



INFORMATION NOTE: Distribution of incremental tuition revenue

PREPARED FOR: FoM Department Heads, School and Centre Directors

ISSUE: **Allocation of incremental tuition income for FY 2015/16**

BACKGROUND:

The Faculty of Medicine receives an annual incremental increase and/or decrease of tuition from the UBC Budget Office as a part of the GPO funding model. This represents changes in tuition revenue due to changes in enrolment and tuition over the previous year. The base tuition is already included in each departmental GPO allocation and only the incremental increase and/or decrease remain to be distributed.

ANALYSIS:

- The fiscal year 2014/15 is taken as the base year. The difference between tuition revenue in 2015/16 and the base year 2014/15 is the increment to be distributed in 2016/17.
- A departmental decrease in tuition of less than \$5,000 will be absorbed by the Dean's Office so that the year over year impact is limited.
- The incremental revenue will be distributed as 75% for the earning Department and 25% for the Faculty, excluding Expansion-related tuition increases. The portion for the Faculty is retained to offset decreases in tuition absorbed by the Dean's Office and to fund other Faculty administration and distributions.
- Note that the 2014/15 base year was restated due to a change in the tuition allocation model for a new policy on Student Financial Aid. No adjustments were made to previous tuition allocations and the impact of the restatement of the 2014/15 base year is cost neutral.

NEXT STEPS:

- Distribute 75% of incremental tuition revenue to each department in relation to earnings as per Appendix D.

Attachments:

Appendix A: Summary of incremental tuition distribution

Appendix B: Summary of tuition drivers for Faculty of Medicine as defined by UBC Budget Model

Appendix C: Breakdown of tuition drivers at Program level

Appendix D: Summary of distribution to departments by driver



Appendix A: Summary of incremental tuition distribution

Summary	Amount	Faculty portion 25%	Department portion 75%
15/16 Tuition revenue increase	\$ 217,099		
Distributions completed to date:			
MD Expansion Direct Distribution from UBC Central	\$ 139,617		
Remainder to distribute	\$ 77,482	\$ 19,370	\$ 58,111
Remainder to distribute			
Distribute to Departments (75% of tuition increases)	58,111		
Total to distribute to departments	\$ 58,111		
Faculty portion tuition revenue increase	19,370		
Write offs (< \$5K) absorbed by Dean's Office	(11,947)		
Total amount retained at the Dean's Office	\$ 7,423		

Appendix B: Summary of tuition drivers for Faculty of Medicine as defined by UBC Budget Model

Driver	Driver Description	2014/15 Final (Restated)	2015/16 Final	Variance	Variance %	Reference
1.1	Domestic Undergrad/Post-Bacc Base Tuition	2,262,483	2,259,918	(2,565)	0%	1.1
3.1	Domestic Undergrad/Post-Bacc Program Base Tuition	3,933,782	3,972,012	38,230	1%	3.1
3.2	Domestic Undergrad/Post-Bacc Program Above the Base Tuition	8,511,666	8,591,246	79,580	1%	3.2
3.3	Domestic Undergrad/Post-Bacc Program Excluded Tuition	382,108	408,686	26,578	7%	3.3
4	Domestic Non-Degree Graduate Courses Tuition	26,088	26,000	(89)	0%	4
5	Undergrad/Post-Bacc Program Tuition Students in Credit Courses Base	396,941	189,194	(207,747)	-52%	5
6	International Undergrad/Post-Bacc Base Tuition	177,147	274,588	97,441	55%	6
8	International Undergrad/Post-Bacc Program Tuition		10,076	10,076	100%	8
10	COOP Tuition	10,342		(10,342)	-100%	10
11.1	Graduate Program and Per Credit Base Tuition	2,164,701	2,235,976	71,275	3%	11.1
11.2	Graduate Program and Per Credit Above the Base Tuition	2,510	5,783	3,273	130%	11.2
11.3	Graduate Program and Per Credit Excluded Tuition	2,542,642	2,654,030	111,389	4%	11.3
		20,410,410	20,627,509	217,099	1%	



