College of Science Annual Financial Report 2021 – 2022

Roy Haggerty, Dean Draft, January 19, 2022. Finalized February 27, 2022.

Summary

To continue building a collaborative and transparent university, with strong shared governance, OSU has asked that each college provide an annual strategic financial report internally to their faculty, staff and students. I support this request, and the financial report that follows provides an overview of College of Science revenues, expenditures, budget, investments and outcomes from our last complete fiscal year (July 1, 2020 – June 30, 2021, "FY21"), a description of how the internal College budget process works, strategic and financial priorities for the current fiscal year (FY22), and a preview of the next two fiscal years (FY23 and 24).

The College's FY22 education and general fund (E&G) budget is \$44.1M, the vast majority of which (>96%) will be spent on labor and other personnel expenses (OPE). The College began FY22 with an operating surplus of just over \$5M, which will decline over FY22 and FY23. Nevertheless, following several years of shrinking faculty numbers, the College is searching for 10 tenure-track faculty this year, with the expectation that core campus funds allocated from the Shared Responsibility Budget Model – in particular, the Academic Productivity Pool net of Ecampus – will stop declining and that Ecampus will continue to grow rapidly. The College's Ecampus revenue has grown at an average of 27% per year for the past three years, and with new investments, we expect to be able to maintain 20% growth for at least two or three more years.

Key challenges and opportunities in coming fiscal years include growing Ecampus while also growing our research across the College, working to ensure equitable access and inclusion for underrepresented students, faculty and staff, and designing and moving into new facilities.

Some terms used in this report may be unfamiliar to readers: a glossary is provided in Appendix A (staring on p. 15).

FY21 Investments & Outcomes (2020 – 2021)

COLLEGE BUDGET ALLOCATION. COS allocates its budget internally by dividing funds into four "boxes", which are color-coded in the FY21 internal budget in Table 1. The light blue box is direct revenue to the departments, which includes tuition from Ecampus, summer session, returned overhead (ROH), sales, Honors College agreements for instruction, and central funding for graduate student health and life insurance. The gold box is funding that came from the Provost's office for strategic investments to grow revenue and bridge funding from the College to help revenue growth. This funding is winding down, and will be zero in FY23. The green box is funding from the College to departments to pay 65% of the salaries and OPE of professorial, senior instructor, heads, and one office manager per department. The dark blue box is funding from the college that shadows the university's Shared Responsibility Budget Model (SRBM). This rewards units for undergraduate and graduate student credit hours (SCH) and degree completions, and adds an approximate 100% bonus for ROH. Consequently, units receive more ROH (approximately 185%) than they generate, as a research incentive. The central COS dean's office budget is funded by a 12.5% tax on most College revenues, with the exception of departmental fees and sales, and graduate student health and life insurance reimbursements.

							1	Total to	FY 2020	
	SBB	SCH	SMB	SMT	SPH	SST	SZO/SIB	Departments	Initial Budget	Change
ECampus, Summer, and ROH (87.5% to Dept)	583,566	2,437,071	348,688	1,763,724	543,998	1,563,009	1,332,268	8,572,324	7,337,941	1,234,384
Internal and External Fees and Sales	8,627	263,327	24,494	363,974	17,116	37,125	187,883	902,545	993,768	(91,223)
Honors		45,000	-	144,000	65,000	-	82,500	336,500	336,500	-
Grad Health/Life	48,810	342,255	41,046	315,708	141,504	215,258	259,922	1,364,503	1,355,887	8,616
Total Estimated Revenues to Department	641,003	3,087,653	414,228	2,587,405	767,618	1,815,392	1,862,573	11,175,872	10,024,095	1,151,776
Financial Plan Investments	82,611	32,842	88,674	65,684	82,105	-	26,274	378,189	598,800	(220,611)
Bridge Funding	-		-	-	341,053	-	189,474	530,526	840,000	(309,474)
Total Financial Plan Investments & Bridge Funds	82,611	32,842	88,674	65,684	423,158	-	215,747	908,716	1,438,800	(530,084)
Funded Positions	1,546,453	3,203,127	1,298,376	3,153,530	2,174,146	1,910,370	3,024,307	16,310,309	16,366,161	(55,852)
Block Funding	-	500,000	125,000	200,000	200,000	-	400,000	1,425,000	1,425,000	-
Total Funded Positions & Block Funds	1,546,453	3,703,127	1,423,376	3,353,530	2,374,146	1,910,370	3,424,307	17,735,309	17,791,161	(55,852)
Trasl Martin Distribution	450.050	1 701 000	CA7 151	1 772 074	000 207	F70 100	1 545 100	7 744 033	10 550 027	12 005 2141
Total Metric Distribution	450,058	1,761,998	647,151	1,//2,9/4	989,397	578,136	1,545,109	7,744,823	10,550,037	(2,805,214)
Tatalla Mal FR C Deserves for Deserves	2 720 124	0.505.630	2 572 420	7 770 502	4 554 210	4 202 000	7 047 720	27 5 64 720	20 904 002	(2 220 274)
Total Initial E&G Resources for Department	2,720,124	8,585,620	2,575,428	1,119,595	4,554,519	4,505,899	7,047,756	57,564,720	59,804,095	(2,239,374)
Check	-	~				-	-	-		
FY 2020 Total Initial E&G Resources	2,965,226	8,766,836	2,857,672	8,335,846	4,970,169	4,234,947	7,673,397	39,804,093		
\$ Change, FY 20 Initial to FY 21 Initial	(245,102)	(181,216)	(284,244)	(556,253)	(415,849)	68,952	(625,661)	(2,239,374)		
			C ==		la Office Shude	nt Comisso Co	sine Deen's B	udant Broomer)	522020	Change
			Cer	itral COS (Dean	s office, Stude	f ECompute Sup	sine, Dean's Bi	1 224 619	1 048 377	176 241
					12.5% 0	of Non-Peyer	iner, and ROH	2,224,618	1,048,277	(400 720)
					Einancial Pl	an Investments	in Control COS	102 461	4,404,554	(499,738)
					Financial Pl	ditional Cat Asid	In Central COS	185,461	290,480	(107,019)
					Ad	Unitional Set Asio	for Tolocorr	360,000	300,000	-
						Holdback	tor relecomm	260,000	260,000	5

