

# **Cell and Molecular Biology Graduate Program**

## **Annual Report**

July 1, 2009 to June 30, 2010

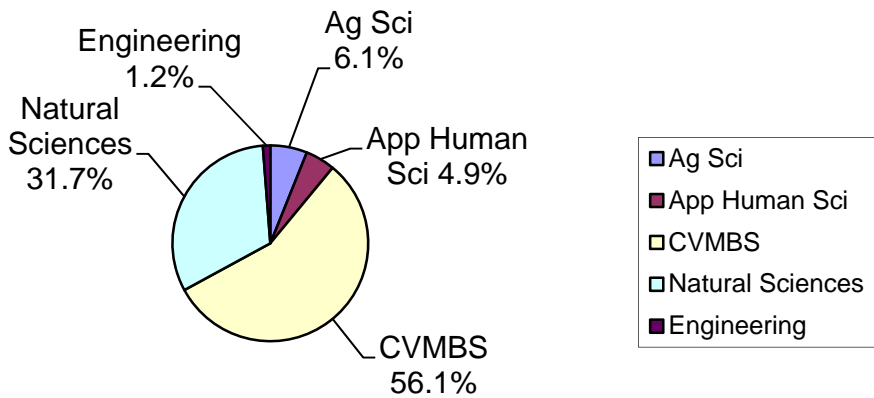
## **FACULTY**

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, one new faculty members joined the CMB program to total 82 members. The faculty of the CMB program as of June 30, 2010, and their departmental affiliations are listed below:

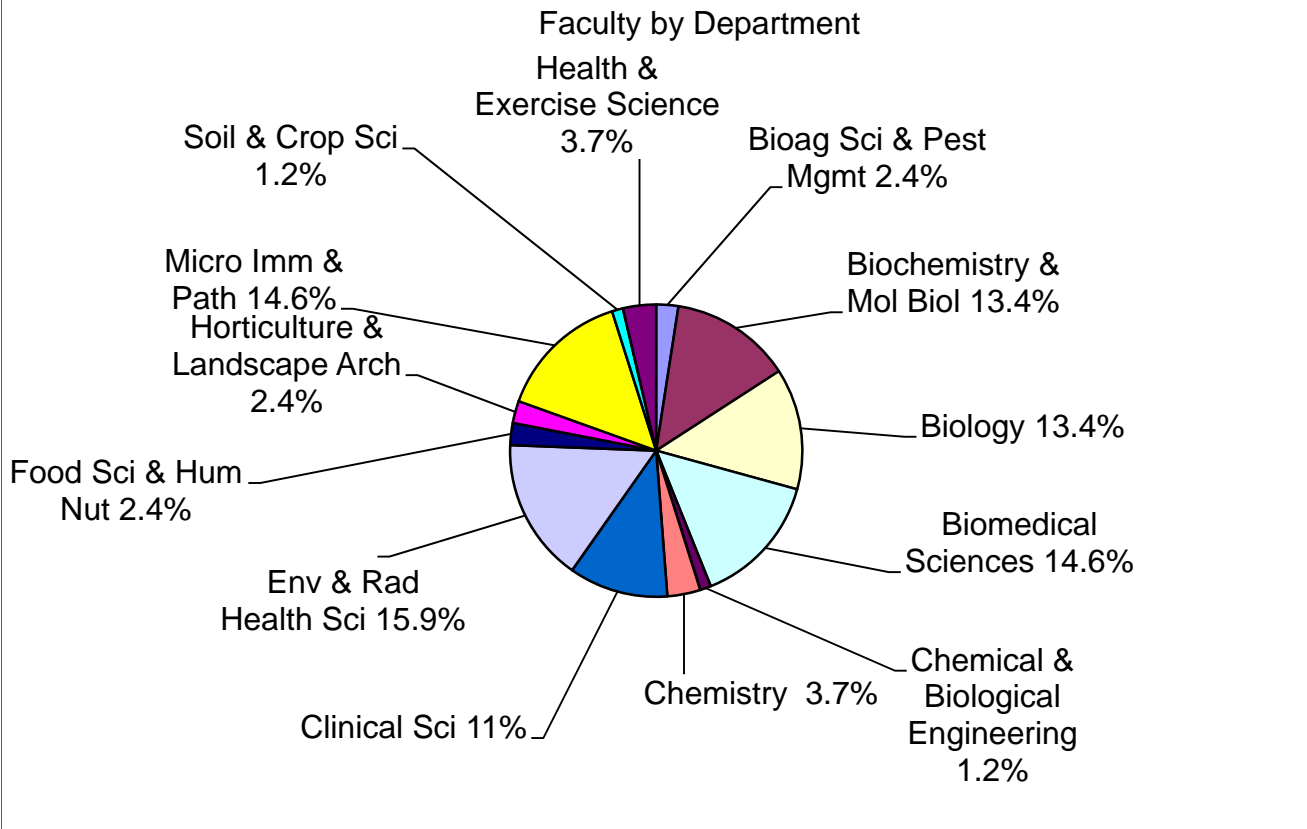
<b><u>Name</u></b>	<b><u>Department</u></b>
Ramesh Akkina	Microbiology, Immunology & Pathology
Kenneth Allen	Food Science & Human Nutrition
Lorinda Anderson	Biology
Susan Bailey	Environmental & Radiological Health Sciences
James Bamberg	Biochemistry & Molecular Biology
B. George Barias	Chemistry
Joel 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
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
Donald Mykles	Biology
Jac Nickoloff	Environmental & Radiological Health Sciences
Jennifer Nyborg	Biochemistry & Molecular Biology
Michael Pagliosotti	Food Science & Human Nutrition

