

# Supplemental Material

*CBE—Life Sciences Education*

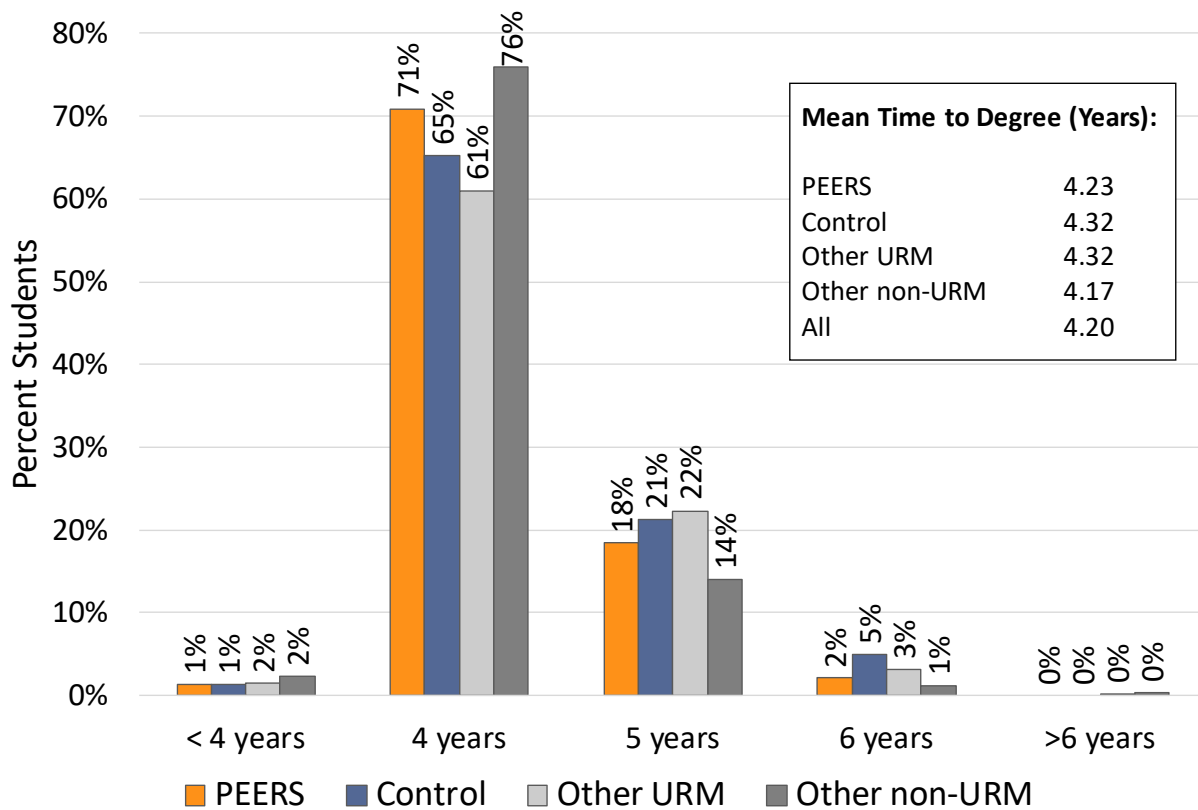
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## Supplementary materials

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### Supplementary Figure



**Figure S 1:** Distribution of time to degree for the indicated student groups. Box insert: mean time to degree. The groups are significantly different from each other (ANOVA,  $p=0.000$ ). Significant pairwise differences (ANOVA with Bonferroni correction) are found between other non-URM with Control ( $p=0.005$ ) and other non-URM with other URM ( $p=0.000$ ). All other groups are not significantly different from each other ( $p>0.05$ ).

