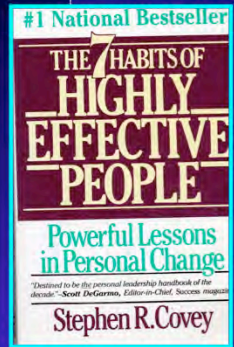




# Strategies for Successful Graduate and Postdoctoral Training

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## Stephen Covey's 7 habits



1. Figure out where you want to go  
(Prioritize, Focus)
2. Plan the best way of getting there  
(Plan and Organize)
3. Mind your own business  
(Focus, Stay on track)
- 4.- 6. Get others to help  
(Engage others)
7. Keep refueling,  
(Priorities shift)

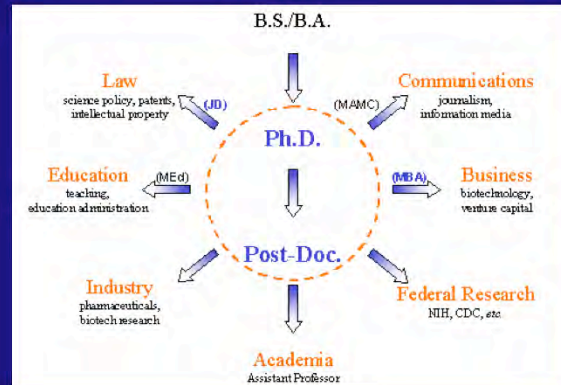
**Begin with the end in mind**

A great book, which I highly recommend. These are the crib notes.

## What's next? (for grad students and Postdocs)

### Reality check:

In the U.S. ~70% of life scientist PhDs  
will not work in research labs  
(academic, government or industrial)



With regard to keeping the end in mind. Many of you will not be working in research labs. Think about customizing your training and expectations to fit your specific career objectives. I think about how much better off we would be with more PhD politicians (like Angela Merkel), more PhD CEOs (think Goldman Sachs/Enron) more PhD industrialists (think BP Oil), journalists, etc., etc. Smarter decisions would be made.

## PhD's are trained for success:

Skills you acquire, and must demonstrate to succeed (in anything!):

- 1) Seeking and integrating information
- 2) Analytical/critical thinking
- 3) Strategic planning and execution
- 4) Problem solving, self-reliance
- 5) Team-work, interdependence
- 6) Communication
- 7) Life-long learning
- 8) Time management, self-motivation

The skills you acquire as a PhD are transferable and will ensure your success in any profession (I you want it and are willing to work for it).

What are **YOUR** goals, interests,  
**skill set** and ambitions?



If you don't know where you're going,  
you can't take the straightest path

- This slides speaks to defining your customizing your training. You need to have this discussion with your advisors.

It begins with self-assessment





Self-assessment: What do you love doing, what are you **UNIQUELY** good at, what can you make a living doing. For picking science projects you also want to think about your competition and take advantage of the unique environment provided by your lab/department/institute.

## Look for 'blue oceans'



- Different questions
- Different perspective
- Different approach
- Unique combinations
- Swim faster!

“Red oceans” refer to crowded, competitive shark-infested waters. Try to identify blue ocean projects, career paths.



## Peter Drucker's Sources of Innovation

Businesses	Academic labs
1) Unexpected Occurrences	Apparently unrelated observations and/or findings that are peripheral to the experimental goals.
2) Incongruities	Unexpected experimental findings in the context of the hypothesis being tested.
3) Process Needs	Improvements to current methodologies and new technologies needed.
4a) Industry Changes	New knowledge, contributed by other labs.
4b) Market Changes	New funding opportunities or shifts in funding priorities by NIH or private funding sources.
Demographic Changes	Not applicable?
5) Changes in Perception	Seeing things from a different angle
6) New Knowledge	Unexpected Discoveries/"Eureka" moments (often from trial & error or serendipity).

Harvard Business Review

Businesses think about innovation as without it they will not be profitable. Science should also think about where innovation comes from and how we can create environments that foster it.

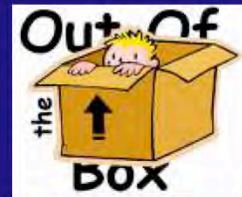
The best way to be successful is to be unique

### Creative thinking



- know a lot about your subject
- define the problem carefully
- look at it from all directions
- brainstorm
- recombine ideas in new ways (explore the “adjacent possible”)
- be perseverant

Creativity needs courage  
and risk-taking

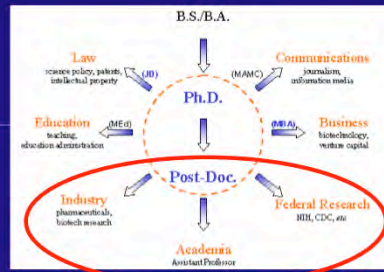


Tools for creative thinking

## Strategies for Success

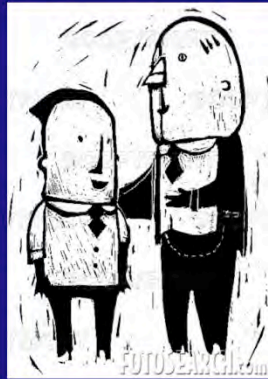
### Four things you must accomplish:

- 1) Decide what you want to do next (begin with the end in mind)
- 2) Finish at least one significant project
- 3) Establish your identity in the research (or teaching/political/editorial) community
- 4) Learn how to communicate effectively (written and verbal)



Your postdoctoral training is probably the most critical point in your career. During it you should decide your career track

## Don't Do This Alone: Find and Engage A Mentor



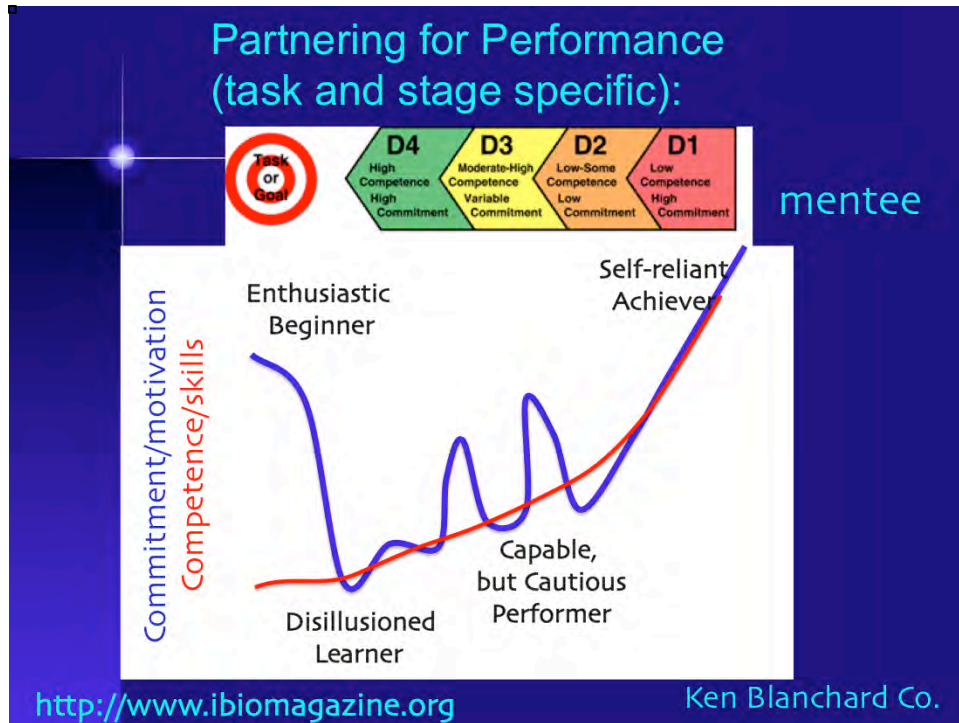
peer  
(or mentors!)



Share with them your goals  
and your expectations (of yourself and them)

- Don't forget the mentorship you can get by talking to more senior graduate students, postdocs, new assistant professors. Learn from their mistakes (you bet they made them).

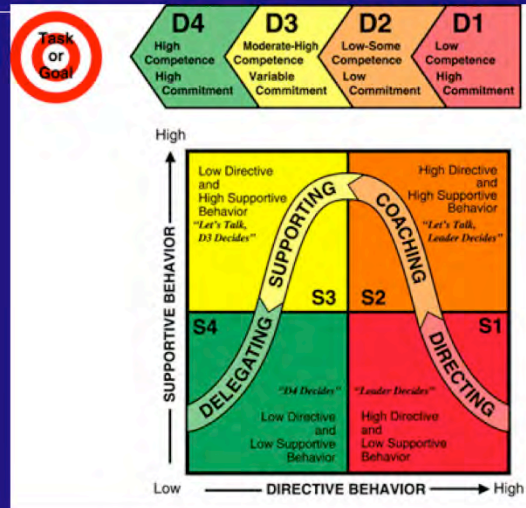
## Partnering for Performance (task and stage specific):



For each new task, you will pass through these 4 stages of development. This is true for each new task

Starting a new project, writing a paper, starting a new lab. We are all beginners over and over again.

## Partnering for Performance (task and stage specific):



mentee

mentor

<http://www.ibiomagazine.org>

Ken Blanchard Co.

Need to use different leadership/mentorship styles for different development levels. More or less directive. More or less supportive. (These are high and low, not 'all' or 'none')

Find more details on iBiomagazine.



## Partnering for Success



Michael Phelps and his coach, Bob Bowman

Everybody needs a coach to push them to greater heights.

## PLAN, PRIORITIZE, SET A CLEAR PATH

### Write a proposal



Core Competencies: Strategic Planning, Analytical thinking, Communication/marketing

Writing a fellowship early on in your project helps your mentor to be more directive.



## Successful PhD/Postdoctoral Training

### 2) Finish at least one significant project

'Finished' means published!!



## Successful PhD/Postdoctoral Training

### 2) Finish at least one significant project

'Finished' means published!!