<b><u>Name</u></b>	<b><u>Department</u></b>
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
Barbara Sanborn	Biomedical 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 College



### Faculty by Department



**New Faculty:** One new faculty member has joined CMB during the past year.

**Name**

EJ Ehrhart

**Department**

Microbiology, Immunology & Pathology

**Affiliate Faculty:** These are faculty who serve on graduate student committees and/or have research collaborations with faculty members in the CMB program.

**Name**

Michael Cornforth  
Edwin Goodwin  
Michelle Le Beau  
Pamela Munster  
Alice Sigurdson

**Affiliation**

University of Texas Medical Branch, Galveston, TX  
Los Alamos National Laboratory, Los Alamos, NM  
University of Chicago Cancer Research Center  
H. Lee Moffitt Cancer Center & Research Institute, Tampa, FL  
Dept. of Health & Human Services, Bethesda, MD

## **STUDENTS**

The CMB Graduate Program currently oversees 51 graduate students (8 MS students and 50 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 2009). In 2009-2010 academic year, the program awarded two M.S. degrees and six Ph.D. degrees in Cell and Molecular Biology.

There were 51 students in the CMB program as of June 30, 2010. 13 students were accepted into CMB for the fall 2010 semester. Of those nine, one 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 40 domestic and 27 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	8	14
PhD	50	86
Total	58	
Gender		
Male	30	52
Female	28	48
Ethnicity		
Asian American	5	9
African American	2	3
Native American	3	5
Hispanic	3	5
Caucasian	29	50
International	16	28
College of Advisor		
CVMB	37	64
CNS	11	19
Engineering	2	3
Appl. Human Sciences	4	7
Ag Sciences	1	2
Undeclared (rotating)	3	5

