Students Targeted towards Advanced Research Studies (STARS) B.S. to Ph.D.

Scholars can change the world. This is an elite program focused on the best students and it is anticipated that we would admit one to three students per academic year. Students may major in one of three degree programs: Biochemistry with the Molecular Biology option, Genetics and Cell Biology or Microbiology. The Doctor of Philosophy Degree is in Molecular Biosciences.

Recruitment

Prospective students should be highly motivated with a long-term interest in a graduate Ph.D. program at Washington State University in the School of Molecular Biosciences (SMB).

The following groups of students are recruited into the program:

High ability incoming freshmen or transfer students

Current students who begin the program no later than the first semester of their junior year.

- Freshmen and first semester sophomores may self select and apply to the program.
- Second semester sophomores must have a written letter of support from an SMB faculty member who can speak to their aptitude for research and potential for success in graduate studies.

Application

All students must apply and be accepted to WSU or be current WSU students.

A committee designated by the Associate Director for Undergraduate Studies and the Associate Director for Graduate Studies will evaluate applications. Typically, this committee will include the Associate Directors for Undergraduate and Graduate studies, the Assistant Director of Undergraduate Studies, and the Chair of the Graduate Recruiting Committee.

New Students (freshmen and transfer) must meet the following minimum requirements:

- New freshmen must have a competitive GPA. Transfer students must have a minimum GPA of 3.6 in their college basic science and math classes (applied science courses, etc are excluded from the calculation).
- Students must show evidence of a strong interest in science such as four years of high school math and science, honors courses in science, AP courses in science, running start in science, or an AST degree.
- Students must be qualified to take calculus as their first math class, or have already received the equivalent of college credit for a calculus course.
- Students must demonstrate a strong interest in a Ph.D. program at WSU, primarily through an essay describing their long-term career goals, including graduate school and how they see themselves in a research career.

Current students who begin the program no later than the first semester of their junior year
Students entering the program at this stage must meet the following minimum requirements:

- They must have a GPA of at least 3.6 in their basic science and math courses taken at WSU (applied science courses, etc are excluded from the calculation).

- The student must be making satisfactory progress in an undergraduate program that is participating in the STARS Ph.D. program.
- Students must have arranged for their first lab experience by the time of their application.
- Students must demonstrate a strong interest in a Ph.D. program at WSU, primarily through an essay describing their long term career goals, including graduate school and how they see themselves in a research career.
- Students must have a written letter of support from an SMB faculty member who can speak to their aptitude for research and potential for success in graduate studies.

Advising and Annual Review

All students will meet at the start of their program with the Associate Directors for Undergraduate and Graduate Studies to assure they understand the expectations of the program, the annual review process, research, etc.

All students will be assigned an undergraduate academic advisor who will supervise the student's undergraduate program of studies and assist the student with his/her academic career, including questions concerning the Bachelor of Science (B.S.) to Doctor of Philosophy (Ph.D.) program. The advisor will be an advocate for the student and advise with the student's best interest in mind. In general, this individual will be different than the student's research advisor.

The Undergraduate Studies Committee will review the students' undergraduate program of studies on an annual basis.

The School's Graduate Affairs Committee will supervise laboratory rotations. All students will undergo annual review following the same procedure that is followed for graduate students with minor changes. The Graduate Affairs Committee and the general SMB faculty will conduct the annual review of the student beginning at the end of the first year that the student is in the program. Students will use a form similar to that used by the graduate students with some modifications. As part of the annual review, the student will answer questions on the annual review form about their ongoing interest in remaining in the STARS program and graduate school at WSU. The student's lab mentor(s) will review the student's laboratory work.

Academic progress will also be reviewed. Students will be expected to 1) maintain a 3.5 GPA in their science classes, 2) make satisfactory research progress in the laboratory, and 3) the student's own self-evaluation must demonstrate a continued interest in the STARS program. If all three criteria are not met, it is expected that the student will not be allowed to continue in the program effective as of the end of spring semester of the academic year.

Annual reviews will occur in the spring. If a student is no longer part of the program following an annual review, they can still receive that following summer research support for working in a laboratory, as well as their next academic year research support, if they 1) have a GPA of 3.0 or higher, and 2) express an interest in obtaining a degree from a unit within the College of Sciences. All students will be encouraged to apply for departmental scholarships their sophomore, junior and senior years. Students who do not continue in the program may still be accepted into the Ph.D. program through the normal application process.

