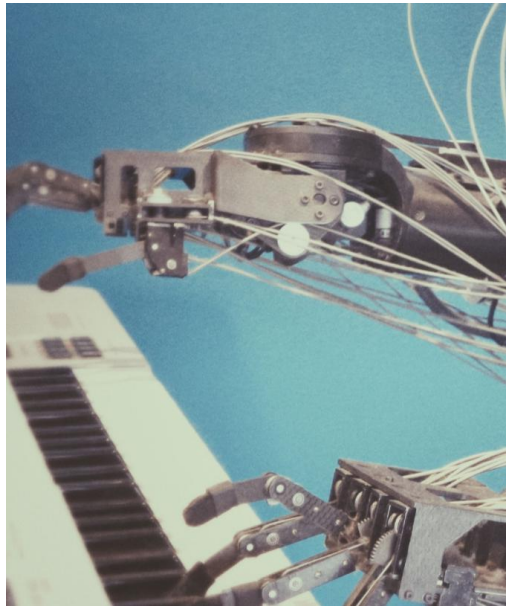
Introduction to Research

AI Hub -Academy and Research (1)

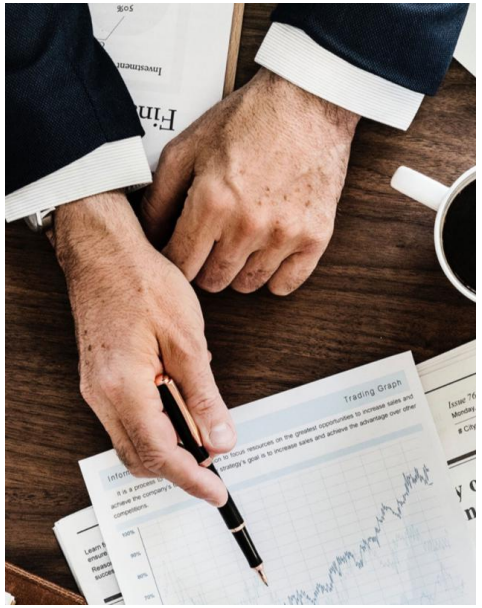
GEC Academy

Jiayi Zhu

AI HUB
顶级STEM科研计划



Me chine Learning



Financial Engineering

AI App Development

AI HUB 顶级STEM科研计划

Academic Research	• First Session: Introduction to Research • Second Session: Topic Selection • Third Session: Academic Retrieval
Professional Knowledge	• July: Begin your knowledge journey
Academic Writing Final Presentation	• Fourth Session: Writing • Fifth Session: Presentation

Today

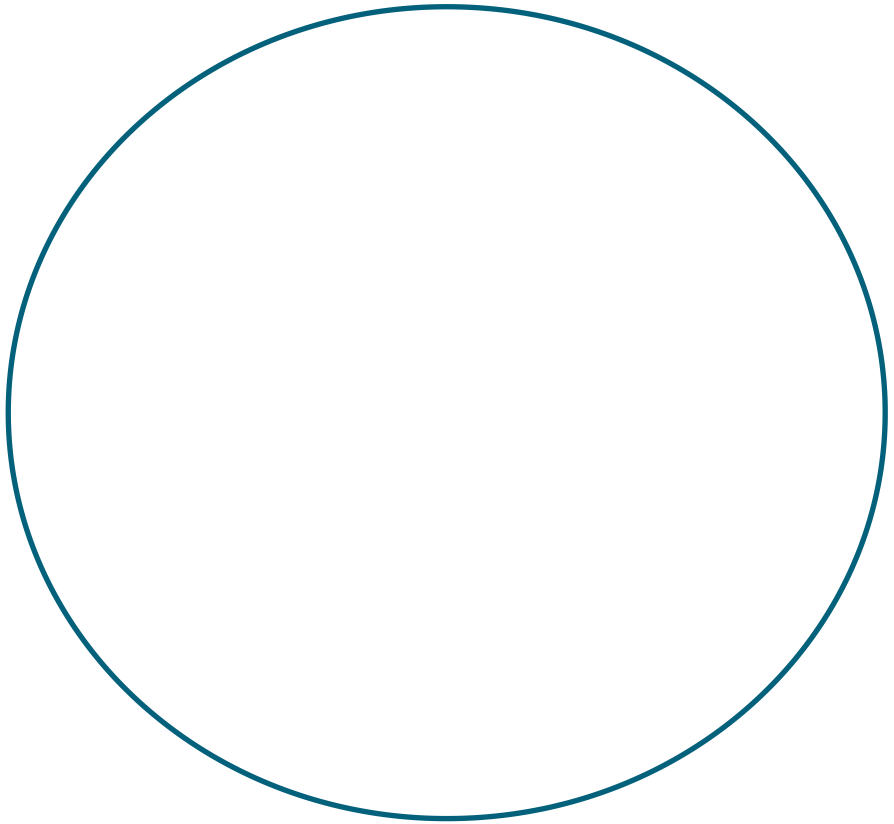
- Introduction: an intro research
- Email: zhujiayi1130@yale.edu

