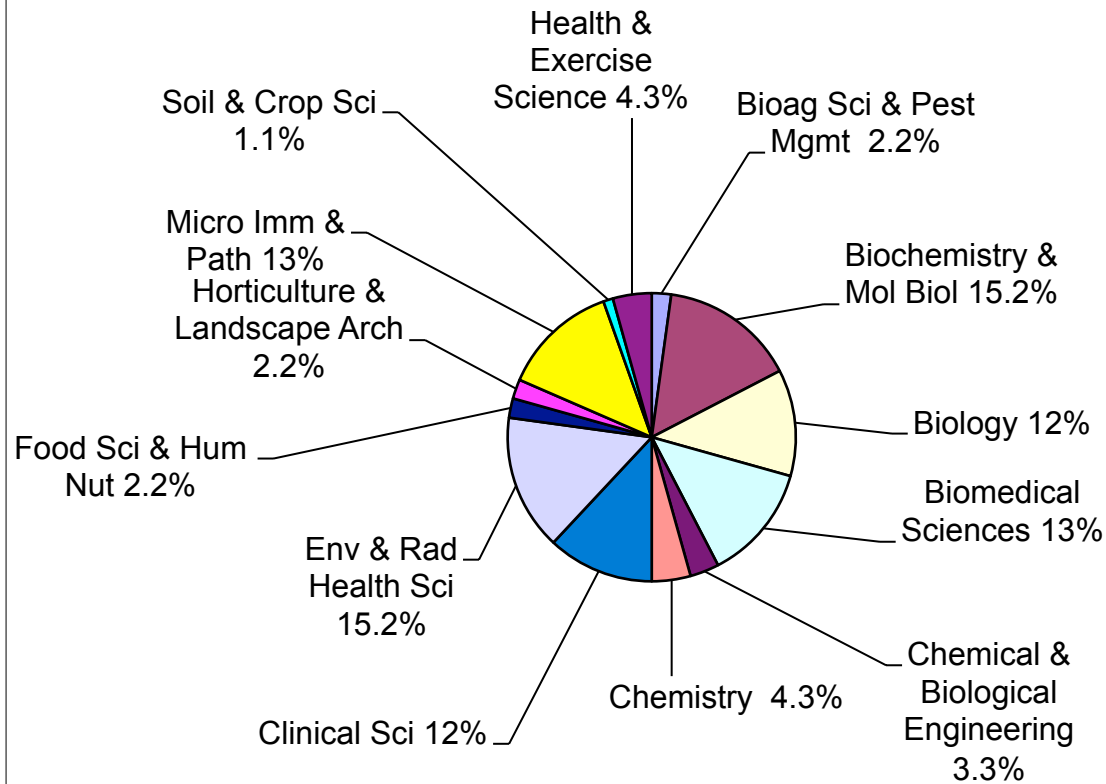
The faculty of the Cell and Molecular Biology Graduate Program continues to expand and broaden into new areas as new faculty join various departments at CSU and then become faculty members in CMB. Last year, eleven new faculty members joined the CMB program to total 92 members. The faculty of the CMB program as of June 30, 2011, and their departmental affiliations are listed below:

<b><u>Name</u></b>	<b><u>Department</u></b>
Chris Ackerson	Chemistry
Ramesh Akkina	Microbiology, Immunology & Pathology
Kenneth Allen	Food Science & Human Nutrition
Lorinda Anderson	Biology
Susan Bailey	Environmental & Radiological Health Sciences
James Bamburg	Biochemistry & Molecular Biology
B. George Barias	Chemistry
Joel Bedford	Environmental & Radiological Health Sciences
Patricia Bedinger	Biology
Barbara Biller	Clinical Sciences
Gerrit Bouma	Biomedical Sciences
Daniel Bush	Biology
Chaoping Chen	Biochemistry & Molecular Biology
Adam Chicco	Health & Exercise Science
Stephen Chisholm	Bioagricultural Sciences & Pest Management
Colin Clay	Biomedical Sciences
Debbie Crans	Chemistry
Norman Curthoys	Biochemistry & Molecular Biology
Jennifer DeLuca	Biochemistry & Molecular Biology
Steven Dow	Clinical Sciences
Dawn Duval	Clinical Sciences
Scott Earley	Biomedical Sciences
EJ Ehrhart	Microbiology, Immunology & Pathology
Nicole Ehrhart	Clinical Sciences
Gregory Florant	Biology
David Frisbie	Clinical Sciences
Deborah Garrity	Biology
Mercedes Gonzales-Juarrero	Microbiology, Immunology & Pathology
Daniel Gustafson	Clinical Sciences
Karyn Hamilton	Health & Exercise Sciences
William Hanneman	Environmental & Radiological Health Sciences
Jeffrey Hansen	Biochemistry & Molecular Biology
Charles Henry	Chemistry
Matthew Hickey	Health & Exercise Sciences
Douglas Ishii	Biomedical Sciences and Biochemistry & Molecular Biology
Shane Kanatous	Biology
John Kisiday	Clinical Sciences
Susan Kraft	Environmental & Radiological Health Sciences
Nora Lapitan	Soil & Crop Sciences
Susan LaRue	Environmental & Radiological Health Sciences
Paul Laybourn	Biochemistry & Molecular Biology
Marie Legare	Environmental & Radiological Health Sciences
Howard Liber	Environmental & Radiological Health Sciences
Karolin Luger	Biochemistry & Molecular Biology
June Medford	Biology
Paul Morley	Clinical Sciences
Donald Mykles	Biology