Laboratory Rotations

All students who are part of the program will work in a research laboratory. Students are expected to have completed three laboratory rotations no later than the summer between their third and fourth year (the third rotation may occur that summer). All rotations must be for a minimum of one semester or 8 to 10 weeks during the summer semester.

All students are expected to work on research projects when in the laboratory. However, for students entering the program as freshmen it is expected that the first year of work will begin with the basics, including attendance at lab meetings, learning to read and access the literature, and basic lab tasks such as making buffers and reagents. The freshman student is expected to devote about six to ten hours a week to these tasks as they settle into college life. As the student learns to manage his/her time successfully in a university environment, laboratory expectations will increase. No later than the beginning of the sophomore year, students will be expected to spend more time in the lab and be working on focused projects. Annual review of the students will reflect the increased expectations of students as they move closer to the start of their graduate program.

Students will rotate through laboratories that are participating in the B.S. to Ph.D. program. The Graduate Affairs Committee will maintain a list of potential mentors. All mentors must be affiliated with SMB and chosen from the list of potential graduate trainers. Students will find useful information on the SMB website (http://molecular.biosciences.wsu.edu/). The student should also refer to the information on the SMB graduate program, including faculty research areas (http://molecular.biosciences.wsu.edu/smb_gradstudies.htm)

Financial Support

STARS students will receive support for their research activities during both the fall and spring semesters up to the end of their fourth year.

Students will receive research support during their first three summers in the program if they perform research in Pullman with an approved faculty member for 8 to 10 weeks.

Starting with the summer after the fourth year, STARS students will be enrolled as graduate students and will be paid the current graduate student assistantship.

Academic Program

Each student will bring to the program different strengths and backgrounds. The program described below is intended to be a guideline. It is not expected that all students will follow this program exactly and individual modifications will be made depending on student learning interests and accumulated credits.

Biochemistry (Mol Bio option)		Genetics and Cell Biology		Microbiology (Mol Bio option)	
Year 1		Year 1		Year 1	
First semester		*First semester*		*First semester*	
Biol 106 [BSCI]	4	Biol 106 [BSCI]	4	Biol 106 [BSCI]	4
Chem 105 [PSCI]	4	Chem 105 [PSCI]	4	Chem 105 [PSCI]	4
Engl 101 [WRTG]	3	Engl 101 [WRTG]	3	Engl 101 [WRTG]	3
HISTORY 105 [ROOT]	3	HISTORY 105 [ROOT]	3	HISTORY 105 [ROOT]	3
MBioS 499	2	MBioS 499	2	MBioS 499	2
	16		16		16
Second semester		Second semester		Second semester	
Biol 107 [BSCI]	4	Biol 107 [BSCI]	4	Biol 107 [BSCI]	4
Chem 106 [PSCI]	4	Chem 106 [PSCI]	4	Chem 106 [PSCI]	4
UCORE as needed[1]	3	UCORE as needed[1]	3	UCORE as needed[1]	3
Math140 or 171[QUAN]	4	Math140 or 171[QUAN]	4	Math140 or 171[QUAN]	4
MBioS 499	2	MBioS 499	2	MBioS 499	2
	17		17		17
• Student receives summer research support to work in a WSU campus laboratory for 8 to10 weeks.					
Year 2		Year 2		Year 2	
First semester		*First semester*		*First semester*	
UCORE as needed[1]	3	UCORE as needed[1]	3	UCORE as needed[1]	3
Chem 345	4	Chem 345	4	Chem 345	4
MBioS 301[2]	4	MBioS 301[2]	4	MBioS 301[2]	4
Phys 101 or 201	4	Phys 101 or 201	4	Phys 101 or 201	4
MBioS 499	3	MBioS 499	3	MBioS 499	3
	18		18		18
Second semester		Second semester		Second semester	
UCORE as needed[1]	3	UCORE as needed[1]	3	UCORE as needed[1]	3
Chem 348	4	MBioS 303	4	MBioS 303	4
MBioS 303	4	MBioS 304	3	MBioS 304	3
Phys 102 or 202	4	Phys 102 or 202	4	Phys 102 or 202	4
MBioS 499	3	MBioS 499	4	MBioS 499	4
	18		18		18
Complete Writing Portfolio		Complete Writing Portfolio		Complete Writing Portfolio	
• Student is encouraged to participate in a summer research program outside of WSU. If student prefers to remain in Pullman then student will receive summer research support to work for 8 to 10 weeks. • Student applies for a Goldwater Fellowship.					
Year 3		Year 3		Year 3	
First semester		*First semester*		*First semester*	
UCORE as needed[1]	3	UCORE as needed[1]	3	UCORE as needed[1]	3
MBioS 404	3	MBioS 404	3	MBioS 404	3
Degree Elective[3]	3-4	Degree Elective[3]	3-4	Degree Elective[3]	3-4
MBioS 305	3	MBioS 305	3	MBioS 305	3
MBioS 499	3-4	MBioS 499	3-4	MBioS 499	3-4
	16		16		16
Second semester		Second semester		Second semester	
Phil 365 or 370 [HUM]	3	Phil 365 or 370 [HUM]	3	Phil 365 or 370 [HUM]	3
Math 212 or Stat 412	3-4	Math 212 or Stat 412	3-4	Math 212 or Stat 412	3-4
MBioS 465	3	MBioS 423	3	MBioS 410	3
MBioS 304	3	Degree Elective[3]	3-4	MBioS 411 [M]	3
Degree Elective[3]	3-4				