Intro Topics

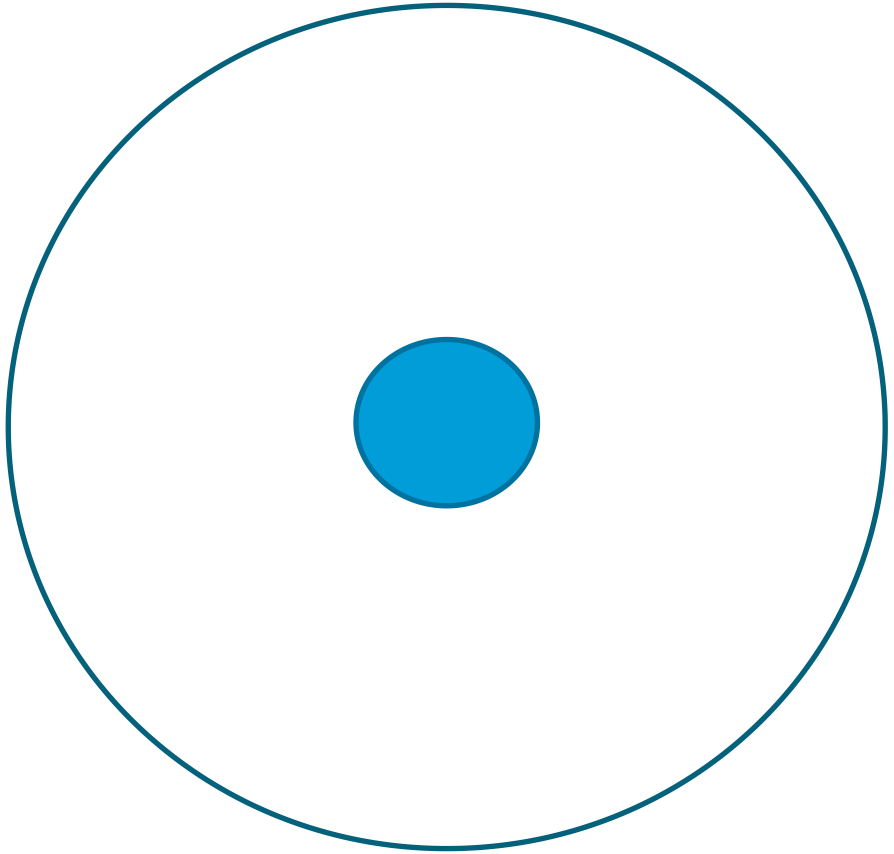
- What is Research ?
- Structure of a Laboratory Group
- How to Start Research?