Total Initial E&G Resources for Central COS 6,072,694 6,503,111 (430,417)

Table 1. Internal COS budget for FY21.Light blue box= direct revenue to departments. Goldbox= Provost's financial plan (strategic) investments and Dean's bridge funding todepartments.Green box= funding for faculty, department head and office manager, and blockfunding to assist with structural budget challenges such as GTA funding.Dark blue boxproductivity metric funding (shadows the university Shared Responsibility Budget Model).Thetotal internal budget for FY21 was \$43,637,414.

Another view of how the budget is allocated internally is shown by the flow chart below in Figure 1.



Figure 1. Flow chart illustrating how the internal COS budget is determined. The light blue box, green box, gold box and dark blue box in this flow chart are the same as referenced above.

COLLEGE REVENUE & EXPENSES. COS' education and general fund ("E&G") revenue for FY20, FY21 and projected FY22 are shown in Table 2. While the focus of this section is FY21, the context of adjacent years may be useful.

COS Revenue	FY20	FY21	FY22 (projected)
Dedicated purpose funds & Other (fees, sales, endowment match, etc.)	2,819,087	2,664,400	3,262,430
Ecampus + Summer	8,907,707	11,712,639	13,481,284
Returned Overhead (ROH)	866,944	840,487	848,142
Academic Productivity Pool net of Ecampus & ROH	32,973,425	29,286,924	26,663,400
Financial Plan Investments & Adjustments from Provost's Office	2,261,407	1,950,000	1,002,950
Total Resources	47,828,570	46,454,450	45,258,207
Net Dean's Office Commitments and Transfers	(2,045,299)	(999,815)	(1,184,738)
Net Revenue	45,783,271	45,454,635	44,073,469

Table 2. COS education and general fund (E&G) revenues for FY20 – 22 (FY22 projected). Here, "Academic Pool The E&G funds in Table 2 are distributed to the College according to the Shared Responsibility Budget Model (SRBM). For more information on the SRBM, please see <u>OSU's Budget and</u> <u>Resource Planning page</u>.

Table 3 shows College expenditures for FY21. Payroll, grad student tuition and fee reimbursements, and OPE make up about 96½% of the College's expenses from the E&G funds.

Category	BB	Chem	MB	Math	Phys	Stats	IB	NMR	CoSine	Dean's Office	Total
Unclassified Salaries	1,488,539	3,225,635	1,423,361	3,626,160	2,285,396	1,826,662	3,359,347	87,342	239,862	1,351,114	18,913,419
Classified Salaries	27,968	289,225	152,203	82,869	53,346	48,883	127,991	57,694	152,115	101,558	1,093,852
Student Pay	15,922	74,461	3,870	133,216	204,543	46,490	51,573		88,727	205,302	824,103
Grad Asst/Res Phys/Dent/Clin Fellws	264,857	1,765,838	172,759	1,288,234	664,672	614,969	1,120,888	8,704			5,900,921
Grad Assist Fee Remissions	194,793	1,198,233	128,272	954,588	450,126	521,015	846,652	3,801			4,297,481
Other Payroll Expenses (OPE-excluding GA fee remissions)	867,773	2,234,361	872,435	2,377,924	1,331,454	1,080,423	2,049,232	73,422	216,584	677,653	11,781,261
Services & Supplies Expense	75,459	313,473	46,856	47,850	30,705	19,810	124,250	116,839	34,396	652,694	1,462,332
Other: Capital Outlay + Student Aid from E&G	21,706									35,060	56,766
Transfers In + Internal Sales Reimbursement	(29)	(131,116)	(24,166)	(58,287)	(9,427)	(1)	(99,671)	(42,383)	(385,169)	(159,481)	(909,730
Transfers Out	401	98,197	24,166	58,287	9,427	1	104,671			184,956	480,106
Total FY21 Expenditures	2,957,387	9,068,309	2,799,756	8,510,841	5,020,240	4,158,252	7,684,933	305,419	346,515	3,048,856	43,900,509

Table 3. COS E&G expenditures for FY21, broken down by budget unit. Budget units include all departments, the NMR facility, CoSINE, and the Dean's office. The NMR facility is one of a few centers and institutes that the College supports, but other centers and institutes' budgets run through the Research Office. CoSINE was part of the College in FY21, but now comes under University Information and Technology. Therefore, in the future, CoSINE services will appear simply as a transfer of funds out of the College. The Dean's office expenditures include the salaries of student services, research support, the dean, associate deans, directors, all of the College's telecomm expenses, marketing & communications, and contributions to other centers and institutes (e.g., the electron microscope) and some research cost-shares.