<b>Name</b>	<b>Department</b>
Jac Nickoloff	Environmental & Radiological Health Sciences
Jennifer Nyborg	Biochemistry & Molecular Biology
Michael Pagliosotti	Food Science & Human Nutrition
Olve Peersen	Biochemistry & Molecular Biology
Marinus Pilon	Biology
Sandra Quackenbush	Microbiology, Immunology & Pathology
Rajinder Ranu	Bioagricultural Sciences & Pest Management
F. Andrew Ray	Environmental & Radiological Health Sciences
Kenneth Reardon	Chemical & Biological Engineering
Anireddy Reddy	Biology
Noreen Reist	Biomedical Sciences
Deborah Roess	Microbiology, Immunology & Pathology
Eric Ross	Biochemistry & Molecular Biology
Elizabeth Ryan	Clinical Sciences
Herbert Schweizer	Microbiology, Immunology & Pathology
George Seidel, Jr.	Biomedical Sciences
Richard Slayden	Microbiology, Immunology & Pathology
Stephen Stack	Biology
Laurie Stargell	Biochemistry & Molecular Biology
Erica Suchman	Microbiology, Immunology & Pathology
Michael Tamkun	Biomedical Sciences
Douglas Thamm	Clinical Sciences
Henry Thompson	Horticulture & Landscape Architecture
Ronald Tjalkens	Environmental & Radiological Health Sciences
Stuart Tobet	Biomedical Sciences
Susan Tsunoda	Biomedical Sciences
Jozsef Vigh	Biomedical Sciences
Jorge Vivanco	Horticulture & Landscape Architecture
John Volckens	Environmental & Radiological Health Sciences
Michael Weil	Environmental & Radiological Health Sciences
Carol Wilusz	Microbiology, Immunology & Pathology
Jeffrey Wilusz	Microbiology, Immunology & Pathology
Stephen Withrow	Clinical Sciences
Raymond Yang	Environmental & Radiological Health Sciences
Mark Zabel	Microbiology, Immunology & Pathology



## Faculty by Department



**New Faculty:** Eleven new faculty members have joined CMB during the past year.

**Name**

Gregory Amberg  
 Lucas Argueso  
 Mark Brown  
 Robert Cohen  
 Santiago Di Pietro  
 Brian Geiss  
 Benjamin Miller  
 Rodney Page  
 Christie Peebles  
 Ashok Prasad  
 Tingting Yao

**Department**

Biomedical Sciences  
 Environmental & Radiological Health Sciences  
 Clinical Sciences  
 Biochemistry & Molecular Biology  
 Biochemistry & Molecular Biology  
 Microbiology, Immunology & Pathology  
 Health & Exercise Sciences  
 Clinical Sciences  
 Chemical & Biological Engineering  
 Chemical & Biological Engineering  
 Biochemistry & Molecular Biology

## **STUDENTS**

The CMB Graduate Program currently oversees 57 graduate students (9 MS students and 46 PhD students) conducting research in labs distributed throughout the five colleges represented by our faculty members (see **table 1** for numerical data on the CMB graduate students as of fall 2010). In 2010-2011 academic year, the program awarded two M.S. degrees and five Ph.D. degrees in Cell and Molecular Biology.

There were 51 students in the CMB program as of June 30, 2011. 11 students were accepted into CMB for the fall 2010 semester. Of those eleven, two DVM/Ph.D. student was admitted to the Cancer Biology program. The CMB Graduate Program has been expanding each year for the last several years. Approximately 51 domestic and 41 international students applied to the CMB program.

The major limitation to accepting students has been the lack of GTA funding for the first year. In the coming year, the program will continue to implement improved procedures to monitor student progress and to ensure timely completion of qualifying examinations. It will also continue to expand program participation in the annual CMB/MCIN Graduate Student Poster Symposium. A major goal of the CMB program is to seek greater institutional and external support for training graduate students by applying for PRSE status and training grants from NSF (IGERT) and DOE (GAANN). Finally, the CMB graduate program will continue to recruit outstanding students who will become valued participants and contributors to an interdisciplinary effort to promote research in Cell and Molecular Biology on campus.

**Table 1. Numerical Data on CMB Graduate Students**

<b>Student Category</b>	<b>Number</b>	<b>Percent</b>
Program		
MS	9	13
PhD	61	87
Total	70	100
Gender		
Male	30	43
Female	40	57
Ethnicity		
Asian American	5	7
African American	2	3
Native American	1	1.4
Hispanic	7	10
Caucasian	36	51
International	19	27
College of Advisor		
CVMSB	40	57
CNS	14	20
Engineering	1	1.4
Appl. Human Sciences	4	6
Ag Sciences	3	4
Undeclared (rotating)	8	11

### **Current Students:**

<b><u>Name</u></b>	<b><u>Degree</u></b>	<b><u>Advisor</u></b>	<b><u>Date Admitted</u></b>
Elizabeth Akin	Ph.D.	Mike Tamkun	Fall 2010
Albers, Stevan	Ph.D.	Stephen Chisholm	Fall 2010
Hanan Ashanta	M.S.	Deborah Roess	Spring 2011
Jennifer Arab	Ph.D.	Ramesh Akkina	Fall 2009
Nadia Ashwish	Ph.D.	Deborah Roess	Spring 2009
Rebecca Barnard	Ph.D.	Dan Gustafson	Fall 2010
Zobaida Ben Musa	Ph.D.	Eric Ross	Spring 2009

