

UC Irvine OPTICAL BIOLOGY CORE
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The Core of It All: Science Mentorship Responsible AI

Using AI to Support the Core — Practical



THE HUMAN WORK

The core is built around infrastructure — but the work is really about the people who use it

The tools matter because of what they make possible for researchers.

Infrastructure

Core infrastructure: Microscope consultation, training, instrument upkeep, scheduling, billing, usage reports etc

Campus wide infrastructure: teaching, workshops, demos, grants, cancer center support, vendor negotiations, and imaging support outside of OBC, etc

Independence

Helping researchers, graduate students, and postdocs become more confident and independent.

A safe senior voice

I have often been a neutral, safe senior researcher outside the direct line of an advisor.

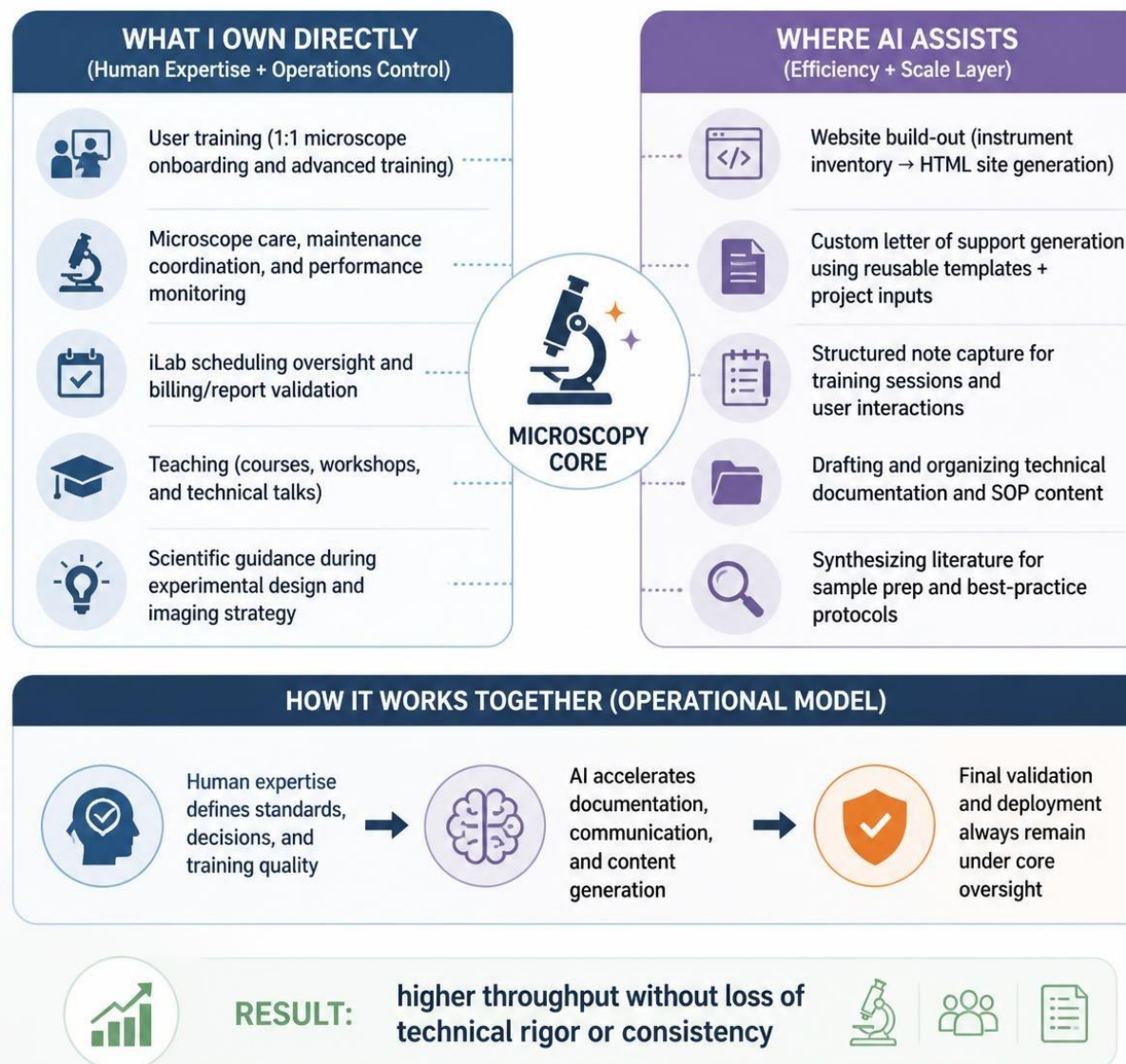
Why it matters

That role makes the human effects of new AI tools impossible to ignore.