Imagine

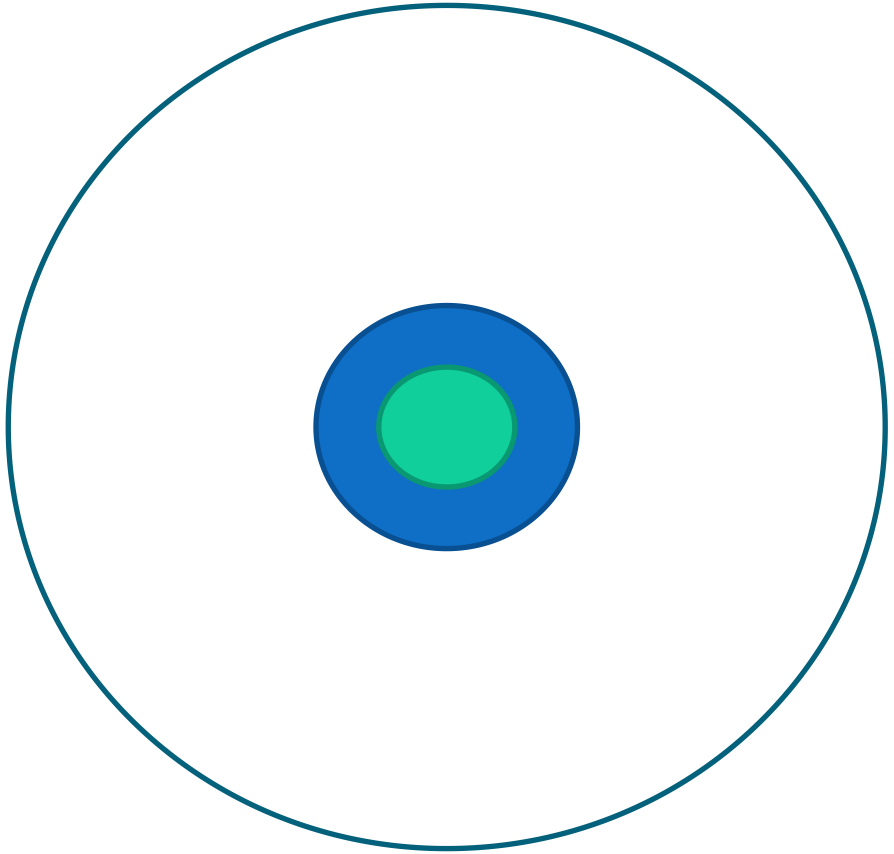
- The circle represents all human being's knowledge.



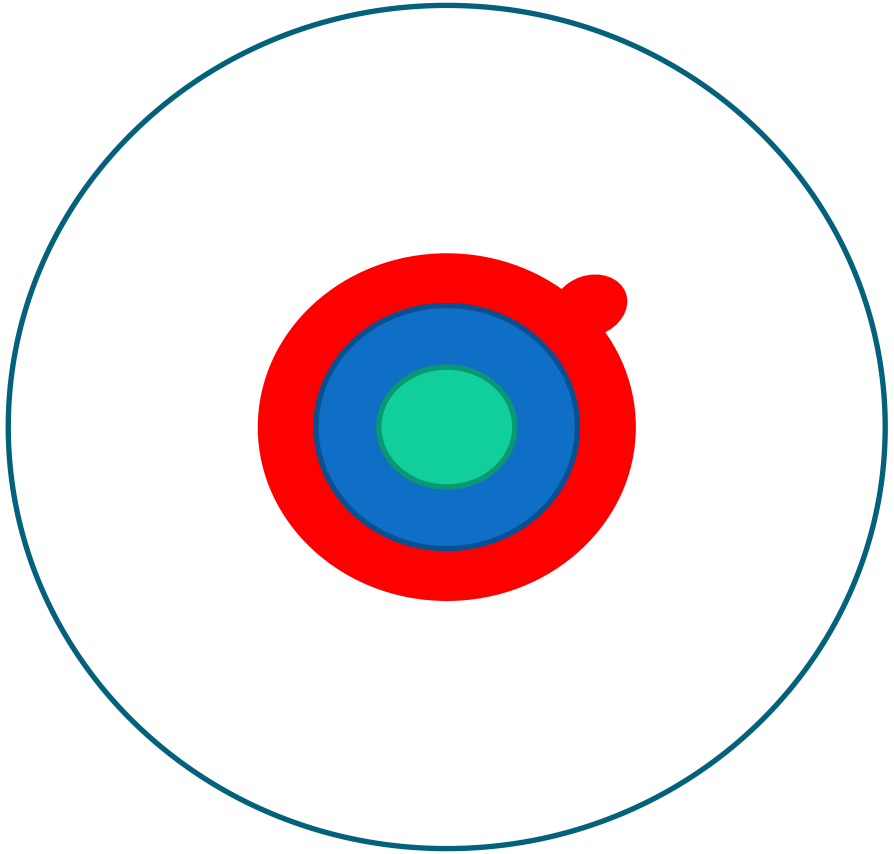
- When you start to explore the world, …



