Ophthalmology Resident Research Curriculum

Institution Name: University of Wisconsin–Madison and University of Wisconsin Health
Title: Ophthalmology Resident Research Program.
Instructional Modality: In-person, online or hybrid.
Instructor Contact Info: Resident Research Committee, education@ophth.wisc.edu

Course Learning Outcomes

1. Residents will be able to identify and write a hypothesis, design a research project/plan, consider statistical power during development of a research plan, and define the significance and impact of the work.
2. Residents will develop a short grant-like proposal for the research project.
3. Residents will present research project progress.
4. Residents will develop skills on how to draft an abstract or a publication.

How Expectations are Met by the Course

Each resident is expected to work on their research projects during their protected time as well as time outside of the protected time to meet the program milestones described below.

Resident Expectations and Communication

Background: Establishment of Research Oversight

The Resident Research Committee (RRC) has the core mission to 1) facilitate advancing residents' knowledge and practice of the scholarly approach to evidence-based patient care through formal resident research program in alignment with the Accreditation Council for Graduate Medical Education (ACGME) Core competencies, 2) educate both mentors and mentees on scientific inquiry and methodology, 3) provide feedback as well as enable progress and completion of proposed resident research projects within the facilities and operations of the department, 4) distribute funds designated upon completion of the resident research proposal requirements in the first year, and 5) provide oversight for protected time for the resident research rotation.

Membership of the RRC consists of the Residency program leadership representative (Program Director or Associate Program Director), the Residency Program Coordinator, and two administrators for research and education. Membership also consists of at least one basic science faculty representative and one clinical science faculty representative as members. RRC meetings are scheduled monthly to provide contiguous discussion around the progress of residents.

Course Overview: PGY-1

As part of our PGY1 resident research orientation experience, Grand Rounds showcases research interests of our faculty in short 5-minute presentations at the beginning of the academic year, and if possible, potential projects for our residents. Afterwards, the PGY-1 residents meet with the RRC to review the requirements of the program and the department's resources including access to key collaborators including our biostatistician, clinical trial unit, retinal image reading lab, research laboratories, and research administrators. A listing of potential research projects including but not limited to those featured at Grand Rounds during the PGY-1 orientation is collected and provided to PGY-1 residents in the fall.

Residents are required to seek out a research mentor and select a project that meets their particular interest by January 15 of their PGY-1. A resident may select from a provided project list or if a resident has a specific topic not included in the list of potential projects, then they are also encouraged to develop the project with a mentor that shares their interest.

Once RRC approves all mentors, a rubric to provide guidance to mentors and mentees to ensure successful completion of the program (Appendix A) is distributed to PGY-1 residents and their mentors prior to residents and their mentors starting their work on a selected project. Residents work closely with their chosen mentor and are expected to develop a proposal by April 1 and present to RRC for feedback and approval. A template provided guides the proposal. (Appendix B). Resident research milestones in PGY-1 developed by RRC must be completed in order for advancement. These milestones include:

1. Resident and mentor work together to provide a short grant-like proposal of the research project to RRC by April 1st.
2. The resident and mentor meet with RRC to present the proposal. This meeting ensures the feasibility and timeliness of the proposed project.
3. All online compliance training recommended by RRC must be completed by the end of PGY-1.

To encourage completion, a $2,000 research project stipend was established that is available from the department direct project-related, non-travel costs over the training period. In addition, residents are encouraged to apply for a travel stipend available through the department for regional, national, and international conferences to present their projects. Additional funding may also be available; however, this must be justified and requires both the RRC and department approval. To obtain the one-time allotted research project stipend amount, certain milestones, that are noted above, need to be achieved.

Research projects may begin once the RRC approves a proposal.

Course Overview: PGY-2 through PGY-4

Uninterrupted protected time for research projects includes a continuous 1 week (10 half days) in PGY-2, 36 half days each in PGY-3, and 4 half days in PGY-4 (Appendix C). This time is protected from other clinical obligations. Yearly progress reports provide status updates for the project using the original research proposal template. A brief annual progress report presentation by each resident, with their mentor present, is also required to ensure research requirements are being fulfilled. Research mentors are expected to track resident progress. Annual updates and evaluations are submitted to the RRC and become part of the residency file. Prior to graduation, the RRC confirms that the resident has fulfilled the research requirement and can recommend remediation if needed.