**Current Students:**

<u>Name</u>	<u>Degree</u>	<u>Advisor</u>	<u>Date Admitted</u>
Jennifer Arab	Ph.D.		Fall 2009
Nadia Ashwish	Ph.D.	Deborah Roess	Spring 2009
Zobaida Ben Musa	Ph.D.	Nicole Ehrhart	Spring 2009
Shawna Campbell	Ph.D.	June Medford	Fall 2008
Erica Chao	Ph.D.	Don Mykles	Fall 2006
Shawna Comer	Ph.D.		Fall 2009
Kathy Cosenza	Ph.D.	Don Mykles	Fall 2008
Alpana Damle	Ph.D.	Deborah Roess	Fall 2004
Ryan Dregalla	Ph.D.	Susan Bailey	Fall 2007
Abdunaser Eadaim	M.S.	Susan Bailey	Spring 2009
Vanessa Enriquez	Ph.D.	Gerritt Bouma	Fall 2008
Laura Epple	Ph.D.		Fall 2009
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 Fullbright	Ph.D.	Stephen Chisholm	Fall 2009
Jessica Goldstrohm	Ph.D.	Robert Ullrich	Fall 2006
Lakshmi Gummadi	Ph.D.	Norman Curthoys	Fall 2006
Scott Hafeman	Ph.D.	Steve Dow	Fall 2007
Xin Huang	Ph.D.	Deborah Roess	Fall 2005
Hui Hung	Ph.D.	James Bamberg	Fall 2001
Toru Ishii	Ph.D.		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
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
Liz Perrault	Ph.D.	Ken Reardon	Fall 2007
Chelsea Roan	M.S.	Deborah Roess	Fall 2008
Samantha Roth	Ph.D.	Don Mykles	Fall 2009
Audrey Ruple	Ph.D.	Paul Morley	Spring 2010
Fumi Sagawa	Ph.D.	Carol Wilusz	Fall 2007
Tara Schumacher	Ph.D.	Ken Reardon	Fall 2006
Hoda Shnaishah	M.S.	Deborah Roess	Spring 2009
Jenette Shoeneman	M.S.	Doug Thamm	Fall 2008
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
Aida Ulloa	Ph.D.	Barbara Sanborn	Fall 2003
Dezaray Varland	Ph.D.	Jozsef Vigh	Fall 2008
Scott Walmsley	Ph.D.	Norman Curthoys	Fall 2006
Peter Winter	Ph.D.	George Barisas	Fall 2006
Luke Wittenburg	Ph.D.	Doug Thamm	Fall 2005
Hiroto Yoshikawa	Ph.D.	Sue LaRue	Fall 2008

### Department Level Breakdown of Primary Majors by Ethnicity and Gender

Student Level & Ethnicity/Race/Gender	Fall 2003	Fall 2004	Fall 2005	Fall 2006	Fall 2007	Fall 2008	Fall 2009
Native American Male	0	0	0	0	0	0	0
Native American Female	0	0	0	0	0	3	2
Black Male	0	0	0	0	0	0	1
Black Female	0	0	0	0	0	1	1
Asian American Male	1	2	2	3	3	3	2
Asian American Female	1	1	2	2	2	3	3
Hispanic Male	0	0	0	0	1	1	1
Hispanic Female	1	1	0	0	0	1	2
White Male	14	15	18	17	18	14	17
White Female	18	20	20	24	18	13	12
International Male	5	6	5	6	7	9	8
International Female	9	9	8	7	5	5	8
Other Male	0	0	0	0	0	0	0
Other Female	0	0	0	0	0	0	0

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

	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009
Percent of Students Who Withdrew Averaged Over the Past 3 Years	28	12	19	25	29	25	24	20
Total Entering Students Averaged Over the Past 3 Years	6	6	9	9	9	8	8	9

**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.

	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
<b>MS</b>	13	10	10	14	11	5	7	8
	416,000	320,000	320,000	448,000	352,000	160,000	224,000	256,000
<b>PhD</b>	28	39	41	41	46	40	50	50
	896,000	1,248,000	1,312,000	1,312,000	1,472,000	1,280,000	1,600,000	1,600,000
<b>total</b>	41	49	51	55	55	45	57	58
	1,312,000	1,568,000	1,632,000	1,760,000	1,760,000	1,444,000	1,824,000	1,856,000

## Doctoral Student Time-To-Degree and Persistence

Entering Student Academic Year Cohort	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06
Number of entering doctoral students	0	02	02	03	06	07	07	07	14	09	06
Number students admitted to candidacy by the end of the 4th year of enrollment	0	01	02	03	03	06	06	04	09	05	0
Of those admitted to candidacy, number who complete within 4 years	0	01	02	03	03	05	06	04	05	02	0
Of those admitted to candidacy, number who complete within 6 years	0	0	0	0	0	01	0	01	0	0	0
Of those admitted to candidacy, number who complete within 8 years	0	0	0	0	0	0	0	0	0	0	0
Of those admitted to candidacy, how many are still enrolled after 8 years?	0	0	0	0	0	0	0	0	0	0	0
Withdrew or received MS (Semester/Year)	0	1/2	0/3	0/2	3/0	1/3	3/1	1/1	4/1	4/2	1/1

**Scholarship activity** – listing of publications with CMB graduate students as authors (2001 through 2008). 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									
	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	
Number of student in class	11	10	12	16	10	12	9	10	
Number of publications per class	9	35	14	38	5	1	4	1	

## Graduated Students

Fifteen students received their degrees during the past year, five M.S. and ten 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>
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