COLLEGE FUND BALANCES. Balances in the College operating indices at the beginning and end of FY21 are shown in Table 4, below. As of 7-26-2021 Pd 14 Close

E&G OPERATING INDEXES

					Adjustments to	
					Ending FY2021 Fund	Adjusted FY2022
		FY 2021 ANNUAL	FY2021 Beginning	FY 2021 Ending Fund	Balance - Made in	Beginning Fund
Unit	Unit Name	SURPLUS/(DEFICIT)	Fund Balance	Balance	FY2022	Balance
SBB	Biochemistry & Biophysics	(214,169)	333,973	119,804		119,804
SCH	Chemistry	28,712	(545,351)	(516,639)	516,639	0
SMB	Microbiology	(49,609)	404,743	355,134		355,134
SMT	Mathematics	502,196	263,315	765,511		765,511
SPH	Physics	(7,033)	(280,975)	(288,008)	288,008	(0)
SST	Statistics	217,198	825,057	1,042,255	(500,000)	542,255
SZO	Integrative Biology	92,307	(243,238)	(150,931)	150,931	0
Total De	epartment E&G Operations	569,603	757,524	1,327,127	455,578	1,782,705
	Dean's Office	(95,032)	260,818	165,786		165,786
	Professional Success Prgrms	(9,161)	236,928	227,767		227,767
	Cosine	101,192	357,389	458,581		458,581
	NMR Facility	(141,231)	(262,569)	(403,800)	403,800	0
	SCIDBR	697,175	2,588,605	3,285,780	(825,378)	2,460,402
Total COS Central E&G Operations		552,943	3,181,171	3,734,114	(421,578)	3,312,536
TOTAL E&G OPERATIONS		1,122,546	3,938,695	5,061,241	34,000	5,095,241

NON-OPERATING E&G INDEXES

Category	FY 2021 Change in Balance	Beginning Fund Balance	FY 2021 Ending Fund Balance		Adjusted FY2022 Beginning Fund Balance
Dean's Research Reserve & SciRIS	206,980	1,137,856	1,344,836	(34,000)	1,310,836
Research Equip Reserve (RERF)	(121,249)	252,200	130,951		130,951
Tech Commons/Learning Innov	(2,512)	10,645	8,133		8,133
Professional Dev Funds ("201s")	202,551	2,212,161	2,414,712		2,414,712
Other E&G (CAM, OSAC, Endowed)	(1,416)	311,166	309,750		309,750
TOTAL Non-Operating E&G	284,354	3,924,028	4,208,382	(34,000)	4,174,382
TOTAL College of Science E&G	1,406,900	7,862,723	9,269,623		9,269,623

NOTES:

FY 2021 ending fund balance does NOT include ROH settle up/(down) which will actually occur in FY 2022

Beginning FY2021 fund balance DOES reflect ROH settle up for FY 2020 which was received in FY 2021.

The latter is the reason beginning balances on this report differ slightly from ending balances

on the same report for the prior year. Beginning in FY2022 we will recognize ROH settle up/down in the year it is paid.

Central COS Prof Success Prgrms ended in FY2021. Balance will be consolidated into Dean's Office in FY2022.

Table 4. FY21 beginning and ending fund balances in major E&G operating and non-operating indices. One can think of these as the cumulative surplus of previous years. Most fund balance within the non-operating indices (\$4.17M at the beginning of FY22) are committed to startup packages, faculty-directed funds ("201" accounts), research development and other multi-year projects.

GIFTS AND ENDOWMENTS REVENUE. Other than E&G revenues, the College has two other important sources of revenue. The first of these is gifts and endowment income, which is very important for research development, infrastructure improvement and scholarships, and comes from the generosity of friends and alumni. For FY21, the endowment income was \$1,346,788,

and the total endowment plus gift income placed in current use accounts was \$3,191,884. The College spent \$2,357,826 from these funds. The allocation of gift and endowment income is the responsibility of the Dean, who delegates some responsibility to department heads and, in some cases, individual faculty.

RESEARCH REVENUE. The second important source of revenue for the College is research awards, which primarily come from federal agencies. COS faculty were awarded \$24.4 million in new research grants and awards in fiscal year 2021, a 55% increase over the average of the previous three years and one of the highest awards ever. The awards are equally distributed between faculty in the School of Life Sciences—which includes Integrative Biology, Microbiology and Biochemistry and Biophysics, and those in the departments of Physics, Chemistry, Statistics and Mathematics. The previous year's total was \$15.88 million. Research spending is largely directed by tenure-track faculty. Most of the College's funding was awarded by federal agencies with the National Science Foundation (\$13M) and National Institutes of Health (\$4M) leading the list. Foundation and industry awards contributed \$4M and the remainder in other categories. COS research expenditures for FY21 totaled \$12.2M – down from \$13.4M the previous year. Federally funded expenditures for the year were \$8.85M. Please see Appendix B for a complete report on research revenue and expenditures.

FY21 STRATEGIC INITIATIVES AND ASSOCIATED FINANCIAL COMMITMENTS.

The following is a summary of major E&G strategic initiatives and associated financial commitments.

<u>Faculty and staff changes</u>. FY21's focus was on getting through the heart of the pandemic. Two assistant professors from searches in FY20 were added in Chemistry and Microbiology. Additionally, an opportunity hire was made in Integrative Biology. As a cost-saving measure, teaching loads increased in most departments across the College, and when instructors and staff departed OSU, they were only replaced to meet urgent instructional and administrative need that could not be met in other ways. As cost saving measures, in the dean's office, the Integrated Professional Development Program (IPD) was closed and the transfer advisor position was not refilled, resulting in a reduction in four positions.

