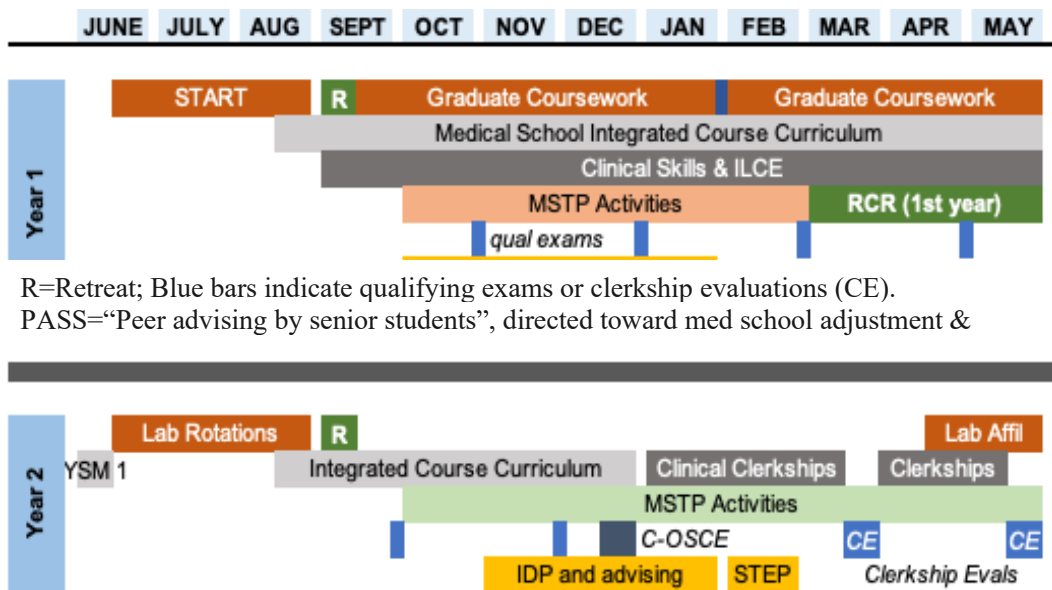


YALE MD-PhD TIMELINE

Years 1 and 2

Incoming students have the option of matriculating early (June – August before the first-year of medical school) to do their first laboratory rotation at Yale through either the START@Yale Program or independently in an approved PhD lab. For the first 18 months MD-PhD students are engaged in the Yale School of Medicine preclinical curriculum—master courses and initial clinical clerkship—alongside their MD classmates in addition to completing courses co-listed in the medical school and graduate school. These classes are graded and count toward course requirements for both degrees in most Biomedical and Biological Sciences (BBS) PhD tracks. Examples include classes in Cell Biology (CBIO 501 Molecules to Systems; CBIO 600/601 Science at the Frontiers of Medicine), Molecular Biophysics and Biochemistry (MB&B 800/801 Advanced Topics in Molecular Medicine) and the Interdepartmental Neuroscience Program (INP 701 Principles of Neuroscience). These co-listed courses require additional work when taken for credit

(e.g. reading, discussion and presentation of primary literature in small groups with faculty experts) and emphasize independent and critical thinking. These graduate courses parallel the content of the medical school curricula, allowing integration of medical school and basic science learning. All PhD programs and departments have slightly different

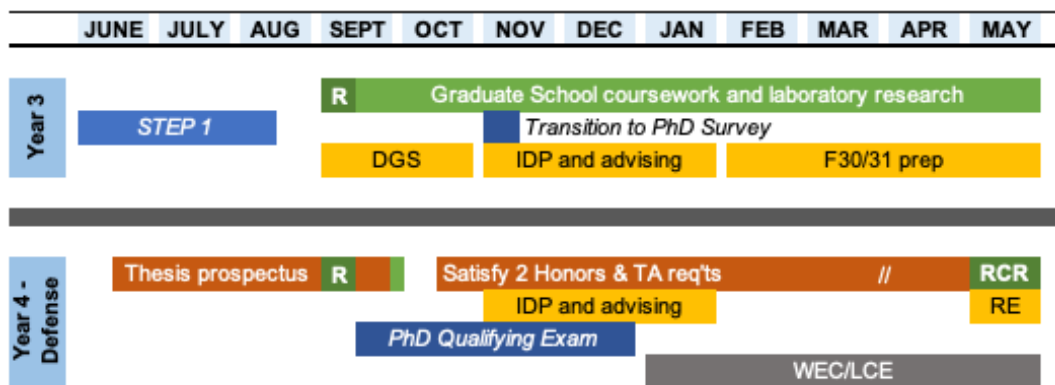


R=Retreat; Blue bars indicate qualifying exams or clerkship evaluations (CE).
PASS="Peer advising by senior students", directed toward med school adjustment &

course requirements which are occasionally modified/individualized on a case-by-case basis to accommodate MD-PhD students so that unproductive redundancies in coursework or differences in preparation do not negatively affect their training plan and time-to-degree. All PhD programs have allowed a decrease in required teaching time for MD-PhD students. MD-PhD students complete two ~5-week laboratory rotations during the summer between the first and second years of medical school in order to explore potential research mentors and projects.