<u>Name</u>	<u>Degree</u>	<u>Advisor</u>	<u>Date Admitted</u>
Srinivasa Boddeda	Ph.D.	Chaoping Chen	Spring 2011
Shawna Campbell	Ph.D.	June Medford	Fall 2008
Erica Chao	Ph.D.	Don Mykles	Fall 2006
Kathy Cosenza	Ph.D.	Don Mykles	Fall 2008
Abdunaser Eadaim	M.S.	Susan Bailey	Spring 2009
Ahmed Elbakush	Ph.D.	Deborah Roess	Fall 2010
Mustafa Elrlmy	Ph.D.	Deborah Roess	Spring 2011
Vanessa Enriquez	Ph.D.	Gerritt Bouma	Fall 2008
Laura Epple	Ph.D.	Barbara Biller	Fall 2009
Kristen Farrell	Ph.D.	Santiago Di Pietro	Fall 2010
John Fitts	Ph.D.	Deborah Garrity	Fall 2009
Jared Fowles	Ph.D.	Dan Gustafson	Fall 2007
Phillip Fox	Ph.D.	Mike Tamkun	Fall 2009
Krystle Frahm	Ph.D.	Stu Tobet	Fall 2009
Scott Fulbright	Ph.D.	Stephen Chisholm	Fall 2009
Lakshmi Gummadi	Ph.D.	Norman Curthoys	Fall 2006
Theo Gurol	Ph.D.	J. Lucas Argueso	Fall 2010
Guima Hadhoud	M.S.	Deborah Roess	Fall 2010
Scott Hafeman	Ph.D.	Steve Dow	Fall 2007
Chuck Halsey	Ph.D.	Dan Gustafson	Fall 2009
Victoria Harcy	Ph.D.	Adam Chicco	Fall 2010
Brie Hawley	Ph.D.	John Volckens	Fall 2010
Hui Hung	Ph.D.	James Bamberg	Fall 2001
Toru Ishii	Ph.D.	Scott Earley	Fall 2009
Nasir Jalal	Ph.D.	Howard Liber	Fall 2007
Luke Kingry	Ph.D.	Richard Slayden	Fall 2006
Tobi Krause	Ph.D.	Karin Hamilton	Fall 2007
Catherine Le	Ph.D.	Matt Hickey	Fall 2008
Phuong Le	Ph.D.	Susan Bailey	Fall 2005
Jerome Lee	Ph.D.	Jeff Wilusz	Fall 2006
Shawna Matthews	Ph.D.	Henry Thompson	Fall 2009
Ashley Neff	Ph.D.	Carol Wilusz	Fall 2008
Preston Neff	Ph.D.	Ramesh Akkina	Fall 2007
Jingyi Nie	Ph.D.	Jac Nickoloff	Fall 2008
Donasian Ochola	Ph.D.	Mike Weil	Fall 2009
Natalie Pitts	Ph.D.	Don Mykles	Fall 2010
Chelsea Roan	M.S.	Deborah Roess	Fall 2008
Samantha Roth	Ph.D.	Don Mykles	Fall 2009
Mia Routh	M.S.	Adam Chicco	Fall 2010
Audrey Ruple	Ph.D.	Paul Morley	Spring 2010
Rema Saad	M.S.	Howard Liber	Spring 2011
Tara Schumacher	Ph.D.	Ken Reardon	Fall 2006
Hoda Shnaishah	M.S.	Deborah Roess	Spring 2009
Jordan Steel	Ph.D.	Brian Geiss	Fall 2009
Matt Stratton	Ph.D.	Stu Tobet	Summer 2008
Eric Tauchman	Ph.D.	Jennifer DeLuca	Fall 2009
Al Trujillo	Ph.D.	Debbie Crans	Fall 2008
Dezaray Varland	Ph.D.	Jozsef Vigh	Fall 2008
Peter Winter	Ph.D.	George Barisas	Fall 2006
Hiroto Yoshikawa	Ph.D.	Sue LaRue	Fall 2008

**Distribution of the CMB Graduate Student Laboratory Residence by College and Department**

- 25% College of Natural Sciences (14 students)
  - 10.5% Biochemistry and Molecular Biology (6 students)
  - 10.5% Biology (6 students)
  - 3.5% Chemistry (2 students)
- 61% College of Veterinary Medicine and Biomedical Sciences (35 students)
  - 10.5% Biomedical Sciences (6 students)
  - 10.5% Clinical Sciences (6 students)
  - 17.5% Environmental and Radiological Health Sciences (10 students)
  - 22.8% Microbiology, Immunology and Pathology (13 students)

- 7% College of Applied Human Sciences (4 students)
  - 0% Food Science and Human Nutrition (0 students)
  - 7% Health and Exercise Science (4 students)
- 5% College of Agricultural Science (3 students)
  - 3.5% Bioagricultural Science and Pest Management (2 students)
  - 1.5% Horticulture and Landscape Architecture (1 student)
  - 0% Soil and Crop Science (0 students)
- 1.5% College of Engineering (1 student)
  - 1.5% Chemical and Biological Engineering (1 student)

### Breakdown of Primary Majors by Ethnicity and Gender

Student Level & Ethnicity/Race/Gender	Fall 2004	Fall 2005	Fall 2006	Fall 2007	Fall 2008	Fall 2009	Fall 2010
Native American Male	0	0	0	0	0	0	0
Native American Female	0	0	0	0	3	2	1
Black Male	0	0	0	0	0	1	1
Black Female	0	0	0	0	1	1	0
Asian American Male	2	2	3	3	3	2	0
Asian American Female	1	2	2	2	3	3	3
Hispanic Male	0	0	0	1	1	1	2
Hispanic Female	1	0	0	0	1	2	3
White Male	15	18	17	18	14	17	17
White Female	20	20	24	18	13	12	16
International Male	6	5	6	7	9	8	9
International Female	9	8	7	5	5	8	8
Other Male	0	0	0	0	0	0	0
Other Female	0	0	0	0	0	0	0

**Funded research** –estimate by # graduate students \* estimated costs per graduate student (\$21,750 stipend, tuition, benefits + \$10,000 supplies, etc. = ~\$32,000. Note that means for tracking this needs to be developed.

	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
<b>MS</b>	10	10	14	11	5	7	8	9
	320,000	320,000	448,000	352,000	160,000	224,000	256,000	288,000
<b>PhD</b>	39	41	41	46	40	50	50	46
	1,248,000	1,312,000	1,312,000	1,472,000	1,280,000	1,600,000	1,600,000	1,472,000
<b>total</b>	49	51	55	55	45	57	58	55
	1,568,000	1,632,000	1,760,000	1,760,000	1,444,000	1,824,000	1,856,000	1,760,000

**Persistence:** Percent of Entering Doctoral Students Who Withdrew Before Completing Two Years of Study Averaged Over the Past Three Academic Years

	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
Percent of Students Who Withdrew Averaged Over the Past 3 Years	12%	19%	25%	29%	25%	24%	20%	22%
Total Entering Students Averaged Over the Past 3 Years	6	9	9	9	8	8	9	11

**Student retention and graduation rates for the past 5 years.**

Entering Year	Number Applied	Number Accepted	Number Enrolled	Still in Program	Earned PhD	Earned MS	Left No Degree	Reason Left
2005	51	18	12	1	5	5	1	grad school not good fit
2006	30	17	9	6	0	2	1	grad school not good fit
2007	110	16	8	6	0	1	1	grad school not good fit
2008	109	20	17	15	0	0	2	1 moved for fiancé 1 academic dismissal
2009	88	21	17	15	0	0	2	1 grad school not good fit 1 family emergency
2010	71	22	17	16	0	0	1	to become a nun

**Scholarship activity** – listing of publications with CMB graduate students as authors (2001 through 2009). Note that CMB faculty members need to list CMB program along with their department on publications.