Appendix C: Breakdown of tuition drivers at Program level

Driver	Department	2014/15 Final (Restated)	2015/16 Final	Sum of Variance	% Variance
	1.1 ANATOMY	1,010	-	(1,010)	-100%
	1.1 ANESTHESIOLOGY, PHARMACOLOGY & THERAPEUTICS	-	240	240	100%
	1.1 AUDIOLOGY AND SPEECH SCIENCES	30,959	44,965	14,006	45%
	1.1 BIOCHEMISTRY	669,662	744,839	75,177	11%
	1.1 CELL AND DEVELOPMENTAL BIOLOGY	-	172	172	100%
	1.1 CELLULAR AND PHYSIOLOGICAL SCIENCES	962,766	702,620	(260,145)	-27%
	1.1 EMERGENCY MEDICINE	-	446	446	100%
	1.1 FAMILY PRACTICE	251,039	273,119	22,080	9%
	1.1 INTERDEPARTMENTAL MEDICINE	-	103	103	100%
	1.1 MEDICAL GENETICS	16,826	21,281	4,455	26%
	1.1 MEDICINE	-	927	927	100%
	1.1 OBSTETRICS AND GYNAECOLOGY	-	686	686	100%
	1.1 ORTHOPAEDICS	-	240	240	100%
	1.1 PAEDIATRICS	-	927	927	100%
	1.1 PATHOLOGY	199,990	183,876	(16,114)	-8%
	1.1 PHARMACOLOGY AND THERAPEUTICS	127,202	129,746	2,544	2%
	1.1 PSYCHIATRY	-	686	686	100%
	1.1 SCHOOL OF POPULATION & PUBLIC HEALTH	3,029	154,117	151,088	4989%
	1.1 SURGERY	-	927	927	100%
1.1 Total		2,262,483	2,259,918	(2,565)	0%
	3.1 MD Core	1,727,278	1,721,381	(5,898)	0%
	3.1 Medical Expansion	2,206,503	2,250,631	44,127	2%
3.1 Total		3,933,782	3,972,012	38,230	1%
	3.2 MD Core	3,737,379	3,721,469	(15,910)	0%
	3.2 Medical Expansion	4,774,287	4,869,777	95,490	2%
3.2 Total		8,511,666	8,591,246	79,580	1%
	3.3 MRES	382,108	408,686	26,578	7%
3.3 Total		382,108	408,686	26,578	7%
	4 BIOCHEMISTRY AND MOLECULAR BIOLOGY	855	-	(855)	-100%
	4 CELL AND DEVELOPMENTAL BIOLOGY	428	-	(428)	-100%
	4 MEDICAL GENETICS	1,711	1,745	34	2%
	4 MEDICINE	855	-	(855)	-100%
	4 PATHOLOGY AND LABORATORY MEDICINE	855	-	(855)	-100%
	4 REHABILITATION SCIENCES	855	872	17	2%
	4 SCHOOL OF POPULATION AND PUBLIC HEALTH	15,396	22,073	6,677	43%
	4 SURGERY	5,132	1,309	(3,823)	-75%
4 Total		26,088	26,000	(89)	0%
	5 APPLIED SCIENCE	-	(1,055)	(1,055)	100%
	5 FOUNDATION OF MEDICINE	323,473	193,062	(130,411)	-40%
	5 GERMAN	-	(703)	(703)	100%
	5 INTERPROFESSIONAL HEALTH AND HUMAN SERVICE	(5,341)	(2,110)	3,231	-60%
	5 ORIENTATION TO MEDICAL SCHOOL	11,268	-	(11,268)	-100%
	5 PRINCIPLES OF HUMAN BIOLOGY	67,541	-	(67,541)	-100%
5 Total		396,941	189,194	(207,747)	-52%



