How to select a mentor and project for your LRP

UPSOM LONGITUDINAL RESEARCH PROJECT

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#1 Takeaway:

There is no true perfect mentor + project combination out there. Use the information in these slides to help guide your selection and reach out to the course directors if you need assistance!

Choosing a project - common questions

I did lots of western blots in undergrad and would like to do something different, but I don't know where to start or what I would enjoy doing

1. Reflect on the clinical topics and patient cases that interested you the most
2. Identify research methods and mentorship dynamics that best fit your needs
3. Use institutional resources to identify mentors that fit your criteria and meet with LRP staff if you get stuck

I know the general topic I want to research (i.e. women's health, orthopedics, psychosis, etc) but I don't know the kind of work I want to do

1. Reflect on what about your topic of interest excites you
2. Identify research methods and mentorship dynamics that best fit your needs
3. Remember that your chosen topic does not constrain you to a certain residency if you end up changing your mind

Example – different research subtypes as applied to cancer research

BASIC RESEARCH

Seeks to understand the fundamental aspects of nature. It provides the foundation for advances against cancer.

TRANSLATIONAL RESEARCH

Moves basic research findings into the clinic and clinical research findings into everyday care. In turn, results from clinical and population-based studies can guide basic research.

CLINICAL RESEARCH

Tests drugs, medical devices, or other interventions in human volunteers to improve all aspects of patient care.

POPULATION-BASED RESEARCH

Explores the causes of cancer, cancer trends, and factors that affect the delivery and outcomes of cancer care in specific populations.

https://cancer.umn.edu/news/types-of-cancer-research

Example research activities

"Wet lab" work

- Cell culture modeling of tumor metabolic changes in response to chemotherapy
- Mouse models of functional recovery after nerve crush injury

Large dataset analysis

- Analyzing patient MRI images before and after pelvic reconstructive surgery
- Lipidome profiling of blood samples from a biobank of people with and without cirrhosis

Example research activities

Direct contact with patient data

- Chart review of post-op recovery of vascular surgery patients taking a new beta blocker
- Using age of onset of first MS exacerbation to predict risk of disease exacerbation later in life

Population-based studies

- Quantification of lifetime air pollution exposure and incidence of autoimmune disorders in PA
- Qualitative effects of social connectedness on wellbeing of pediatric lymphoma patients

Finding research methods that interest you

“I enjoy talking to other people and learning about their lives”	Survey design, patient recruitment and interviews, community based participatory research
“I have a good eye for detail and enjoy getting into the weeds of a subject so I can act as an expert”	Chart review, image annotation and analysis
“Organizing information and managing a lot of moving parts at once is satisfying”	Quality improvement, patient recruitment, geospatial information systems analysis
“I want to work with my hands; I always want to be doing something”	Bench research, cell culture, animal studies, engineering & surgical devices
“I like doing a little bit of everything and making connections between different systems”	Biospecimen repository +/- chart review, medical education

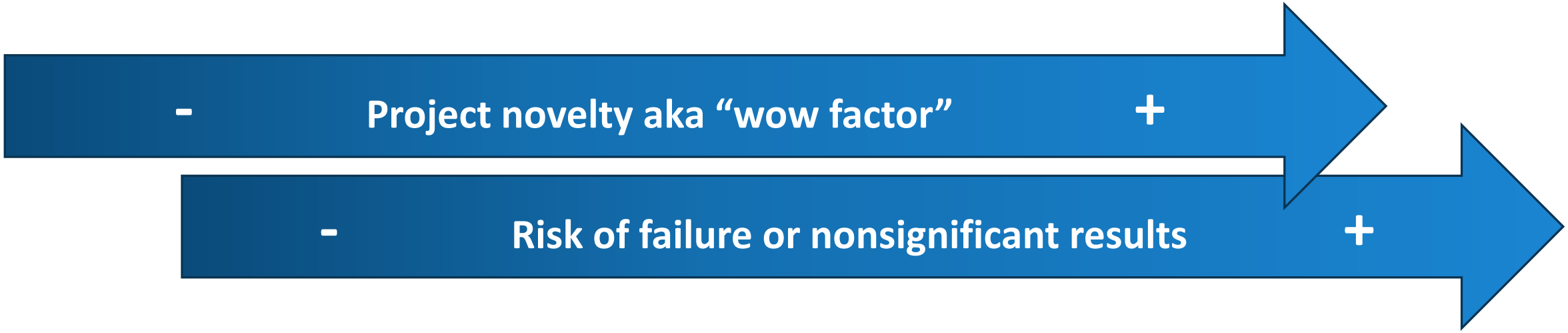
Different types of research projects

An existing dataset in need of routine analysis to answer a field-standard question

An existing dataset that could be re-analyzed or expanded to investigate a novel effect

Ongoing study in an understudied population answering a field-standard question

Brand new project analyzing a recently discovered effect in an understudied population



PRO TIP: “shovel ready” projects are pre-prepared and ready to start any time – the only other thing needed is a pair of hands.