A complete timeline of course requirements is provided in Course Schedule/Calendar.

Course Webpage and Required Textbook, Software and Other Course Materials

- DOVS Resident Research Training Webpage
- Research Fundamentals for Ophthalmology Residents and Clinical Fellows Toolkit (Association of University Professors of Ophthalmology (AUPO))
- Faculty Research Training Toolkit (AUPO)
- Rubric (Appendix A)
- Resident Research Project Template (Appendix B)
- Block Schedule (Appendix C)
- List of potential projects (provided annually)
- Video materials:
    - Resident research proposal form tutorial w/Drs. Christina Thomas-Virnig and Tetyana Schneider
    - Statistical Support Presentation by Kyle Peterson, PhD, Biostatistician II
    - IRB Training for Beginners

Course Schedule/Calendar

The outline of expectations and protected research time in each year of residency is presented during orientation and can be found in Appendix C to align expectations from the time of entry into the program.

PGY	Protected Research Time	Required	Encouraged
PGY-1	N/A	○ Selection of research project by January 15 ○ Research Proposal by April 1 ○ Presentation to Resident Research Committee	N/A
PGY-2	10 half days	○ Research progress report submitted to Resident Research Committee by April 1 ○ Presentation to Resident Research Committee	○ Presentation at Learner's Research Symposium/ Wisconsin Ophthalmology Research Day (WORD)
PGY-3	36 half days	○ Research progress report submitted to Resident Research Committee by April 1 ○ Presentation to Resident Research Committee ○ Poster presentation at Learner's Research Symposium (WORD)	○ Podium talk at Learner's Research Symposium (WORD)
PGY-4	4 half days	○ Complete research ○ Final research report/future studies submitted to Resident Research Committee by November 1. ○ Final presentation to Resident Research Committee ○ Podium talk at Learner's Research Symposium (WORD)	○ Finalize manuscripts for publication ○ Presentation at a national or international conference

Performance

- Participation and completion of research metrics/requirements outlined under Course Schedule/Calendar is required.

Academic Policies and Statements

- ACGME Program Requirements for Graduate Medical Education in Ophthalmology
- GME Policy 43.21: Evaluation and Promotion of Residents and Fellows

Attribution Statement

The Resident Research Curriculum is a collaborative effort of current and past members of the Resident Research Committee in the Department of Ophthalmology and Visual Sciences (DOVS) at the University of Wisconsin-Madison: Jonathan Chang, MD, Pam Cromell, Donna Neumann, PhD, Robert Nickells, PhD, T. Michael Nork, MD, MS, Tetyana Schneider, PhD, EdD, Maggi Schrader, Andrew Thliveris, MD, Christina Thomas-Virnig, PhD, Lexa Van Fleet, MPH, and Danver Wu. It was first published on the DOVS website in 2026. If you use or adopt the Resident Research Curriculum we ask that you cite the "University of Wisconsin, Department of Ophthalmology and Vision Sciences, Resident Research Curriculum." For inquiries regarding the use of the course content, or access-related matters, please contact the DOVS Residency Research Committee via education@ophth.wisc.edu.

