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How to Survive in Research

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SAGEX
Scattering Amplitudes: from Geometry to Experiment

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Session outline

- Motivations and attributes of a successful researcher
- Student/Supervisor relationships
- Mentors and second supervisors
- Challenges
- Career planning
- Horizon scanning
- Work-life balance / external pressures

An opportunity to reflect and discuss

What things would you like to discuss?

www.menti.com

Motivations and attributes of a successful researcher

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Why are you interested in pursuing a career in research?

Or why are you undertaking this research?

Discuss with the person next to you and then share reasons with the rest of the group.

Activity:

Attributes of a successful researcher.

On the post-it notes, write down an important attribute of a successful researcher.

On the flip chart paper, rank the attributes with the most important at the top going down to the least.

After 10 mins we will compare with the rest of the group.

Passionate about his or her career.
Resilient.
Detail-oriented but yet visionary.
A creative thinker.
Determined.

Knowledgeable (an expert).
A team player.
Self-motivated.
An effective communicator.
Capable of thinking “outside the box”.

Stull and Ciappo (2014)
https://doi.org/10.3945/an.114.007179

student / supervisor relationships

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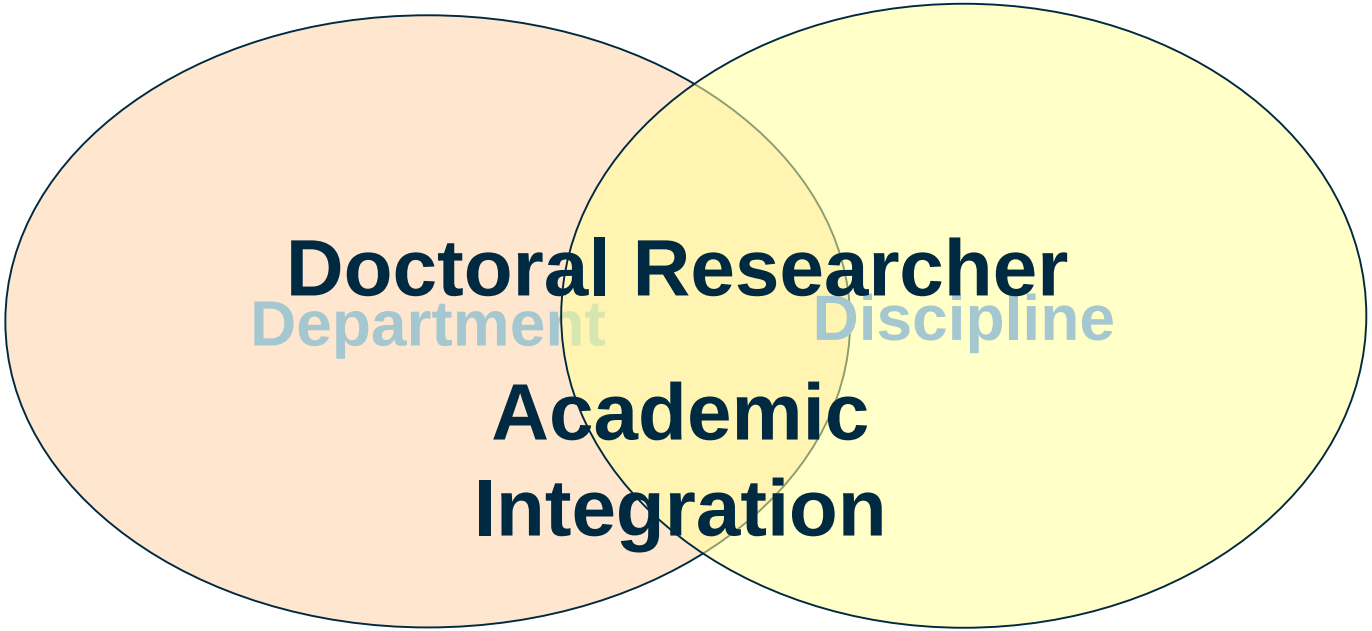

Doctoral Researcher
Department
Discipline
Academic
Integration

Problem Areas

	Discipline
Mismatch	•Does not fit with conventional ways of being a researcher or scholar in the discipline •Research practices not matched with student's strengths
Isolation	•Marginalized from the discipline

Golde 2005, 681-693

https://www.jstor.org/stable/pdf/3838782.pdf

Problem Areas

	Department
Mismatch	•Does not fit with ways of being a student or junior scholar in the department •Poor fit of expectations between student and department: – inaccurate expectations about nature of graduate life –Academically under-prepared •Mismatch between student and supervisor
Isolation	•Marginalized from the departmental community •Structural isolation of student

Golde 2005, 681-693

Problem Areas

	Discipline Filtered Through Department
Mismatch	•Does not fit with ways of being a researcher or scholar as portrayed by those in the department •Student perceives research faculty life is incompatible with personal goals •Student perceives job market to be poor •Research practices not matched with student's strengths
Isolation	•Marginalized from the discipline

Golde 2005, 681-693

- What are your **supervisor's** responsibilities?

- What are **your** responsibilities?

Working with Your Supervisor(s)

- How would you describe your supervisor's personality and way of supervising?

- How would you describe your personality and preferred way of working?