Investment in Research. In FY21, the College's Research Reserve fund was decreased from previous years slightly to \$767k (\$800k regular funding less prior-year carry forward net of commitments -\$33k). These funds were used to provide matching for major projects such as the Continuous Flow Facility funded by the Murdock Charitable Trust (\$175k set-aside), faculty startups (\$648k), lab renovations, equipment and supplies (\$27k), major proposal development (\$25k) and the remainder for SciRIS grants, other faculty support.

<u>Investment in Education and Instruction.</u> The College granted \$893k across 295 scholarships to 248 students. The College continues to support the Supplemental Instruction tables, the tutoring centers (i.e., Mole Hole, Vole Hole, Worm Hole and the Math-Stats Learning Center), and the Learning Assistants Program. Mathematics undertook a major overhaul of the introductory calculus sequence.

<u>Other investments.</u> Beyond research investments, the College detailed a number of faculty and staff part-time to the TRACE project (e.g., Dalziel, Lubchenco, McLaughlin, Yong, Maddux, Cissna) to assist in statewide and OSU testing for COVID, and the College invested more than \$100k in equipment and supplies for the same project. Staff in ChemStores (Hansen, Root) invested considerable time manufacturing supplies (hand sanitizer, surface sanitizer, etc.) for the pandemic for campus-wide use.

REVENUE GROWTH AND COST SAVINGS. In FY21, the College continued a multi-year effort to bring expenditures into alignment with revenue. The most significant revenue growth to the College has been Ecampus, which again grew significantly in FY21.



COS Departmental Ecampus Revenues by Fiscal Year

Figure 2. Ecampus revenue growth by department, not including summer, through FY21.

Cost saving measures have been taken College-wide in everything from modest increases in teaching loads to closing programs (e.g., IPD). One of the biggest cost-saving measures in the College has been a modest level of hiring of Tenure-Track Faculty (TTF). By FY21, the number of TTF had dropped by approximately 10% from four years earlier. This has lowered salary expenditures and start-up costs but has caused some departments to drop below 60% of their FTE within the tenure and tenure-track ranks and, in one case, below 50%. COS as a whole is right at 60%. OSU's <u>Accreditation Self Evaluation</u> (see p. 18) says that if OSU as a whole falls below 60%, that would be a failure, and that excellence would be above 80%.

EFFECT OF FY21 TEMPORARY SALARY REDUCTION PROGRAM. OSU implemented a salary reduction program from July 1 to Dec. 31, 2020 on senior leadership and Sep. 1 to Nov. 30 on other OSU employees. An analysis by ASBC indicates that this saved approximately \$295,000

within the College, which was a significant contribution to the College ending FY21 with a modest surplus rather than a deficit.

FY 22 Strategic & Financial Priorities (2021 – 2022)

MISSION AND VISION. The <u>mission, vision and values</u> of the College are provided on our website. In brief, the College desires to advance science through discoveries in human and ocean health, materials science, data science and basic, curiosity-driven research; to innovate with these discoveries to make a difference in people's lives; and to provide an excellent science education to all OSU students regardless of background or major.

STRATEGY. While the new College strategic plan is being written, we will continue to contribute to OSU's Land Grant and R1 missions by attracting and retaining excellent tenure-track professors who make up most of our faculty. Excellent fixed-term faculty will continue to teach larger, lower-division classes, and world-class graduate students will contribute research discoveries while pursuing their studies and assisting in our labs and recitations. We will continue to grow our Ecampus presence that provides an excellent education to thousands of students and that will more than offset projected flat on-campus enrollment. We seek growth in donations to further assist with tuition and living expenses for students with financial need and for those who have historically been vulnerable or marginalized, to grow our research, and to build our scientific and educational infrastructure. We seek opportunities in the near term for the Departments of Chemistry, Physics and Statistics to move into adequate, 21st-century facilities, and in the medium-term for the Department of Mathematics and the Dean's Office to move in to renovated space. We will invest to improve student and research outcomes. Across all strategies, we will invest to improve outcomes for minoritized students, faculty and staff.

FACULTY AND STAFF SEARCHES. The ratio of tenure-track faculty (TTF) to fixed-term faculty in the College has lowered to 60%, and in some units is even lower. As an R1 institution, a principal part of our mission is to advance knowledge, which depends on the tenure-track faculty. OSU's <u>Accreditation Self Evaluation</u> (see p. 18) says that if OSU as a whole falls below 60%, that would be a failure, and that excellence would be above 80%. In FY22, we have launched searches for 10 TTF. Together, along with two opportunity hires, these will strengthen the College in each of our strategic areas of data science, life and biomedical sciences, marine science, materials science, and basic science. Beginning in FY22, we are investing \$150k/y in a new program in equity, access and inclusion (EAI) led by a new director for EAI.

RESEARCH. The College has increased its set-aside to the Research Reserve fund to more than \$1.2M this year. This will continue to fund the SciRIS program as well as fund faculty startups and assist in research priorities such as the Physics Frontiers Center and the Genetic Code Expansion for All (GCE4AII) center in Biochemistry and Biophysics. We continue to provide matching funds for many major equipment proposals, such as RERF, Murdock, and NSF Major Equipment Instrumentation, and grant writing support for larger projects. Additionally, we are

expanding our Research Development program, led by Vrushali Bokil and Bettye Maddux, by hiring a research program coordinator.