Appendix A: Resident Research Rubric

Project Design	High Level (3) Exceeding Expectations	Moderate Level (2) Meeting Expectations	Minimal Level (1) Not Meeting Expectations
Hypothesis	Clear in binary format	Open ended – more in question format	No hypothesis
Research Plan (does it test the hypothesis?)	Able to address hypothesis – timeline well planned	Plan does not adequately address hypothesis	No plan
Research Design	Prospective	Retrospective / chart review	Case report
Statistical Consideration (Justification Required if Statistical Consultation Is Not Needed)	Statistician Involved – study meets meaningful level to test hypothesis	Statistician Involved – study does not meet critical power	None – simple case report level
Completeness of research template	Design has considered all aspects	Design is partially complete, but needs work	Incomplete – lacking most components
Mentor Involvement	Mentor shows active involvement – able to guide using principles of scientific method	Mentor available – able to co-ordinate design changes with committee help	Mentor not active participant in study
Impact	Study addresses important gap in knowledge	Study adds to existing level of knowledge	Study not meaningful
Progress			
Report	Annual reports complete and informative	Annual reports submitted incomplete	Not submitted
Presentation to Committee	Clear PowerPoint presentation – good at fielding questions	Adequate PowerPoint presentation – modest progress shown – needs significant mentor/committee input	Poor presentation – minimal or no progress – indifferent to committee input
Continued/Future project Expansion	Study leads to future research which is recognized and executed by candidate	Study complete – candidate recognizes needs for future research but does not extend work	Study incomplete
Work Presentation			
Platform/Meeting presentation	Candidate makes an annual presentation at Learner's Day and national or international conference	Candidate makes annual presentation at Learner's Day only	Candidate does not present
Publication of Work	Multiple publications or 1 paper in high level journal	Work is published in good specialty journal	Case report only, or not published

Appendix B: Project Template

Department of Ophthalmology and Visual Sciences
UNIVERSITY OF WISCONSIN
SCHOOL OF MEDICINE AND PUBLIC HEALTH

RESIDENT RESEARCH PROJECT

Instructions:

- **Complete proposal by April 1st and email to DOVS Education team at: education@ophth.wisc.edu.**
- **Please limit to 6 pages, including the detailed budget.**
- **Please keep original signed copies for your records. Electronic signatures are acceptable.**

Section 1: PROPOSAL

RESIDENT NAME:

PROJECT PROPOSAL TITLE:

PI MENTOR:

TOTAL BUDGET (Please provide estimate of the budget not to exceed $2000. Please also complete a detailed budget on p. 4):

HYPOTHESIS (limit to 400 characters): Please provide a prediction for your study. Remember that the hypothesis must be testable and proven or disproven.

PREMISE/BACKGROUND (limit to 2000 characters): Please describe current research and/or acceptable clinical practice and provide the rationale for the study. If applicable, present any preliminary data.

MILESTONES/AIMS (limit to 500 characters): State specific research project goals to test your hypothesis. Please make sure these goals are measurable and feasible. Please do not present steps in the process here.

EXPERIMENTAL DESIGN (limit to 2000 characters): Lay out clearly your approach /experimental design to test the hypothesis.

STATISTICAL EVALUATION (limit to 500 characters): Include a justification of the statistical power for the study.

EXPECTED OUTCOMES/ALTERNATIVE APPROACHES (limit to 1000 characters): Please state expected results and contribution to basic or clinical knowledge/patient care. Please suggest alternative approaches if outcomes are not achieved.

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PROJECT DETAILED BUDGET PROPOSAL* DIRECT COSTS ONLY FOR AWARDED $2000	FROM	THROUGH

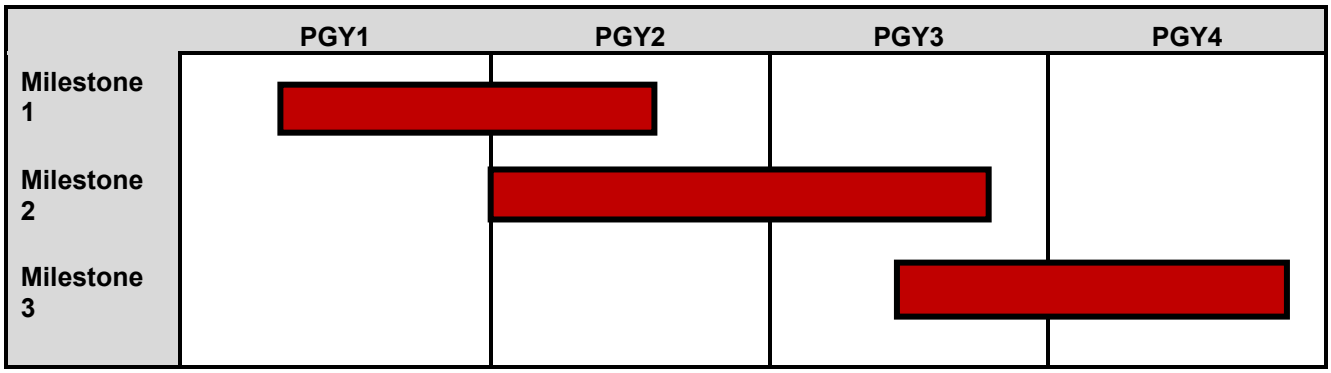
*Adapted from PHS398 US Department of Health and Human Services Public Health Service

List PERSONNEL (i.e. Research Specialist, Student Hourly, etc.)

