**Biochemistry Biophysics and Chemical Biology Graduate Group**

**Specific Material for F30/F31 Fellowship Applications**

**You will need to edit specific sentences on the next two pages to personalize the document, and conform to current NIH length requirements. As of writing, the length must not exclude 2 PAGES. It will be obvious where the edits should go. Once you make the edits, you can remove the “bold” fonts at those positions in the document. Please also check for the following:**

1) Places where you need to add your name;

2) Add names of your Mentor and Co-Mentor (if applicable), with their affiliations;

3) Add names of faculty on your thesis committee, and the TOTAL number of students they have graduated (the BBCB office can provide these numbers);

4) Add in any special courses you might have taken from outside your specialty;

5) Add the date you passed your prelim, and

6) Add your year in Graduate school come September (or currently; i.e., “..a rising xth year…” or “…in my xth year…” );

If you partake in any educational activities/journal clubs specific to your research area, e.g. Crystal Club, RNA Club, that are not described in the general BBCB program, and if page length permits, add these in the 'Training for Excellence' section

If you are, or have been a trainee on the SBMB training grant (or other grant), you may also add specifics of those to the 'Training for Excellence' section

After making these edits, removing the instructions pages, save the next pages as one document Follow the NSRA instructions on how to name the document, and where in your application to upload it.

**BBCB Graduate Group Description:** The Biochemistry Biophysics and Chemical Biology Graduate Group (BBCB) provides rigorous, interdisciplinary training toward the Ph.D. The Group includes a wide range of faculty representing the leading edge of basic and translational biomedical science drawn from the Medical, Veterinary, Engineering, and Arts and Sciences Schools at the *University of Pennsylvania*, and also from *Children’s Hospital of Philadelphia*, and the *Wistar Institute*. The student has a wide choice of thesis topic, approaches and methodologies. The Mentor/Co-Mentor pairing for **Mr. / Ms. Xxx’s** application reflects this, as [**NAME MENTOR/CO-MENTOR]** represent different **INSTITUTES/SCHOOLS/DEPARTMETNS/SPECIALTIES**).

Students attain the necessary depth through individualized course electives and targeted mentoring throughout their training. This is augmented with hands-on advising throughout their Ph.D. time. This includes guidance on selecting rotations & monitoring progress during rotations; providing advice in designing and writing the thesis research proposal, fellowships or manuscripts; selecting electives that anticipate the student’s research needs; providing feedback on presentations; and providing career guidance. The modal time to degree in the BBCB graduate program is 6 years. BBCB’s success is evident: Graduates have pursued successful research careers at top academic institutions, in the biotech and pharmaceutical industries, and in other biomedical-related career paths. 95 students received their PhD over the last 10 years. Five are Assistant or Associate Professors; 39 are Postdoctoral Fellows; 21 are in Biotech positions such as Manager, Senior Investigator, Director of Strategy or Clinical Trial Coordinator, 5 are finishing Medical school while 3 MD/Ph.D graduates are in a Residency, ; 2 are teaching school; 5 are Consultants, 1 is working for the federal government. From the 5 years before that, 24 graduates are now Assistant or Associate Professors.

**Coursework and Candidacy Examination:** During their first year, BBCB students take four required courses: Cell Biology & Biochemistry (BIOM 6000), a BGS-wide foundational course; and three graduate group specific core courses Macromolecular Biophysics (BBCB5080), Structural and Mechanistic Biochemistry (BBCB5090), Data Analysis and Scientific Inference (BBCB 5100); These provide the foundations in biophysics and biochemistry, respectively. Students also take 1 or 2 electives and complete three laboratory rotations. At the end of year 1 students have chosen their thesis lab and advisor. This allows them to choose 4 discipline-specific elective courses in year 2 from a wide range of courses within and outside the BBCB graduate group. The current cohort of students have taken elective courses offered by graduate groups in BBCB, Cell and Molecular Biology, Pharmacology, Bioengineering, Chemistry, Physics, Computer Science and Neuroscience, among others. (**INSERT EXAMPLE ELECTIVES HERE FOR applicant of this NRSA).** In spring of year 2 students take a Candidacy Exam Prep Course, which includes scientific writing and grantsmanship, followed by preparation of the written part of the Candidacy Exam based on their proposed thesis topic and written in the format of a predoctoral fellowship grant application, followed by oral examination by a committee of three BBCB faculty. The student then advances to dissertation status. Generally, students applying for individual NRSAs have just passed their Candidacy exam. **[Mr/Ms xxxx passed their exam in May of 20ZZ, and will be a rising YYth year student Fall 20YY].**