Driver	Department	2014/15 Final (Restated)	2015/16 Final	Sum of Variance	% Variance
	6 ANATOMY	-	-	-	100%
	6 AUDIOLOGY AND SPEECH SCIENCES	2,456	-	(2,456)	-100%
	6 BIOCHEMISTRY AND MOLECULAR BIOLOGY	104,534	144,675	40,141	38%
	6 CAPS	58,932	75,290	16,358	28%
	6 FAMILY PRACTICE	-	3,691	3,691	100%
	6 MEDICAL GENETICS	1,403	2,214	811	58%
	6 MEDICINE	702	738	37	5%
	6 PATHOLOGY AND LABORATORY MEDICINE	1,403	16,239	14,836	1057%
	6 PHARMACOLOGY AND THERAPEUTICS	6,314	9,596	3,282	52%
	6 SCHOOL OF POPULATION AND PUBLIC HEALTH	702	22,144	21,443	3056%
	6 SURGERY	702	-	(702)	-100%
6 Total		177,147	274,588	97,441	55%
	8 MD Core	-	10,076	10,076	100%
8 Total		-	10,076	10,076	100%
	10 COOP	10,342	-	(10,342)	-100%
10 Total		10,342	-	(10,342)	-100%
	11.1 MDPHD	67,610	76,570	8,960	13%
	11.1 MHSC	63,079	95,450	32,371	51%
	11.1 MPH	169,576	167,403	(2,173)	-1%
	11.1 MPHMSN	-	3,254	3,254	100%
	11.1 MPTPHD	2,127	3,254	1,127	53%
	11.1 MSC In Audiology and Speech Sciences	225,902	241,082	15,179	7%
	11.1 MSC In Biochemistry and Molecular Biology	53,863	52,517	(1,346)	-2%
	11.1 MSC In Cell and Developmental Biology	48,574	51,416	2,842	6%
	11.1 MSC In Experimental Medicine	141,521	157,410	15,889	11%
	11.1 MSC In Health Care and Epidemiology	1,943	1,887	(56)	-3%
	11.1 MSC In Interdisciplinary Oncology	30,514	33,649	3,136	10%
	11.1 MSC In Medical Genetics	44,497	42,916	(1,581)	-4%
	11.1 MSC In Neuroscience	76,269	87,121	10,852	14%
	11.1 MSC In Occupational and Environmental Hygiene	73,566	67,404	(6,162)	-8%
	11.1 MSC In Pathology and Laboratory Medicine	71,497	77,872	6,375	9%
	11.1 MSC In Pharmacology and Therapeutics	20,112	15,091	(5,021)	-25%
	11.1 MSC In Population and Public Health	71,259	82,968	11,709	16%
	11.1 MSC In Rehabilitation Sciences - OT	25,578	32,158	6,580	26%
	11.1 MSC In Rehabilitation Sciences - PT	25,578	32,158	6,580	26%
	11.1 MSC In Reproductive and Developmental Sciences	36,302	38,297	1,995	5%
	11.1 MSC In Surgery	5,307	5,142	(165)	-3%
	11.1 PHD In Audiology and Speech Sciences	6,682	5,731	(951)	-14%
	11.1 PHD In Biochemistry and Molecular Biology	72,650	81,343	8,693	12%
	11.1 PHD In Cell and Developmental Biology	54,374	44,220	(10,153)	-19%
	11.1 PHD In Experimental Medicine	234,899	216,985	(17,915)	-8%
	11.1 PHD In Genetics			(3,724)	100%
	11.1 PHD In Health Care and Epidemiology	28,609	22,292	(6,317)	-22%
	11.1 PHD In Interdisciplinary Oncology	49,721	49,339	(382)	-1%
	11.1 PHD In Medical Genetics	58,968	54,770	(4,198)	-7%
	11.1 PHD In Neuroscience	114,354	115,422	1,069	1%
	11.1 PHD In Occupational and Environmental Hygiene	6,150	3,176	(2,974)	-48%
	11.1 PHD In Pathology and Laboratory Medicine	71,972	72,116	144	0%
	11.1 PHD In Pharmacology and Therapeutics	19,482	20,354	872	4%
	11.1 PHD In Population and Public Health	105,563	100,389	(5,174)	-5%
	11.1 PHD In Rehabilitation Sciences - OT	35,214	34,805	(410)	-1%
	11.1 PHD In Rehabilitation Sciences - PT	35,214	34,805	(410)	-1%
	11.1 PHD In Reproductive and Developmental Sciences	12,453	15,211	2,759	22%
11.1 Total		2,160,977	2,235,976	71,275	3%