RENOVATIONS, EQUIPMENT AND INFRASTRUCTURE. The College established an Infrastructure Working Group that set infrastructure priorities with costs in the range of \$50k - \$500k, which is approximately the range that the College can be helpful with. Smaller infrastructure needs can be accommodated within unit budgets and larger infrastructure needs require OSU, donor, state or federal support. Infrastructure projects were funded in Microbiology (autoclave and security upgrades, \$91k) and Biochemistry and Biophysics (purchase of a Keyence microscope for the cell culture facility, \$160k). A series of faculty labs in Chemistry (Gilbert Hall) are being repaired for better temperature control, dust control and airflow. The College is funding a facilities manager (Robinson) to assist in the move of Integrative Biology out of Cordley Hall in late summer, 2022, which will then allow the renovation of the east side of Cordley. The College is working with the Provost's Office, the College of Engineering and CEOAS to build a Collaborative Innovation Complex (CIC). The CIC, along with the move out of Weniger Hall to the old heat plant and Plageman Hall, will result in new or like-new space for all of Physics, Statistics and some of Chemistry.

EQUITY, ACCESS AND INCLUSION. Investment in equity, access and inclusion will increase in FY22. In FY22, the College committed to a new investment in EAI of \$150k/year. Continuing beyond the many activities of faculty, staff and students in equity, access and inclusion (EAI), the largest investment of the College will be within our scholarships, which were mentioned previously. Of the recipients, 14.9% were from URM populations, the same percentage of the College that is from URM populations. A new scholarship (started in FY21) is the Equity Promise Scholarship, which has granted more than \$150k to students in extreme financial need. Of those scholarships, 30.9% went to students from URM populations. Additionally, the College continues to support the Louis Stokes Alliance for Minority Participation (LSAMP) at \$35k and STEM Leaders at \$60k (increasing to \$70k in FY23). The College is funding an Educational Opportunity Program (EOP) section for CH231, 232 and 233 in FY22, and is making investments in access for disabled students, including supplying GTAs to assist in instruction of our blind students.

EDUCATION AND STUDENT SUCCESS. The College continues to invest in our expanding Ecampus mission, with the launch of our e-Biohealth Science BS path this year, and the addition of advisors (co-funded by Ecampus) to our e-Zoology BS program. Instructors have been added across the College where cost-effective to advance Ecampus instruction. In our scholarships, we are taking increased care to ensure our allocations are representative of the student body, we are increasing the funding of freshmen and sophomores and students with financial need, and we continue to fundraise. We have just hired an undergraduate recruiter.

FY23 & 24: Looking Forward 2022 – 2024

ENROLLMENT TRENDS. The College is experiencing two divergent trends – a rapid rise of Ecampus Student Credit Hours (SCH), which we have worked toward, and a slow decline of on-campus SCH, which we have been trying to counteract. The trends are shown below.



Figure 3. On-campus (including summer) vs. Ecampus SCH since 2013, all levels. FY21 was the first year since FY14 that total SCH increased.

Ecampus SCH growth has been led by Chemistry, Mathematics, and, recently with the advent of the e-Zoology degree, Integrative Biology. Revenues largely track SCH, with funds associated with on-campus SCH in decline and funds associated with Ecampus on the rise. Demand for Ecampus Science classes is associated with growth in Ecampus via Computer Science and other majors, as well as new College degree pathways.

The College expects continued growth in demand for Ecampus and expects on-campus demand to be flat. See Appendix C for more detailed enrollment details.

FINANCIAL OUTLOOK. Based on what we know about enrollment, expenses, past trends, the Shared Responsibility Budget Model (SRBM), predicted raises, and inflation, we can project College surplus or deficits in expenditures relative to budget (Figure 4) and fund balances (Figure 5).



Figure 4. Past and future projected operating surplus (positive) or deficit (negative) in the College. The sharp decline in FY21 – 23 is due to significant declines in the academic productivity pool and a planned tapering of financial investments from the Provost's office. The expected reversal in the trend in FY23 and thereafter is when, at current growth projections, Ecampus revenue growth will overtake other declines.



Figure 5. Past and future projected operating fund balance in the College.

The College has seen flat or declining revenue from the SRBM's Academic Productivity Pool, which is the primary source of funding to the College. The university distributes this in the SRBM via the Academic Productivity Pool, which after Ecampus revenue is subtracted, has been shrinking since the SRBM was put in place. The reason for the declines in the Academic Productivity Pool relates to two fundamentals. First, the net tuition revenue the university receives (tuition from on-campus students minus tuition waivers), which is the top line shown in Figure 6, has been declining since FY19. This is partially due to a very significant and strategically important increase in tuition waivers to address widening need gaps among Pelleligible students and help attract out-of-state students (in part to offset the drop in international student enrollment). Second, the Academic Productivity Pool tends to suffer when OSU chooses or is forced to invest in other areas, because it is one of the few parts of the university budget that are not constrained by other factors such as legal or political forces.



Figure 6. Key elements of the OSU budget that drive the College budget and revenues.

The College expects Ecampus revenues to continue to grow robustly, while it expects the Academic Productivity Pool to continue to be flat or decline. Since the College finished FY21 with an operating fund balance of \$5.06M, it was able to increase strategic expenditures somewhat. Given that retirements and departures of tenure-track faculty have significantly exceeded hiring in recent years, that there were needs across the College, and that the College

is about to fall below 60% tenure-track faculty, a total of 10 hires were authorized for FY22. These hires are expected to start in FY23 and FY24. With other expenditures and a flat FY22 and FY23 budget, it is expected that these two fiscal years will result in deficit spending and a significant reduction or elimination of the fund balance. If the revenue outlook does not improve in FY23 and FY24, the College will likely have to return to allowing tenure-track faculty numbers to decrease.

STRATEGIC PRIORITIES. Strategic priorities over the next two fiscal years for the College include the following.