MBioS 499	1-4	MBioS 499	3-4	Degree Elective[3]	3-4
	18		18	MBioS 499	1-3
					18

- Student receives summer research support to work for 8 to10 weeks. The faculty advisor is encouraged to supplement it.
- Student works in lab with intent to do graduate work.
- Selection of Dissertation Advisor.
- Student should take the Graduate Record Examination (GRE) during summer between Years 3 and 4
- The student should contact the Graduate School for admission instructions. (The student will receive an application fee waiver code and instructions for completing the application process.)

Year 4		Year 4		Year 4	
First semester		*First semester*		*First semester*	
Undergraduate work		Undergraduate work		Undergraduate work	
MBioS 454 [M]	3	MBioS 478	3	MBioS 440	3
MBioS 494 [CAPS][M]	3	MBioS 494 [CAPS][M]	3	MBioS 494 [CAPS][M]	3
MBioS 499	4	MBioS 499	3	MBioS 499	4
	10		9		10
Graduate work		Graduate work		Graduate work	
MBioS 513	3	MBioS 513	3	MBioS 513	3
MBioS 503	3	MBioS 503	3	MBioS 503	3
	6		6		6
Second semester		Second semester		Second semester	
Undergraduate work		Undergraduate work		Undergraduate work	
MBioS 401	3	MBioS 442 or		MBioS 450	3
MBioS 499	4	Biology 476	3	MBioS 499	4
	7	MBioS 402 [M]	3		7
		MBioS 499	2		
			8		
Graduate work		Graduate work		Graduate work	
MBioS 514	3	MBioS 501	3	MBioS 542	3
Program Course[4]	3	MBioS 504	3	MBioS 548	1
	6		6	Program Course[4]	3
					7

Total undergraduate credits: 120 (minimum 120 required); undergraduate degree completed. To complete the undergraduate degree, students must submit an application for undergraduate degree for May graduation (available from the SMB Undergraduate Coordinator) during first, i.e., fall semester.

To prepare for the transition to graduate student status, STARS students should do the following during Year 4:

- Refer to the SMB Graduate Student Handbook at http://molecular.biosciences.wsu.edu/Documents/Graduate%20Student%20Handbook.pdf. The handbook will provide essential information for completing the graduate program
- At the beginning of Year 4, an application for admission to the Graduate School, along with a preliminary program of study, should be on file at the Graduate School.
- Establish Washington State residency.
- Attend the annual SMB retreat (week before classes start in August) to begin integration into the SMB Graduate Program.
- Prior to each semester, submit to the Graduate School a Reservation of Credit Form for all graduate level courses (i.e., 500 level) the student intends to take.

- Select a dissertation committee and hold first meeting.

Year 5 *First semester* Submit program of study MBioS 5## (TBD) 3 Phil 530 (optional) 2 Program Elective[4] 2-6 MBioS 593 (1st prop)[5] 0-2 MBioS 800 1-6 12 Second semester MBioS 579 1 Program Elective[4] 2-6 MBioS 593 (1st prop)[5] 0-2 MBioS 800 1-6 12	Year 5 *First semester* Submit program of study MBioS ## (TBD) 3 Phil 530 (optional) 2 Program Elective [4] 2-6 MBioS 593 (1st prop)[5] 0-2 MBioS 800 1-6 12 Second semester MBioS 579 1 Program Elective [4] 2-6 MBioS 593 (1st prop)[5] 0-2 MBioS 800 1-6 12	Year 5 *First semester* Submit program of study MBioS 5## (TBD) 3 Phil 530 (optional) 2 Program Elective [4] 2-6 MBioS 593 (1st prop)[5] 0-2 MBioS 800 1-6 12 Second semester MBioS 579 1 Program Elective [4] 2-6 MBioS 593 (1st prop)[5] 0-2 MBioS 800 1-6 12

- Student is a Teaching Assistant in Year 5 with graduate student wages in summer.
- Approved program of study must be on file at the Graduate School at the end of Year 5.

