

Preparing a successful career path: Differences between academic and industrial scientists

选择最佳事业发展道路：学术界与生物医药工业界科学家的区别

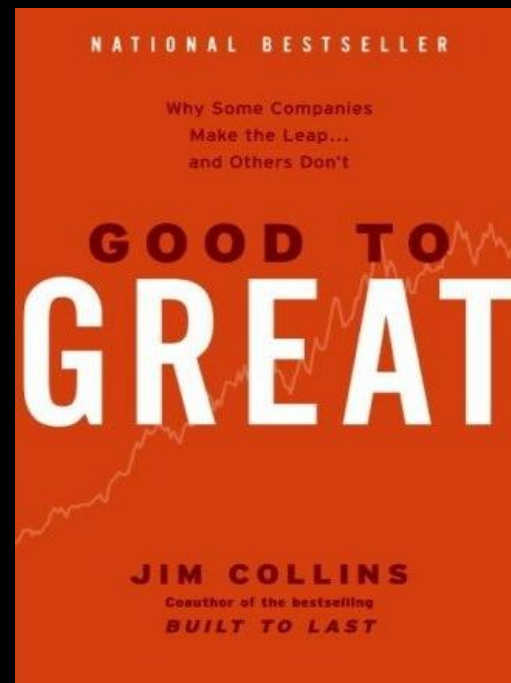
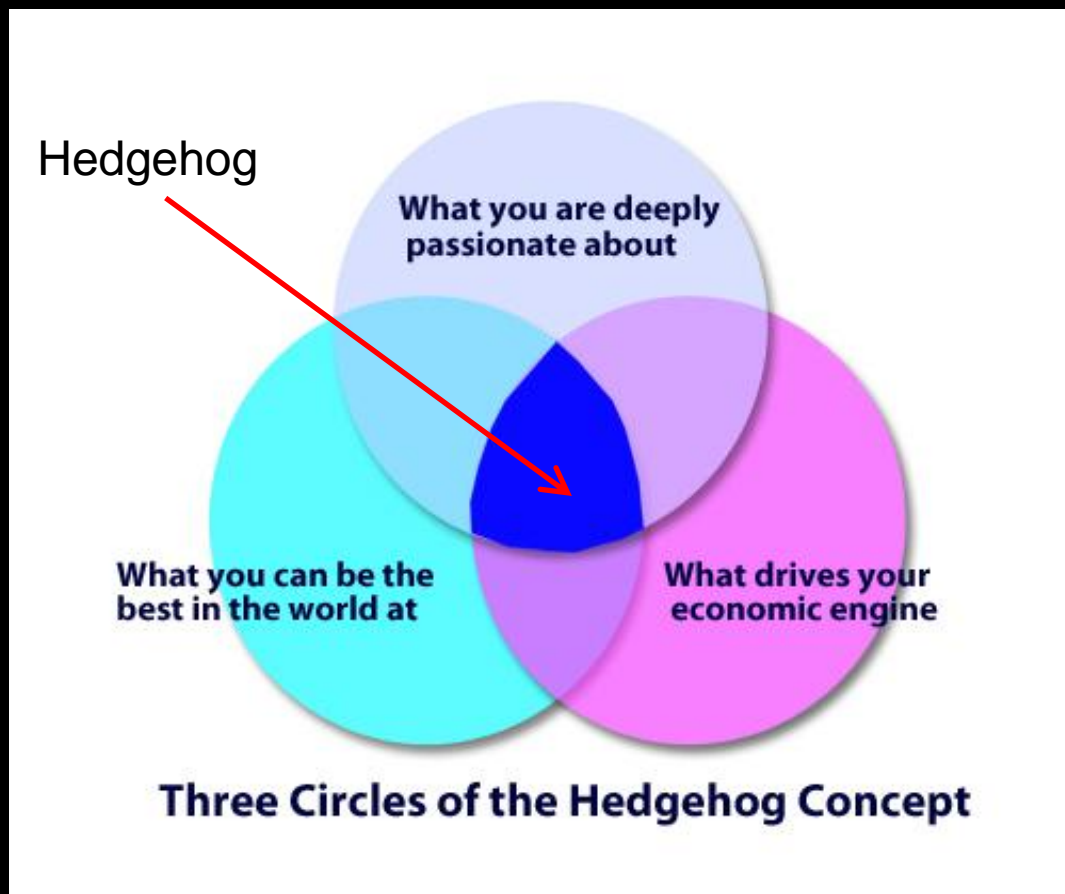
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怎样选择最适合你的事业