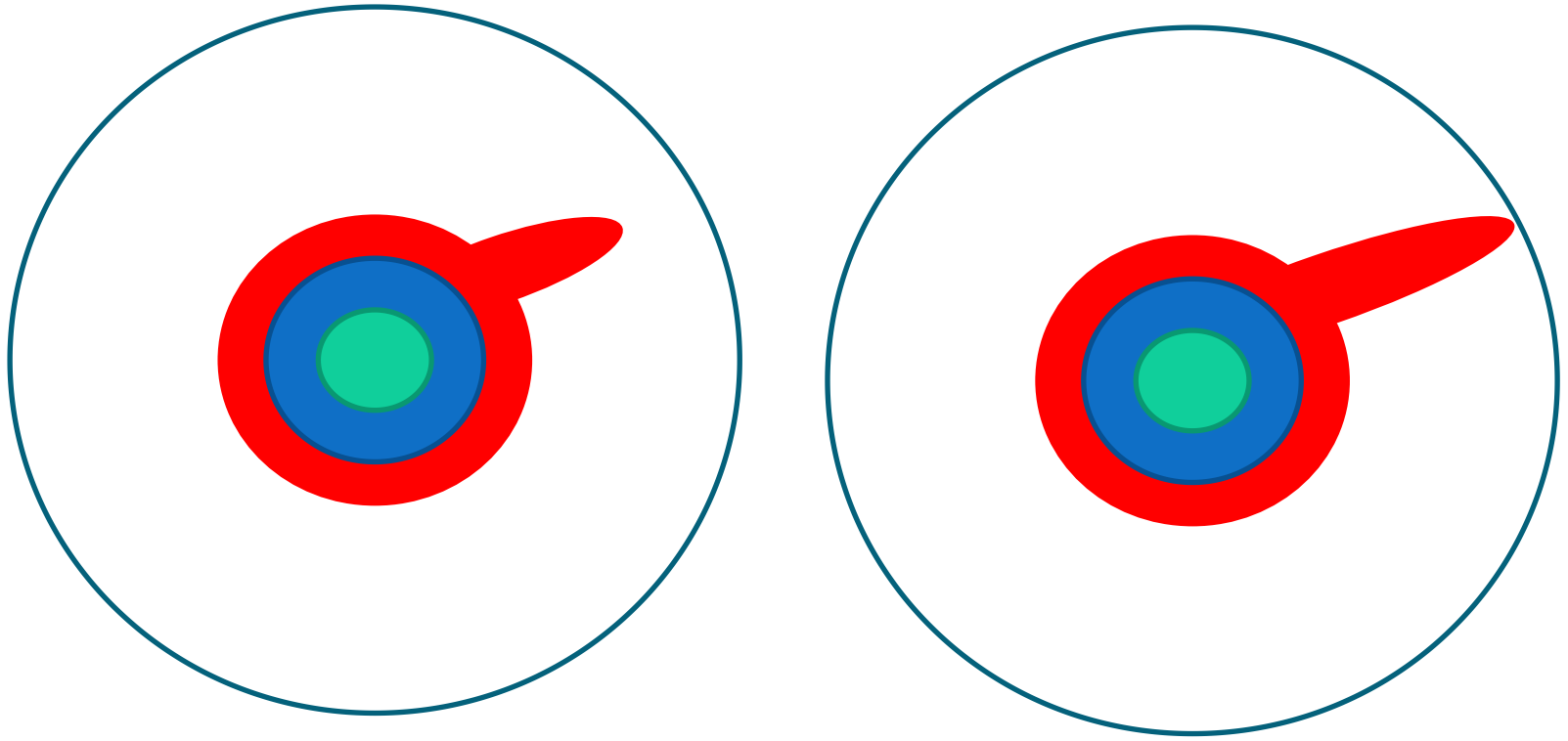
- When you go to high school, ...