Years 3 and 4 through PhD Defense

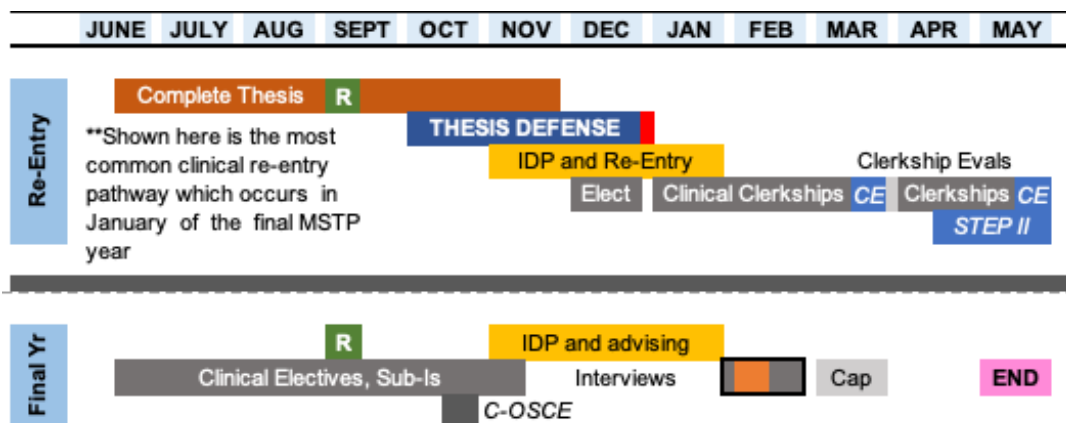
During the summer following their 6 months of Integrated Clinical Clerkships, MD-PhD students study for and take USMLE Step I. There is also time to complete an additional research rotation, if necessary, and to take a vacation. The Step 1 exam must be taken by December 31 of Year 3. Students meet with their Director of Graduate Studies to formally affiliate with a PhD department and research laboratory at the start of Year 3 and complete program or department-specific coursework, teaching and qualifying examination requirements in Years 3 and 4. A thesis prospectus is submitted in Year 3 or 4, which coincides with participation in the MD-PhD Program's Grant Writing Workshop to prepare NIH NRSA F30/F31 and other private foundation applications. Students are required to submit a first author paper and successfully write, defend and submit their PhD dissertation before returning to the wards in October or January of their penultimate year of training.



There is a strong emphasis on maintaining engagement in clinical activities during the PhD thesis years of the MD-PhD training. Clinical activity during research years is an explicit part of the IDP review process, and thesis advisors are informed that this is an

encouraged training activity for dual-degree candidates. Most students participate in one or more longitudinal clinical experiences (LCEs) or the student-run “Wednesday Evening Clinic” (WEC) for which they receive elective credit. A student-organized monthly Clinical Reasoning Seminar employs a clinical case-based approach to review diagnosis, pathology and treatment/management with a clinical faculty expert. In addition to maintaining clinical fluency, customized LCEs allow students to explore clinical (sub)specialties related to their research work and interests and are precepted by physician-scientists whenever possible. These experiences allow students to gain a richer understanding of possible career paths for physician-scientists and expose them to the advantages and challenges of combining research with clinical care. Strategies to manage wellness and resilience in a physician-scientist career are discussed during annual program retreats and recurring Brown Bag lunch discussions, while a Curriculum in Leadership and Research Management for Physician-Scientists provides ongoing career development training and experiential learning to MD-PhD students.

Re-entry and Final Year



Four to ten months prior to re-entry, all MD-PhD students must meet with Dr. Tamar Taddei, Associate Director for Clinical Education to complete re-entry requirements. Following the thesis defense, submission of a first author manuscript and

submission of the dissertation, students complete a two-week Re-Entry Elective and return to clerkships in January (or less commonly October) of the penultimate program year. This allows ample time for completion of remaining clerkships, a mandatory 4-week sub-internship or clinical elective, additional Yale or away electives relevant to postgraduate training, completion of USMLE Step 2 CK/CS exams and the C-OSCE exam, residency interviews and a mandatory medical school capstone course to ensure that students are “internship-ready.” Almost all MD-PhD students spend time during this final 18-month period engaged in basic, translational or clinical research. They may return to their thesis lab, structure a short research experience to learn a new skill, or participate in clinical research related to the specialty in which they plan to match.