The Hedgehog Concept



- 做你最喜欢，最有兴趣的事
- 了解自己的个性，特长和弱点；做自己最擅长的事
- 将注意力集中在最能产生价值的东西上

做你喜欢的事

孔子

- Choose a job you love, and you will never have to work a day in your life
- 从事你喜欢的工作，就没有一天让你觉得是在工作
- 知之者不如好之者，好之者不如乐之者。——《论语 雍也》



发现自己的性格特点, 兴趣和长处

The goal of undergraduate/graduate education

- Discover your true passion/interests
- Understand your characters
- Develop your skills/capacities
- On the look out for emerging fields

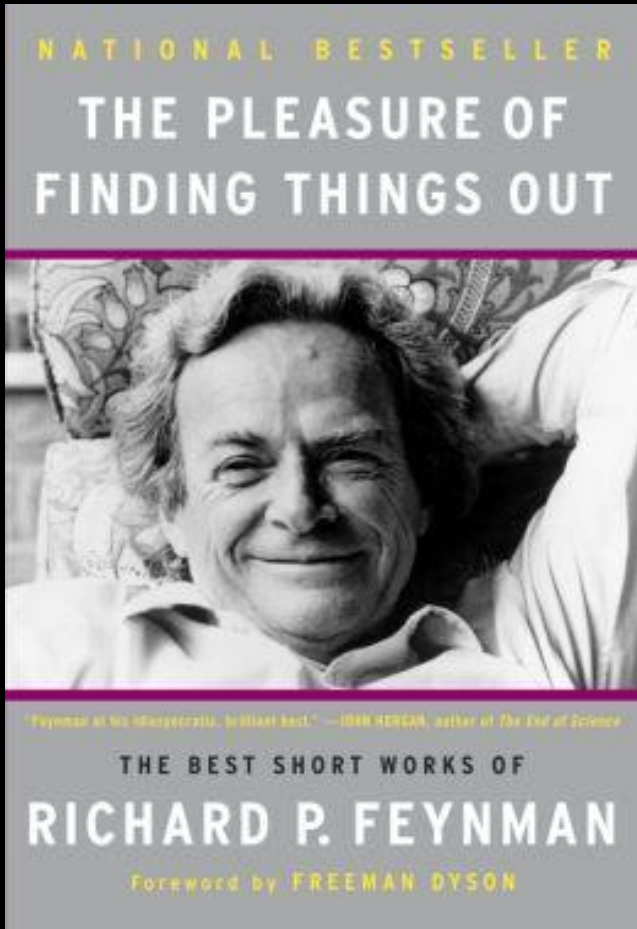


Shirley Tighman

- Career \neq Job
- Dream jobs: pursue your interests

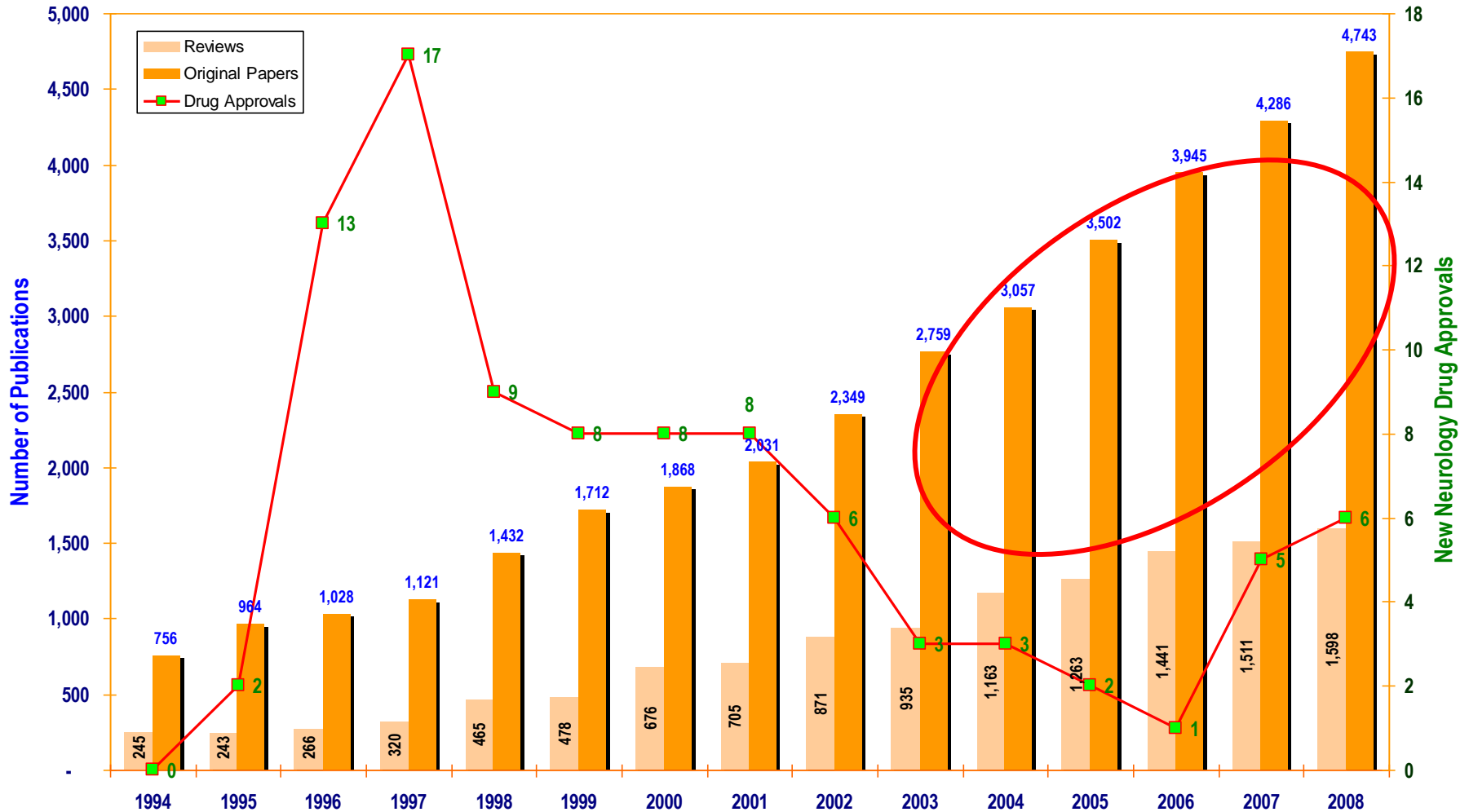
