ChatGPT

PhD Timeline (Aug 2025 – Aug 2027)

This timeline integrates requirements from the BME Graduate Program, your latest proposal draft, and the expectations discussed with your advisor. Because you entered the program in Aug 2021 (entering your fifth year), priority is given to completing the dissertation proposal quickly and accelerating research milestones.

Program milestones

- **Proposal deadline:** The BME handbook requires students to propose by the end of their third year [1]. You should schedule and defend your proposal no later than Dec 2025 to comply with this requirement.
- **Written proposal:** The proposal must include a one-page specific aims and a 12-page research strategy [2]. Submit the proposal to your committee at least two weeks before the oral exam [3].
- **Administrative steps:** Update your committee membership if needed [4], schedule the exam and reserve a room [5], and file the program-of-work form [6].

High-level research plan

Your dissertation proposal outlines a multi-year research program with three aims and eight quarterly milestones [7]. Each quarter below corresponds to ~3 months.

Quarter & dates	Key deliverables and tasks (concise)
Q1: Sept–Nov 2025	*Proposal & laser alignment* – finalize timeline and outline; draft aims and research strategy; improve seed alignment to ≥30 mW; achieve ≥130 mW output and compressed pulses; calibrate microscope with Air Force target; prepare AAV vector designs and place orders. Meet committee to confirm plan.
Q2: Dec 2025–Feb 2026	*Proposal exam & AAV validation* – submit written proposal to committee (Dec 2025) [3]; defend proposal (Jan 2026); produce AAV-mScarlet and jRGECO1b vectors [8]; perform pilot imaging comparing viral labeling to Texas Red/Rhodamine [9]; refine spectral separation and registration protocols [10] [11]. Begin developing U-Net-based segmentation pipeline [12].
Q3: Mar–May 2026	*Aim 2 development* – optimize dual-color imaging (two-photon & LSCI) [10]; conduct systematic comparisons of imaging depth, SNR and contrast across labeling methods [13]; deliver viruses for enhancer-based labeling; implement automated quality control and data backup workflows. Publish methodology paper on AAV-based imaging.

Quarter & dates	Key deliverables and tasks (concise)
Q4: Jun–Aug 2026	*Stroke model & longitudinal imaging* – establish stroke induction model; initiate longitudinal imaging across acute (0–1 week), transition (2–4 weeks) and stabilization (5–8 weeks) phases [14] ; collect dual-channel neurovascular data; continue refining machine-learning analysis; maintain strict injection and care schedules; train and involve a surgical assistant.
Q5: Sept–Nov 2026	*Aim 3 data collection* – complete data acquisition for stroke experiments; perform network analysis of microvascular remodeling and neurovascular coupling; integrate LSCI flow metrics with two-photon data; prepare conference presentations; draft a second manuscript.
Q6: Dec 2026–Feb 2027	*Analysis & dissertation writing* – finalize quantitative analyses (e.g., vessel diameters, depth-dependent SNR, network metrics); begin writing dissertation chapters; circulate methods/results to committee for feedback; maintain reliability (meeting punctuality, lab logs, injection schedule).
Q7: Mar–May 2027	*Dissertation completion* – finalize remaining analyses; complete dissertation draft; schedule final oral exam; update committee membership if needed; prepare professional development section and IDP slide [15] ; aim to submit at least one more manuscript.
Q8: Jun–Aug 2027	*Defense & graduation* – defend dissertation; make revisions; submit final thesis to Graduate School; complete exit paperwork; prepare for postdoctoral transition; disseminate remaining results in journals/conferences.

Ongoing commitments

- **Reliability & lab culture:** Be punctual to meetings and injections; keep a detailed rig log for any alignment changes; communicate modifications to colleagues and committee [7] .
- **Surgical practice & animal care:** Maintain proficiency with cranial window surgeries; schedule regular practice sessions to train others; ensure IACUC compliance and strict injection timing.
- **Data management:** Implement automated quality control checks and nightly backups as outlined in the proposal [7] .
- **Collaboration & accountability:** Ask for help when needed; provide regular updates to your advisor; take ownership of the microscope as the go-to person for maintenance and training.

*Dates and durations can be adjusted based on experimental realities and the availability of committee members. Use this framework as a guide to prioritize tasks and ensure steady progress toward your dissertation defense.

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[1] [2] [3] [4] [5] [6] [15] Dissertation Proposal - BME Graduate Program Handbook - University Wiki Service
https://cloud.wikis.utexas.edu/wiki/spaces/bmegradhandbook/pages/38047976/Dissertation%20Proposal

[7] overview.tex

https://github.com/guitarbeat/PhD-Writing/blob/f4a3422063b3ec1fef01c3e0cc869bbd6bf04d2e/dissertation-proposal/sections/research-strategy/overview.tex

[8] [9] [13] main.tex

https://github.com/guitarbeat/PhD-Writing/blob/f4a3422063b3ec1fef01c3e0cc869bbd6bf04d2e/dissertation-proposal/sections/research-strategy/aim1/approach/main.tex

[10] methodology.tex

https://github.com/guitarbeat/PhD-Writing/blob/f4a3422063b3ec1fef01c3e0cc869bbd6bf04d2e/proposal/proposal-drafts-2/sections/methodology.tex

[11] [12] main.tex

https://github.com/guitarbeat/PhD-Writing/blob/f4a3422063b3ec1fef01c3e0cc869bbd6bf04d2e/dissertation-proposal/sections/research-strategy/aim2/innovation/main.tex

[14] main.tex

https://github.com/guitarbeat/PhD-Writing/blob/f4a3422063b3ec1fef01c3e0cc869bbd6bf04d2e/dissertation-proposal/sections/research-strategy/aim3/significance/main.tex