A WORKING BOUNDARY

There are a few things I hand off to AI — the judgment is never one of them.

Core Operations + AI-Augmented Support Model



A CONCRETE EXAMPLE

Claude assisted rebuild of our [OBC](#) core website

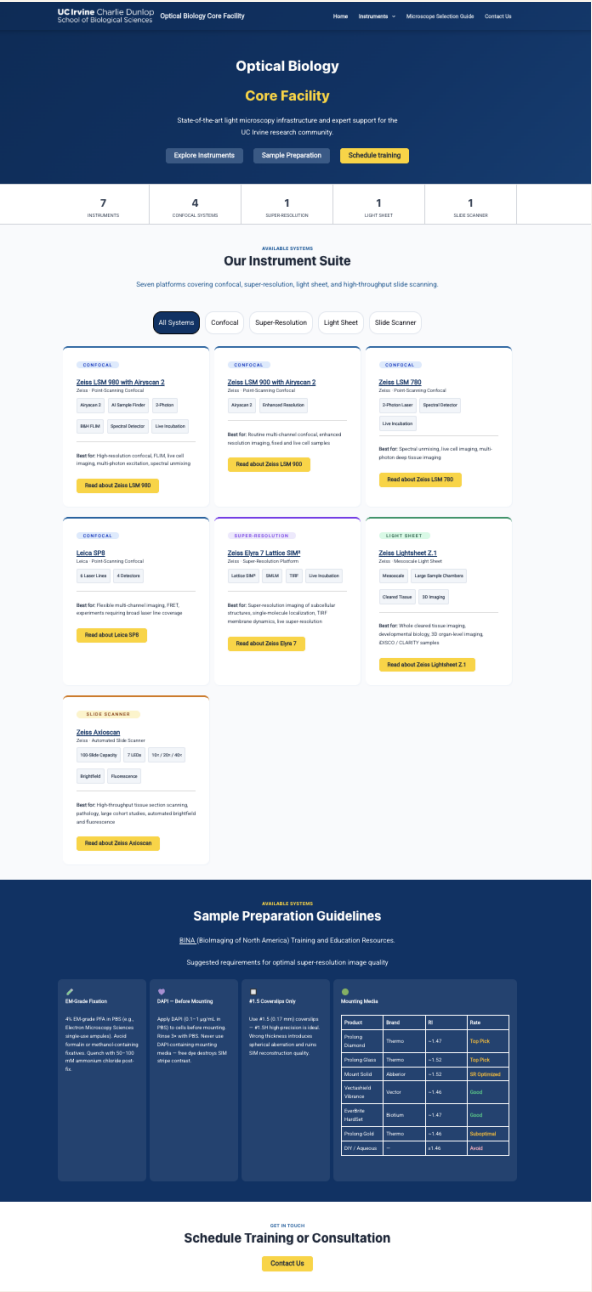
I supplied Claude with microscope specs, capabilities, imaging modes, sample prep best practices, and how I wanted the site structured and laid out

Claude generated a complete HTML website based on that input

I reviewed and approved the final output

The site was uploaded directly by our OIT team — no developer needed

The quality of the output depended entirely on the quality of what I put in — domain knowledge is not optional



Currently working on microscope selection guide

Newer researchers, especially new students, often do not know which system to use or how to begin.

A question-based guide asks:

1. What are you imaging?
2. What level of resolution?
3. How many fluorescent markers?
4. Do you need time-lapse or live imaging?
5. What is your microscopy experience level?