学术生涯 **Academic career**

- **Be your own boss**
- **No schedule**
- **Travel around the world**
- **Meet interesting people**
- **Pursue your interests**



Publications vs. Drug Approvals in Neuroscience

Neuroscience Publications (Human Studies Published in English from 1994 to 2008)
and New Neurology Drug Approvals in Past 15 Years



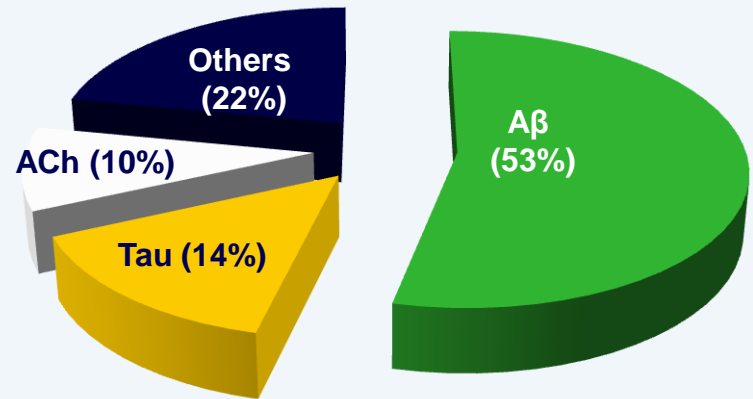
SOURCE: 1. PUBMED SEARCH: ("1990"[Publication Date] : "2009"[Publication Date]) AND (neuroscience) AND ((Humans[Mesh]) AND (English[lang])).
2. New Neurology Drug Approvals from CenterWatch, 2009.