CMB Graduate Student Publications with CMB Faculty, by year enrolled									
	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
Number of student in class	14	13	17	19	12	14	10	12	16
Number of publications per class	26	28	31	47	13	25	18	11	5

### Graduated Students

Seven students received their degrees during the past year, two M.S. and five Ph.D. students. A complete list of students who have graduated from CMB is given below.

<u>Name</u>	<u>Degree</u>	<u>Advisor</u>	<u>Graduated</u>
Scott Hafeman	Ph.D.	Steven Dow	Summer 2011
Jerome Lee	Ph.D.	Carol Wilusz	Summer 2011
<u>Name</u>	<u>Degree</u>	<u>Advisor</u>	<u>Graduated</u>
Dezaray Varland	M.S.	Jozsef Vigh	Summer 2011
Ryan Dregalla	Ph.D.	Susan Bailey	Spring 2011
Fumi Sagawa	M.S.	Jeff Wilusz	Spring 2011
Scott Walmsley	Ph.D.	Norm Curthoys	Spring 2011
Aida Ulloa	Ph.D.	Barbara Sandborn	Fall 2010
Luke Wittenburg	Ph.D.	Doug Thamm	Summer 2010
Lisa Kellihan	M.S.	Steven Dow	Spring 2010
Xiangfei Liu	Ph.D.	Robert Ullrich	Spring 2010
Joseph Sottnik	Ph.D.	Steve Dow	Spring 2010
Erica Chao	M.S.	June Medford	Fall 2009
Jes Kuruvilla	Ph.D.	Ramesh Akkina	Fall 2009
Pak, Chi	Ph.D.	Jim Bamburg	Fall 2009
Paul Kim	Ph.D.	Ken Allen	Fall 2009
Stephen Keysar	Ph.D.	Michael Fox	Summer 2009
Rebekah Klingler	Ph.D.	F. Andrew Ray	Summer 2009
Casey Boczon	M.S.	Paul Kugrens	Spring 2009
Lisa Chamberlain	Ph.D.	David Grainger	Spring 2009
Eric Lee	M.S.	Mercedes Gonzalez-Juarrero	Spring 2009
Julie Moreno	Ph.D.	Ron Tjalkens	Spring 2009
Jun Zhou	M.S.	Deborah Roess	Spring 2009
Kristin Askin	Ph.D.	Robert Ullrich	Fall 2008
Amy Boczon	M.S.	Rajinder Ranu	Fall 2008
Corey Broeckling	Ph.D.	Jorge Vivanco	Fall 2008
Ron Carsten	Ph.D.	Robert Ullrich	Fall 2008
Jennifer Chiniquy	M.S.	Jon Carlson	Fall 2008
Tracy Nichols	Ph.D.	Mark Zabel	Fall 2008
Sung-Bong Shin	Ph.D.	Anireddy Reddy	Fall 2008
Abby Williams	Ph.D.	Robert Ullrich	Fall 2008
Kevin Flynn	Ph.D.	James Bamburg	Summer 2008
Kristy McClellan	Ph.D.	Stuart Tobet	Summer 2008
Camilla Kristensen	M.S.	Mike Tamkun	Summer 2008
Amanda Ashley	Ph.D.	William Hanneman	Spring 2008
James Bogenberger	Ph.D.	Paul Laybourn	Spring 2008
Kitty Brown	M.S.	Karolin Luger	Spring 2008
Jennifer Devitt	Ph.D.	Sue LaRue	Spring 2008
R. Tanner Hagelstrom	Ph.D.	Robert Ullrich	Spring 2008
Susan Hudachek	Ph.D.	William Dernell	Spring 2008
Scott McCorvey	M.S.	Steven Dow	Spring 2008
Tiffany Weir	Ph.D.	Jorge Vivanco	Spring 2008
Guanxiong Xiao	Ph.D.	Michael Weil	Spring 2008
Angela Morrison	M.S.	Jeff Wilusz	Fall 2007



<b>Name</b>	<b>Degree</b>	<b>Advisor</b>	<b>Graduated</b>
Alison White	M.S.	Karolin Luger	Fall 2007
Eli Williams	Ph.D.	Robert Ullrich	Fall 2007
Debra Davison	M.S.	Marie Legare	Summer 2007
Alfred Flint	Ph.D.	William Hanneman	Summer 2007
Jingjing Liu	Ph.D.	Deborah Roess	Summer 2007
Susan McGrath	M.S.	Herbert Schweizer	Summer 2007
Junqing Zhou	Ph.D.	Howard Liber	Summer 2007
Mike Abernathy	M.S.	Michael Fox	Spring 2007
Daniel Konet	Ph.D.	Jonathan Carlson	Spring 2007
Kyoung Hee Choi	Ph.D.	Herbert Schweizer	Fall 2006
Mark Clark	M.S.	Pat Bedinger	Summer 2006
Marisha Godek	Ph.D.	David Grainger	Summer 2006
Sung-Gu Lee	Ph.D.	Don Mykles	Summer 2006
Colleen McWilliams	M.S.	David Grainger	Summer 2006
Carley Ross	Ph.D.	Michael Fox	Summer 2006
Ginny Schmit	M.S.	Jennifer Nyborg	Summer 2006
Traci Nichols	M.S.	William Hanneman	Spring 2006
Aaron Thompson	Ph.D.	Olive Peersen	Spring 2006
Christine Lee	M.S.	Ramesh Akkina	Spring 2006
Brian Barth	M.S.	Michael Fox	Fall 2005
Adam Holmes	M.S.	Charles Waldren	Fall 2005
Ying Lei	Ph.D.	Deborah Roess	Fall 2005
Junqing Zhou	M.S.	Howard Liber	Fall 2005
James Bogenberger	M.S.	Paul Laybourn	Summer 2005
Jingjing Liu	Ph.D.	Deb Roess	Summer 2005
Sung-Bong Shin	M.S.	Anireddy Reddy	Spring 2005
Kristin Askin	M.S.	Robert Ullrich	Fall 2004
Purabi Dhakras	M.S.	Norm Curthoys	Fall 2004
Jennifer Malone	Ph.D.	Robert Ullrich	Fall 2004
Dhanashree Joshi	M.S.	Michael Fox	Summer 2004
Chang-Uk Lim	Ph.D.	Michael Fox	Spring 2004
Jill Livengood	Ph.D.	Jennifer Nyborg	Spring 2004
Hyun-Woo Kim	Ph.D.	Don Mykles	Spring 2004
Joseph Gogain	Ph.D.	Marv Paule	Fall 2003
Susan Hudachek	M.S.	Greg Florant	Fall 2003
Sean Lupien	Ph.D.	Douglas Ishii	Fall 2003
Venu Muni	M.S.	Steve Stack	Fall 2003
Qing Zhao	M.S.	Douglas Ishii	Summer 2003
Carrie Tyszko	M.S.	Russell Anthony	Spring 2003
Buffy Ellsworth	Ph.D.	Colin Clay	Fall 2002
Richard Griffeth	M.S.	Gordon Niswender	Fall 2002
Rachelle Lynn	M.S.	William Hanneman	Fall 2002
Bridget Robinson	M.S.	Joseph Smith	Spring 2002
Xiaoli Yu	Ph.D.	Don Mykles	Spring 2002
Sandra Gunselman	Ph.D.	Charles Waldren	Fall 2001
Amy Farris	M.S.	Colin Clay	Summer 2001
Anna Maria Al-Khouri	Ph.D.	Marv Paule	Spring 2001
Diane Hohorst	M.S.	Pat Bedinger	Summer 2000
Regina Horvat	Ph.D.	Deborah Roess	Spring 2000
Ryan Orbus	M.S.	Russell Anthony	Summer 1999
Meredith Holtzen	M.S.	Debbie Crans	Spring 1999
Fei Pan	M.S.	Herbert Schweizer	Spring 1999
Jonathan Bowser	M.S.	Anireddy S.N. Reddy	Spring 1998
Qing Li	M.S.	Kathy Partin	Spring 1998
Tara Nolan	M.S.	Colin Clay	Spring 1998
Suzanne Stratford	M.S.	Patricia Bedinger	Spring 1998

