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Proposal Timeline

PhD Research Calendar

Total Tasks: 63 tasks
Generated: September 03, 2025

1 Complete Task List

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1. **Draft timeline v1** [PROPOSAL]

   Duration: 2025-08-29 – 2025-08-31

   Create initial project timeline for Tuesday review with Andy. Bring both printed and digital copies to meeting.

2. **Initial proposal skeleton** [PROPOSAL]

   Duration: 2025-08-29 – 2025-08-31

   Develop 1-page Specific Aims and detailed outline following BME format requirements for PhD proposal.

3. **Submit proposal outline** [PROPOSAL]

   Duration: 2025-08-31 – 2025-08-31 **[MILESTONE]** MILESTONE: Send initial proposal draft to advisor for review before Monday deadline.

4. **Define proposal committee** [PROPOSAL]

   Duration: 2025-09-02 – 2025-09-05

   Identify committee members; confirm availability; and schedule oral exam date. Reserve room for exam.

5. **Expand proposal draft** [PROPOSAL]

Duration: 2025-09-01 – 2025-09-12

Develop 12-page Research Strategy section from outline following BME proposal guidelines.

6. **Confirm exam date** [PROPOSAL]

   Duration: 2025-09-12 – 2025-09-12 **[MILESTONE]** MILESTONE: Oral exam date scheduled. Must send final proposal to committee 2 weeks prior to exam.

7. **Align seed laser** [LASER]

   Duration: 2025-08-30 – 2025-09-03

   Achieve 30 mW output in fiber core (pre-pump configuration) for stable laser operation.

8. **Align amplifier** [LASER]

   Duration: 2025-09-03 – 2025-09-10

   Restore amplified output to 130 mW (previous benchmark performance level).

9. **Check pulse compression** [LASER]

   Duration: 2025-09-10 – 2025-09-12

   Verify 200 fs pulse duration and record specifications in equipment log.

10. **Calibrate microscope** [LASER]

    Duration: 2025-09-12 – 2025-09-12

    Align imaging system using USAF target for optimal resolution before in vivo experiments.

11. **Laser system ready** [LASER]

    Duration: 2025-09-12 – 2025-09-12 **[MILESTONE]** MILESTONE: Laser output and imaging optics meet all requirements for live animal imaging.

12. **Plan imaging cohort** [IMAGING]

    Duration: 2025-09-01 – 2025-09-05

    Plan \textasciitilde3 pilot mice cohort with IACUC protocol confirmation and surgery slot booking.

13. **Annual progress review** [ADMIN]

    Duration: 2025-09-01 – 2025-09-07

    Complete yearly graduate student progress report (department form) due early September.

14. **Proposal exam paperwork** [ADMIN]

    Duration: 2025-09-12 – 2025-10-15

    File committee forms; Program of Work; and confirm exam room logistics for proposal defense.

15. **Design AAV vectors** [IMAGING]

    Duration: 2025-10-01 – 2025-10-15

    Design and order AAV-mScarlet (vascular) and jRGECO1b (neuronal) vectors. Finalize constructs and submit production orders to core facility.

16. **AAV vectors ready** [IMAGING]

    Duration: 2026-01-15 – 2026-01-15 **[MILESTONE]** MILESTONE: AAV vectors received from core facility. Ready for in vivo animal injections to begin expression studies.

17. **Complete proposal draft** [PROPOSAL]

    Duration: 2025-11-15 – 2025-12-15

    Write full proposal document (\textasciitilde13 pages) including all aims and research strategy for committee review.

18. **Send proposal to committee** [PROPOSAL]

    Duration: 2025-12-16 – 2025-12-16 **[MILESTONE]** MILESTONE: Email proposal to committee 2 weeks before exam date (satisfies pre-exam requirement).

19. **Prepare presentation** [PROPOSAL]

    Duration: 2026-01-04 – 2026-01-18

    Create slide deck and practice oral exam presentation. Aim for two practice runs with lab members.

20. **PhD Proposal Exam** [PROPOSAL]

    Duration: 2026-01-20 – 2026-01-20

    Qualifying Exam: Defend dissertation proposal in oral exam with committee members.

21. **Address committee feedback** [PROPOSAL]

    Duration: 2026-01-21 – 2026-01-28

Incorporate committee revisions into proposal and submit signed approval form for final approval.