What to look for in a mentor

- **Is excited to have you there**
- **Understands the proposed project and will help you interpret new findings**
- **Has a good sense of how much time you can contribute as a medical student**
- **Will provide you with technical and financial resources to complete the project**
- **Will assist you if things go wrong with your project**

Different types of mentors

Brand new investigator who just got their first research grant	Junior faculty with one main project and several side project ideas	Senior investigator with several long-term projects and side projects	Department head with multiple grants and years worth of accumulated data

What to look for in a research group

- They actively engage with your mentor and vice versa
- The number of people working on the team is appropriate for the scale of the project
- Has time and resources to teach you any skills required for success
- Has a point person you can report to for non-urgent problems
- Good communication and organization
- Welcoming and inclusive culture

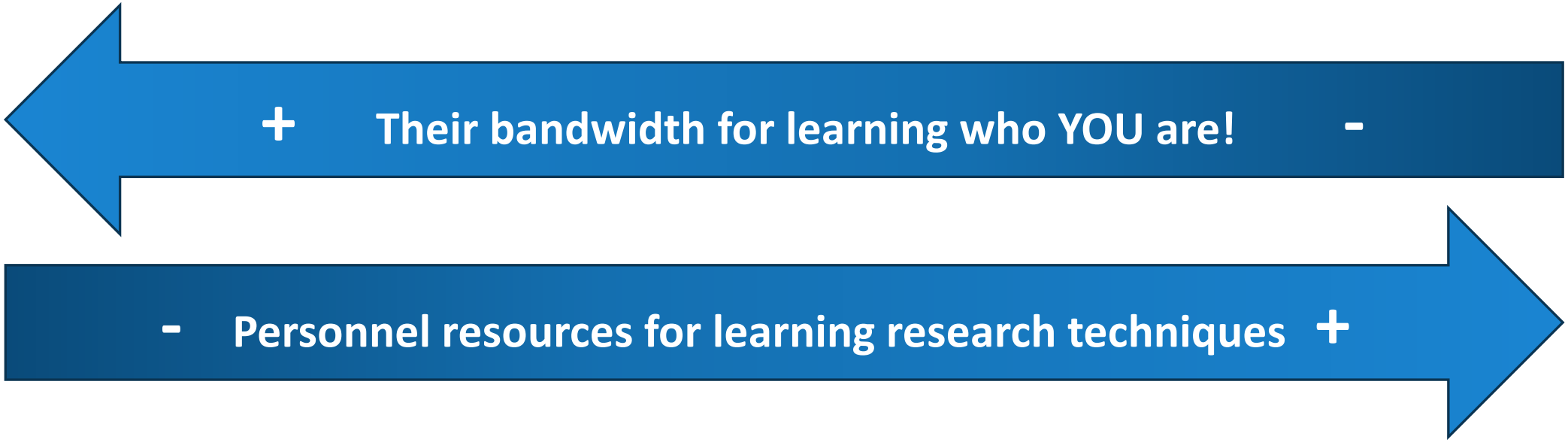
Different types of research groups

The investigator and their administrative assistant

The investigator, a senior staff member, and a few trainees

The investigator, hired staff, an MD on a research year, and some trainees

Multi-investigator group with hired staff and multiple trainees



Things to ask current and former students

- **What expectations does the mentor have for you?**
- **What is their research team like and do their expectations align with the mentor's?**
- **How often will you meet with your mentor and/or team to discuss progress? What are the meetings like?**
- **How do the mentor and team help struggling students?**
- **How is authorship discussed?**
- **If you had to do everything again would you still choose to work with this mentor?**

I'm interested in a lot of different fields (IR, thoracic surgery, pathology) and I think the pathophysiology behind clot formation is interesting. I want to be prepared to apply to a competitive field so I plan to pick a "safe" project that can guarantee a publication with a mentor that can advocate on my behalf. I like working in environment where I can learn a lot about a niche topic but the dynamics of the big wet lab I worked in during undergrad weren't for me. **I'm going to join a shovel-ready study run by the thoracic surgery department chair and a resident where I'll be doing a chart review comparing the effect of two different post-op rehabilitation programs on risk of future thromboembolism.**

I still don't know what I want to do for residency, but my favorite part of medicine since I was a pre-med was seeing the teamwork that went on behind the scenes and how good teamwork positively influenced patient outcomes. I like the risk of a big project so long as I have a large and diverse team of mentors to help me if I get stuck. **The LRP course directors helped me find a mentor who just got a grant to study communication patterns between addiction medicine and maternal-fetal medicine specialists and their effect on maternal and neonatal birth outcomes.** They are junior faculty but will have a lot of support from fellows from both departments who are very excited about this collaboration.

Resources for identifying mentors

- **LRP list of faculty members for clinical and basic departments on Elentra**
- **https://upsomtraineeresearch.pitt.edu/**
- **https://pivot.proquest.com/profiles/main**
- **Research speed dating events organized by UPSOM trainee interest groups**
- **Departmental research directories, UPSOM research symposiums**
- **Other students (especially the LRP SARC Manual)**