Driver	Department	2014/15 Final (Restated)	2015/16 Final	Sum of Variance	% Variance
	11.2 MDPHD	2,271	2,509	238	10%
	11.2 MPHMSN	-	2,908	2,908	100%
	11.2 MPTPHD	239	366	127	53%
11.2 Total		2,510	5,783	3,273	130%
	11.3 GCGSC	-	8,353	8,353	100%
	11.3 GCRS	35,504	17,997	(17,507)	-49%
	11.3 MRSC	100,309	155,173	54,864	55%
	11.3 MHSC	19,845	16,900	(2,945)	-15%
	11.3 MOT	625,560	662,627	37,067	6%
	11.3 MPH	18,635	2,430	(16,205)	-87%
	11.3 MPHDPH	2,240	3,427	1,187	53%
	11.3 MPT	794,641	805,272	10,631	1%
	11.3 MSC In Genetic Counselling	157,488	166,425	8,937	6%
	11.3 MSC In Audiology and Speech Sciences	2,938		(2,938)	-100%
	11.3 MSC In Biochemistry and Molecular Biology	19,983	13,363	(6,620)	-33%
	11.3 MSC In Cell and Developmental Biology	25,860	18,222	(7,638)	-30%
	11.3 MSC In Experimental Medicine	43,082	71,710	28,628	66%
	11.3 MSC In Interdisciplinary Oncology	9,404	8,504	(900)	-10%
	11.3 MSC In Medical Genetics	18,538	14,578	(3,961)	-21%
	11.3 MSC In Neuroscience	24,097	16,704	(7,393)	-31%
	11.3 MSC In Occupational and Environmental Hygiene	5,494	2,430	(3,064)	-56%
	11.3 MSC In Pathology and Laboratory Medicine	17,110	15,739	(1,371)	-8%
	11.3 MSC In Pharmacology and Therapeutics	4,966	2,007	(2,959)	-60%
	11.3 MSC In Population and Public Health	20,890	28,548	7,659	37%
	11.3 MSC In Rehabilitation Sciences - OT	6,886	8,278	1,392	20%
	11.3 MSC In Rehabilitation Sciences - PT	6,886	8,278	1,392	20%
	11.3 MSC In Reproductive and Developmental Sciences	3,143	14,524	11,382	362%
	11.3 MSC In Surgery	26,752	19,567	(7,186)	-27%
	11.3 PHD in Anatomy and Cell Biology	1,175	-	(1,175)	-100%
	11.3 PHD In Audiology and Speech Sciences	6,669	7,289	620	9%
	11.3 PHD In Biochemistry and Molecular Biology	18,130	21,867	3,737	21%
	11.3 PHD In Cell and Developmental Biology	32,326	32,113	(212)	-1%
	11.3 PHD In Experimental Medicine	140,440	138,634	(1,805)	-1%
	11.3 PHD In Health Care and Epidemiology	8,228	1,611	(6,617)	-80%
	11.3 PHD In Interdisciplinary Oncology	25,477	37,606	12,129	48%
	11.3 PHD In Medical Genetics	36,656	39,613	2,956	8%
	11.3 PHD In Neuroscience	97,899	92,060	(5,839)	-6%
	11.3 PHD In Occupational and Environmental Hygiene	8,498	8,700	201	2%
	11.3 PHD In Pathology and Laboratory Medicine	41,901	52,104	10,204	24%
	11.3 PHD In Pharmacology and Therapeutics	30,553	33,181	2,628	9%
	11.3 PHD In Population and Public Health	35,264	37,605	2,341	7%
	11.3 PHD In Rehabilitation Sciences - OT	11,167	16,373	5,206	47%
	11.3 PHD In Rehabilitation Sciences - PT	11,167	16,373	5,206	47%
	11.3 PHD In Reproductive and Developmental Sciences	46,840	37,844	(8,996)	-19%
11.3 Total		2,542,641	2,654,030	111,389	4%
Grand Total				217,099	