Overview of pharmaceutical/biotech industry

Year	FDA Approvals	NS Approvals	Novel NCE
2007	57	5	1
2008	53	6	3
2009	90	10	0

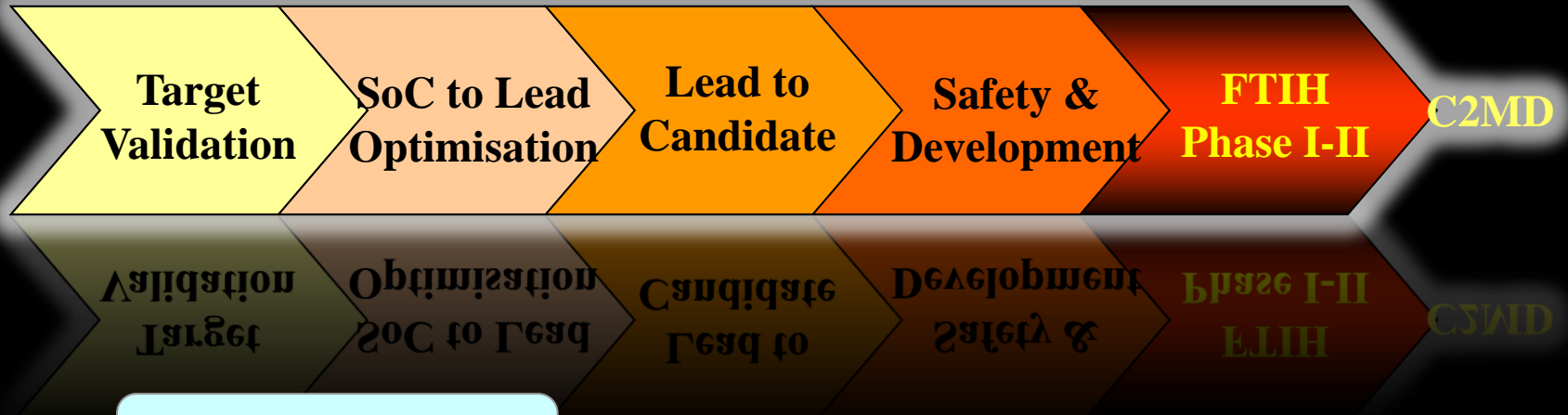
- Poor understanding of disease biology
- Poor predictable value of animal models
- Difficulty in delivering drugs across BBB
- High attrition rate mostly due to safety
- Lengthy and large clinical trials

- On average, a new drug takes 10 years and \$1 billion to develop
- A good drug will have \$1 billion/year revenue and about 8 years patent life



- Over 50% of drugs fail because of safety issues
- 5 phase III & 3 phase II trials failed – Aβ reduction achieved but no efficacy