## Supplementary Tables

<b>Supplementary table 1. Participation in undergraduate research by group*</b>											
	PEERS		Matched Control		Other URM		Other Non-URM		All		
	%	N	%	N	%	N	%	N	%	N	
Assisted UCLA faculty in research for pay	<b>29.7</b>	91	<b>11.8</b>	102	<b>13.7</b>	542	<b>13.4</b>	1774	<b>13.9</b>	2509	
Assisted UCLA faculty in research as a volunteer	<b>62.6</b>	91	<b>45.6</b>	103	<b>39.7</b>	546	<b>51.8</b>	1781	<b>49.3</b>	2521	
Assisted faculty at another university with research	<b>16.5</b>	91	<b>6.1</b>	99	<b>6.7</b>	541	<b>8.9</b>	1769	<b>8.6</b>	2500	
<i>Any research with faculty<sup>1</sup></i>	<b>77.3</b>	141	<b>41.1</b>	141	<b>45.6</b>	542	<b>57.8</b>	1774	<b>55.6</b>	2613	
Gave oral presentation/poster at UCLA	<b>38.5</b>	91	<b>21.8</b>	101	<b>16.9</b>	543	<b>25.6</b>	1769	<b>24.0</b>	2504	
Gave oral presentation/poster outside UCLA	<b>28.6</b>	91	<b>8.9</b>	101	<b>8.9</b>	542	<b>11.3</b>	1767	<b>11.3</b>	2501	
Received scholarship for UG research	<b>25.8</b>	89	<b>4.0</b>	101	<b>5.5</b>	541	<b>7.6</b>	1754	<b>7.6</b>	2485	
Co-authored published paper with faculty	<b>15.4</b>	91	<b>6.9</b>	101	<b>5.5</b>	542	<b>13.7</b>	1765	<b>11.7</b>	2499	

\*Based on UCLA College Senior Survey responses (UG research survey); 2-point scale: 1 = "Yes," or 2 = "No, did not choose to" or "No, not available"

<sup>1</sup> Includes research center data. Two-point Scale: Yes (affirmative response to at least one of the following: (1) Assisted UCLA faculty in research for pay, (2) Assisted UCLA faculty in research as volunteer, or (3) Assisted faculty at another institution with research), (4) participated in a research program); No

**Supplementary table 2.** Participation in undergraduate research, pairwise comparisons by group\*: results of Chi-square test with Bonferroni post-hoc correction

		PEERS (A)	Control (B)	Other URM (C)	Other Non- URM (D)
Assisted UCLA faculty in research for pay $\chi^2(3, N=2509) = 19.7$ $p = 0.000$	No		A ( $p=0.012$ )	A ( $p=0.001$ )	A ( $p=0.000$ )
	Yes	B ( $p=0.012$ ) C ( $p=0.001$ ) D ( $p=0.000$ )			
Assisted UCLA faculty in research as a volunteer $\chi^2(3, N=2521) = 31.3$ $p = 0.000$	No			A ( $p=0.000$ ) D ( $p=0.000$ )	
	Yes	C ( $p=0.000$ )			C ( $p=0.000$ )
Assisted faculty at another university with research $\chi^2(3, N=2500) = 31.3$ $p = 0.000$	No			A ( $p=0.009$ )	
	Yes	C ( $p=0.009$ )			
Any research with faculty <sup>1</sup> $\chi^2(3, N=2598) = 64.42$ $p = 0.000$	No		A ( $p=0.000$ ) D ( $p=0.001$ )	A ( $p=0.000$ ) D ( $p=0.000$ )	A ( $p=0.000$ )
	Yes	B ( $p=0.000$ ) D ( $p=0.000$ ) D ( $p=0.000$ )			B ( $p=0.001$ ) C ( $p=0.000$ )

\* Includes all UCLA College Senior Survey responses (UG research survey) and research center data; Results are based on two-sided tests. For each significant pair, the key of the category with the smaller column proportion appears in the category with the larger column proportion. Non-significant values ( $p>0.05$ ) are not displayed.

2-point scale: 1 = "Yes," or 2 = "No, did not choose to" or "No, not available"

<sup>1</sup> Includes research center data. Two-point Scale: Yes (affirmative response to at least one of the following: (1) Assisted UCLA faculty in research for pay, (2) Assisted UCLA faculty in research as volunteer, or (3) Assisted faculty at another institution with research), (4) participated in a research program); No

**Supplementary table 3. Logistic regression predicting (1) undergraduate research participation and (2) science degree completion, for all groups (N(1)= 2446, N(2)=2415). Bold print indicates statistically significant values. NA = not available / does not apply.**

	Research participation			Science degree completion*		
	B (S.E.)	Exp(B)	<i>p</i>	B (S.E.)	Exp(B)	<i>p</i>
Sex = Female	0.10 (0.09)	1.103	0.276	-0.16 (0.10)	0.851	0.116
Math SAT	1.05 (0.17)	2.863	<b>0.000</b>	0.64 (0.17)	1.892	<b>0.000</b>
HS GPA	0.00 (0.00)	1.002	<b>0.000</b>	0.01 (0.00)	1.008	<b>0.000</b>
URM	-0.16 (0.11)	0.849	0.139	-0.28 (0.12)	0.756	<b>0.019</b>
Low SES	-0.06 (0.10)	0.941	0.541	0.08 (0.11)	1.086	0.461
PEERS	1.50 (0.28)	4.502	<b>0.000</b>	0.68 (0.26)	1.982	<b>0.009</b>
UG research	NA	NA	NA	1.13 (0.10)	3.081	<b>0.000</b>
Constant	-5.92 (0.80)	0.003	<b>0.000</b>	-7.66 (0.82)	0.000	<b>0.000</b>