Department Total of Masters and Doctoral Degrees Conferred by Gender and Academic Year								
	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
MS Total Male	0	1	3	1	1	3	0	1
MS Total Female	3	1	3	2	4	2	2	1
MS Total % Minority	0	0	17%	0	0	20%	0	50%
PhD Total Male	4	1	3	2	5	4	5	4
PhD Total Female	2	2	4	4	5	6	0	1
PhD Total %Minority	0	33%	0	17%	0	0	0	20%

**Department Total of Masters and Doctoral Degrees Conferred by Gender, Race/Ethnicity and Academic Year**

Unit Level & Gender	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	
<b>Master's Level</b>									
Native American Male	0	0	0	0	0	0	0	0	0
Native American Female	0	0	0	0	0	0	0	0	0
Black Male	0	0	0	0	0	0	0	0	0
Black Female	0	0	0	0	0	0	0	0	0
Asian American Male	0	0	0	0	0	0	0	2	0
Asian American Female	0	0	0	0	0	0	0	0	0
Hispanic Male	0	0	0	0	1	0	0	0	0
Hispanic Female	0	0	0	0	0	0	0	0	0
Non-Minority Male	0	2	0	1	2	1	0	1	0
Non-Minority Female	0	2	3	1	3	2	0	2	2
<b>Doctoral Level</b>									
Native American Male	0	0	0	0	0	0	0	0	0
Native American Female	0	0	0	0	0	0	0	0	0
Black Male	0	0	0	0	0	0	0	0	0
Black Female	0	0	0	0	0	0	0	0	0
Asian American Male	0	0	0	0	0	0	0	1	1
Asian American Female	0	0	0	0	0	1	0	0	0
Hispanic Male	0	0	0	0	0	0	0	0	0
Hispanic Female	0	0	0	1	0	0	0	0	0
Non-Minority Male	0	0	4	1	3	2	0	3	4
Non-Minority Female	3	0	2	1	4	3	0	6	0

## **ADMINISTRATION & COMMITTEE MEMBERS**

The CMB program is jointly administered by the Deans of the College of Veterinary Medicine, Agricultural Sciences, Applied Human Sciences and Natural Sciences. The Director is Dr. Paul Laybourn. The Steering Committee is the major policy-making committee. There are four standing committees with responsibilities for different areas of the program. Terms for the Academic Committee and Research Committee are for two years, with two members being elected each spring. The members of the standing committees are listed below.

### **Academic Committee**

**Chairman:** *Dr. Matt Hickey*, Department of Health & Exercise Sciences  
*Dr. Susan Bailey*, Department of Environmental & Radiological Health Sciences  
*Dr. Sandra Quackenbush*, Department of Microbiology, Immunology & Pathology  
*Dr. Deborah Garrity*, Department of Biology

### **Research Committee**

**Chairman:** *Dr. Adam Chicco*, Department of Health & Exercise Sciences  
*Dr. Eric Ross*, Department of Biochemistry & Molecular Biology  
*Dr. Scott Earley*, Department of Biomedical Sciences  
*Dr. Shane Kanatous*, Department of Biology

### **Admissions Committee**

**Chairman:** *Dr. Noreen Reist*, Department of Biomedical Sciences  
*Dr. Brian Geiss*, Department of Microbiology, Immunology & Pathology  
*Dr. Karyn Hamilton*, Department of Health & Exercise Sciences  
*Dr. Susan Tsunoda*, Department of Biomedical Sciences

### **Seminar Committee**

**Chairman:** *Dr. Howard Liber*, Department of Environmental & Radiological Health Sciences  
*Dr. Chaoping Chen*, Department of Biochemistry & Molecular Biology  
*Dr. Lorrie Anderson*, Department of Biology  
*Dr. George Seidel, Jr.*, Department of Biomedical Sciences

### **Steering Committee**

**Chairman:** *Dr. Paul Laybourn*, Department of Biochemistry & Molecular Biology  
*Dr. Howard Liber*, Department of Environmental & Radiological Health Sciences  
*Dr. Matt Hickey*, Department of Health & Exercise Sciences  
*Dr. Adam Chicco*, Department of Health & Exercise Sciences  
*Dr. Noreen Reist*, Department of Biomedical Sciences

### **Research Committee Activities**

The research committee planned several activities designed to bring together the faculty and students to interact and learn about each other's research interests and expertise. The events included a series of seminars in which one faculty member from each focus area presented their current research, the annual Poster Competition, and co-sponsorship of the Frontiers of Science Seminar Series. Prospective new students were invited to visit campus at

the same time as the Poster Competition so they could meet many faculty and students, which helped our recruitment activities.