**Training for Excellence.** Students have multiple forums beyond didactic learning to enhance their training. 1) students receive training in Responsible Conduct in Research Training each year through seminars and lectures given by BGS. 2) students have the opportunity to meet distinguished US and international scientists in an informal setting through the BBCB’s Raiziss Rounds course, a journal club type course tied to the Biochemistry & Biophysics Department weekly seminar series. Students read the papers of the speaker ahead of time, present them to other students, attend the seminar, and then host lunch (without faculty!) with the speaker after the seminar. 3) Students receive ongoing training in presentation skills. 1st year students present their three rotation research projects in one each of poster format, oral presentation, and written report. The Lab Rotation Director provides written feedback to each student. Dissertation level students are required to present a poster each year at the annual BBCB graduate group retreat. Posters are judged with prizes for best poster in the categories of Biochemistry (The Ferguson Award) and Biophysics (The Wand Award). In addition students are selected to give talks at the annual retreat at least once in their stay. Dissertation level students are selected on a rotating basis to present research progress reports at the weekly Friday Research Discussions, attended by BBCB students, faculty, and Dept. of Biochemistry and Biophysics members. The graduate group awards a prize annually for the best published paper with a BBCB graduate student as lead author (The Dutton Prize).

**Mentoring and Advising:** The current chair of BBCB is Dr. Kim Sharp, who oversees the mentoring provided to the 90+ students currently (as of 8/1/2022) in *BBCB*. He has trained numerous PhD students, and has been committed to graduate education throughout his 30-year career at U. Penn. Dr. Sharp is supported by an advisory group of BBCB faculty comprised of a talented, energetic mix of senior and junior faculty, all with active research programs. Under the coordination of the BBCB Chair these faculty chair specific sub-committees to implement effective education, training and mentoring: DrGeorge Bursslem (Chair of Ph.D. Admissions )Dr. George Burslem (Director of rotations) Dr Rahul Kohli (Chair of Combined Degree Admissions), Dr. James Shorter (Chair of Academic/Course Advising). Dr. Ronen Marmostein (Chair of Candidacy Exam), Drs. Ben Black and Elizabeth Rhoades CoDirector of the Structural Biology and Molecular Biophysics Training Grant).

Mentoring starts immediately upon matriculation, and evolves through graduate school. Advising committee meets with individually with each student to create an individual development plan (IDP) encompassing research interests, career goals, addressing strengths and weakness. Thereafter, students complete an IDP annually with the Advising Committee (pre-dissertation status) and with their thesis advisor (dissertation status). Each matriculating student is paired with a successful senior student mentor to provide them with the students' perspective, and a role model for succeeding in graduate school. In years 1 and 2, students meet with the Advising Committee before each semesters to select courses. After students achieve dissertation status, they select, in consultation with their advisor, a Working Thesis Committee consisting of 3 faculty, of which at least two are BBCB faculty. Committee selection must be approved by the BBCB Chair. Students meet with their Committee plus advisor biannually at least, to present progress reports and receive guidance. Prior to their first committee meeting, students get instruction from the GG chair on how to get the most from their meetings. It is stressed to the student that members of their committee become more than advisors for their thesis; students will form a close academic relationship with some of these faculty, and will rely on several of them for letters of reference (for fellowships, to attain a postdoctoral position, and beyond). . **Ms/Mr yyyyy’s Faculty committee is composed of: Drs. , , , & . Collectively, these faculty have mentored ZZ graduate students.** Prior to defense of the thesis, the student's committee is expanded by an additional BBCB faculty and one external examiner, to give a fresh perspective for the final defense.

**[Delete this, or Edit it if you have TA’d or acted as a mentor for earlier-stage students: “**While BBCB does not require students to participate in TA-ing, **Ms/Mr** chose to be a teaching assistant in ….. **. ”**

**Ms/Mr** has been an active participant in the student mentoring program and was a very effective mentor to **[name student]”.]**

In sum, our mission is to provide an exceptional training and mentoring experience to every student, providing a foundation for successful careers as leaders in biomedical research.

***Information provided by Kim Sharp, Ph.D, Chair BBCB Grad Group***