

**ANNUAL REPORT
OF
BIOLOGY UNDERGRADUATE AFFAIRS**

2007-08

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Executive Summary

I. Enrollments

Table I shows undergraduate enrollments in courses taught by BioMed faculty. These comprise mainly BI/BC and BN courses, but also courses in disciplines such as Anthropology, Chemistry, Engineering, Psychology and Environmental Studies. During the period 1999/00-2007/08, University undergraduate enrollments were steady in the range 45,629-47,821. BioMed enrollments were steady at about 9.5% of the total, until 2004, when the percentages inched up, and then rose more dramatically in 2007/08 to 11.9%, representing a 24% increase from the previous plateau. This trend is shown in Chart 1.

II. Concentrators

Table 2A includes data since 1985/86 on undergraduate concentrations completed in Divisional programs. At present there are 10 programs, some of which offer both AB and ScB tracks (Biology and Human Biology). Two of these are recent additions: BioMedical Engineering, graduating its first class in 2003; and Computational Biology, graduating its first group in 2001.

The three largest programs are Biology, followed by Human Biology and Neuroscience; then BioMed Engineering and Biochemistry/Molecular Biology; then Biophysics, Marine Biology and Applied-Math Biology. The Concentration offered by the Department of Community Health is also documented in this table, although it is regarded as a public health than Program in Biology. With significant faculty participation in advising, the Office of Biology Undergraduate Affairs tends to all students who major in any of the natural sciences programs. Each of the basic sciences BioMed departments contributes to the course offerings that are included in all of the natural sciences programs via a unified curriculum shared across the board. Therefore, any of the departments may indicate concentrator figures represented a cross the board by the figures shown in these Tables.

Table 2B shows concentrators' trends in the three largest programs, and as a function of total baccalaureate concentrations completed between 1986 and 2008.

Of the total concentrations in 2008, 19% were in Divisional programs. The trend illustrated in Table 2B is of a surge in the mid-1990s, followed by a plateau, and a new surge occurring in the last two years. Concentrators in Divisional Programs now account for 21% of students in the graduating class.

Trends in the individual programs are charted in 2.1-2.6. All programs have experienced increases during the past two years, but the most dramatic change is due to the Human Biology Program. This interdisciplinary program introduced a new ScB track in 2005, which has been an attractive option. The program has doubled in size over the last four years and now accounts for nearly 27% of concentrators among all Program in Biology completers in 2008.

III. Undergraduate Research

Funding for undergraduate research (mainly summer projects) with BioMed Faculty is shown in Table 3A. Sources of funding are from University sources under the aegis of the UTRA program and from the Division for the PLME SRA program. The number of these awards is supplemented by external funding (mainly grants), and this picture is shown in Table 3B. The number of university fellowships has remained fairly stable over the past eight years; however, with the rise in concentrator numbers, the interpretation of this commitment must be regarded with caution.

The opportunity for undergraduate/faculty collaborative projects is considered a hallmark feature of Brown programs, and also represents the gateway for most students to Honors projects that are carried out for a full academic year beginning with the prior summer. Therefore, support for these activities is of paramount importance in sustaining this highly esteemed feature of our programs.

With the exception of the AB Biology program, all Divisional undergraduate programs require completion of a senior capstone activity, mostly represented by independent research projects carried out under the auspices of the faculty (there are occasional internships or senior seminars in the Human Biology program. Also, while not required, the overwhelming majority of AB Biology students carry out a research activity at some point in their college years, including outside-Brown or summer programs.

3C and 3D document the number and percentages of students completing Honors in Biomed programs. Honors requires a thesis based on significant research; an oral presentation or poster, a satisfactory recommendation from the Honors sponsor and a second reader, and an assessment of quality grades and trends in the students programs. Students receiving Honors presently comprise about 33% of all University Honors awarded, which exceeds the proportion of BioMed concentrators in the university.

It is also notable that Research Project sponsors include both basic science and clinical faculty. A significant and increasing percentage of directed research course enrollments are due to hospital-based sponsors (Table 3C). Faculty sponsoring projects (accessed via the elaborate research projects collection maintained at bms.brown.edu/bug/ugres) provide this training, supervision and resource without specific remuneration for this significant activity as a teaching load.

IV. Commencement and Prizes

The Biology Diploma Ceremony 2008 participants are listed here. Senior prizes were given to students in this graduating class and represent nominees selected from among the different concentration programs. Criteria may include academic achievement, research achievement, teaching, service and community activities.

V. Curriculum Committee

The members of the Biology Curriculum committee appear herein. This committee undertook reviews, revisions and approvals of a bumper crop of new courses that will debut in 2008-09, are also listed. New offerings stemmed from faculty in Departments of MCB, EEB, and include several new first-year seminars.

VI. Alumni

Table 5 and Chart 5 document career outcomes assembled from exit surveys and one major retrospective survey.

The return rate for information is ~80%. Of known responses, over 54% have entered medicine; 17% PhD or Master's; 12% business, and the remainder distributed among Veterinary Medicine, Law, Dental Medicine, Teaching, Physical therapy and assorted other activities that defy specific classification. The trends over time have not been easy to discern, but have remained reasonable constant as per exit and some retrospective surveys.