\* Excludes cases with no degree awarded or missing data

**Supplementary table 4.** Participation in faculty-mentored research, pairwise comparisons by group\*: results of Chi-square test with Bonferroni post-hoc correction

		PEERS (A)	Control (B)	Other URM (C)	Other Non- URM (D)
Gave oral presentation/poster at UCLA $\chi^2(3, N=2504) = 28.0$ $p = 0.000$	No			A (p=0.000) D (p=0.000)	A (p=0.039)
	Yes	C (p=0.000) D (p=0.039)			C (p=0.000)
Gave oral presentation/poster outside UCLA $\chi^2(3, N=2501) = 30.9$ $p = 0.000$	No		A (p=0.003)	A (p=0.000)	A (p=0.000)
	Yes	B (p=0.003) C (p=0.000) D (p=0.000)			
Received scholarship for UG research $\chi^2(3, N=2485) = 47.1$ $p = 0.000$	No		A (p=0.000)	A (p=0.000)	A (p=0.000)
	Yes	B (p=0.000) C (p=0.000) D (p=0.000)			
Co-authored published paper with faculty $\chi^2(3, N=2499) = 30.2$ $p = 0.000$	No			A (p=0.000) D (p=0.000)	
	Yes	C (p=0.004)			C (p=0.000)

\* Includes all UCLA College Senior Survey responses (UG research survey); Results are based on two-sided tests. For each significant pair, the key of the category with the smaller column proportion appears in the category with the larger column proportion. Non-significant values ( $p > 0.05$ ) are not displayed.

2-point scale: 1 = "Yes," or 2 = "No, did not choose to" or "No, not available"

**Supplementary table 5.** Science degree completion, pairwise comparisons by group\*: results of Chi-square test with Bonferroni post-hoc correction

		PEERS (A)	Control (B)	Other URM (C)	Other Non- URM (D)
Science degree completion $\chi^2(3, N=3485) = 189.5$ $p = 0.000$	No		A (p=0.001) D (p=0.000)	A (p=0.000) D (p=0.000)	
	Yes	B (p=0.001) C (p=0.000)			B (p=0.000) C (p=0.000)

Results are based on two-sided tests. For each significant pair, the key of the category with the smaller column proportion appears in the category with the larger column proportion. Non-significant values ( $p > 0.05$ ) are not displayed.

**Supplementary Table 6: Students' overall satisfaction with UCLA experience, by group\***

Group (total number of survey respondents)	Academic experience			Campus life experience			Overall experience		
	M	SD	N	M	SD	N	M	SD	N
PEERS (N=92)	3.28	0.60	92	3.30	0.66	92	3.36	0.59	92
Control (N=105)	3.17	0.63	103	3.32	0.65	103	3.31	0.61	103
Other URM (N=563)	3.14	0.65	554	3.31	0.65	554	3.34	0.63	546
Other Non-URM (N=1809)	3.18	0.65	1797	3.40	0.63	1790	3.38	0.62	1770
All	3.17	0.65	2546	3.37	0.64	2539	3.37	0.62	2511

\* Sample size reflects total from each group who participated in UCLA College Senior Survey between 2012 and 2015 and responded to the respective survey item;

4-point scale: 1=very dissatisfied, 2=dissatisfied, 3=satisfied, 4=very satisfied



## Codebook

Variable	Description	Values	Value Label	Notes
<i>Student records data:</i>				
MEMBER_CONTROL	Membership in PEERS or matched control group	1 2	CONTROL PEERS	Control group created using propensity score matching as described in Toven-Lindsey 2015; N=282
GROUPS	Comparison groups	1 2 3 4	Control PEERS Other Non-URM Other URM	Other non-URM and Other URM are other life and physical sciences majors entering as freshmen in 2009 or 2010; 181 cases excluded from analysis as no information on URM status available
PEERS	PEERS versus all other groups	1 2	non-PEERS (all) PEERS	non-peers contains matched control group, other URM, other non-URM
URM_ALL	Underrepresented minority (URM) status	1 2	Non-URM URM	URM includes African American, Latino/a, Chicano/a, Native American, Pacific Islander
DEG_AWARD_YRS_ALL	Degree Award -- # of years (ordinal)	1 2 3 4 5	Less than 4 years 4 years 5 years 6 years More than 6 years	
DEG_AWARD_YRS_recode	Degree Award - in number of years, recoded to be scalar	scale	N/A	range: 3 - 7