Drug development process



Repositioning assets for ND Indications

Internal Programs

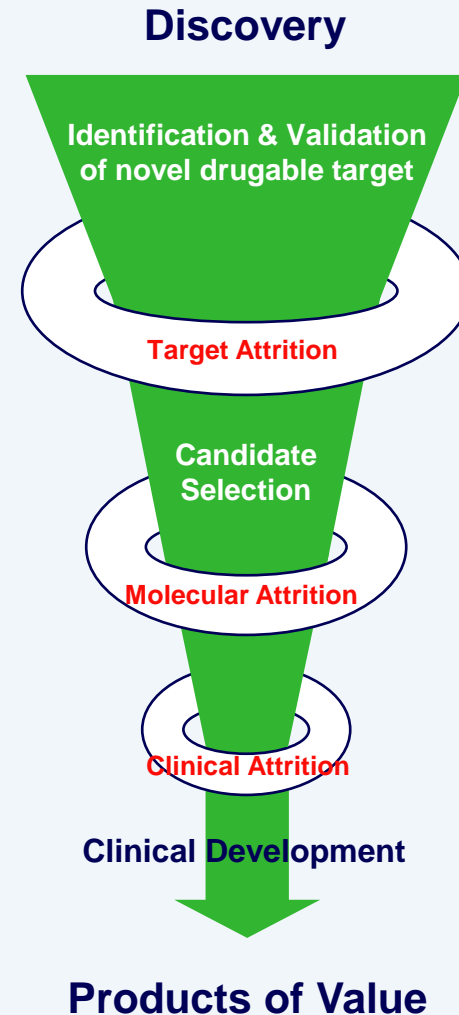
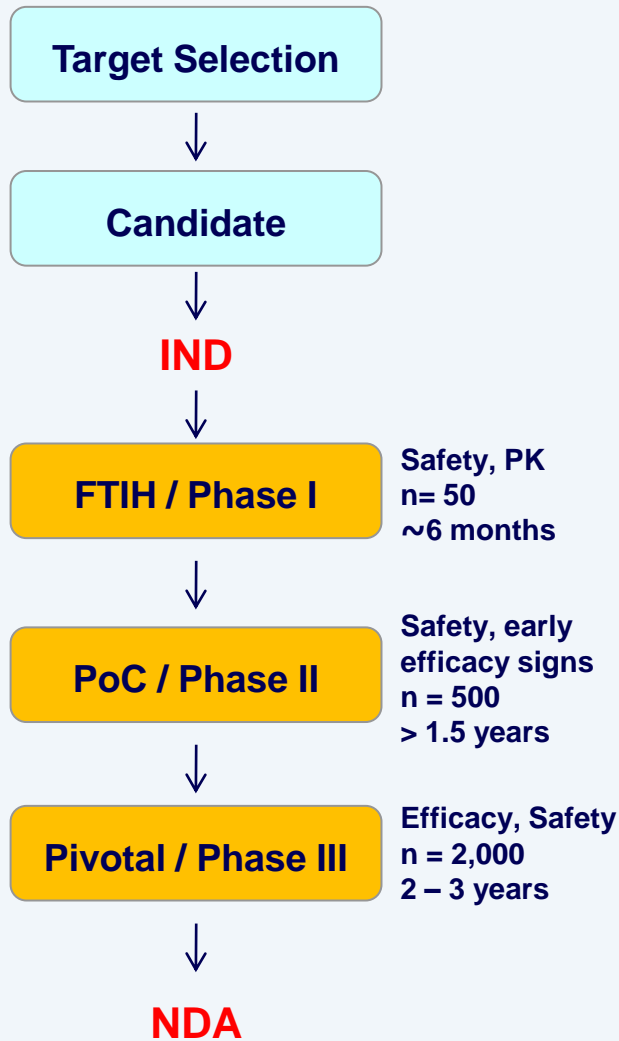
Academic Partnerships