<u>Continue to grow Ecampus.</u> It is vital for the College that Ecampus continues to grow. As the main source of revenue growth offsetting decline in the on-campus revenue pool, the College must continue to grow Ecampus. In the next two years, the College will look at how best to organize instruction such that Ecampus revenue supports the R1 mission while maintaining high quality.

<u>New facilities.</u> With the Collaborative Innovation Complex, an opportunity exists to place Physics, Statistics and some or all of the non-LPSC part of Chemistry into new facilities. The move of Integrative Biology first out of, then back to Cordley will also happen over this time. Together, these are the most important infrastructure improvements in the College of Science in decades and will be a major strategic priority.

<u>Equity, Access and Inclusion.</u> The establishment of the EAI program in the College, although modest in size, is intended to make a significant improvement in outcomes for minoritized students, faculty and staff in the College.

<u>Continue to develop research and innovation.</u> Through investment in research development, the College has been able to help excellent faculty go after major new research funding. The College will continue to invest in research development and innovation, following a strategy to see these investments generate new discoveries and recognition (research) and funding for the College and local economy (innovation).

EXPENSE TRENDS. University expenditures are primarily salary and OPE, the totals of which (not necessarily for individuals) have historically grown faster than inflation. This is a common feature of economic sectors that are heavily labor-dependent (vs. technology-dependent). Trends in the College expenditures have followed the university. Trends described above assume a 3.5% average raise on July 1, 2022, and a 3% average raise on July 1, 2023.

KEY CHALLENGES AND OPPORTUNITIES. The key challenges and opportunities in the College in the coming years are the following.

<u>Growing Ecampus while advancing the research mission.</u> While Ecampus is a welcome source of revenue, for us to fulfill our R1 and Land Grant research missions, we must use a significant fraction of that revenue to support research. Doing this in the most efficient manner is critical.

For example, should the College increase its use of graduate students to teach some Ecampus sections, thereby supporting more graduate students and advancing our research mission. Similarly, with declining in-person SCH, should tenure-track faculty take on a greater role in Ecampus teaching? These are questions we will need to answer in the next two years.

<u>Rising startup costs.</u> In some fields such as biochemistry, offers for startup at competing universities frequently top \$1M, and in several fields can exceed \$500k. Accessing funds of this magnitude are an increasing challenge for the College. In future hires, we will need to take steps such as ensuring we hire faculty who will use existing equipment, work with shared equipment, and attract faculty who want to be at OSU for personal reasons and therefore are willing to accept startup offers smaller than at peer institutions.

<u>Insufficient funding for an R1 College of Science.</u> Previous analyses have shown that OSU's College of Science is under-funded compared to peer units at other universities. These analyses are provided in other years financial plans, particularly in the appendices of the FY19 plan. Clearly, one of the key challenges for the College is to fulfill its mission with less revenue than is needed.

<u>Increasing equity, access and inclusion.</u> As resources change, the College must take care to include potentially vulnerable students, faculty and staff in key decisions, and to work to expand access and equity for the same. This involves resources as well as careful decision-making.

<u>Planning for new facilities and associated moves.</u> As OSU renovates Cordley Hall and plans several new facilities, the College will have the opportunity to significantly improve its physical infrastructure. This will require a significant investment of time and some College resources.

Appendix A: Glossary of Terms

Academic Productivity Pool. The academic productivity pool is a quantity in the Shared Responsibility Budget Model (SRBM) that allocates funds to academic units in proportion to student credit hours of various types (lower division, upper division, graduate, within and outside the major), degree completions (BS, MS, PhD, minors and certificates), success with strategic populations (graduations for URM and Pell-eligible students), and teaching within the Honors College. Ecampus reimbursements are lumped in with the Academic Productivity Pool within the SRBM, though I have tried to separate the numbers in this report. It is not clear to me how the Academic Productivity Pool net of Ecampus number is determined, though it is clear the number has declined significantly (Figure 6).

Arts and Science Business Center (ASBC). This is the group of accountants that manage the College's financial transactions and assist us with strategic financial planning.

Current Use. Current use funds are funds held at the OSU Foundation that may be spent at the discretion of an OSU dean or other executive, in agreement with the gift agreement that established the fund. Some funds, such as the Renaissance Fund can be used for a wide range of purposes that benefit the College and its faculty and students, while others, such as the Women in Science Fund, have specific uses.

Dean's Office Commitments and Transfers (Table 1). This is the net of incoming and outgoing budget transactions related to Dean's Office Commitments, which include the research reserve setaside, special university commitments to a small number of faculty, ROH settle-up to units, department transfers out faculty development accounts and miscellaneous incoming department transfers such as Laurels block grants, advising and development MOUs, and several other similar items.

Dedicated purpose funds. These are funds that come into OSU for a specific purpose. Examples include targeted state funding for a specific program, differential tuition fees, and materials sales. Most of COS' dedicated purpose funds are from student fees and sales (e.g., Chem Stores).

Education and General Funds (E&G Funds). Those funds received by the university directly from the legislature, from student tuition, and from facilities and administrative (F&A) cost recovery. The funds are subject to expenditure limitations and are allocated to colleges and departments through the budget process. <u>Definition from here</u>.

Educational Opportunity Program (EOP). The EOP program at OSU is <u>described here</u>. Among EOP's offerings includes sections of key classes that are smaller and offer specialized instruction. The EOP controls access to enrollment in these sections.

Endowment. An endowment is a sum of donated money intended to provide a reliable stream of income for a particular use at OSU over the long term. The use is specified in the

gift agreement with the donor. OSU's endowment is held at the OSU Foundation and is invested, providing an income of 4.0%. <u>Definition from here</u>.