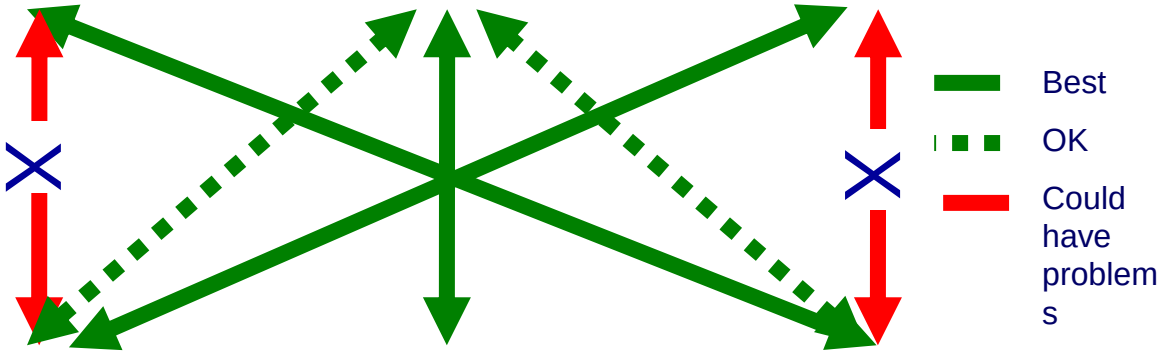
Relationship with Supervisor

SUPERVISORS

DOMINANT
-expert who wants things their own way

INTERACTIVE
-give & take in discussions to agree

INDEPENDENT
-believes it's the student's project



SELF-MOTIVATED
-wants minimum interference

ENJOYS INTERACTION
-as part of the learning process

NEEDS DIRECTION
-willing to act as assistant to supervisor

RESEARCHER

Second supervisors and mentors

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What is the role of your second supervisor?

What is the role of your mentor?

Mentors

A leading scientist at a different SAGEX node, with complementary academic expertise to you.

Novel insights: might offer an alternative view on your research project.

Might find the relationship develops over time as you gain more experience

Be proactive: the mentors are busy academics, so expect to put in effort to develop the relationship.

It is crucial during your training that you develop confidence in your insight and learn to think independently of your mentor (in the wise words of my first mentor, “the outcome of the perfect training experience is that you leave the laboratory thinking that your mentor is a good person, but a bit dumb”).

(Yewdell, 2008)

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Challenges for a scientist.

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Early career

- Imposter syndrome.
- Lack of confidence.
- Less knowledge.
- Feel constrained.

Established career

- Feel you have exhausted the area.
- Lose interest.
- Dug so deep in one hole that you can’t see over the sides.
- Feel constrained.

Activity:

Developing research ideas.

Activity: How would you overcome struggling with coming up with research ideas.

In groups of three or four spend **5 minutes** discussing strategies to deal with this challenge.

What would you do?

Where would you go?

Activity: Blue skies thinking

In pairs:

Imagine a perfect world.

In this perfect world what would you like to find out about?

Now focus on these thoughts to develop them into something feasible and practical.

Stepping back - decontextualisation

Read all the recent articles in your field.

Update your place in the field.

Read articles / attend seminars outside of your field.

Coping with rejection

Avoid taking it personally

View the feedback constructively

Embrace your feelings

You are not alone – share with others

http://makewritelearn.com/rejection-letter

Working collaboratively

What part do you play in a team?

What are the other parts required for success?

What problems do you envisage and how can they be addressed?

Discuss in pairs and then share with the rest of the group.

Career planning and horizon scanning.

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Career Drivers Survey

Career drivers are the individual forces within people, which shape individual career decisions. This survey will help you clarify what you are looking for from your working life.

Instructions

Below are 36 pairs of statements about what you might want from your career. You should evaluate the relative importance to you of each statement in the pair and allocate 3 points, no more, no less. In other words one statement could be given 3 points, the other 0, or one could be allocated 1, the other 2.

Activity:

Your career plan.

On the sheet provided, complete your own career timeline.

What are your aspirations?

When do you hope to achieve them?

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Activity:

Horizon scanning.

In your groups, discuss these questions for five minutes:

What opportunities may be developing in your area?

How can you increase your awareness of possible opportunities?

How can you improve your chances?

AI beautiful mind

Machine learning is no longer limited to calculating permutations

Creative thinking

In his new book *The Creativity Code*, mathematician Marcus du Sautoy surveys the current landscape of AI's encroachment into areas once thought to be the preserve of human intelligence: visual art, poetry, music – and science. Du Sautoy points out that already AI is not just trouncing the best human opponents in games like chess and Go but is doing so in ways that astonish experts: not by a relentless grinding down, but by making bold moves that the human players find 'beautiful' and would never have imagined for themselves (*Chemistry World*,

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Ball, P. (2019)
Chemistry World. Vol 16(3)

Work life balance.

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The importance of work-life balance

- To maintain your mental health (reduce stress)
- To ensure your physical health and wellbeing
- It increases productivity
- Become a more rounded individual
- You only get one life!

What we covered today:

What are the qualities of a successful scientist?

We considered the recognised qualities of a successful scientist such as: resilience, creativity, team player.

Challenges of scientific research.

We considered some of the challenges of academic research such as: generating ideas and managing rejection.

The student / supervisor relationship

We considered the nature of the student/supervisor relationship and how best to manage this.

Career planning

We explored career drivers and future career planning.