<b><u>Name</u></b>	<b><u>Degree</u></b>	<b><u>Advisor</u></b>	<b><u>Graduated</u></b>
Jes Kuruville	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 Dernel	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
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.	Olve 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

<u>Name</u>	<u>Degree</u>	<u>Advisor</u>	<u>Graduated</u>
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-Khoury	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**

	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
MS Total Male	2	0	1	3	1	1	3	0
MS Total Female	2	3	1	3	2	4	2	2
MS Total % Minority	0	0	0	17%	0	0	20%	0
PhD Total Male	0	4	1	3	2	5	4	5
PhD Total Female	0	2	2	4	4	5	6	0
PhD Total %Minority	0	0	33%	0	17%	0	0	0

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

Unit Level & Gender	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010
<b>Master's Level</b>										
Native American Male	0	0	0	0	0	0	0	0	0	0
Native American Female	0	0	0	0	0	0	0	0	0	0
Black Male	0	0	0	0	0	0	0	0	0	0
Black Female	0	0	0	0	0	0	0	0	0	0
Asian American Male	0	0	0	0	0	0	0	0	2	0
Asian American Female	0	0	0	0	0	0	0	0	0	0
Hispanic Male	0	0	0	0	0	1	0	0	0	0
Hispanic Female	0	0	0	0	0	0	0	0	0	0
Non-Minority Male	0	0	2	0	1	2	1	0	1	0
Non-Minority Female	0	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	0
Native American Female	0	0	0	0	0	0	0	0	0	0
Black Male	0	0	0	0	0	0	0	0	0	0
Black Female	0	0	0	0	0	0	0	0	0	0
Asian American Male	0	0	0	0	0	0	0	0	1	1
Asian American Female	0	0	0	0	0	0	1	0	0	0
Hispanic Male	0	0	0	0	0	0	0	0	0	0
Hispanic Female	0	0	0	0	1	0	0	0	0	0
Non-Minority Male	0	0	0	4	1	3	2	0	3	4
Non-Minority Female	0	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. Stu Tobet*, Department of Biomedical Sciences  
*Dr. Marinus Pilon*, Department of Clinical Sciences  
*Dr. Susan Bailey*, Department of Environmental & Radiological Health Sciences  
*Dr. Erica Suchman*, Department of Microbiology, Immunology & Pathology

### **Research Committee**

**Chairman:** *Dr. Carol Wilusz*, Department of Microbiology, Immunology & Pathology  
*Dr. Jennifer DeLuca*, Department of Biochemistry & Molecular Biology  
*Dr. Mark Zabel*, Department of Microbiology, Immunology & Pathology  
*Dr. Matt Hickey*, Department of Health & Exercise Sciences

### **Admissions Committee**

**Chairman:** *Dr. Norm Curthoys*, Department of Biochemistry & Molecular Biology  
*Dr. Ron Tjalkens*, Department of Environmental & Radiological Health Sciences  
*Dr. Dawn Duval*, Department of Clinical Sciences  
*Dr. Deborah Garrity*, Department of Biology

### **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. Carol Wilusz*, Department of Microbiology, Immunology & Pathology  
*Dr. Stu Tobet*, Department of Biomedical Sciences  
*Dr. Howard Liber*, Department of Environmental & Radiological Health Sciences  
*Dr. Norm Curthoys*, Department of Biochemistry & Molecular Biology