SEX_NUM_ALL	Student sex	1	Male	
		2	Female	
HS_GPA_ALL	High school GPA	scale	N/A	range: 0.0 - 5.0
SAT_MATH_ALL	SAT math score	scale	N/A	range: 260 - 800
act_major_name	Academic major name	string	N/A	
PELL_RECIPIENT	Pell Recipient (at least one term) as a proxy for low socioeconomic status (low SES)	1	Pell recipient	Pell grants are awarded based on financial need and is used as a proxy for low socio-economic status here
		2	Did not receive Pell	
GPA_GRADUATION	GPA at graduation	scale	N/A	Range: 2.1 – 4.0
DEGREE_DIV_SCIUPDATED_ALL	Major division at graduation (Science degree)	1	NOT SCIENCE	Science degree: life or physical science majors; missing: did not graduate / left UCLA, still enrolled
		2	SCIENCE	
<i>Senior survey response data:</i>				
OverallAcad	Satisfied: Overall UCLA academic experience	1	Very dissatisfied	senior survey responses
		2	Dissatisfied	
		3	Satisfied	
		4	Very Satisfied	
OverallStuLife	Satisfied: Overall UCLA student and campus life	1	Very dissatisfied	senior survey responses
		2	Dissatisfied	
		3	Satisfied	
		4	Very Satisfied	
OverallExp	Satisfied: Overall UCLA experience	1	Very dissatisfied	senior survey responses
		2	Dissatisfied	
		3	Satisfied	
		4	Very Satisfied	
RSCHPart01_binary	Assisted UCLA faculty in research for pay	1	NO	senior survey responses
		2	YES	
RSCHPart02_binary	Assisted UCLA faculty in research as a volunteer	1	NO	senior survey responses
		2	YES	

RSCHPart03_binary	Assisted faculty at another university with research for pay or as a volunteer	1 2	NO YES	senior survey responses
RSCHPart04_binary	Received a scholarship or fellowship on the basis of your undergraduate research	1 2	NO YES	senior survey responses
RSCHPart05_binary	Received an award other than a scholarship or fellowship on the basis of your undergraduate research	1 2	NO YES	senior survey responses
RSCHPart06_binary	Gave an oral presentation or presented a poster at a research meeting at UCLA	1 2	NO YES	senior survey responses
RSCHPart07_binary	Gave an oral presentation or presented a poster at a research meeting outside of UCLA	1 2	NO YES	senior survey responses
RSCHPart08_binary	Co-authored a published paper with your faculty mentor	1 2	NO YES	senior survey responses
RSCHPart09_binary	Worked as a member of a team on a class research project	1 2	NO YES	senior survey responses
RESEARCH	combo of Rschpart01, 02 and 03 and participation in research center programs or research for course credit	0 1	NO YES	senior survey responses, undergraduate research center and registrar data
<i><u>National Clearinghouse Data (PEERS and matched control only):</u></i>				
GRAD_binary	Clearinghouse: Matriculated in grad school	0 1	NO YES	Enrolled in any graduate degree program
MED_binary	Clearinghouse: Medical school enrollment	0 1	NO YES	
JD_binary	Clearinghouse: JD enrollment	0 1	NO YES	
PHARM_binary	Clearinghouse: PharmD enrollment	0 1	NO YES	
PHD_binary	Clearinghouse: PhD enrollment	0 1	NO YES	
MSMA_binary	Clearinghouse: MS/MA enrollment	0 1	NO YES	
MSN_binary	Clearinghouse: MSN enrollment	0 1	NO YES	
MPH_binary	Clearinghouse: MPH enrollment	0 1	NO YES	
DDS	Clearinghouse: DDS enrollment	0 1	NO YES	

OTH_GRAD	Clearinghouse: Other grad enrollment	0	NO	
		1	YES	
UNKNOW_GRAD	Clearinghouse: Unknown grad degree type	0	NO	Graduate degree type not available
		1	YES	
DOCTORATE	Clearinghouse: MD or PhD or PharmD	0	NO	Combination of PhD_binary, MD_binary and Pharm_binary
		1	YES	