

Doing Research in Medical School: A Survival Guide for the Accidentally Overachieving

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Background: Medical students are frequently informed that “research experience” is both highly desirable and somehow easily accomplished between anatomy lab, clerkships, and board studying. This satirical narrative traces the typical medical student research journey—from the moment someone says “programs like to see scholarly activity” through mentor hunting, chart reviews, statistical bargaining, peer review purgatory, and the obligatory poster photo for residency applications. By exaggerating common experiences while remaining uncomfortably recognizable, the piece highlights how structural expectations, limited time, and uneven mentorship shape what students actually learn from research: not just methods and p-values, but how to ask answerable questions, protect their sanity, and decide whether they ever want to open statistical software again..

Keywords: Medicine, the only profession that labors incessantly to destroy the reason for its existence. – J. Bryce

INTRODUCTION

Medical schools increasingly treat “scholarly activity” as a de facto graduation requirement, especially for students aiming at competitive specialties, yet the actual process by which students stumble into and through research remains remarkably opaque. Brochures showcase smiling students at simulations and in pristine anatomy labs, but rarely depict the late-night email drafting, spreadsheet archaeology, or quiet panic that accompanies the realization that “research experience” has become a near-universal expectation.

Somewhere between orientation icebreakers and ERAS account creation, many students discover that their transcript alone is no longer enough; they are expected to demonstrate curiosity, productivity, and “potential as a future academic” through posters, abstracts, and publications. This transition from learner to novice contributor in the scientific ecosystem is rarely structured, often informal, and heavily dependent on local culture, happenstance mentorship, and the student’s tolerance for ambiguity. As a result, the research experience can feel less like a planned curriculum and more like an accidental side quest that has somehow become high stakes.

scholarly activity”) through mentor selection, project choice, data wrangling, statistics, manuscript drafting, peer review, and conference presentations. By exaggerating familiar scenes while preserving their emotional truth, the piece aims to illuminate what medical students actually learn from research—not just how to interpret p-values, but how to navigate power dynamics, manage time poorly and then better, and reconcile idealized images of “doing science” with the messy reality of real-world academic work.

Step 1: Deciding you “like” research

This usually happens in one of three ways:

- You hear that your dream specialty is “very competitive” and suddenly develop a passionate interest in something you just learned existed last Tuesday.

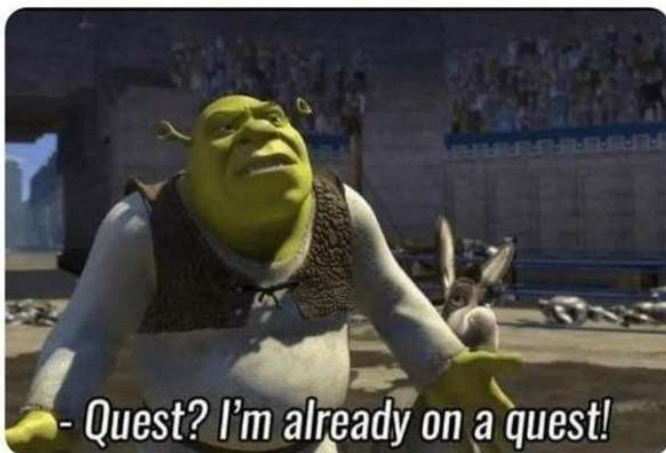
- A fourth-year says: “You don’t *need* research... unless you want options,” and then walks away like a cryptic wizard. (Fig. 1)
- Someone casually mentions that “programs like to see scholarly activity,” and within 24 hours, you’re on PubMed trying to figure out what a “retrospective cohort” is and why all the abstracts sound the same.

You don’t *decide* to do research in med school. You simply wake up one day and realize your CV is a barren, publication-free wasteland, and a panicked-email begins.



Fig 1: Sound advice from an upperclassman

Step 2: Finding a mentor (a quest!)



Finding a research mentor in medical school is like online dating, but with more Excel and less honesty.