I. Undergraduate Enrollments in Courses Taught by BioMed Faculty (includes courses taught by PHP, BN and BI faculty)

Table 1

AY	2000	2001	2002	2003	2004	2005	2006	2007	2008
UGEnrollment BioMed	4562	4388	4371	4384	4454	4687	5189	5214	5534
UGEnrollment, University	46663	45629	45709	45756	45795	45728	47821	46804	46427
Percentage	9.8	9.6	9.6	9.6	9.7	10.2	10.8	11.1	11.9

Chart 1

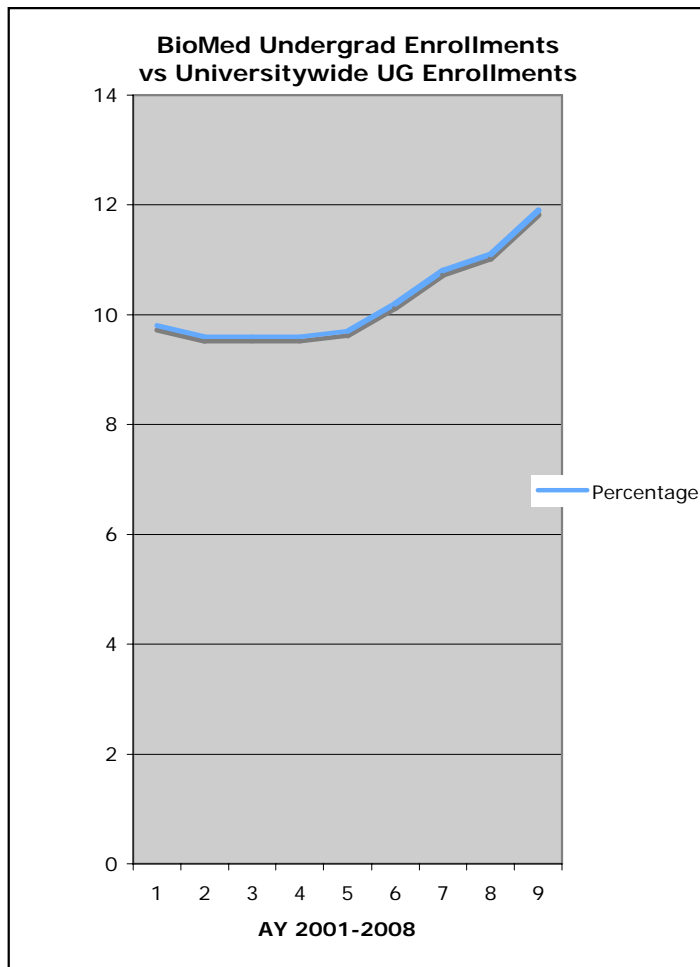


Chart 1

As a proportion of total University-wide undergraduate enrollments, Undergraduate Enrollments in courses taught by BioMed faculty have exhibited a 24% increase since the period 2000-2004.

II. Undergraduate Concentrators in Programs offered by the Division

Table 2A

Program	85-86	86-87	87-88	88-89	89-90	90-91	91-92	92-93	93-94	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	02-03	03-04	04-05	05-06	06-07	07-08
AB Biology	89	93	54	54	68	65	65	84	70	99	108	98	124	96	67	81	77	57	44	59	59	52	55
ScB Biology	28	23	23	24	19	16	31	46	35	46	64	59	38	60	39	37	33	38	24	32	36	39	43
TOT BIOLOGY	117	116	77	78	87	81	96	130	105	145	172	157	162	156	106	118	110	95	68	91	95	91	98
AB Human Biology	20	26	15	20	11	22	20	15	25	19	27	28	36	42	41	34	27	35	27	29	30	34	36
ScB Human Biology	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	9	28	44
TOT Human Biology	20	26	15	20	11	22	20	15	25	19	27	28	36	42	41	34	27	35	27	34	39	62	80
Marine Biology	0	1	3	3	3	2	2	1	5	9	4	2	2	1	2	5	2	1	3	1	2	7	5
Biophysics	3	2	3	1	1	2	2	2	5	4	5	1	2	2	2	3	6	4	2	3	5	6	9
Applied Math-Biology	1	8	6	1	1	3	1	1	7	5	2	1	4	1	2	0	0	0	2	6	6	1	4
Computational Biology*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	8	6	3	1	2	0	8
Biochemistry & Molecular Bio	13	16	8	22	13	11	11	19	24	28	26	24	28	15	20	11	8	10	4	7	11	16	16
Biomedical Engineering*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	19	20	15	17	17
Total Bio Sci	154	169	112	125	116	121	132	168	171	210	236	213	234	217	173	175	161	159	128	163	175	200	237
Neuroscience	27	19	23	20	18	18	31	38	21	41	42	38	41	53	60	48	61	59	51	58	63	55	63
Total w/Neuro	181	188	135	145	134	139	163	206	192	251	278	251	275	270	233	223	222	218	179	221	238	255	300
Community Health	9	5	8	17	17	18	18	13	22	22	26	20	22	25	27	25	26	21	21	31	37	32	25
Total BioMed undergrad	190	193	143	162	151	157	181	219	214	273	304	271	297	295	260	248	248	239	200	252	275	287	325