22. **Cranial window surgery \1** [IMAGING]

    Duration: 2026-02-01 – 2026-02-01

    Install cranial window and inject AAV in first pilot mouse. Begin expression timeline for vascular labeling.

23. **Post-op recovery \1** [IMAGING]

    Duration: 2026-02-02 – 2026-02-05

    Monitor and medicate Mouse \1 after surgery. No imaging during recovery period to allow healing.

24. **Cranial window surgery \2** [IMAGING]

    Duration: 2026-02-08 – 2026-02-08

    Install cranial window and inject AAV in second pilot mouse (staggered one week after \1).

25. **Post-op recovery \2** [IMAGING]

    Duration: 2026-02-09 – 2026-02-12

    Monitor and medicate Mouse \2 after surgery. Maintain analgesia schedule during recovery.

26. **Cranial window surgery \3** [IMAGING]

    Duration: 2026-02-15 – 2026-02-15

Install cranial window and inject AAV in third pilot mouse (further staggered timing).

27. **Post-op recovery \3** [IMAGING]

    Duration: 2026-02-16 – 2026-02-19

    Monitor and medicate Mouse \3 after surgery. Complete recovery period before imaging.

28. **Pilot imaging session \1** [IMAGING]

    Duration: 2026-02-22 – 2026-02-23

    Acquire in vivo images for Mouse \1 comparing AAV fluorescence vs traditional dye injection methods.

29. **Pilot imaging session \2** [IMAGING]

    Duration: 2026-03-01 – 2026-03-02

    Acquire in vivo images for Mouse \2 under dual-label vs dye conditions for comparison.

30. **Pilot imaging session \3** [IMAGING]

    Duration: 2026-03-08 – 2026-03-09

    Acquire in vivo images for Mouse \3. Complete final pilot dataset for Aim 1 validation.

31. **Pilot datasets complete** [IMAGING]

    Duration: 2026-03-10 – 2026-03-10 **[MILESTONE]** MILESTONE: Three pilot two-photon imaging datasets acquired for Aim 1 validation and proposal figures.

32. **Process pilot data** [IMAGING]

    Duration: 2026-03-10 – 2026-03-15

    Perform image registration and SNR analysis. Calculate contrast metrics and refine imaging protocols.

33. **Develop U-Net pipeline** [IMAGING]

    Duration: 2026-03-15 – 2026-04-01

    Begin developing automated image segmentation pipeline using U-Net architecture for vascular features.

34. **Optimize imaging systems** [IMAGING]

    Duration: 2026-03-15 – 2026-04-30

    Tune microscope optics for dual-channel two-photon imaging and configure LSCI for blood flow measurements.

35. **Order enhanced AAV** [IMAGING]

    Duration: 2026-03-01 – 2026-05-01

    Design and order enhanced-expression AAV with tissue-specific enhancer for improved dual-label imaging (Aim 2).

36. **Enhanced AAV delivered** [IMAGING]

    Duration: 2026-07-01 – 2026-07-01 **[MILESTONE]** MILESTONE: Enhanced AAV vector received and ready for in vivo testing to continue Aim 2 studies.

37. **Compare labeling methods** [IMAGING]

Duration: 2026-04-30 – 2026-05-31

Systematically compare imaging depth; SNR; and contrast across different labeling methods (AAV vs dye) in vivo.

38. **Draft methodology paper** [PUBLICATION]

Duration: 2026-04-01 – 2026-05-31

Write manuscript on AAV-based vascular imaging methodology and pilot results from Aim 1 studies.

39. **Submit methodology paper** [PUBLICATION]

Duration: 2026-06-01 – 2026-06-01

Submit Aim 1 imaging methodology paper to journal for peer review and publication consideration.

40. **Establish stroke protocol** [IMAGING]

Duration: 2026-05-31 – 2026-06-05

Complete training and IACUC approval for stroke induction method (photothrombosis). Ensure all regulatory approvals are in place.

41. **Induce stroke** [IMAGING]

Duration: 2026-06-06 – 2026-06-10

Perform stroke induction surgeries on experimental animal cohort to initiate Aim 3 longitudinal imaging study.

42. **Acute-phase imaging** [IMAGING]

Duration: 2026-06-15 – 2026-06-16

Conduct two-photon + LSCI imaging sessions in acute phase (0-1 week post-stroke) to capture immediate vascular changes.