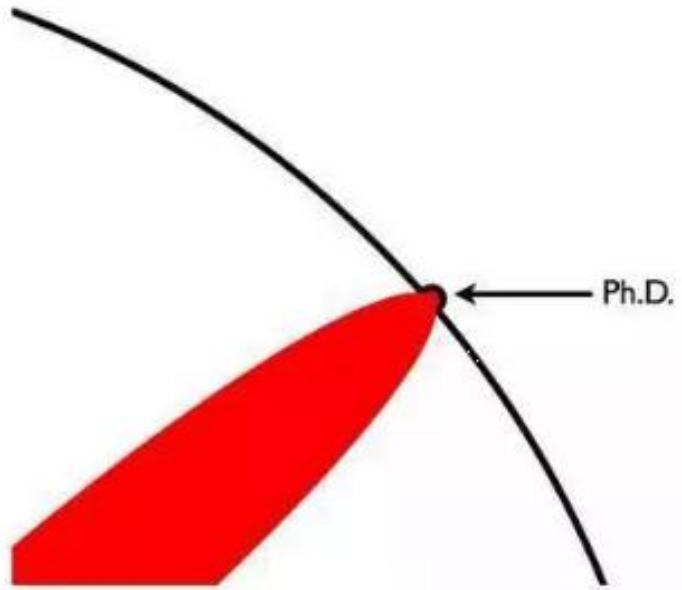
- When you go to university, find your major...



- When you become graduated, try to touch the boundary...



- When you become a Ph.D., make a breakthrough...



High School	Bachelor	Master	PhD
Chemistry	Organic Chemistry	Lab of Photochemistry Lab of Organic Solid	Visible-light photocatalysis in nitrogen-doped titanium oxides Gold nanoparticles: Assembly, supramolecular chemistry, quantum-size-related properties, and applications toward biology, catalysis, and nanotechnology Metal-Air Batteries with High Energy Density: Li-Air versus Zn-Air Accurate description of van der Waals complexes by density functional theory including empirical corrections Diagnostics for the Developing World: Microfluidic Paper-Based Analytical Devices Interfacial toughness measurements for thin films on substrates
	Inorganic Chemistry	Lab of Molecular Reaction Dynamics Lab of Supramolecular Chemistry	
	Analytical Chemistry	Lab of Computational Chemistry Lab of Green Chemistry	
	Physical Chemistry	Lab of Colloid and Interface Lab of Nanoscience and Technology	
	High-Polymer Chemistry	Lab of Biochemistry Lab of Molecular Recognition and Function	

Better Solution

Better Equipment

Better Data Analysis

Better Theoretical Methods

More Funding

Doctor

Master

Bachelor

Table 2: Researches about Capital Asset Pricing Model (CAPM)

Author(Year)	Model	Country	Sample Period
	Advanced		
Sharpe (1964)	CAPM	-	-
Merton (1973)	Intertemporal CAPM (ICAPM)	-	-
Black(1976)	wealth CAPM	-	-
Lucas (1978)	consumption CAPM (CCAPM)	-	-
	Intermediate		
Fama and French (1993)	3-factor CAPM	U.S.	1962-1989
Chen et.al.(2012)	CAPM-GARCH	U.S.	2001:1-2010:3
Gultekin and Rogalski (1985)	APT and CAPM	U.S.	1960-1979
Ziegler et.al. (2008)	CAPM and Multifactor Model	Europe	1996:1-2001:8
Los Rios and Garcia (2011)	CAPM and SDF	Europe and U.S.	1994:1-2008:6
Jin(2012)	CAPM-AEPD	China and U.S.	2006:1-2010:12
	Primary		
Chen and Sun (2000)	CAPM	China	1994:9-1998:10
Söderlind (2006)	CCAPM	U.S.	1947:1-1956:4
Grossman and Shiller (1981)	CCAPM	U.S.	1890-1979
Wu and Xu (2004)	CAPM and 3-factor model	China	1995:2- 2002:6
Hodgseon and Seçkin (2012)	CAPM	Canada	1968-2008
Zhang et.al. (2012)	CAPM	China	2007-2011
Li and Yang(2012)	CAPM-AEPD	Hongkong	2006:1-2010:12

- What will you likely do in a long research process?