It leads to a system recommendation

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Microscope Selection Guide

Answer a few quick questions and we'll recommend the best instrument for your research needs.

Step 1 of 5

QUESTION 1 OF 5

What type of sample are you imaging?

This helps us determine which systems are compatible with your specimen.

 **Live cells or tissue**
Cells that are still alive and potentially moving or changing over time

 **Fixed / stained samples**
Cells or tissue that have been chemically preserved and labeled with fluorescent markers

 **Expansion microscopy samples**
Physically expanded gel-embedded specimens for enhanced resolution

 **Large cleared tissue / whole organ**
Intact or cleared tissue blocks, embryos, or whole organs

☐ **Many tissue sections / slides**
Large number of slides that need to be scanned automatically

Next →

WHAT'S NEXT?

Developing Learning Modules to Support Researchers:

1. Create interactive, AI-driven learning modules covering live imaging techniques, reagent selection, and specific protocols to enhance researcher independence
2. Develop tailored guides for different imaging modalities, helping users understand best practices and troubleshooting tips
3. Implement AI-assisted tutorials for advanced image analysis, including segmentation, quantification, and data interpretation
4. Integrate these modules into the core website, making resources easily accessible and reducing repetitive consultation
5. Employ AI to update and expand modules dynamically as new techniques, reagents, and protocols emerge
6. Foster a community-driven platform where researchers can share tips, ask questions, and receive AI-supported feedback
7. The goal is to empower researchers with self-guided, high-quality training resources, freeing core staff to focus on complex support and mentorship
8. AND SO MUCH MORE!

HUMAN VS AI SUPPORT CHALLENGE

A Pattern I Can't Ignore — The Post-COVID Researcher

Pre-COVID a researcher used to ask questions such as:

“Can you help me understand why my advisor wants these controls?”

My “Eeyore” researcher afraid to “break everything” and “nothing is going to work” 😊

Now many of them take the same question as a personal attack

For many current graduate students and early postdocs, formative years were shaped by isolation and disrupted social development.

From direct observation, stress and negative feedback can land differently than they did with prior cohorts.

WHEN REASSURANCE
COMES TOO EARLY

49%

One study across 11 leading AI models found they affirmed users' actions 49% more often than humans — including in harmful or unethical scenarios

AI can become a validator before the real critique arrives

A researcher gets reassurance from AI, then an advisor raises hard questions.

The gap between those experiences can feel devastating.

AI did not cause the fragility, but it can amplify false confidence before real critique arrives.

I configure my own AI tools for direct, neutral, concise answers because the default is not neutral.

MY CHATGPT SETTINGS

Provide direct, concise, neutral answers. Validate correctness when appropriate. Challenge assumptions only when they are clearly incorrect or would materially affect the answer. Avoid unnecessary pushback or hedging. Ask clarifying questions only if required to give an accurate answer. Include confidence level only when uncertainty is meaningful.

THE MENTORING MOVE

As core directors, we help the next generation build those skills as the tools change.

I try to be a supportive bridge before work reaches an advisor or reviewer: honest and kind, not another hurdle

Validate it

Have you checked the result yourself?

Read the paper

Do you know what this analysis needs to show?

Make sense

Does the result make biological sense to you?



FLAIR 2027 Workshop

2nd Annual Collaborative AIM/LFD Workshop: Synergizing Efforts
January 26 to 28, 2027 · University of California, Berkeley

FLAIR 2027 brings researchers together for three days of talks, keynotes, hands on workshops and a poster session covering fluorescence lifetime imaging, AI and computational microscopy, and advanced quantitative imaging. The workshop is co-hosted by UC Irvine's Laboratory for Fluorescence Dynamics and Optical Biology Core and by the Molecular Imaging Center at UC Berkeley.

Registration fees

Academic student	\$300
Academic non profit faculty, postdoc or staff	\$500
Industry	\$750
Sponsor attendee	\$1,000
Speaker, organizer, chair or volunteer	\$300

Fees in US dollars. A credit card processing fee may apply.

Join us for the UCI & UC Berkeley joint workshop on [FLuorescence Advanced Imaging Research \(FLAIR\)](#)!