## **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 2009**

<b>Date</b>	<b>Speaker</b>
Nov 5	Jozsef Vigh
Nov 19	George Seidel

#### **Spring 2010**

<b>Date</b>	<b>Speaker</b>
Mar 4	John Volckens

### **Poster Competition**

The Annual Cell and Molecular Biology Poster Symposium was held on Friday, February 26, 2010 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. Seventy-seven posters were presented. Of those posters, 75 were judged. Three judges reviewed each poster. Two awards were presented for the highest honor, two awards were presented with High honors, five with honors and twelve honorable mentions. One postdoc award was given. The judges were Drs. Ken Allen, Chuck Anderson, Jennifer Barfield, Andrea Bohn, Jerry Bouma, Charles Calisher, Chaoping Chen, Robert Cohen, Debbie Crans, Norm Curthoys, Sheena D'Arcy, Santiago Di Pietro, Alexa Dickson, Steven Dow, Dawn Duval, Scott Earley, Melanie Furgason, Deborah Garrity, Brian Geiss, Alan Godwin, Amanda Guth, Jeff Hansen, Matt Hickey, Shing Ho, Paul Laybourn, Caroline Lopez, Steve McBryant, Brian McNaughton, Patrick Monnier, Dilyara Murtazina, Don Mykles, Jenny Nyborg, Mike Pagliassottie, Kathy Partin, Christie Peebles, Olve Peersen, Jessica Prenni, Bruce Pulford, Sandra Quackenbush, Andy Ray, Mary Robinson, Deborah Roess, Eric Ross, Joel Rovnak, Alan Schenkel, Carol Seger, Laurie Stargell, Erica Suchman, Stu Tobet, Mark van der Woerd, Sue VandWoude, Jozsef Vigh, O'Neil Wiggan, Carol Wilusz, Jeff Wilusz, Robert Woody Ting Ting Yao and Mark Zabel.

#### **The Post-doctoral Award was:**

Uma Muthurajan                      Biochemistry & Molecular Biology

#### **The Graduate Student Awards were:**

##### **Highest Honors**

Kevin Sokoloski                      Microbiology, Immunology & Pathology  
Keely Sudhoff                          Biochemistry & Molecular Biology

##### **High Honors**

Nicholas Clark                        Biochemistry & Molecular Biology  
Lynsie Sundin                          Biochemistry & Molecular Biology

##### **Honors**

Candace Mathiason                    Microbiology, Immunology & Pathology  
Jarred Bultema                         Biochemistry & Molecular Biology  
Megan Carter                          Biochemistry & Molecular Biology  
Scott Walmsley                        Cell & Molecular Biology  
Karin Streifel                          Molecular, Cellular & Integrative Neurosciences

## **Honorable Mention**

Ryan Dregalla	Cell & Molecular Biology
Scott Hafeman	Cell & Molecular Biology
Davis Seelig	Microbiology, Immunology & Pathology
Liza O'Donoghue	Clinical Sciences
Peter Winter	Cell & Molecular Biology
Michel Brady	Microbiology, Immunology & Pathology
Geoff Guimaraes	Biochemistry & Molecular Biology
Luke Wittenburg	Cell & Molecular Biology
Crystal Meyerett	Microbiology, Immunology & Pathology
Jenette Shoeneman	Cell & molecular Biology
Emily Chaskey	Microbiology, Immunology & Pathology
Michael De Miranda	Biology

The Research Committee members, Drs. DeLuca, Dow, Wilusz and Zabel, 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 2009:**

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 2010:**

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.

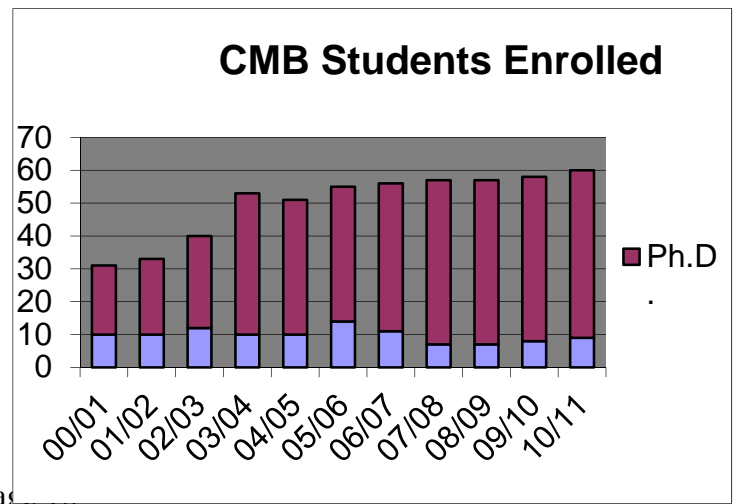
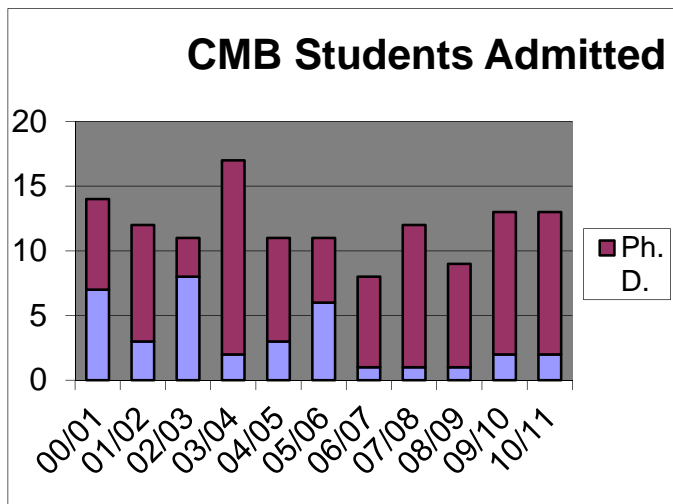
In the 2010 applicant pool there are 40 domestic applicants (11 MS, 29 PhD) and 27 international applicants. Within the domestic applicant pool the average GPA is 3.43, and the average combined GRE score is 1117. Of this pool, 11 students were invited to attend our recruiting weekend and to participate in the fourth annual combined CMB/MCIN Graduate Student Poster Symposium on February 26, 2010. Eight of these applicants accepted the invitation (average GPA 3.71, average combined GRE 1163).