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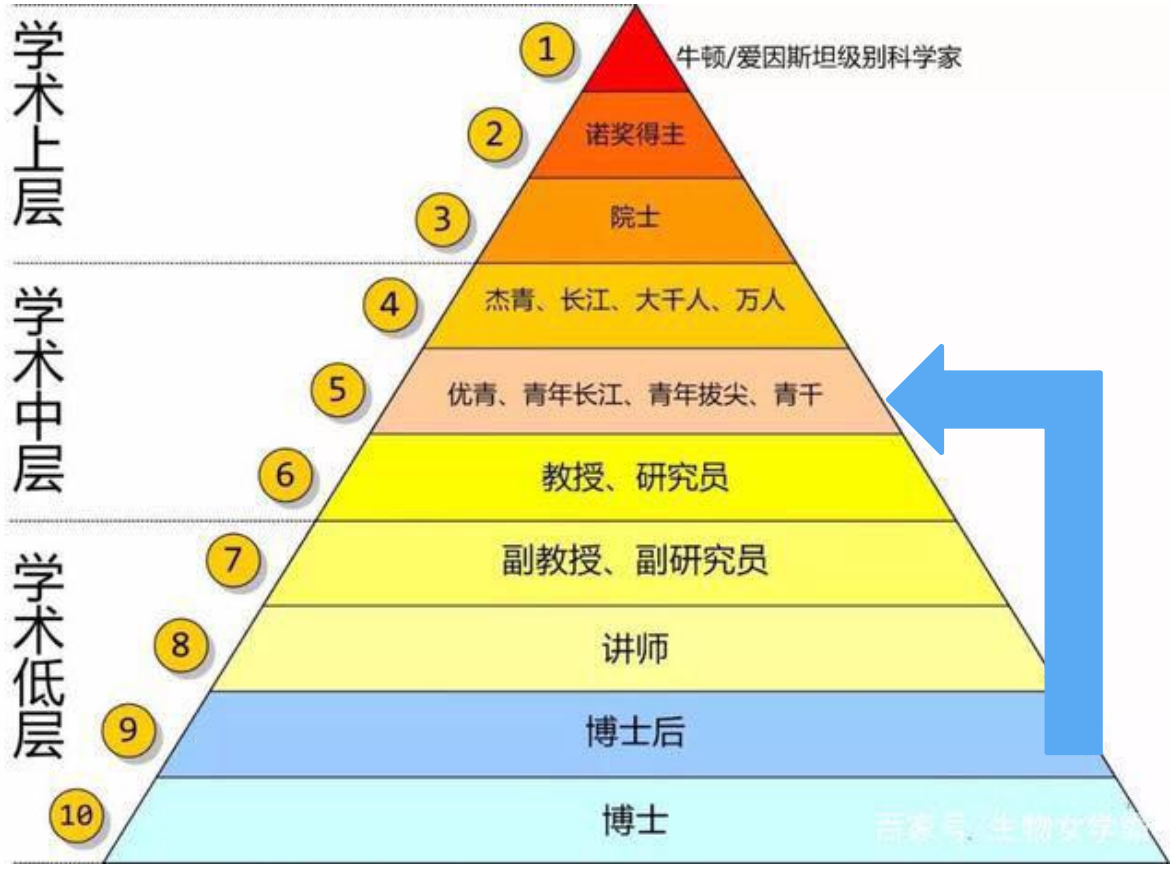
- Structure of a Laboratory Group