NAME	ROLE ON PROJECT	Months of Project Effort	TOTAL
CONSULTANT COSTS			
EQUIPMENT *(Itemize)* (Note: Computers allowed only if directly used for research project. At project end, the computer becomes the property of the research mentor.)			
SUPPLIES *(Itemize by category.)*			
INPATIENT CARE COSTS			
OUTPATIENT CARE COSTS			
OTHER EXPENSES *(Itemize by category. Travel may not be included.)*			
		ESTIMATED DIRECT COSTS	**$**

BUDGET JUSTIFICATION (Provide justification for each category listed in the detailed budget found on previous page. If estimated cost exceeds $2000 provide an explanation for the cost-shaving for this project.).

GANTT CHART/TIMELINE: Please create your own Gantt Chart by using the following example.



Signature Block

Resident Signature _____ Date _____

PI/Mentor Approval Yes No

PI/Mentor Signature _____ Date _____

Research Committee Approval Yes No Date _____

Please email document DOVS Education team at: education@ophth.wisc.edu.

<u>Section 2: PROGRESS REPORT (2 page limit):</u> Complete this section by the dates indicated below whether your research is complete or still in progress.

PGY2 reports are due April 1st.

Instructions:

1. **Restate your original specific aims.**
2. **Briefly describe results that support each aim made since your last research presentation to the Resident Research Committee.**
3. **If your project has changed, please outline any change made to the project aims.**
4. **Is work towards your research project complete? Has a manuscript been submitted for publication?**
5. **List any publications/presentations resulting from this project made during the designated period.**

Please email document to DOVS Education team at: education@ophth.wisc.edu.

Signature Block

Resident Signature _____ Date _____

PI/Mentor Approval Yes No

PI/Mentor Signature _____ Date _____

Research Committee Approval Yes No Date _____

<u>Section 2: PROGRESS REPORT (2 page limit):</u> Complete this section by the dates indicated below whether your research is complete or still in progress.

PGY3 reports are due April 1st.

Instructions:

1. **Restate your original specific aims.**
2. **Briefly describe results that support each aim made since your last research presentation to the Resident Research Committee.**
3. **If your project has changed, please outline any change made to the project aims.**
4. **Is work towards your research project complete? Has a manuscript been submitted for publication?**
5. **List any publications/presentations resulting from this project made during the designated period.**

Please email document to DOVS Education team at: education@ophth.wisc.edu.

Signature Block

Resident Signature _____ Date _____

PI/Mentor Approval Yes No

PI/Mentor Signature _____ Date _____

Research Committee Approval Yes No Date _____

<u>Section 2: PROGRESS REPORT (2 page limit):</u> Complete this section by the dates indicated below whether your research is complete or still in progress.

PGY4 reports are due November 1st.

Instructions:

1. **Restate your original specific aims.**
2. **Briefly describe results that support each aim made since your last research presentation to the Resident Research Committee.**
3. **If your project has changed, please outline any change made to the project aims.**
4. **Is work towards your research project complete? Has a manuscript been submitted for publication?**
5. **List any publications/presentations resulting from this project made during the designated period. Please state if there is an intention to publish or present in the future.**

Please email document to DOVS Education team at: education@ophth.wisc.edu.

Signature Block

Resident Signature _____ Date _____

PI/Mentor Approval Yes No

PI/Mentor Signature _____ Date _____

Research Committee Approval Yes No Date _____

Resident Research Rotation Block Schedule

Appendix C

	New Schedule	half days	weeks
PGY 2	1 week continuous time between retina and peds	10	1
PGY 3	1 full day per week on consult rotation	26	3.5
	1 full day per week for 5 weeks (2 days in a row)	10	
PGY 4	4 half days per week on elective	4	0.5
	TOTAL	50	5