Business Development



Drug discovery pipeline

Innovation to reduce attrition: **multiple checkpoints**



Academia vs Industry: Output

Academia

- Important and significant
- Creative and novel
- Solid and rigorous

Papers

Unique is essential

语不惊人誓不休

Industry

- Safety
- Efficacy
- Market

Products

病人就是上帝

Academia vs Industry: **Styles**

Academia

- hypothesis driven
- beginning review
- freedom
- being first

Independence

Industry

- Mission oriented
- End review
- Discipline
- Collaboration

Team work

Academia vs Industry: **Focus**

Academia

- curiosity to discovery
- mechanism
- creativity

To tell a story

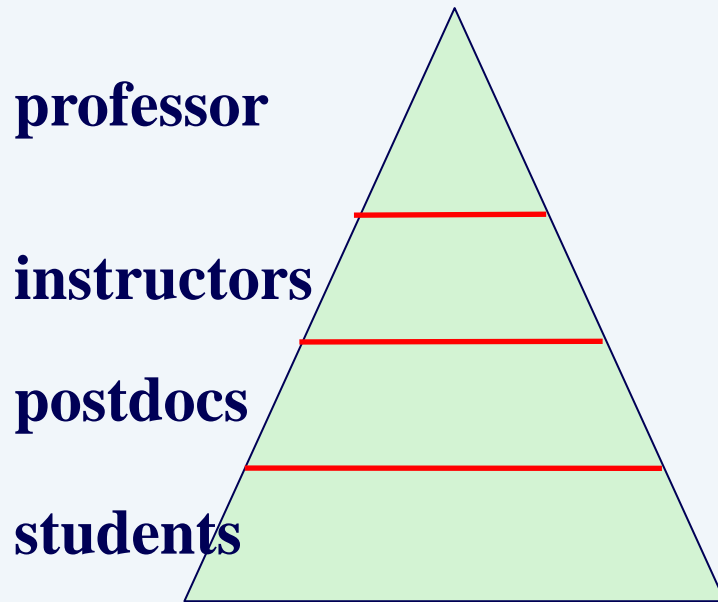
Industry

- Materialize ideas
- Effect
- Rigor

To make go-nogo decision

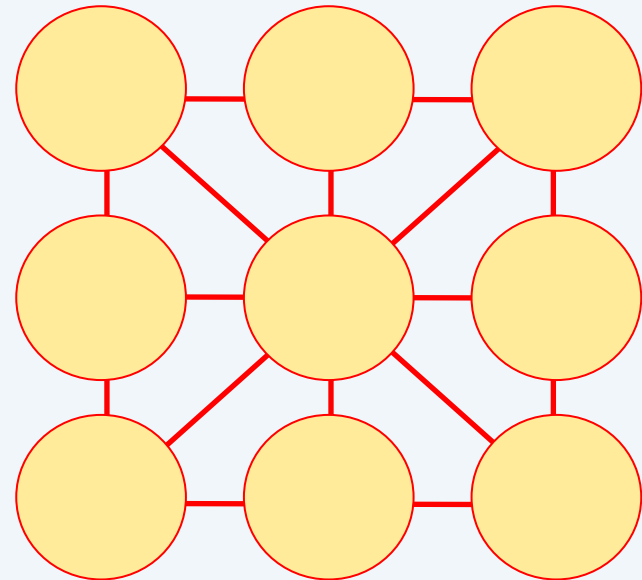
Academia vs Industry: people relationships

Academia



- Pyramid
- Less restrictive
- Manage up

Industry



- Matrix
- Dynamic and interactive
- Changes all the time

Making CNS drugs: **The devil is in the details**

- **Dose response**
- **Expression/distribution**
- **Pharmacokinetics (PK)**
- **Pharmacodynamics**
 - **target engagement**
- **Brain penetrate?**
- **Toxicity**



Interpersonal skills – people assets

➤ Interpersonal relationships

- team work, coordination
- considerate of others' needs/feelings
- power of persuasion, win-win