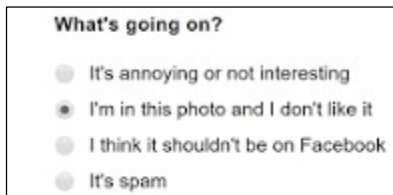
Five types of potential mentors:

- **The Ghost**
Responds to your beautifully worded email... 6 months later. By then you’ve matched into fellowship in another specialty.
- **The Powerhouse**
H-index: terrifying. Desk: never seen. You will interact exclusively with their army of fellows, like a research MLM. You gain a line on your CV and mild emotional scarring.
- **The Enthusiastic but Overcommitted**
“I have so many ideas!” they say, opening 23 half-finished projects. You will inherit 7 IRB protocols, 3 half-built REDCap databases, and a sense of generational trauma.
- **The CV Collector**
Has 47 “ongoing projects,” each with a sprawling author list and unclear ownership. Enthusiastically adds your name to three of them, none of which ever reach submission, but all remain on a shared spreadsheet labeled “In Progress” indefinitely.
- **The Micromanager of Minor Details**
Responds instantly to emails but only to debate comma placement, figure font size, or whether “significant” should be replaced with “notable.” Weeks pass before any decision is made about the actual research question, but the title has been revised 14 times.

Red flags in the first meeting:

- “The last student on this project... vanished.”
- “The data is basically done, we just need to write it up” (translation: nothing is done; no one remembers the password to anything).

- “We can definitely get this into NEJM” (you are studying parking patterns outside the hospital).
- “We don’t really need an IRB for this, it’s just quality improvement... probably.”
- “I’m not great with deadlines, but things always come together eventually.”
- “I have a statistician I sometimes work with, but they’re a bit upset about how the last project ended.



**minor editorial addition from faculty advisors*

Green flags:

- Clear question.
- Realistic timeline.
- They know what statistical test they *don't* want you to use.
- They can clearly describe what a successful project looks like for you specifically (timeline, likely product, and how it will support your future goals).
- They show you examples of past student work that actually made it to poster or publication, and can name what those students are doing now

Step 3: Choosing a project (and accepting your fate)

At some point, you'll be offered “options.” These will all be the same chart review, but in different fonts.

Common species of med-student projects:

- *The Classic Retrospective Chart Review*
You will spend 40 hours trying to interpret notes that say only “Pt doing okay.” Half the charts will be missing. Two patients will have three different birthdays. You will become intimately familiar with the phrase “data excluded.”

- *The Case Report*
“This case is so rare it must be publishable.” Rarer still: finding a journal that cares. But you will learn figure formatting, journal submission portals, and the five stages of grief.

- *The Survey Study*
You design a survey. You send the survey. You beg people to complete the survey. You realize response bias is not a theoretical concept; it is your life.

- *Quality improvement (QI) project*

Research’s pragmatic cousin who actually wants to fix things. Pitfalls: Too many moving parts: interventions change mid-stream, staff turnover, shifting baselines, and overgeneralizing local results to the whole world.

- *The Basic Science Summer Fling*
You thought you’d be curing cancer. You are labeling tubes. Your Western blot fails for the fifth time, but the lab postdoc assures you: “This is just how science is.” You consider becoming a barista.

- *Educational research*

Med students bravely attempt to prove, using rigorous statistics, that the exact thing everyone already hates about the curriculum is in fact “not significantly different” and therefore must be expanded next year.

- *Qualitative projects*

Where you collect 40 hours of interviews, spend 80 hours coding them, and then conclude—with great rigor—that “things are complicated” and “more research is needed, preferably by someone else.”

- *Meta-analysis*

What happens when academics get tired of arguing about data and instead publish highly cited papers proving, with 37 forest plots, that everyone else’s papers are terrible and underpowered—but, regrettably, “further studies are needed.”

- **Reviews**

You read 300 papers so you can write one paper that says, “In summary, the evidence is mixed, the studies are small, the methods are bad, and more research—ideally by someone else—is urgently needed.”

- Treating a correlation of 0.19 as “suggesting a strong trend” as long as the arrow points in the direction you were hoping for.

Using bar graphs with giant error bars that span half the y-axis and confidently saying, “You can clearly see the difference here.”

Step 4: Statistics: the final boss

Every med student goes through the same arc with statistics:

1. Denial: “We’ll just use a t-test or something.”
2. Anger: “What do you mean we violated 3 assumptions?”
3. Bargaining: “If we just call it ‘exploratory,’ does that make $p=0.09$ okay?”
4. Depression: You open R, stare at the console, and close it again.
5. Acceptance: You befriend a biostatistician and never let go.

Common statistical behaviors:

- Treating $p=0.049$ as divine endorsement.
- Calling everything “significant” when you mean “numerically different and emotionally important to me personally.”
- Creating 47 subgroups until *something* is significant and then pretending that was the plan all along.
- Confidently reporting standard error while labeling it “standard deviation,” and then wondering why the effect size looks like a superhero origin story.
- Interpreting a perfectly flat, non-significant Kaplan–Meier curve as “probably underpowered, but clinically meaningful to us.
- Running three different tests on the same variable, picking the one with the lowest p-value, and calling it “the most appropriate model.”