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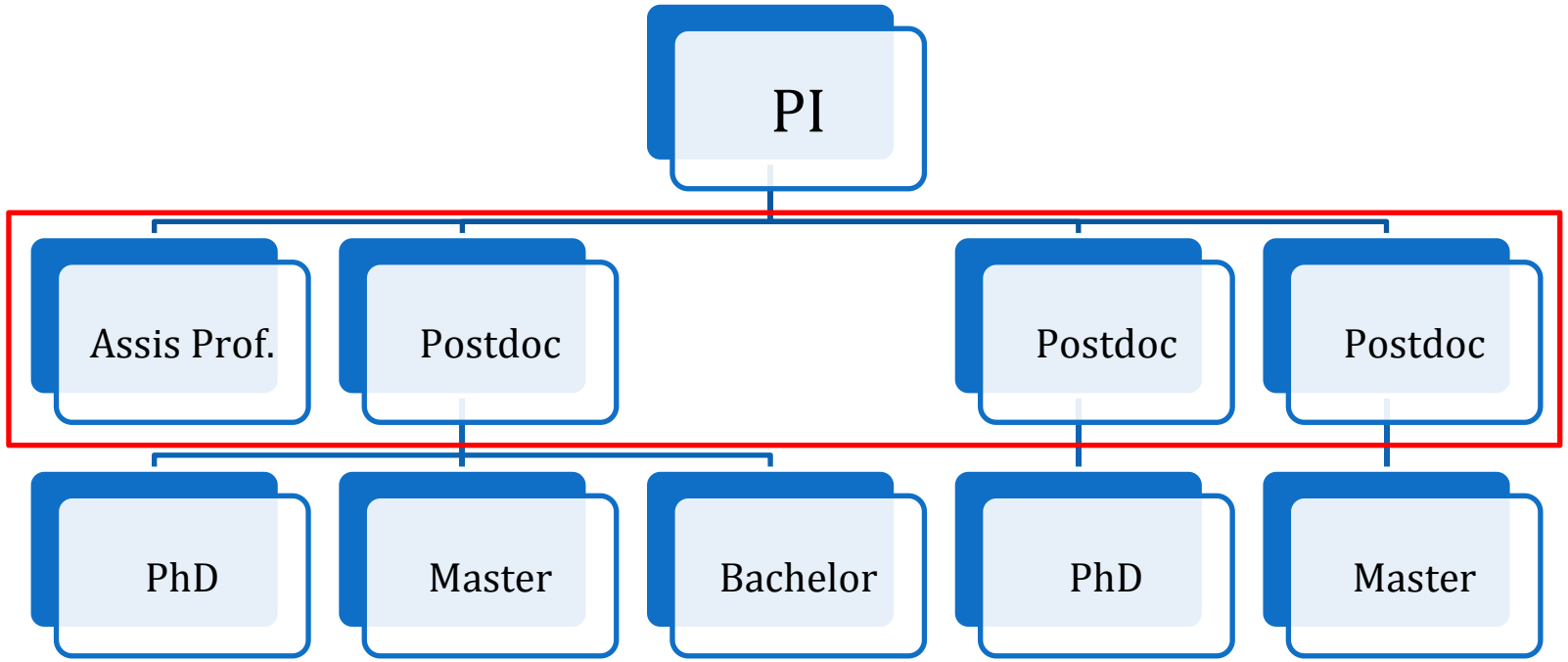

- Group Direction
- Operation
- Recruitment
- Funding

- Research Task
- Guidance
- Daily Management
- Funding Draft Preparation
- Equipment Maintainence

Application

Dear Prof. Green,

I am Jiayi Zhu, a second year graduate student from xxx university, majoring in .... I am looking for XXX position/program.

I was delighted to learn that you are involved with ....(this specific area of interest) at ..lab or ..university. I have developed a great interest ...owing to our course--..... I also have studied your paper....

I have recently taken up the project work on .....

My academic standing has been good so far and my current GPA is ..., I am currently ranked ".." in my department. Please find my resume at the following link: (if you have)

Would it be possible for me to come to see you to discuss ? Or if you are too busy to meet. Perhaps we could talk on phone/Skype/Zoom?

Subject

"Prospective Graduate Application" or "CEMB Applicant"

Self-introduction

Who you are? What is your degree history? From what institution?

Considering or have already applied to the program?

Links

The links between your research interests and the faculty members' research

一级学科 Biology 二级学科 Genetics

三级学科 Evolutionary genetics 四级学科 Human evolutionary genetics

Personalize the email to the faculty members' research

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Show your ability

Program

Paper or Working paper

Teaching /Research experience

Interview

Especially for research program

Indicate your financial needs

01

正面指数*****

I appreciate your interest in my lab and your strong research background ... I would consider taking a PhD student next year, and I think you would be a very good candidate ... Ensure that I could fund the duration of your PhD program.