Appendix D: Summary of distribution to Departments by driver

Department per FoM	Driver	DeptID	PG	Sum of 2014/15 Re	Sum of 2015/16 Re	Sum of Va	Sum of 25% I	Sum of 75% Department
▣ Anaesthesia Department Office	1.1	200301	20G33501	-	240	240	60	180
Anaesthesia Department Office Total				-	240	240	60	180
▣ Associate Dean, Research	11.1	200104	20G33240	80,235	82,989	2,754	688	2,065
	11.3	200104	20G33240	34,881	46,110	11,228	2,807	8,421
Associate Dean, Research Total				115,116	129,098	13,982	3,496	10,487
▣ Audiology & Speech Office	1.1	200401	20G33701	30,959	44,965	14,006	3,501	10,504
	6	200401	20G33701	2,456	-	(2,456)	(614)	(1,842)
	11.1	200401	20G33701	232,585	246,813	14,228	3,557	10,671
	11.3	200401	20G33701	9,608	7,289	(2,319)	(580)	(1,739)
Audiology & Speech Office Total				275,607	299,067	23,460	5,865	17,595
▣ Biochemistry Office	1.1	200501	20G33801	669,662	744,839	75,177	18,794	56,383
	4	200501	20G33801	855	-	(855)	(214)	(642)
	6	200501	20G33801	104,534	144,675	40,141	10,035	30,106
	11.1	200501	20G33801	126,513	133,860	7,347	1,837	5,510
	11.3	200501	20G33801	38,113	35,230	(2,883)	(721)	(2,162)
Biochemistry Office Total				939,678	1,058,605	118,926	29,732	89,195
▣ Cell & Dev't Sci Grad Prog	1.1	209001	20G46600	-	172	172	43	129
	11.1	209001	20G46600	102,948	95,636	(7,311)	(1,828)	(5,484)
	11.3	209001	20G46600	58,186	50,336	(7,850)	(1,963)	(5,888)
Cell & Dev't Sci Grad Prog Total				161,133	146,144	(14,990)	(3,747)	(11,242)
▣ Cellular & Physiological Sci	1.1	200201	20G33601	963,775	702,620	(261,155)	(65,289)	(195,866)
	6	200201	20G33601	58,932	75,290	16,358	4,090	12,269
	11.3	200201	20G33601	1,175	-	(1,175)	(294)	(881)
Cellular & Physiological Sci Total				1,023,883	777,911	(245,972)	(61,493)	(184,479)
▣ Dean's Office-Medicine	3.1	200101	20G33101	1,727,278	1,721,381	(5,898)	(1,474)	(4,423)
	3.2	200101	20G33101	3,737,379	3,721,469	(15,910)	(3,978)	(11,933)
	3.3	200101	20G33101	382,108	408,686	26,578	6,645	19,934
	4	200101	20G33101	428	-	(428)	(107)	(321)
	5	200101	20G33101	396,941	189,194	(207,747)	(51,937)	(155,810)
	8	200101	20G33101	-	10,076	10,076	2,519	7,557
	10	200101	20G33101	10,342	-	(10,342)	(2,585)	(7,756)
	11.1	200101	20G33101	67,610	76,570	8,960	2,240	6,720
	11.2	200101	20G33101	2,271	2,509	238	60	179
Dean's Office-Medicine Total				6,324,356	6,129,884	(194,472)	(48,618)	(145,854)
▣ Department Of Medicine Office	1.1	201101	20G34501	-	1,030	1,030	257	772
	4	201101	20G34501	855	-	(855)	(214)	(642)
	6	201101	20G34501	702	738	37	9	27
	11.1	201101	20G34501	567,043	576,938	9,895	2,474	7,421
	11.3	201101	20G34501	305,518	319,109	13,591	3,398	10,193
Department Of Medicine Office Total				874,118	897,815	23,697	5,924	17,773
▣ Emergency Medicine	1.1	200901	20G38000	-	446	446	112	335
Emergency Medicine Total				-	446	446	112	335
▣ FMPR - Central Admin	1.1	200602	20G34101	251,039	273,119	22,080	5,520	16,560
	6	200602	20G34101	-	3,691	3,691	923	2,768
FMPR - Central Admin Total				251,039	276,810	25,771	6,443	19,328
▣ Medical Genetics Office	1.1	201001	20G34401	16,826	21,281	4,455	1,114	3,342
	4	201001	20G34401	1,711	1,745	34	9	26
	6	201001	20G34401	1,403	2,214	811	203	608
	11.1	201001	20G34401	107,189	97,686	(9,503)	(2,376)	(7,127)
	11.3	201001	20G34401	212,683	220,616	7,933	1,983	5,950
Medical Genetics Office Total				339,811	343,543	3,731	933	2,799
▣ Medical School Expansion	3.1	200116	20G52000	2,206,503	2,250,631	44,127	11,032	33,096
	3.2	200116	20G52000	4,774,287	4,869,777	95,490	23,872	71,617
Medical School Expansion Total				6,980,791	7,120,408	139,617	34,904	104,713
▣ Obstetrics: Dept Office	1.1	201301	20G34701	-	686	686	172	515
	11.1	201301	20G34701	48,755	53,509	4,754	1,188	3,565
	11.3	201301	20G34701	49,983	52,368	2,386	596	1,789
Obstetrics: Dept Office Total				98,737	106,563	7,826	1,957	5,870