Facilities and Administrative costs (F&A costs). F&A cost recovery is the Facilities and Administrative costs paid by research grants to help cover the cost of maintaining research facilities and services. These are sometimes called overhead or indirect cost charges. These rates are negotiated with the Federal government (in OSU's case, with the NIH) and cover costs to support research expenses like utilities, library, research administration, and others. The F&A rate is based on actual and auditable expenses that OSU has already paid to support research. Definition from here. OSU's F&A current F&A rate for on-campus federally-sponsored research is 48.5% of modified total direct costs (MTDC). See Returned Overhead and Modified Total Direct Costs.

Faculty-directed funds. These are funds that faculty have some control over. While all funds at OSU are legally controlled by OSU, faculty are typically granted discretion on faculty-directed funds. In the College, most faculty-directed funds are located within accounts with an index SCI201-xxxx, where "xxxx" is an activity code. These indices are where startup and some other E&G funds are placed.

Fiscal Year. A fiscal year is an accounting period of 12 months that does not necessarily correspond to the calendar year. OSU's fiscal year corresponds to the State of Oregon's fiscal year, which runs from July 1 to June 30.

Modified Total Direct Costs (MTDC). MTDC, in a grant budget, are all direct salaries and wages, applicable fringe benefits, materials and supplies, services, travel, and up to the first \$25,000 of each subaward. MTDC excludes equipment, capital expenditures, charges for patient care, rental costs, tuition remission, scholarships and fellowships, participant support costs and the portion of each subaward in excess of \$25,000. <u>Definition from here</u>.

Operating Budget. The operating budget is a budget of income and expenses for a fiscal year. It does not include funds set aside or committed in the past to startup, equipment purchases, or many other assets that the College controls.

Other Payroll Expenses (OPE). OPE is the cost of an employee beyond wages, including health insurance, retirement benefits, and payroll taxes. <u>Definition from here</u>.

Returned Overhead (ROH). The ROH is a fraction of the F&A that is returned to a unit. For most colleges at OSU, the ROH is 26% of the F&A funds collected on all grants. For example, if all grants in the COS have an F&A rate of 48.5% (the average F&A rate is usually in the range of 35 - 40% because not all grants are federal and a few federal grants have a different F&A rate), the COS ROH would be 12.61% of MTDC.

SciRIS fund. This is the Science Research and Innovation Seed fund. SciRIS' purpose is to accelerate the pace of research, discovery and innovation in the College by enabling scientists

to work across an array of disciplines. SciRIS has a budget of more than \$250k/y. More information about SciRIS is available <u>here</u>.

Shared Responsibility Budget Model (SRBM). The SRBM is the algorithm, which is expressed in a spreadsheet each year, which allocates E&G funds within OSU. <u>See here for more information</u>.

Student Credit Hours (SCH). SCH for a unit is the sum over all classes of the number of students taking the class multiplied by the credit hours for the class. For example, MTH 251 is a 5 credit hour class. If 1000 students take MTH 251, that generates 5000 SCH.

Underrepresented Minority (URM). URMs are any population that is less represented than in the general population. In science and when referenced in this report, this includes Black and African American, Hispanic, Native American, Pacific Islander. Some definitions of URM would also include women.

Appendix B: Research Awards and Expenditures – FY21

College of Science faculty were awarded \$24.4 million in new research grants and awards in fiscal year 2021¹, a 55% increase over the average of the previous three years and one of the highest awards ever². The awards are equally distributed between faculty in the School of Life Sciences—which includes integrative biology, microbiology and biochemistry and biophysics and those in the departments of physics, chemistry, statistics and mathematics. The previous year's total was \$15.88 million.

As the chart below indicates, most of the College's funding was awarded by federal agencies with the National Science Foundation (\$13M) and National Institutes of Health (\$4M) leading the list. Foundation and industry awards contributed \$4M and the remainder in other categories.

¹ Note that the report denotes actual awards that arrive in a given fiscal year. The amount represents either the full award or the increment, if the agency awards annually.

² See : <u>https://science.oregonstate.edu/impact/2021/08/science-faculty-research-funding-in-fiscal-year-2021-hits-</u> <u>a-high-mark</u>



Figure B1. Research funding for FY21.

Federal awards received in FY21 include NSF, NASA, NIH, The National Security Agency (NSA), USDA, USDI Bureau of Land Management. NSF and NIH represented 76% and 21% of the total awards respectively.



Figure B2. Federal awards for FY21.

For the FY21, 130 research proposals were submitted by the College this year – down from 143 submitted in FY20. The total requested funds from grant proposal submissions was \$65.3M, down from \$81.5M the previous year, but total awards were up \$24.4M from the previous year of \$16M. See chart below for award distribution.



Figure B3. Three-year moving averages for research funding by COS department.

College of Science research expenditures for FY21 totaled \$12.2M – down from \$13.4M the previous year. Federally funded expenditures for the year were \$8.85M.

Many Science faculty received substantial research grants this year. Below are just a few notable awards that demonstrate the College's breadth of research in the life, physical, mathematical and computational sciences.

Biochemist **Elisar Barbar** received a two-year \$300k EAGER grant from the National Science Foundation to pursue research on SARS-CoV-2 coronavirus that causes Covid-19. The research project is aimed at understanding how the N-protein of the SARS-CoV-2 performs its essential functions in viral infection and transmission. Associate professor **David Hendrix** and **Rick Cooley**, a research assistant professor in the Department of Biochemistry and Biophysics, are collaborators on the project.