02

正面指数****

Thank you for your interest in a PhD position in my lab. You sound like an excellent candidate! ... Perhaps we should set up a time to talk by phone?

03

正面指数***

Yes, I am recruiting Ph.D. students. Your current and future research interests align well with the current research in my lab, and I think your application would be very strong. If you would like to apply to my lab, then I am accepting students through the Department of ....I would like to strongly encourage you to apply to the graduate program ... Your background sounds to be highly appropriate for graduate study here!

04

正面指数**

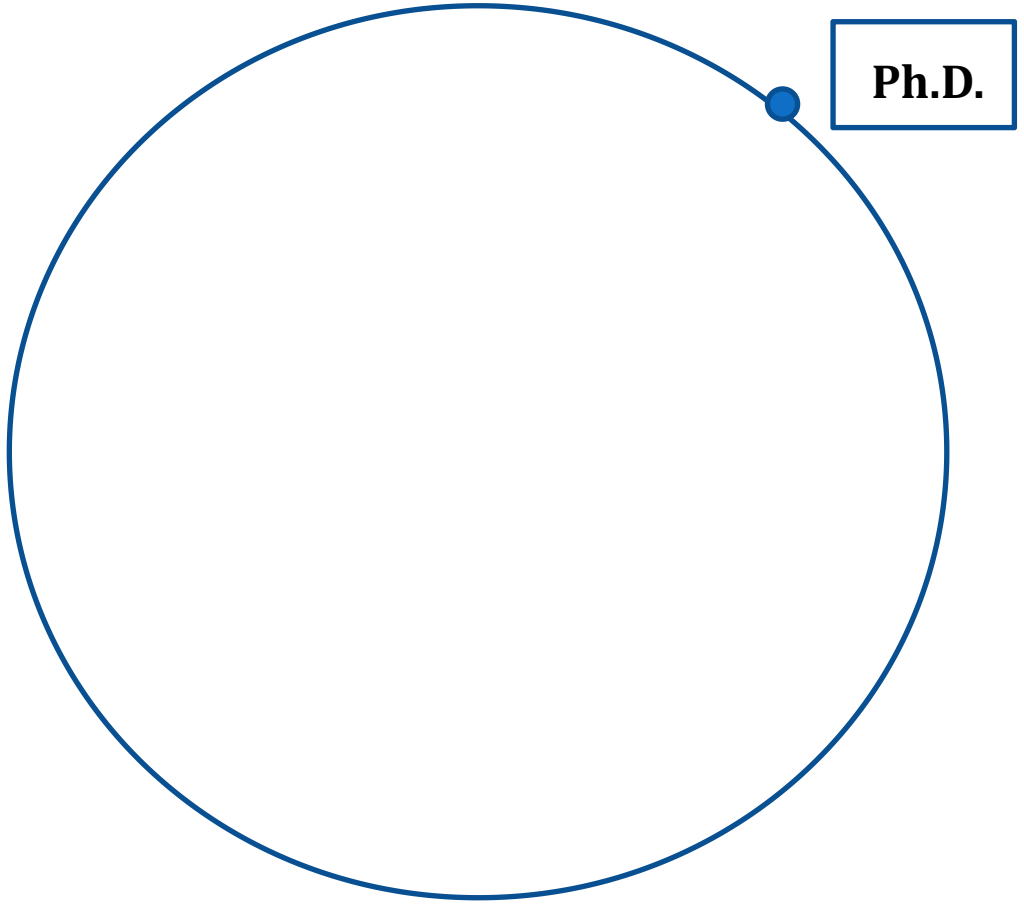
Thanks for your interest. Yes, I'm currently taking students. So, I encourage you to apply to *** for your PhD ...

05

正面指数*

I work closely with Dr. *** and am writing to you on her behalf. She regrets that she is unable to respond to your email herself ... Professor *** is quite limited to taking on PhD students who are enrolled in the programs with which she is affiliated, or other graduate programs … She does however have intentions of taking on new students from these programs each year ...

- Looking Back…



Thank you for your listening !