Table 2B

Program	85-86	86-87	87-88	88-89	89-90	90-91	91-92	92-93	93-94	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	02-03	03-04	04-05	05-06	06-07	07-08
Total BI and BN concentrators	181	188	135	145	134	139	163	206	192	251	278	251	275	270	233	223	222	218	179	221	238	255	300
Total BI, BN and BC concentrators	190	193	143	162	151	157	181	219	214	273	304	271	297	295	260	248	248	239	200	252	275	287	325
Total Baccalaureates	1304	1385	1517	1388	1407	1425	1520	1421	1354	1454	1509	1410	1458	1481	1604	1462	1507	1544	1490	1499	1549	1531	1542
Total BioMed/Total Univ	14.6	13.9	9.4	11.7	10.7	11.0	11.9	15.4	15.8	18.8	20.0	19.2	20.3	19.9	16.2	17.0	16.4	15.5	13.4	16.8	17.8	18.7	21.1

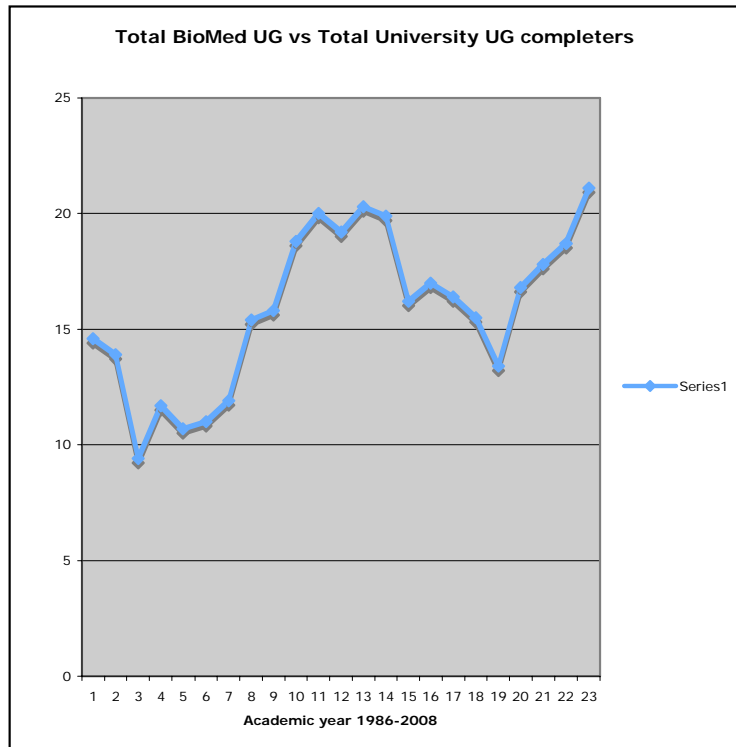


Chart 2B:
Based on data in Table 2B,
shows undergraduate BioMed concentrators completing as
a percentage of Total University baccalaureates per
annum.