Year 6 *First semester* MBioS 593(prelim exam)[5]0-2 MBioS 800 10-12 12 Second semester MBioS 593(prelim exam)[5]0-2 MBioS 800 9-11 MBioS 579 1 12	Year 6 *First semester* MBioS 593 (prelim exam)[5]0-2 MBioS 800 10-12 12 Second semester MBioS 593(prelim exam)[5]0-2 MBioS 800 9-11 MBioS 579 1 12	Year 6 *First semester* MBioS 593(prelim exam)[5]0-2 MBioS 800 10-12 12 Second semester MBioS 593(prelim exam)[5]0-2 MBioS 800 9-11 MBioS 579 1 12

- Student should be supported off a PI grant as a Research Assistant.

Year 7 *First semester* MBioS 800 12 Second semester MBioS 579 1 MBioS 800 11 12	Year 7 *First semester* MBioS 800 12 Second semester MBioS 579 1 MBioS 800 11 12	Year 7 *First semester* MBioS 800 12 Second semester MBioS 579 1 MBioS 800 11 12

- Student should be supported off a PI grant as a Research Assistant.
- Student should be completing research for Ph.D. degree and preparing for dissertation defense.

Biochemistry Footnotes [1]University Common Requirements as listed in the catalog which fit both the student's schedule and individual interests. Students in the Honors College should consult their Honors advisor. [2]If taking the Phys 201/202 series then this class should be replaced with Math 172 in this semester and MBioS 301 completed in a subsequent semester. [3]Three hours from MBioS 410, 423, 426, 440, 442, 450, 466, 478, or Physics 466, taken either fall or spring semester; AND three hours from MBioS 402, 411,	**Genetics and Cell Biology Footnotes** [1]University Common Requirements as listed in the catalog which fit both the student's schedule and individual interests. Students in the Honors College should consult their Honors advisor. [2]If taking the Phys 201/202 series then this class should be replaced with Math 172 in this semester and MBioS 301 completed in a subsequent semester. [3]Three hours from MBioS 410, 426, 440, 442, 450, Biology 476, 519, taken either fall or spring semester; AND three hours from MBioS 411, 430, 454, 498, 499, Biology 251,	**Microbiology Footnotes** [1]University Common Requirements as listed in the catalog which fit both the student's schedule and individual interests. Students in the Honors College should consult their Honors advisor. [2]If taking the Phys 201/202 series then this class should be replaced with Math 172 in this semester and MBioS 301 completed in a subsequent semester. [3]Three hours from MBioS 342, 401, 426, 446, Biology 418, Entom 343, FS 416, taken either fall or spring semester; AND three hours from MBioS 402, 430, 454, 498, 499,

430, 498, 499, Biology 251, 315, 353, Neurosci 425/426, Vet Ph 308, taken either fall or spring semester. [4]Must have a minimum 15 graded credits For Ph.D. degree. Two science electives required by SMB. See Graduate Handbook for elective courses. [5]First proposal may be in the fall or spring of Year 5. Similarly, the preliminary exam/second proposal will be in the fall or spring of Year 6. See Graduate Handbook for additional information.	315, 321, 353, 372, 420, Neurosci 425/426, Vet Ph 308, taken either fall or spring semester. [4]Must have a minimum 15 graded credits For Ph.D. degree. Two science electives required by SMB. See Graduate Handbook for elective courses. [5]First proposal may be in the fall or spring of Year 5. Similarly, the preliminary exam/second proposal will be in the fall or spring of Year 6. See Graduate Handbook for additional information.	Biology 251, 315, 353, Entom 344, FS 417, Neurosci 425/426, Vet Ph 308, taken either fall or spring semester. [4] Must have a minimum 15 graded credits For Ph.D. degree. Two science electives required by SMB. See Graduate Handbook for elective courses. [5]First proposal may be in the fall or spring of Year 5. Similarly, the preliminary exam/second proposal will be in the fall or spring of Year 6. See Graduate Handbook for additional information.