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

Admits/Enroll. Status	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010
Number Applications	103	87	81	58	50	31	110	72	92
Number Admits	31	27	17	25	26	17	16	13	12
Number Enrolled	10	12	16	10	12	9	10	9	9
Percent Accepted that Enrolled	32	44	94	40	46	53	63	69	75

### History of Average Verbal, Quantitative, and Analytical GRE Scores for Entering Graduate Students

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



## 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 2009 SEMINAR SPEAKERS

DATE		SPEAKER AND HOST	SPEAKER AFFILIATION	SEMINAR TITLE
<b>Mon Aug 24</b>		NO SEMINAR		
<b>Thurs Aug 27</b>		NO SEMINAR		
Thurs Sep 3	CMB	Dr. Ted Able Host: Dr. Greg Florant	CANCELLED	
Mon Sep 07	BMB	NO SEMINAR		
Fri Sept 11	CMB	Dr. Bert Selmer Host: Erica Suchman	University of California - Irvine School of Medicine	Viral Subversion of Host Functions During Picornavirus Replication
Thurs Sep 17	CMB	Dr. Dave Kovar Host: Dr. Jim Bamburg	University of Chicago	Formin-Mediated Actin Assembly for Cell Division in Yeast and Worms
Thurs Sep 24	CMB	Dr. Amit Mitra Host: Dr. Rajinder Ranu	University of Nebraska - Lincoln	Direct Repeat Induced Gene Silencing in Plants
Mon Sep 28	BMB	Dr. Michael Shogren-Knaak Host: Jeff Hansen	Iowa State University	The Role of Cooperative Nucleosome acetylation in Regulating Inducible Gene Expression
<b>Wed Oct 7</b>	<b>CMB</b>	<b>Frontiers Dr. Paul J. Anderson</b>		Polysomes, P-bodies and Stress Granules: Spatial Control of mRNA Translation/Decay
Mon Oct 12	BMB	NO SEMINAR		
Thur Oct 22	CMB	Dr. Chris Allen Host: Dr. Jac Nickoloff	University of New Mexico School of Medicine	High Throughput Flow Cytometric Screening for Chemical Probe Discovery - Developing a Collaborative Pipeline in the NIH Roadmap Initiative
Fri Oct 23	CMB/MIP	Dr. Erik Sontheimer Host: Jeff Wilusz	Northwestern University	Roles and Mechanisms of CRISPR Interference in Staphylococci
Mon Oct 26	BMB	Dr. Martin Bisailon Host: Dr. Brian Geiss	University of Montreal	Molecular Modeling Studies & Nucleotide Analogs to Understand Enzymes Involved in RNA Cap Synthesis
Thur Nov 5	CMB	Dr. Jozsef Vigh	CSU - Biomedical Sciences	Visual Information Processing by Retinal Bipolar Cells
Mon Nov 9	BMB	Dr. Joaquin Maximilliano Espinosa Host: Sarah Lee	Howard Huges Medical Institute, CU Boulder	Mechanisms of Transcriptional Regulation in the Serum Response and p53 Networks
Thurs Nov 19	<b>CMB</b>	<b>Dr. George Seidel</b>	CSU - Biomedical Sciences	The National Academy of Sciences - How it functions; what it does.