➤ Conflict resolution

- debate
- negotiation
- mediation

➤ People management

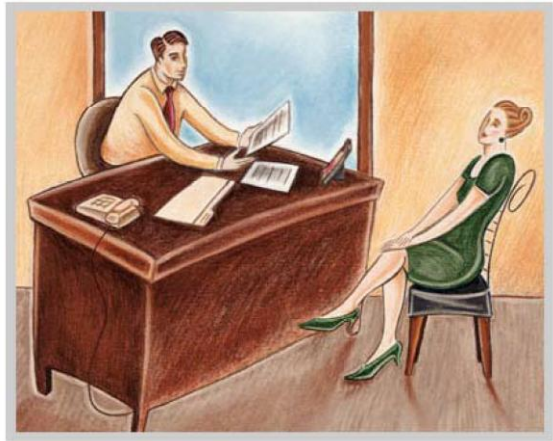
- motivation
- feedback

➤ Crisis management

- termination
- sudden events

驟然臨之而不慌
無故加之而不怒

Communication skills – 写与说的技能



One-on-one



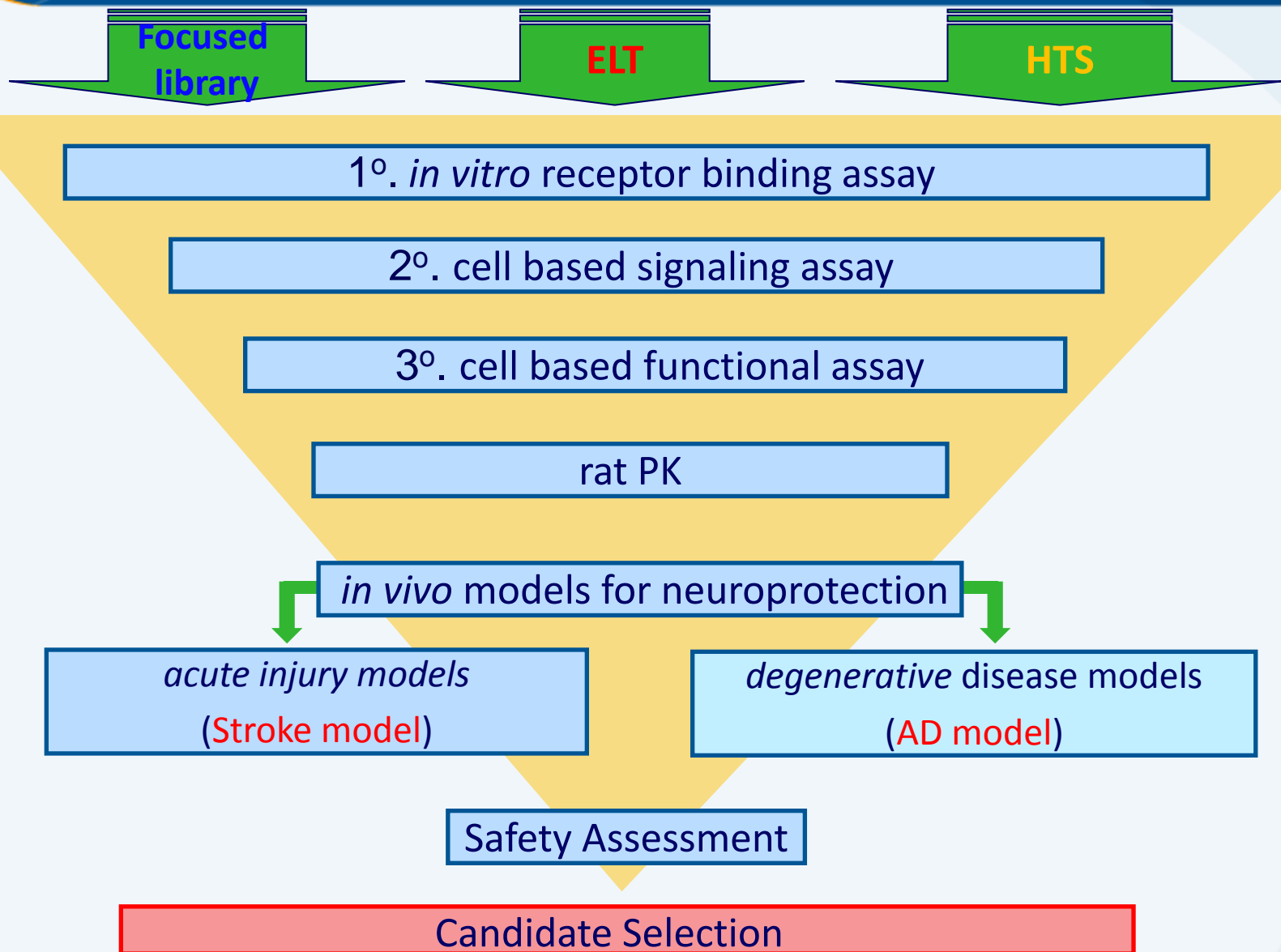
Group

- **Your first impression accounts 80%!**
- **Think of it as a performance**
- **Demonstrate your confidence**
- **Take home message**