Charts based on data from Table 2A

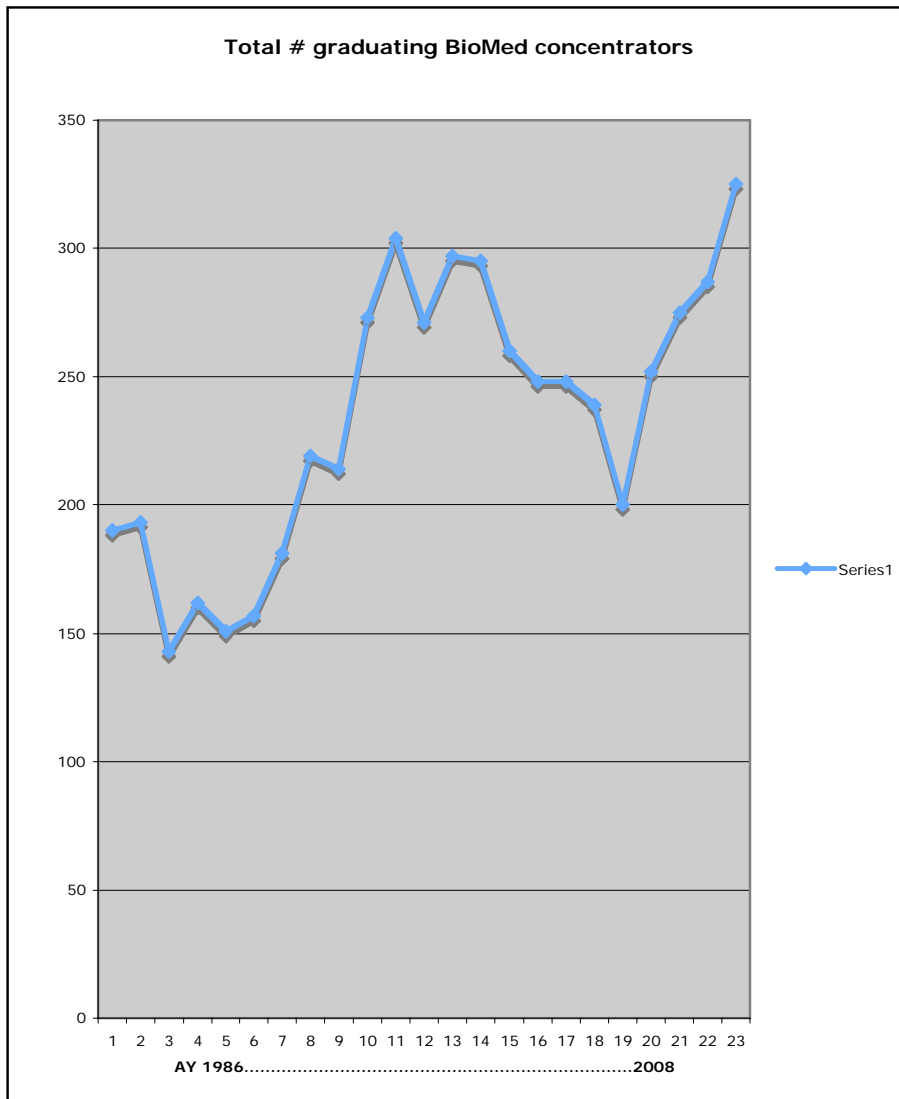


Chart 2.1
From data in Table 2
Historical trend for all undergraduate BioMed Programs, 1986- 2008
(includes Community Health)