## SPRING 2010 SEMINAR SPEAKERS

DATE		SPEAKER AND HOST	SPEAKER AFFILIATION	SEMINAR TITLE
<b>Thurs Jan 21</b>		<b>CMB faculty meeting</b>		
Thurs Jan 28	CMB	Dr. Julian Schroeder Host: Dr. Dan Bush	University of California - San Diego	Early Atmospheric CO <sub>2</sub> Sensing and Abscisic Acid Signaling Mechanisms in Plants
Thurs Feb 4	CMB	NO SEMINAR		
Mon Feb 08	BMB	Dr. Brian McNaughton Host: Dr. P. Shing Ho	CSU - Chemisty	Advances in RNA - Targeting: From Small Molecule Discovery to siRNA Delivery
Wed Feb 17		Frontiers in Biomedical Sciences: Dr. Tom Cech	Colorado University - Boulder	Crawling Out of the RNA World: Telomerase and Telomeres
Mon Feb 22	BMB	Dr. Aaron Hieb Host: Dr. Karolin Luger	CSU - Guest Faculty	Transcription Factor Accessibility; One Molecule at a Time
Thurs Mar 4	CMB	Dr. John Volckens	CSU - Environmental & Radiological Health Sciences	An In Vitro Lung Model for Aerosol Research: Potential Applications in Toxicology, Global Health, and Infectious Disease
Mon Mar 08	BMB	Dr. P Andrew Karplus Host: Shing Ho	Oregon State University	From Peroxide Signaling to Pi-helices: The Power of an Evolutionary Perspective on Protein Structure
Mon Mar 22		NO SEMINAR		
Thurs Mar 25	CMB	Dr. Paula Cohen Host: Lorrie Anderson	Cornell University	In Search of an Integrated View of Meiotic Recombination in the Mouse
Mon Mar 29	BMB	Dr. Jeffrey Kieft Host: Dr. Olve Peersen	University of Colorado Medical School	
Thurs Apr 8	CMB	Dr. Jackie Shanks Host: Ken Reardon	Iowa State University	CANCELLED
Mon Apr 12		NO SEMINAR		
Thurs April 22	CMB	Dr. James Quigley Host: Luke Wittenburg	The Scripps Research Institute	Tumor Cell Intravasation. The Understudied Step in the Metastatic Cascade
Mon Apr 26	BMB	Dr. Eric O. Freed Host: Dr. Chaoping Chen	Chief, Virus-Cell Interaction Section, NIH	HIV Assembly, Release, and Maturation
Mon May 3	BMB	Dr. Rui Zhao Host: Dr. Karolin Luger	University of Colorado - Denver	Structure, Mechanism, and Regulation of Spliceosomal Proteins Prp8 and Brr2
Mon May 10		Dr. Marcy Osgood Host: Nicholas Clark	University of New Mexico Health Science Center	An Alternate Paradigm? Scientific Teaching, and education research, as component of an Academic Career

**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 gradschoools.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)**

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

## CMB Budget 2009-2010

### ALLOCATED TO CMB BUDGET

base budget	\$103,752
rollover/adjustments	\$10,000
GTA from Graduate School	<u>\$16,440</u>

TOTAL \$130,192

### EXPENDITURES

	Budgeted	Expended
ADMINISTRATION		
Director (2 months)	\$23,900	\$28,975
Administrative Asst III (10 months)	\$29,389	\$29,168
SEMINAR PROGRAM	\$11,000	\$11,953
TEACHING		
NB502/CM502	\$2,275	\$2,399
OFFICE OPERATIONS	\$10,000	\$11,574
copying, phone, postage, etc		
STUDENT STIPENDS/TUITION		
GTA (CVMBS)	\$22,000	\$24,849
STUDENT RECRUITMENT	\$8,400	\$7,186
EDUCATIONAL OUTREACH & INTERACTION	\$9,105	\$3,448
poster contest, research meetings, etc.		
TUITION	-	-
TOTAL	\$121,145	\$119,552
Roll Forward		\$10,640

### Annual CMB Budget for 2000 through 2008

	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
Personnel	75,758	77,538	84,479	72,353	92,985	92,985	79,206	86,690
Operating Expenses	45,500	44,850	40,500	54,586	41,629	41,629	49,976	32,862
<b>Total</b>	121,258	122,388	124,979	126,939	134,614	134,614	129,182	119,552