Microbiologist **Rebecca Vega-Thurber** received a four-year \$800k grant from the National Science Foundation for a project entitled "Collaborative Research: Tipping points in coral reefs and their associated microbiomes: interactive effects of herbivory, nutrient enrichment, and temperature."

Mathematician **Mary Beisiegel** received funding from the National Science Foundation a \$2.1M for her project entitled "Collaborative Research: Mathematics Graduate Teaching Assistant Professional Development Focused on Implementation of Evidence-based Teaching Practices" This is a collaborative project with San Diego State University and Virginia Commonwealth University, and OSU's portion is \$855k over five years.

Physicist **Bo Sun** received \$528k from the Department of Defense for a project entitled "Decoding the mechano-regulation of breast tumor organoid invasion – one cell at a time."

Biochemist **Afua Nyarko's** received an <u>\$820k NSF grant</u> over four years for her proposal, "Assembly of multivalent regulatory complexes in hippo signaling."

In addition, the college received three large grants that were each over \$2M across the life and physical sciences.

Astrophysicist **Xavier Siemens** received a five-year <u>\$17M NSF grant</u> that moved the NANOGrav Physics Frontiers Center to Oregon State University. The center will generate deeper discoveries about the universe in the coming years and will create additional opportunities for OSU students interested in pursuing careers in astrophysics. (What is OSU portion?)

Rebecca Vega Thurber, along with co-PIs **Thomas Sharpton**, **Ryan Mueller**, **Maude David** and Xiaoli Fern from Engineering, received a four-year \$3 million NSF grant for a project entitled "<u>Defining the ecological and genomic properties that underlie microbiome sensitivity and resilience.</u>" The award was made in the category of Understanding the Rules of Life, one of NSF's 10 big ideas to advance pioneering research that serves the nation's future.

Epidemiologist **Ben Dalziel** received **\$2.8M** from the David and Lucile Packard Foundation for the project "Scaling the TRACE Project with a Coordinating Center." The grant helped in the creation of a national TRACE Center that will expand OSU's COVID-19 public health project to other states. The project also received support of \$800k from PacificSource Health Plans and \$1.07M from the Oregon Health Authority.

In the new fiscal year, the College is seeing strong momentum with significant awards totaling more than \$13M already. Below are just a few incoming awards received since July 1, 2021, including a prestigious CAREER award from the National Science Foundation.

Chemist **Marilyn Mackiewicz's** <u>new NSF CAREER grant</u> was awarded \$558k to support her work to mentor and train the next generation of scientists, including them the soft skills they need to be successful while also continuing to investigate the use of biomaterial to address age-related macular degeneration.

Computational biochemist **David Hendrix** led a multi-college collaborative team to receive \$638k from USDA-NIFA for a project entitled "The essence of Cannabaceae: Comparative genomics and metabolomics to unravel the complexities of aroma and flavor."

Microbiologist **Thomas Sharpton** received \$396k from the National Institutes of Health for a project entitled "Impacts of Benzo[a]pyrene on Microbiome Development across Lifespan and Generations and the Behavioral Consequences."

Ecologist **Mark Novak** received a \$140k grant from the National Science Foundation for a grant entitled "Collaborative Research: Timescale-Dependent Effects of Transient Dynamics in Plant-Pollinator Networks."

In this fiscal year, the college has received two large grants over \$5M each.

Chemists **May Nyman** and **Tim Zuehlsdorff's** proposal, entitled "Passive and enhanced capture and conversion of CO2 by d/f0 molecules and materials," was <u>one of the nine proposals</u> <u>selected</u> by the U.S. Department of Energy for a \$6.6M grant to explore new materials and chemical processes with the potential for improved efficiency of CO2 capture from ambient air.

Biochemist **Ryan Mehl** received a five-year Biomedical Technology Development and Dissemination (BTDD) Center <u>The GCE4All Center: Unleashing the Potential of Genetic Code</u> <u>Expansion for Biomedical Research</u> funded by the National Institute of General Medical Sciences of the National Institutes of Health for \$5.6M with the possibility for two five-year renewal.

Appendix C: Enrollment Trends

Headcount 10 Yr Trend



Students of Color 10 Yr Trend



First Generation 10 Yr Trend

Distinct count	800 600 400 200	772	786	910	7 17	854	864	872	837	862	818
		Fall 2012	Fall 2013	Fall 2014	Fall 2015	Fall 2016	Fall 2017	Fall 2018	Fall 2019	Fall 2020	Fall 2021

Pell Eligible 10 Yr Trend *counts less than 10 are not shown

Int	1000	1.002	1,158	1,143	1,108				-		
cou	2000	1,005				998	1,010	1,005	947	982	984
Distinct	500										
	0										
		Fall 2012	Fall 2013	Fall 2014	Fall 2015	Fall 2016	Fall 2017	Fall 2018	Fall 2019	Fall 2020	Fall 2021

Figure C1. All enrollment 10-year trends.

Headcount 10 Yr Trend



Students of Color 10 Yr Trend



First Generation 10 Yr Trend

Distinct count	800 600 400 200	755	762	882	78	806	812	825	782	732	637
		Fall 2012	Fall 2013	Fall 2014	Fall 2015	Fall 2016	Fall 2017	Fall 2018	Fall 2019	Fall 2020	Fall 2021

Pell Eligible 10 Yr Trend *counts less than 10 are not shown

Distinct count	1000 500 0	1,053	1,112	1,100	1,054	934	935	930	867	808	759
		Fall 2012	Fall 2013	Fall 2014	Fall 2015	Fall 2016	Fall 2017	Fall 2018	Fall 2019	Fall 2020	Fall 2021

Figure C2. Enrollments Corvallis only trends.