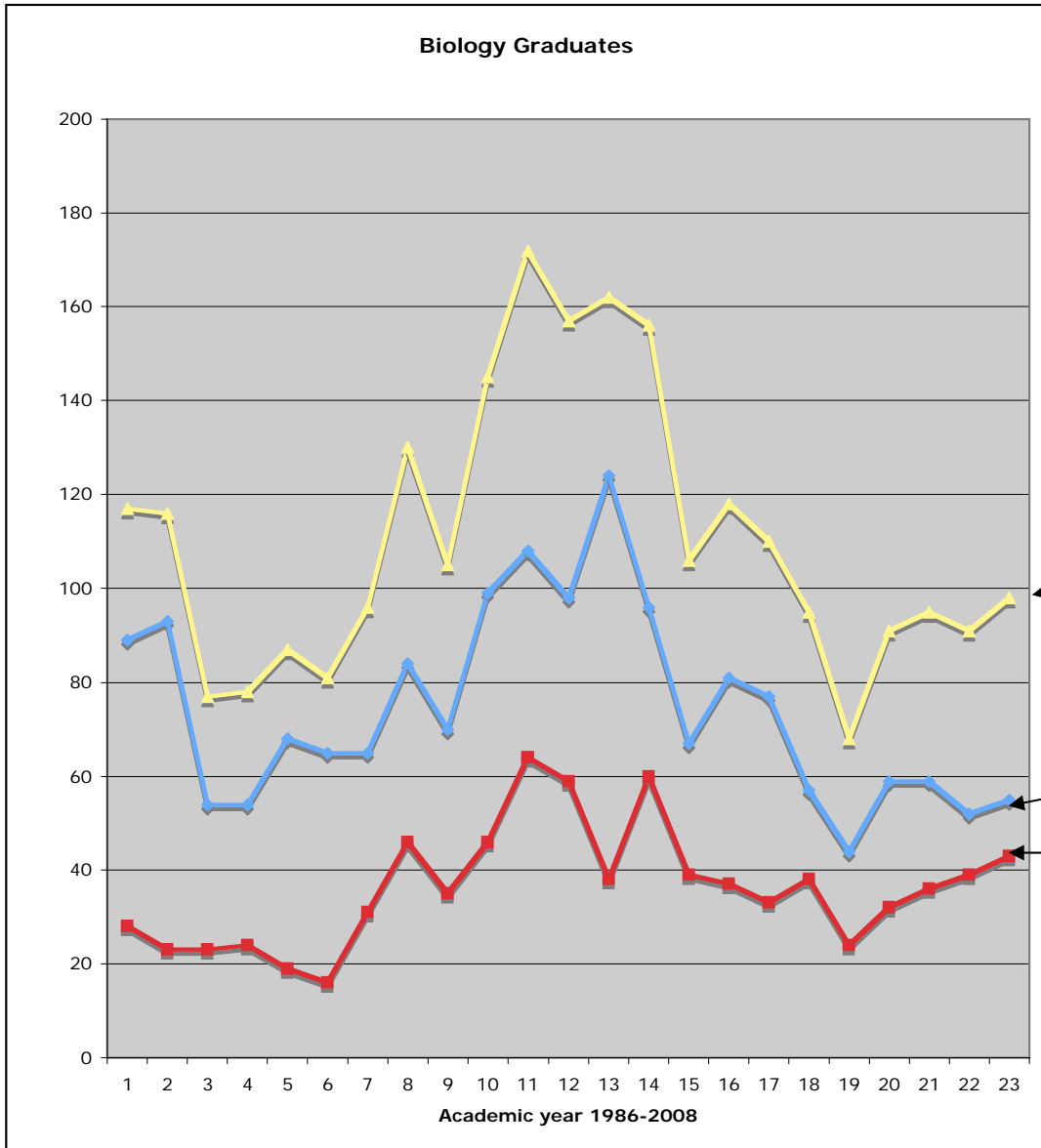


Chart 2.2
 Biology Graduates (AB, ScB and total)
 1986-2008

Total Biology

AB Biology

ScB Biology

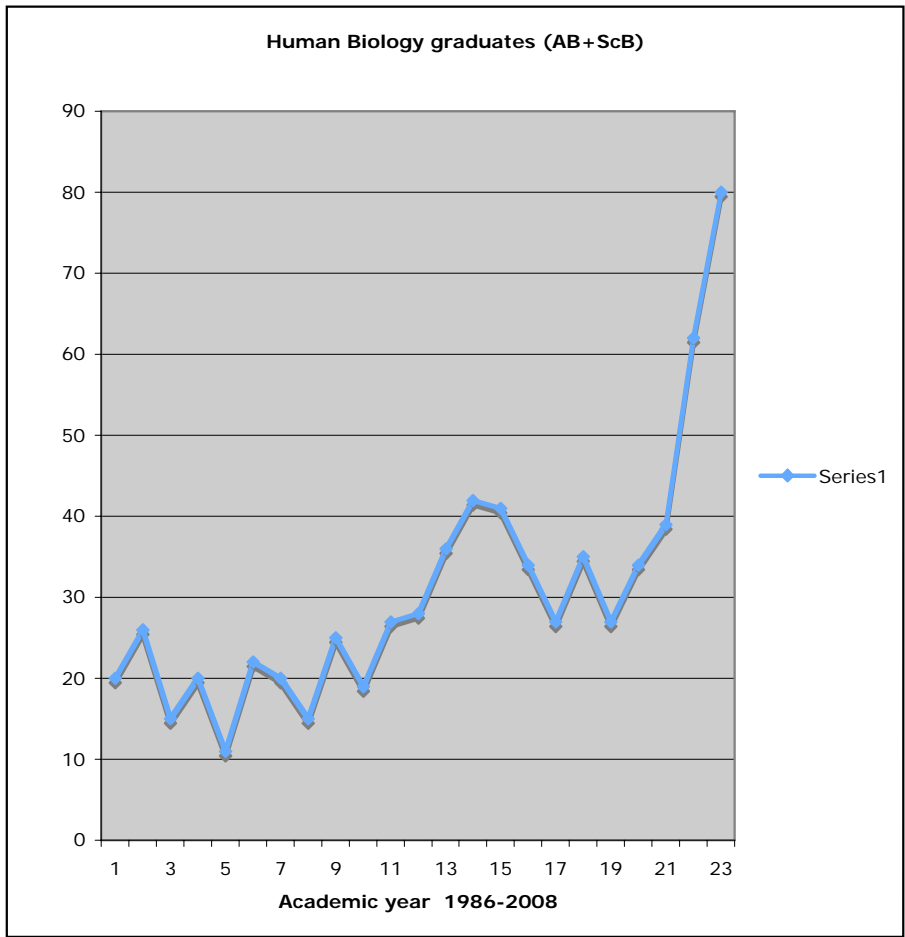


Chart 2.3
Human Biology graduates
1986-2008

Note: The ScB option was introduced in 2005

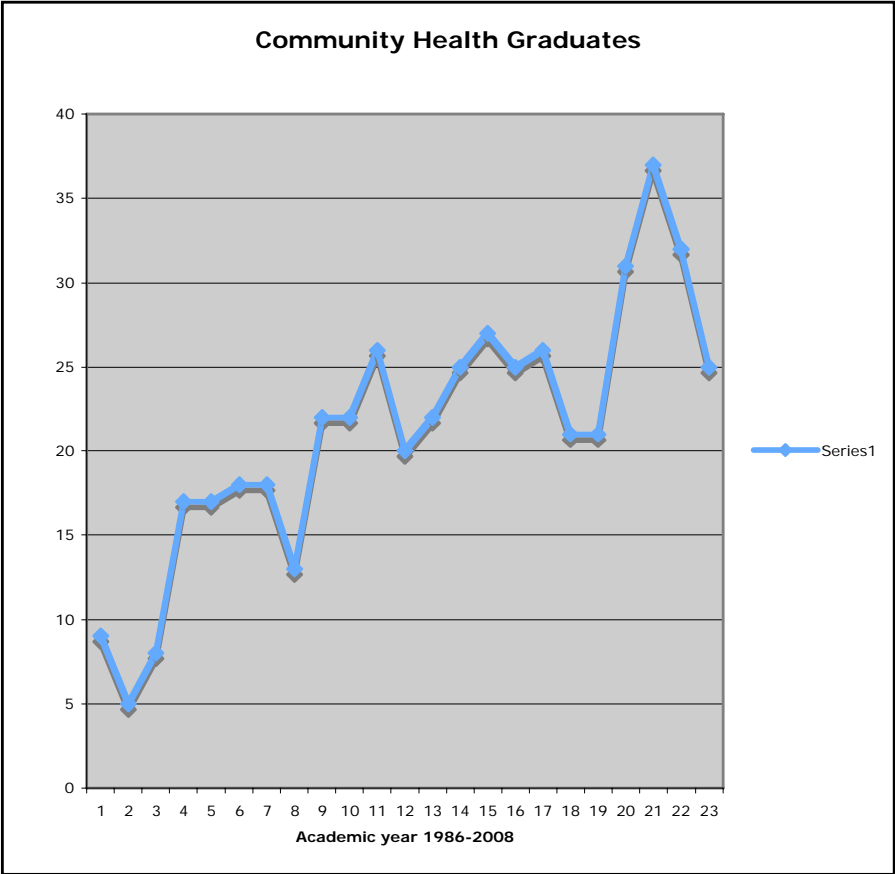


Chart 2.4
Community Health graduates
1986-2008

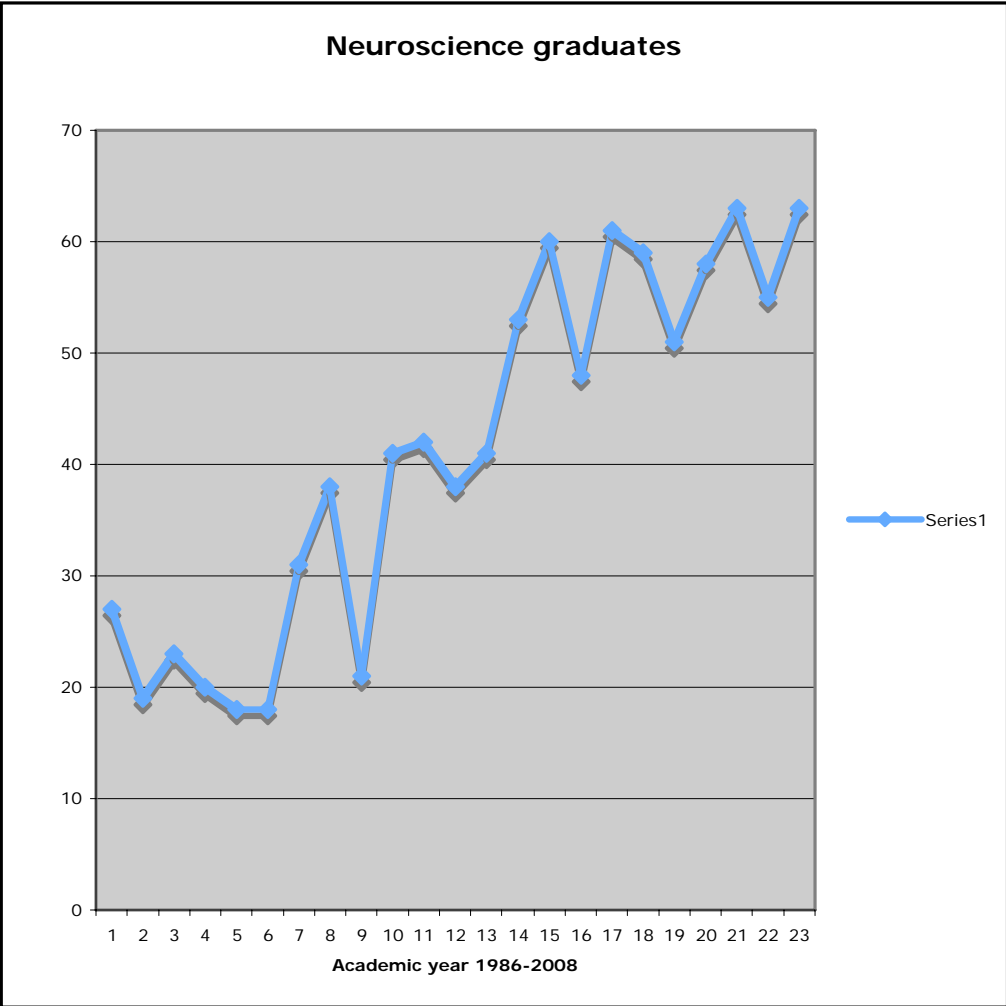


Chart 2.5
Historical trend for Neuroscience
program
1986-2008

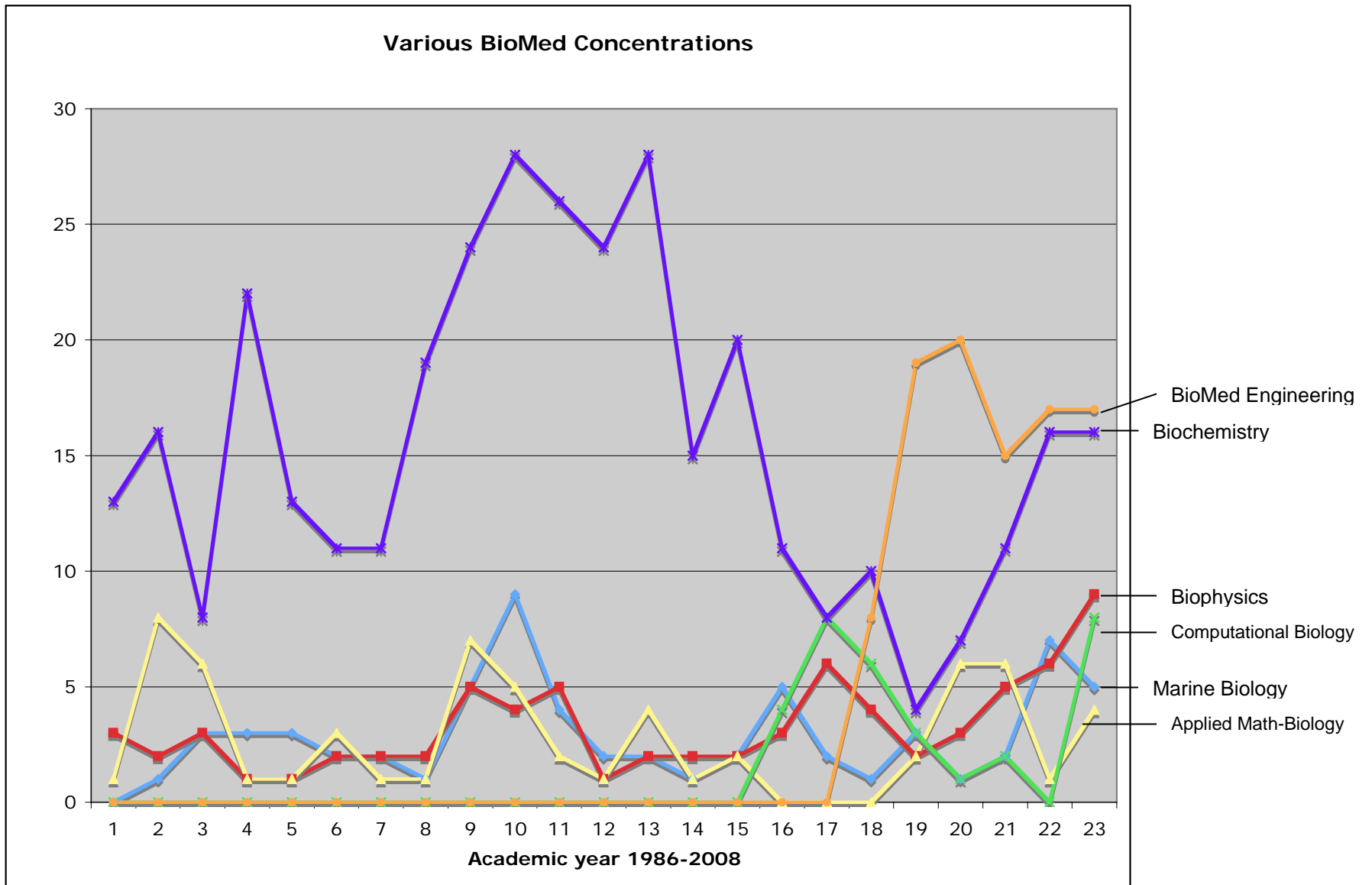


Chart 2.6
 Historical trend for Other BioMed Programs
 1986-2008

III. Undergraduate Research, Honors and Fellowships

Table 3A

	1984-85	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
UTRA	27	41	39	33	35	27	18	38	56	60	60.5
Hughes	20	23	23	27	26	20	24	13	--*	--	
Tot UTRA/Hughes	47	64	62	60	61	47	42	51	56	60	60.5
PLME UG SRAs	--	17	14	11	10	13	10	14	12	15	13
Total	47	81	76	71	71	60	52	65	68	75	73.5

*Hughes Funding ended 2005

Table 3B