### **Faculty Seminar Series**

#### **Fall 2010**

<b>Date</b>	<b>Speaker</b>
Aug 25	Noreen Reist
Nov 4	Shane Kanatous

#### **Spring 2011**

<b>Date</b>	<b>Speaker</b>
Mar 07	J. Lucas Argueso

### **Poster Competition**

The Annual Cell and Molecular Biology Poster Symposium was held on Friday, February 25, 2011 from 2:00 - 5:00 p.m. in the North Ballroom at the Lory Student Center. The event was co-sponsored by the Molecular, Cellular and Integrated Neuroscience Program, the Department of Biochemistry & Molecular Biology and the Department of Microbiology, Immunology & Pathology. Approximately 40 applicants to the CMB, MCIN, Biochemistry and Microbiology graduate programs attended the symposium. Eighty-seven posters were presented. Of those posters, 83 were judged. Two judges reviewed each poster. Two awards were presented for the highest honor, two awards were presented with High honors, eight with honors and six honorable mentions. Two postdoc awards were given. The judges were Drs. Greg Amberg, J. Lucas Argueso, Jayne Bramley, Corey Broeckling, Charles Calisher, Corey Campbell, Chaoping Chen, Adam Chicco, Steve Chisholm, Robert Cohen, Keith De Luca, Dawn Duval, Scott Earley, Melinda Frye, Melonnie Furgson, Deborah Garrity, Brian Geiss, Amanda Guth, Ryan Hansen, Aaron Heib, Alisha Howard, Marisa Isaacson, Shane Kanatous, Pankaj Kumar, Paul Laybourn, Kyle MacLea, Uma Muthurajan, Leah Mitchell, Don Mykles, Jennifer Nyborg, Rod Page, Christie Peebles, Olve Peersen, Eric Ross, Alan Schenkel, Hataichanok Scherman, Brian Searcy, Swapnil Sinha, Laurie Stargell, Jennifer Taylor, Stu Tobet, Mark van der Woerd, Jozsef Vigh, Vara Vissa, Mike Weil, O'Neil Wiggan, Carol Wilusz, Jeff Wilusz, Duane Winkler, Luke Wittenburg, Tingting Yao and Mark Zabel.

#### The Post-doctoral Awards were:

Alexa Dickson	Microbiology, Immunology & Pathology
Gavin Ryan	Microbiology, Immunology & Pathology

#### The Graduate Student Awards were:

##### **Highest Honors**

Geoff Guimaraes	Biochemistry & Molecular Biology
Lynsie Sundin	Biochemistry & Molecular Biology

##### **High Honors**

Scott Fulbright	Cell & Molecular Biology
Preston Neff	Cell & Molecular Biology

##### **Honors**

Jarred Bultema	Biochemistry & Molecular Biology
Ling Zhang	Biochemistry & Molecular Biology
Drew Rhol	Microbiology, Immunology & Pathology
Amber Troy	Microbiology, Immunology & Pathology
Lakshmi Gummadi	Cell & Molecular Biology
Ada Ndoja	Biochemistry & Molecular Biology
Erik Arthun	Microbiology, Immunology & Pathology
Stephanie Moon	Microbiology, Immunology & Pathology

##### **Honorable Mention**

Amber Wolf-Ringwall	Clinical Sciences
Gina Caldas	Biochemistry & Molecular Biology
Courtney Croke	Biochemistry & Molecular Biology
Matt Kortus	Biochemistry & Molecular Biology
Crystal Meyerett	Microbiology, Immunology & Pathology
Nicholas Clark	Biochemistry & Molecular Biology

The Research Committee members, Drs. Chicco, Ross, Earley and Kanatous wish to thank all of the contributors, the judges, and those who visited the CMB Student Poster Competition for contributing to its success.

### **Academic Committee Activities**

The Academic Committee advised new students on lab rotations and class registration issues.

#### **CMB Classes Taught**

##### **FALL 2010:**

CM 502	Techniques in Molecular & Cellular Biology	Carol Wilusz (coordinator)
CM 510	Introduction to Cell & Molecular Biology	Paul Laybourn (coordinator)
CM 792	Cell & Molecular Biology Seminar	Howard Liber (coordinator)
CM 793	Seminar	Paul Laybourn (coordinator)

##### **SPRING 2011:**

BC 601	Responsible Conduct in Biochemistry	Paul Laybourn (co-instructed with Jenny Nyborg)
CM 792	Cell & Molecular Biology Seminar	Howard Liber (coordinator)
CM 793	Seminar	Paul Laybourn (coordinator)

### **Admissions Committee Activities**

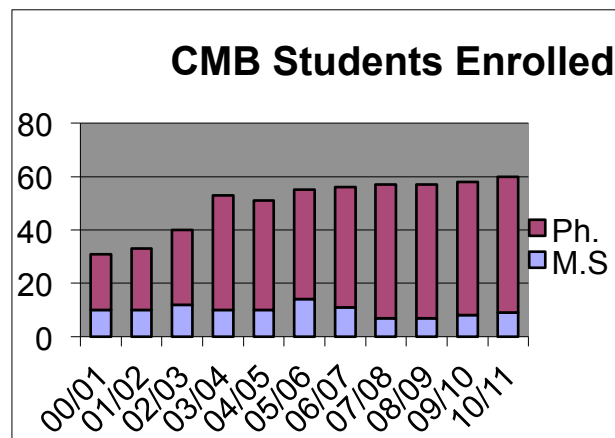
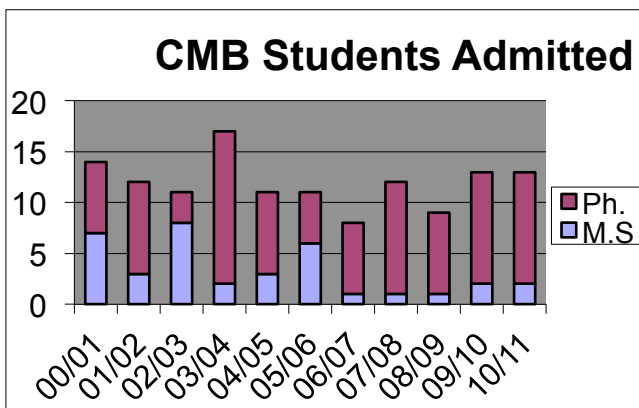
The admissions committee reviews applications received by the CMB program and recommends whether to accept or deny the applicants and then prioritizes the top student.