5K to be absorbed by Dean's Office

Note 1

5K to be absorbed by Dean's Office

Note 2



Department per FoM	Driver	DeptID	PG	2014/15 Restated	2015/16 Final	Variance	25% Faculty	75% Department
Occupational Therapy	4	202601	20G36656	855	872	17	4	13
	11.1	202601	20G36656	60,792	66,962	6,170	1,543	4,628
	11.3	202601	20G36656	779,426	860,449	81,023	20,256	60,767
Occupational Therapy Sum				841,074	928,284	87,210	21,803	65,408
Orthopaedics: Office	1.1	201501	20G34901	-	240	240	60	180
Orthopaedics: Office Sum				-	240	240	60	180
Pathology: Office	1.1	201701	20G35101	199,990	183,876	(16,114)	(4,029)	(12,086)
	4	201701	20G35101	855	-	(855)	(214)	(642)
	6	201701	20G35101	1,403	16,239	14,836	3,709	11,127
	11.1	201701	20G35101	143,469	149,988	6,519	1,630	4,889
	11.3	201701	20G35101	59,011	67,843	8,833	2,208	6,625
Pathology: Office Sum				404,728	417,946	13,218	3,304	9,913
Pediatrics: Office	1.1	201601	20G35001	-	927	927	232	695
Pediatrics: Office Sum				-	927	927	232	695
Pharmacology: Office	1.1	201801	20G35201	127,202	129,746	2,544	636	1,908
	6	201801	20G35201	6,314	9,596	3,282	820	2,461
	11.1	201801	20G35201	39,593	35,444	(4,149)	(1,037)	(3,112)
	11.3	201801	20G35201	35,519	35,188	(331)	(83)	(248)
Pharmacology: Office Sum				208,628	209,974	1,346	337	1,010
Physical Therapy	11.1	202301	20G36401	62,919	70,216	7,297	1,824	5,473
	11.2	202301	20G36401	239	366	127	32	96
	11.3	202301	20G36401	812,694	829,923	17,229	4,307	12,922
Physical Therapy Sum				875,852	900,506	24,654	6,164	18,491
Psychiatry: Office	1.1	202001	20G35401	-	686	686	172	515
Psychiatry: Office Sum				-	686	686	172	515
School_Population & Public Hlth	1.1	200701	20G34201	3,029	154,117	151,088	37,772	113,316
	4	200701	20G34201	15,396	22,073	6,677	1,669	5,008
	6	200701	20G34201	702	22,144	21,443	5,361	16,082
	11.1	200701	20G34201	519,745	544,223	24,478	6,120	18,359
	11.2	200701	20G34201	-	2,908	2,908	727	2,181
	11.3	200701	20G34201	119,093	101,650	(17,443)	(4,361)	(13,082)
School_Population & Public Hlth Sum				657,964	847,115	189,150	47,288	141,863
Surgery: Office	1.1	202401	20G35801	-	927	927	232	695
	4	202401	20G35801	5,132	1,309	(3,823)	(956)	(2,868)
	6	202401	20G35801	702	-	(702)	(175)	(526)
	11.1	202401	20G35801	5,307	5,142	(165)	(41)	(124)
	11.3	202401	20G35801	26,752	27,920	1,167	292	875
Surgery: Office Sum				37,893	35,297	(2,596)	(649)	(1,947)
Grand Total				20,410,409	20,627,509	217,099	54,275	162,825

Medical Expansion Excluded:	(139,617)	(34,904)	(104,713)
Total to be distributed	\$ 77,482	\$ 19,371	\$ 58,112

Decreases to be absorbed by Dean's Office

Cell & Dev't Sci Grad Prog	(5,000)
Cellular & Physiological Sci	(5,000)
Surgery: Office	(1,947)
Total to be absorbed	\$ (11,947)

Note 1: Decrease due to the curriculum change where Pharmacy students are no longer required to take CAPS courses.

Note 2: Decrease due to Faculty of Dentistry students no longer enrolling in Faculty of Medicine courses as they are now offered within the Faculty of Dentistry (e.g. Foundation of Medicine, Principles of Human Biology).