Funding / Sources for Summer Undergraduate Research in BioMed

	Total Faculty	Total Research		Funding		PLME/			External	Other		Total
Department	Respondents	Students		Sources:	UTRA	SRA	ROYCE	REU	Grants	Source	Volun- -teer	Funding
<i>Community Health</i>	7	8			4	0	2	1	0	1	1	8
<i>EEB</i>	11	27			6	1	0	2	15	2	1	26
<i>Hospital</i>	18	22			4	9	0	0	3	2	4	18
<i>MCB</i>	18	34.5			18	0	1	0	12.5	2	1	33.5
<i>MMI</i>	4	7			5	0	0	0	1	1	0	7
<i>MPPB</i>	8	18.5			9.5	1	0	3	2	1	2	16.5
<i>NEUR</i>	10	14			9	1	0	0	2	2	0	14
<i>PATH</i>	9	11			2	0	0	0	5	4	0	11
<i>Psych & Human Behavior</i>	6	26			3	1	0	0	12	1	1	17
TOTALS	91	168	0		60.5	13	3	6	52.5	16	10	151

Table 3C: Proportions of Biology projects sponsored by basic science versus hospital-based faculty

BI 195/196(credit)	01-02	02-03	03-04	04-05	05-06	06-07	07-08
%Campus-based sponsors	55	54	56	61	61	63	42
%Hospital-based sponsors	45	46	44	39	39	37	59

Table 3D: (“1950/1960” refer to fall and spring semester directed research projects.)