In the 2011 applicant pool there are 51 domestic applicants (10 MS, 41 PhD) and 41 international applicants. Within the domestic applicant pool the average GPA is 3.202, and the average combined GRE score is 1189. Of this pool, 13 students were invited to attend our recruiting weekend and to participate in the fourth annual combined CMB/MCIN Graduate Student Poster Symposium on February 25, 2011. 13 of these applicants accepted the invitation (average GPA 3.33, average combined GRE 1221).

Test Area and Unit Level	Fall 2001	Fall 2002	Fall 2003	Fall 2004	Fall 2005	Fall 2006	Fall 2007	Fall 2008	Fall 2009	Fall 2010
Average Verbal Scores	532	509	493	509	529	516	484	444	537	562
Aver. Quantitative Scores	698	666	639	669	682	666	565	644	671	612
Aver. Analytical Scores	693	710	609	637	707	630	670	4	4	4.5
Aver. GPA	3.40	3.37	3.42	3.40	3.42	3.76	3.53	3.64	3.58	3.68

The tables and graphs below summarize the number of applications received, accepted, denied, and enrolled over the past nine years for comparison.

	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
<b>Applications</b>	103	87	81	58	50	31	110	72	92
<b>Admits</b>	31	27	17	25	26	17	16	13	12
<b>Enrolled</b>	10	12	16	10	12	9	10	9	9
<b>% Admits Enrolled</b>	32	44	94	40	46	53	63	69	75



**Seminar Committee Activities:**

The seminar committee solicits national and international speakers to present their latest research to the CMB students and faculty. Students who register for the seminar class also get experience writing reports that are graded by members of the seminar committee or their mentors. Thus, it serves a dual purpose of informing the students about different areas of research and practicing their writing skills. The seminars given during the past year are listed below.

**FALL 2010 SEMINAR SPEAKERS**

DATE	SPEAKER AND HOST	SPEAKER AFFILIATION	SEMINAR TITLE
Thurs Aug 26	Dr. Noreen Reist	Colorado State University	Synaptic Transmission: How does the Ca <sup>2+</sup> sensor work?
Mon Aug 30	Lars Nordenskiöld Host: Karolin Luger	School fo Biological Sciences Nanyang Technolglcal University - Singapore	Electrostatic and Molecular Mechanisms in Chomatin Compaction
Thurs Sep 2	Dr. Xiaolei Xu Host: Debbie Garrity	Mayo Clinic	Functional Analysis of Tcap in Muscular Dystrophy and Cardiomyopathy Using Zebrafish Genetics
Mon Sep 13	Dr. David Clark Host: Jeff Hansen	NIH Program in Genomics of Differentiation	Nucleosomes, chromatin remodeling and histone gene regulation in budding yeast
Thurs Sept 16	Dr. Cathy Drennan Host: Dr. Debbie Crans	Massechusetts Institute of Technology	Shake, Rattle and Roll: Crystallographic Snapshots of Metalloproteins in Action
Fri Sept 17	Dr. Kevin Flynn Host: Dr. James Bamburg	Max Planck Institute of Neurobiology Martinsried Germany	ADF/Cofilin-mediated Actin Turnover Directs Neurite Formation in the Developing Brain
Wed Sep 22	Dr. Mario Capecchi Frontiers in Biomedical Sciences	University of Utah	Gene Targeting into the 21st Century: Mouse Models of Human Disease from Cancer to Neuropsychiatric Disorders
Thur Oct 7	Dr. Charles Scoggins Host: Karolin Luger	N30 Pharmaceuticals	Discovery of S-Nitrosoglutathione Reductase (GSNOR) Inhibitors as a New Class of Anti-Inflammatories
Mon Oct 11	Steve Foster, Dir. & Rodman Tomkins, Assoc. Dir.,	Business Development, CSURF Technology Transfer Office	Intellectual Property, Technology Transfer and You: Making the Most of Your Research
Thurs Oct 21	Dr. William K. Kaufmann Host: Jac Nickoloff	University of North Carolina Lineberger Comprehensive Cancer Center	Mechanisms of Chromosomal Instability in Environmental Melanoma
Mon Oct 25	Dr. Christopher Hill Host: Bob Cohen	University of Utah	Proteasome Activation: Opening the Gate to Nature's Molecule of Mass Destruction
Thur Nov 4	Dr. Shane Kanatous	Colorado State University	Exercising While Holding Their Breath: The Physiology of Diving Mammals
Mon Nov 8	Dr. P. John Hart Host: Jeff Hansen	University of Texas Health Sciences Center - San Antonio	Misfolded Copper-Zinc Superoxide Dismutase and Motor Neuron Disease
Mon Dec 6	Dr. Joan Conway Host: Tingting Yao	Stowers Institute for Medical Research	A Role of Mediator of RNA Polymerase II Transcription in Elongation Control