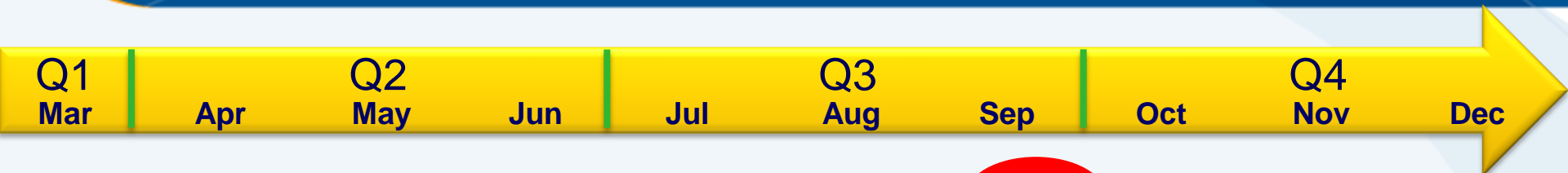


- **monthly reports**
- **project summaries**
- **meeting memos**
- **email communications**

Critical path – R&D 的指南针



Timeline – R&D 的时间表



HTS

Hit to Lead

- 1° assay ✓
- 2° assay ✓
- 3° assay ✓
- QC of selective hits ✓
- Compound correlations ✓
- Compound synthesis ✓

SoC

SAR

Chemistry + DMPK
Tests in 2°, 3° assays
Efficacy *ex vivo*
Efficacy *in vivo*

animal model characterization

Complete in 7 months

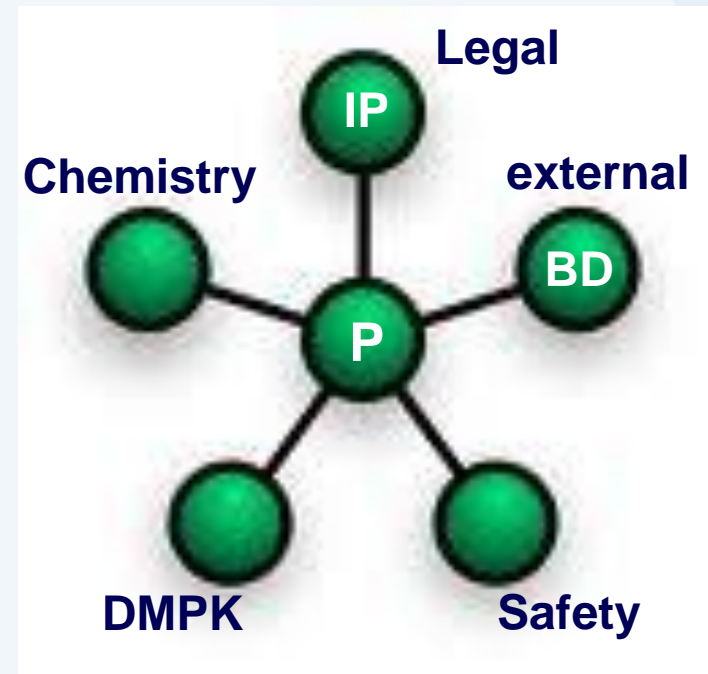
Biomarker development

Continue till Q2 next year

Three teams working coordinately

Project management – R&D 项目进展的关键

- Plan, action items, timelines, deliverables
- Coordinate multiple departments
- Accountability
- Ability to adapt to changes
 - constant reviews/report
 - rapidly changing projects



Comparison: academic versus industry careers

	Academia		Industry	
Output	papers		products	
Relationships	pyramid		matrix	
Styles	Independence	Hypothesis driven Beginning review Freedom Competition	Teamwork	Mission oriented End review Discipline collaboration
Focus	Tell a story	Curiosity Discovery Mechanism creativity	Go-Nogo decision	Materialize ideas Development Effect Rigor
Talent	Technical gift Deep insights		Interpersonal skills communication	
Project choice	Logical analysis Imagination		Critical path Project management	
Impact	Intellectual life		Physical life	