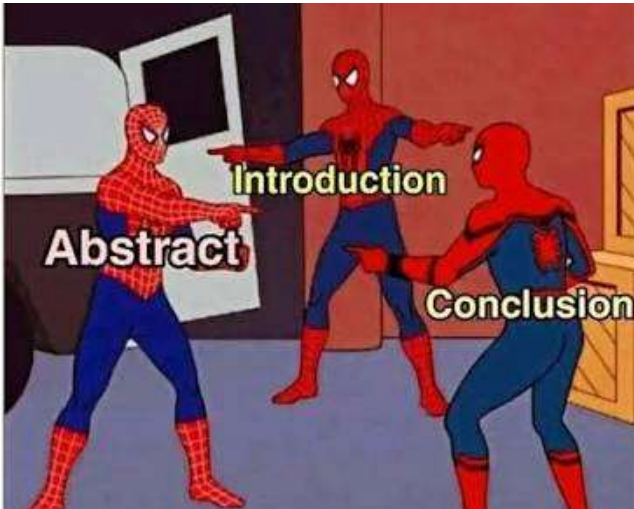
P-VALUE	INTERPRETATION
0.001	HIGHLY SIGNIFICANT
0.01	
0.02	
0.03	
0.04	SIGNIFICANT
0.049	
0.050	OH CRAP. REDO CALCULATIONS.
0.051	ON THE EDGE OF SIGNIFICANCE
0.06	
0.07	HIGHLY SUGGESTIVE, SIGNIFICANT AT THE $P<0.10$ LEVEL
0.08	
0.09	
0.099	HEY, LOOK AT THIS INTERESTING SUBGROUP ANALYSIS
≥ 0.1	

Step 5: Writing the manuscript (a.k.a. rearranging the same 12 sentences)

Welcome to academic Mad Libs.

You will write:

- “There is a paucity of literature...”
- “To our knowledge, this is the first study...” (it is not, but you added “at a tertiary care center in the Midwest” to make it technically true).
- “Further studies are needed...”



The writing process:

1. **Draft 1:** Overly detailed, 5,000 words, includes things like what time you usually collected data and why you hate the EMR.
2. **Draft 2:** Your mentor deletes half of it and adds 23 citations from 1983.
3. **Draft 3:** You shorten it to meet journal word limits; somehow the references section is now longer than the Discussion.
4. **Final-Final-NoReally-Actually-FINAL!.doc draft:** You no longer understand English but you hit "submit" anyway.

Important ritual: adding your name to the author line in the correct position and then deeply overthinking what that position means.

Step 6: Peer review: the world's fanciest group chat

Months later, you receive "Reviewer Comments."

- Reviewer 1: Helpful, kind, precise.
- Reviewer 2: Asks for three more randomized controlled trials, a new data set, and possibly a time machine. ****BEWARE REVIEWER #2****
- Reviewer 3: May have reviewed a different paper entirely (I actually did this once and was promoted to "senior reviewer")

You respond:

- "We thank the reviewer for this insightful comment" (you do not).
- "We have now clarified this in the Methods" (you added one adjective).
- "This was beyond the scope of the current study" (we didn't do that and we're not going to).

Eventually, one of three things happens:

- Acceptance (you print the email and frame it like a birth certificate).
- Rejection (you send it to another journal 45 minutes later with minor cosmetic changes).
- Eternal revision requests (the academic equivalent of "it's complicated").



Step 7: Presentations, posters, and the great lanyard migration

You finally make it to a conference.

Key components:

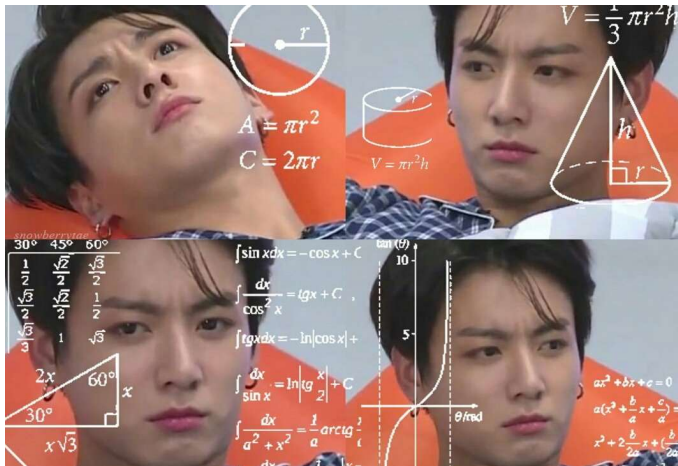
- A poster printed the night before. The figures looked fine on your laptop but now your confidence intervals are roughly the size of a parking space.
- You say the phrase “single-center retrospective study” approximately 14 times in 10 minutes.
- Someone asks an aggressively detailed stats question that begins with, “So I’m just wondering...” You briefly dissociate.