Year	BI 195	BI 196	BC 195	BC 196	BN 195	BN 196	Honors Bio-Science	Honors Bio chem	Honors Comm Health	Honors Neuro	Honors Bio-Engineering	Total Bio/Med Honors	Total Univ. Honors	% Honors BioMed/Un.
01-02	108	117	35	36	18	21	51	7	17	19	4	98	493	19.9%
02-03	116	120	29	25	28	29	53	8	9	22	2	94	428	22%
03-04	79	85	26	27	26	29	36	4	13	22	8	83	405	20.5%
04-05	93	116	25	25	17	21	43	7	12	8	10	80	401	19.9%
05-06	127	147	17	17	27	27	53	11	13	17	8	102	429	23.8%
06-07	135	139	22	19	33	33	59	15	8	13	9	104	436	23.8%
07-08	179	182	12	16	17	34	95	10	8	30	7	150	456	32.8%

Biology Curriculum Committee 07-08

Faculty Reps:

Andrew Campbell (MMI), David Rand (EEB), Kenneth Miller (MCB), Chi-Ming Hai (MPPB), Lundy Braun (PATH), Jonathan Waage (EEB), David Sheinberg (Neuro)

Class of 08 Student reps: James Kraemer, Steven Betit

Class of 09 Student reps: Colin Feuille, Julia Heneghan

Class of 10 Student reps: Evan Walker, Colin O'Brien

Chair: Marjorie Thompson

Business:

New Courses reviewed and approved-

BI 19M Introduction to Research, Gary Wessel (MCB) (FYS)

BI 19O Conservation Medicine, Katherine Smith (EEB) (FYS)

BI 19P Development of Scientific Theories, Stephen Helfand (MCB) (FYS)

BI 19Q Climate Change and Species Extinction, Dov Sax (EEB) (FYS)

BI 38 Ecology and Evolution of Infectious Disease, Daniel Weinreich (EEB)

BI 121 Synthetic Biological Systems, Wessel (MCB)

BI 122 Synthetic Biological Systems in Theory and Practice (Wessel) (MCB)

BI 148 Terrestrial Biogeochemistry.Ecosystems, Stephen Porder

BI 194 Genetics and Evolution of Complex Traits, Annie Schmitt (EEB)

V. Commencement and Senior Prizes, 2008

Biology Diploma Ceremony:

Speech to Seniors: Prof Richard Freiman, MCB

Name Reader: Prof Andrew Campbell, MMI

Diploma Distribution: Prof. Kenneth Miller, MCB

MC: Dean Marjorie Thompson

Corporation Members: James J. Burke, Jr.

Biology Prizes 2008

George W. Hagy Prize in Human Biology

-Whitney Mostafiz

Maria L. Caleel Memorial Prize for Academic Excellence

-Megan Dawson

James Kidwell Prize in Genetics and Population Biology

-Kaya Schmandt

Elizabeth Leduc Prize in Cell Biology

Yuyuan Han

Richard J. Goss Prize in Experimental Biology

-Steven Betit

Morris L. Povar Prize in Physiology, Biotechnology or Zoology

-Jana Jarolimova

Donald C Jackson Prize in Physiology

-James G Kraemer

Biology Prizes, General

-Stephen Rosenberg, William Kimmel, Sarah Rodriguez, Siquing He, Adisorn Chaibang, Jonathan Levin

Community Health

-Nadia Maccabee, Jessica Ratner

Neuroscience

-Rosy Carter, Ryan Lee, Heidi Adlman, Sergey Stavisky, Lauren Engel

Biomed Engineering—Joseph Carpenter

Biochemistry—Kyle Jay

Other Fellowships and Awards:

Vani Kilikatthi- Science/Society Senior Thesis Prize

115 elected to associate membership Sigma Xi (115/237 grads = 48.5%)

John Cox - Harvey Almy Baker Fellowship - AB Human

Whitney Mostafiz - Anne Crosby Emery Fellowship - ScB Human

Candace Tannis - Anne Crosby Emery Fellowship - ScB Human

Sandra Valenciano - Harvey Almy Baker Fellowship

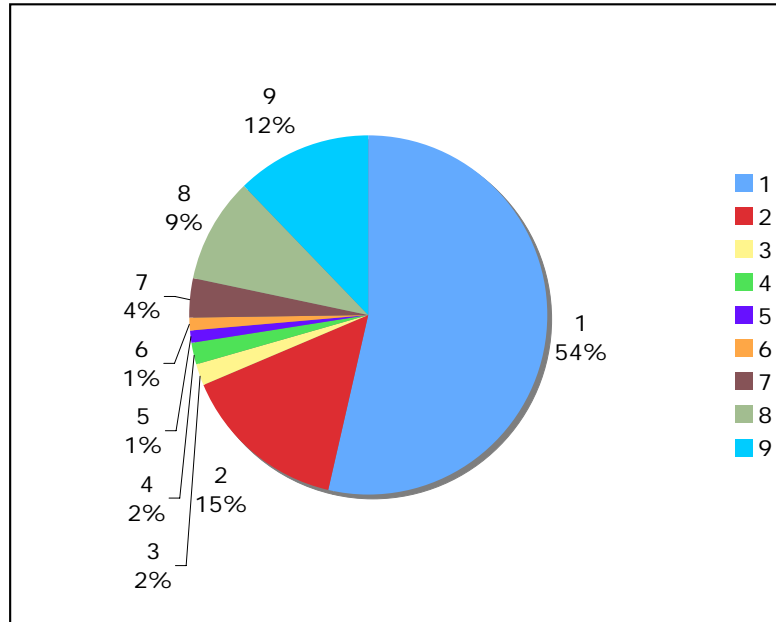
Wilfredo Perez, Jr. - David J. Zucconi '57 Fellowship - AB Human

V. Alumni Outcomes (for graduates exclusive of Community Health) 1985/86-2007/08

Table 5

Profession	Frequency	% of REPORTED Total*
MD	1771	.54
PHD	495	.15
MASTER'S	69	.02
Law	64	.02
Dental, PT	30	.01
Vet	40	.012
Teaching	118	.04
Business	311	.09
Other	406	.12
Total Reported	3304	100
<i>Not Reported</i>	833	-
Grand Total	4137	

Chart 5: Alumni Outcomes -Known Group



Key to Chart 5:

- 1 MD
- 2 PHD
- 3 MASTERS
- 4 Law
- 5 Dental and Physical Therapy
- 6 Vet
- 7 Teaching
- 8 Business
- 9 Other

Data represent ~80 % responses based on exit surveys, 1985-2008

68 MD- PHD reported.