## SPRING 2011 SEMINAR SPEAKERS

DATE	SPEAKER AND HOST	SPEAKER AFFILIATION	SEMINAR TITLE
Mon Jan 24	Dr. Terrace Fletcher Host: Jeff Hansen	University of Miami School of Medicine	Chromatin Higher-Order Structure and Genome Maintenance
Thurs Feb 3	NO SEMINAR		
Wed Feb 09	Dr. Ron Weiss Host: June Medford	Massechusetts Institute of Technology School of Engineering	Synthetic Biology: From Modules to Systems
Fri Feb 18	Dr. Frederic Meunier Host: Noreen Reist	University of Queensland Neuronal Trafficking Laboratory	Munc18-1 Controls Syntaxin 1a Trafficking to the Plasma Membrane: Molecular Basis of Early Infantile Epileptic Encephalopathy
Mon Feb 21	Dr. Martin Margittai Host: Eric Ross	University of Denver Dept. of Chemistry & Biochemistry	Seed, Propagate, and Break: Prion-like Properties of Tau Fibrils
Thurs Mar 3	Dr. Michael Graner Host: Laura Epple	University of Colorado Denver Department of Neurosurgery	Spewing fat balls while under siege: the unfolded protein response and exosomes in the biology of brain tumors
Mon Mar 07	Dr. J. Lucas Argueso Host: Laurie Stargell	Colorado State University ERHS	Structural genomic variation in yeast: Lessons from basic and applied research
Mon Mar 28	Dr. Maithreyen Srinivasan Host: Norm Curthoys	Agilent Technologies Santa Clara, CA	Massively Parallel Human Exome Analysis using 2 <sup>nd</sup> Generation DNA sequencing
Thurs Mar 31	Dr. Robert Sclafani Host: Dr. Jac Nickoloff	University of Colorado School of Mines	Checkpoint Protein Kinases Regulate DNA Replication and Cancer Chemoprevention
Thurs Apr 7	Dr. Bin Tian Host: Carol Wilusz	UMDNJ New Jersey Medical School	The Long and Short of Alternative Polyadenylation
Thurs April 21	Dr. David Markovitz Host: Ramesh Akkina	University of Michigan Ann Arbor	The Exciting Life of a Human Endogenous Retrovirus
Thurs May 5	Dr. Robin Dowell Host: J. Lucas Argueso	CU Boulder	Yeast as a Model for Personalized Genomics

### Major Accomplishments:

The CMB Webpage (<http://www.cmb.colostate.edu/>) attracts a large number of hits. More to the point, when one runs a Google search for "Cell and Molecular Biology graduate programs" the CSU CMB program comes up fifth from the top (not including gradschools.com). In addition, recent questionnaires, administered to our graduate students and program applicants, indicated that most of them identified potential programs through the Internet. Therefore, the CMB Website has probably contributed to the increased number of outstanding applicants to the program.

In 2008, the CMB Program developed a concentration in Cancer Biology. This program has attracted foundation and university AEP funding that supports fellowships for recruiting additional PhD and DVM/PhD students. Students in the Cancer Biology concentration complete additional courses (see **table 2 Additional Cancer Biology Courses** and <http://www.colostate.edu/Depts/CMB/Cancerbiology1.html> ).

**Table 2. Additional requirements for Cancer Cell Biology (min. 5 credits from this list)**

Course	Title	Credits
ERHS 510	Cancer Biology	3
ERHS 611	Cancer Genetics	2
VS 780	Cancer Biology Clinical Practicum	2
ERHS 733	Environmental Carcinogenesis	3

The excellence of the scholarly activities of the CMB faculty has been acknowledged through many prestigious honors and awards (CSU, national and international), appointments, and speaking invitations. In addition, many members serve as journal editorial positions, in leadership roles for scientific workshops, conferences and grant review panels. Many faculty members are invited too travel extensively, both nationally and internationally, to present their research. Finally, many members have patents. Examples particularly worth noting are several College of Natural Sciences Professor Laureates, Monfort Professors, Pew Scholars, an HHMI Investigator, CSU Pennock Service Awardees, and Cermack Advising Awardees.

The faculty members in the CMB Graduate Program have garnered a wide array of prestigious CSU, national and international awards and honors through the careers as faculty

and scientists (see Appendix A). The CMB faculty members are invited to speak at other institutions in the US and abroad, as well as at national and international scientific conferences. Most CMB faculty members serve as manuscript and grant application reviewers, many as editors and committee chairs. A large proportion of the CMB faculty members have leadership roles in scientific societies and as organizers of national and international scientific symposia. On average, CMB faculty members have published 17 journal articles and have been cited 232 times (9.4 times per article) since 2006. The CMB faculty members are well funded with an average of \$1,677,042 in funding per faculty member from 2006 to 2011, or \$335,409 per faculty per year. Finally, a large number of CMB faculty members collaborate with researchers from across the US and the world. Similarly, they are able to attract postdoctoral fellows nationally and internationally.

Very recently, through the efforts of Provost Rick Miranda, a task force and a couple of Faculty Council standing committees the administrative reporting line and budget oversight has been restored to the Graduate School (Vice Provost for Graduate Studies) in conjunction with the Deans of the College of Natural Sciences and the College of Veterinary Medicine and Biomedical Sciences.

In summary, by any measure the CMB Graduate Degree Program an unqualified success. Even so, room for improvements remains. High on the list of priorities is securing training grant funds for Ph.D. students and reconciling issues with how CMB and all interdisciplinary programs interface with the University administrative structure. We would like to thank everyone for all their contributions, faculty and students alike, to make the CMB Program so successful.



## CMB Budget 2010-2011

### ALLOCATED TO CMB BUDGET

base budget	\$ 98,648
rollover/adjustments	\$9,600
GTA from Graduate School	<u>\$16,440</u>

TOTAL \$123,668

### EXPENDITURES

	Budgeted	Expended
ADMINISTRATION		
Director (2 months)	\$25,740	\$28,902
Administrative Asst III (10 months)	\$29,042	\$29,388
SEMINAR PROGRAM	\$22,000	\$10,686
TEACHING		
NB502/CM502	\$2,782	\$2,399
OFFICE OPERATIONS	\$5,135	\$8,252
copying, phone, postage, etc		
STUDENT STIPENDS/TUITION		
GTA (CVMBS)	\$17,169	\$23,532
STUDENT RECRUITMENT	\$10,200	\$13,210
EDUCATIONAL OUTREACH & INTERACTION	\$11,600	\$1,997
poster contest, research meetings, etc.		
TUITION	-	-
TOTAL	\$123,668	\$115,959
Roll Forward		\$7,710

### Annual CMB Budget for 2003 through 2011

	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
<b>Personnel</b>	77,538	84,479	72,353	92,985	92,985	79,206	86,690	81,822
<b>Operating Expenses</b>	44,850	40,500	54,586	41,629	41,629	49,976	32,862	41,846
<b>Total</b>	122,388	124,979	126,939	134,614	134,614	129,182	119,552	115,959