Networking at conferences:

- You stand near your poster.
- People read your title, nod, and walk away.
- One person engages for 20 minutes and turns out to be a med student from another institution with the exact same project in another population.

Still, you leave with:

- A photo of you pointing at your poster (for your mom and your residency application).
- A lanyard.
- A vague sense that this is how academia perpetuates itself.



Step 8: Integrating research with actual medical school

You will at some point try to balance:

- Research deadlines.

- Clerkship exams.
- Random emails from co-authors asking if you can “just quickly” re-run all the analyses.

Strategies that students *claim* to use:

- Time blocking, Gantt charts, bullet journals.
- “I wake up at 4 a.m. to write.”
- “I only check email twice a day.”

Strategies they actually use:

- Panic-writing at 11:47 p.m. before a meeting.
- Copying templates from old projects.
- Promising themselves: “Next project will be more organized” (it will not).

The dirty secret: you learn a lot.

- How to ask answerable questions.
- How to read a paper without crying.
- How to say “no” (eventually) when someone tries to add you to your ninth “quick chart review.”

Step 9: What research in med school is *actually* for

Yes, it helps your CV. Yes, it makes you look “scholarly.” But the real value:

- You learn to tolerate uncertainty and imperfection.
- You see how messy real data and real patients are compared to board questions.
- You get comfortable saying, “We don’t know—and here’s how we might find out.”

And you might discover things about yourself:

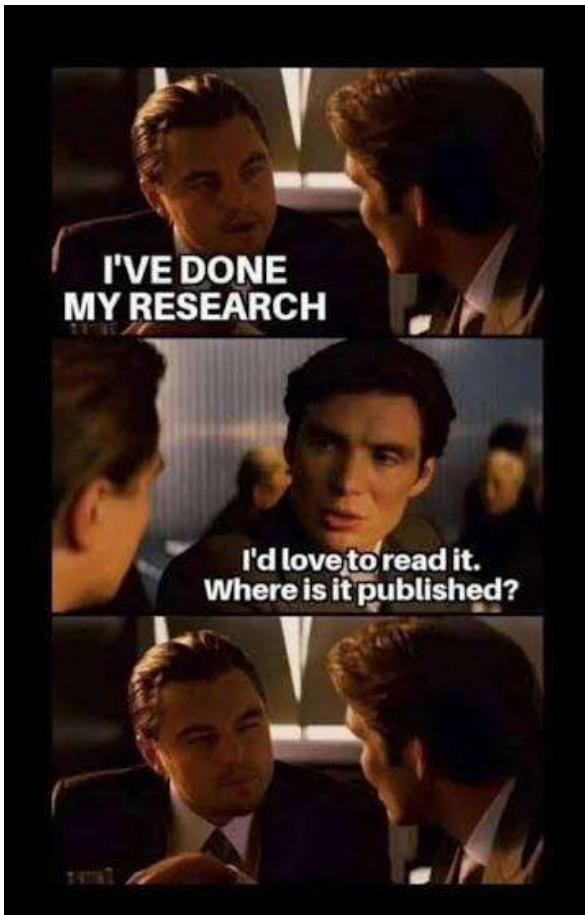
- Maybe you truly love methods, design, and careful analysis.
- Maybe you love teaching and explaining your work more than running the stats.
- Maybe you confirm, with scientific rigor, that you never want to open SPSS again.

Note: All of these are valid outcomes.

Final thoughts for the accidentally scholarly

If you are a medical student staring down your first project:

- **Pick people, not just topics.** A decent mentor with a boring question beats a terrible mentor with your dream topic.
- **Scope ruthlessly.** A small, clean project that finishes is more valuable than a giant, heroic project that lives forever in Drafts.
- **Protect your sanity.** You are allowed to have limits, hobbies, and REM sleep.



And when you're deep in your fifth revision, remember:

Every attending who casually says "just publish something" has retyped "further studies are needed" more times than they will ever admit.

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