43. **Transition-phase imaging** [IMAGING]

Duration: 2026-07-01 – 2026-07-02

Conduct imaging sessions during subacute transition phase (2-4 weeks post-stroke) to capture evolving vascular dynamics.

44. **Stabilization-phase imaging** [IMAGING]

Duration: 2026-07-30 – 2026-07-31

Conduct imaging sessions in early chronic phase (5-8 weeks post-stroke) to observe vascular remodeling processes.

45. **Extended chronic imaging** [IMAGING]

Duration: 2026-08-25 – 2026-08-26

Conduct imaging at \textasciitilde12 weeks post-stroke (if needed) to capture long-term vascular remodeling and recovery patterns.

46. **Refine ML pipeline** [IMAGING]

Duration: 2026-06-15 – 2026-08-31

Adapt and improve machine learning segmentation pipeline for stroke dataset analysis and vascular feature detection.

47. **Stroke data complete** [IMAGING]

Duration: 2026-08-31 – 2026-08-31 **[MILESTONE]** MILESTONE: Completion of all planned longitudinal imaging sessions for stroke study (Aim 3).

48. **Integrate flow data** [IMAGING]

Duration: 2026-09-01 – 2026-09-30

Combine LSCI blood flow metrics with two-photon structural/functional data for comprehensive vascular analysis.

49. **Analyze neurovascular coupling** [IMAGING]

Duration: 2026-10-01 – 2026-11-15

Quantify microvascular network changes and neurovascular coupling dynamics from post-stroke imaging data.

50. **Prepare conference presentation** [PUBLICATION]

Duration: 2026-11-15 – 2026-12-01

Create talk/poster for conference presentation (SPIE or neuroscience meeting) showcasing Year 5-6 research results.

51. **Draft second manuscript** [PUBLICATION]

Duration: 2026-11-15 – 2026-11-30

Write second research paper covering dual-color imaging platform and initial stroke study findings (Aim 2/3).

52. **Submit second manuscript** [PUBLICATION]

Duration: 2026-12-15 – 2026-12-15

Submit second major manuscript (Aim 2/3 results) to journal for peer review and publication consideration.

53. **Annual progress review** [ADMIN]

Duration: 2026-09-01 – 2026-09-07

Complete yearly graduate student progress review (department form) with advisor due early September.

54. **PhD Dissertation \ Defense** [DISSERTATION]

Duration: 2026-12-01 – 2027-08-15

Complete dissertation write-up; final defense; and all graduation requirements by Summer 2027.

55. **Draft Introduction** [DISSERTATION]

Duration: 2026-12-15 – 2027-01-31

Write dissertation Introduction chapter including literature review and study rationale for PhD thesis.

56. **Draft Aim 1 chapter** [DISSERTATION]

Duration: 2027-01-01 – 2027-02-28

Write chapter detailing Aim 1 (AAV imaging) methods; experiments; and results for dissertation.

57. **Draft Aim 2 chapter** [DISSERTATION]

    Duration: 2027-01-15 – 2027-03-31

    Write chapter detailing Aim 2 (dual-color imaging platform) methods and results for dissertation.

58. **Draft Aim 3 chapter** [DISSERTATION]

    Duration: 2027-02-01 – 2027-04-15

    Write chapter detailing Aim 3 (stroke model imaging study) methods; data; and findings for dissertation.

59. **Draft Conclusions** [DISSERTATION]

    Duration: 2027-03-01 – 2027-04-30

    Write final dissertation chapter summarizing findings; implications; and future research directions.

60. **Dissertation draft complete** [DISSERTATION]

    Duration: 2027-05-01 – 2027-05-01 **[MILESTONE]** MILESTONE: Complete PhD dissertation draft compiled and ready for committee review.

61. **PhD Defense** [DISSERTATION]

    Duration: 2027-07-15 – 2027-07-15

    Defend PhD dissertation in oral exam with committee (must occur 2 weeks before final submission deadline).

62. **Revise dissertation** [DISSERTATION]

Duration: 2027-07-16 – 2027-07-31

Incorporate committee feedback and revisions after defense. Obtain final approval signatures.

63. **Submit dissertation** [DISSERTATION]

Duration: 2027-08-01 – 2027-08-01

Upload approved dissertation PDF and submit all required forms to Graduate School by deadline.