- How does your discovery fit in the context of the field?
- What is the single important question you can address?
- What data is needed to tell a compelling story?
- Collaborate with and contribute to other projects  
(demonstrate yourself expertise)
- "Home-runs" are great, but think strategically and take the "base hits and walks"

**Be alert for the unexpected**

If you string together a series of 'base hits' your overall scoring will be higher. Don't be forced to put whole papers into the supplemental materials of a Science paper.

## Strategies for success

### 3) Establish your identity in the research community

- You may need **3-4 letters** of recommendation (more for a Green card!)
- Talk to other faculty members about their research and yours
- Present your work, whenever possible
- Learn what others around you are doing and be helpful
- **Go to seminars** and **ask questions**

You can't establish your identity unless you talk to other people. This is also where good ideas come from (cross-fertilization, or the 'adjacent possible')

## Be an Active Learner (Listener/Reader)

Ask questions while you read/listen

What assumptions are being made?

Are these conclusions justified?

What else might be happening?

What would I do next?

What's missing?

How might this relate to my system?

How else can this information be used?

Do this with every paper you read, every seminar you attend, every group meeting and WIP.

## Strategies for Success

### 4) Learn how to communicate effectively

- Write a compelling grant
- Write a clear paper
- Give organized presentations
- Describe your research to others
- Write effective emails



Get practice. Write up your experiments as if they were descriptions of a result for a paper. Have your advisor (or peer mentor) read them



Keith Yamamoto

<http://www.ibiomagazine.org>

You need to  
master 4 skills

- 1) **The ability to identify an important problem.** Sift through problems in biology and identify those that are important to move forward and those that need to sit until other advances are made.
- 2) **The capacity to formulate hypothesis that drive the design of experiments.** Break big problems into smaller pieces that can be experimentally tested to verify or disprove.
- 3) **The ability to sift through results** to choose which ones should be pursued and which ones left behind.
- 4) **To realize that in all of the above there is a branchpoint.** Take the risky branch rather than the safe one.

Check out iBioMagazine for this terrific talk.





PRACTICE  
MAKES  
PERFECT

## How? Practice, practice, practice

Just do it, do lots of repetitions. The more reps, the better you become and the more confidence you gain that you can do it well.

Every hallway conversation, every meeting, every seminar, every paper you read offers multiple opportunities to ask (and discuss)

- is this the problem that I would have pursued?
- is this the hypothesis I would have developed?
- would I have followed the results in this direction, are these the experiments I would have chosen?



<http://www.ibiomagazine.org>

Strategies for Success

**Work Hard!**

Success in anything requires hard work. Think Thomas Edison “2% inspiration, 98% perspiration”.



*Time Management*

## How to avoid being overwhelmed by your workload



Don't confuse busy-ness  
with effectiveness

Productivity  $\propto$  time • efficiency

How can you increase efficiency?

□

## Be effective, not just busy: The Pareto Principle

Roughly 80% of results emerge from 20% of your efforts

The Corollary:

80% of your efforts produce only 20% of your results

**Small changes in efficiency, can lead to large  
changes in productivity**

20:80 → 33:67 ] 2X!

Plan ahead. Talk to your advisor. Make sure you're doing the right experiment in the right way, as best you can predict.

## If It Doesn't Work the First Time

1) Try it again

You might have made a mistake

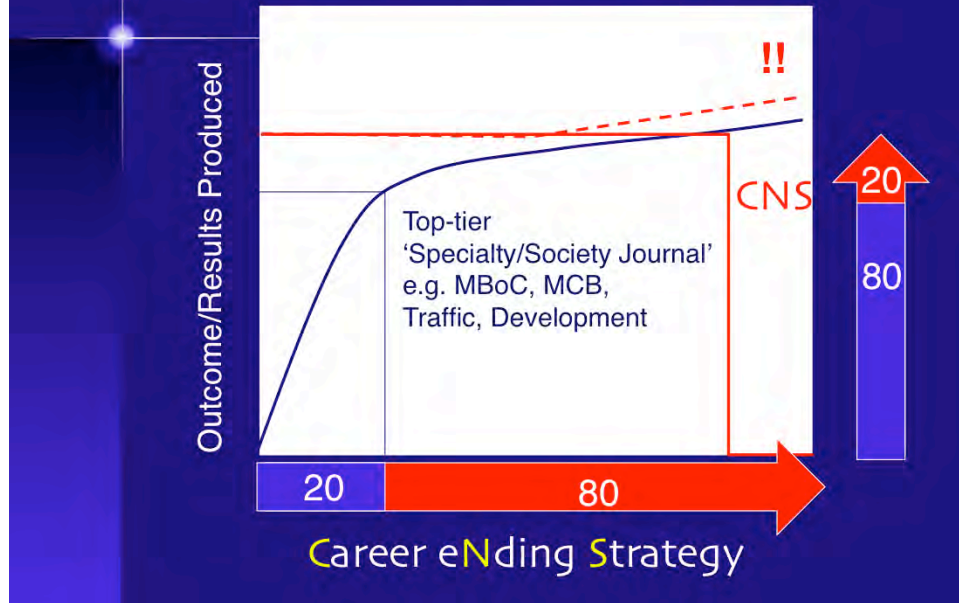
2) Do something different

What changes might make a difference?

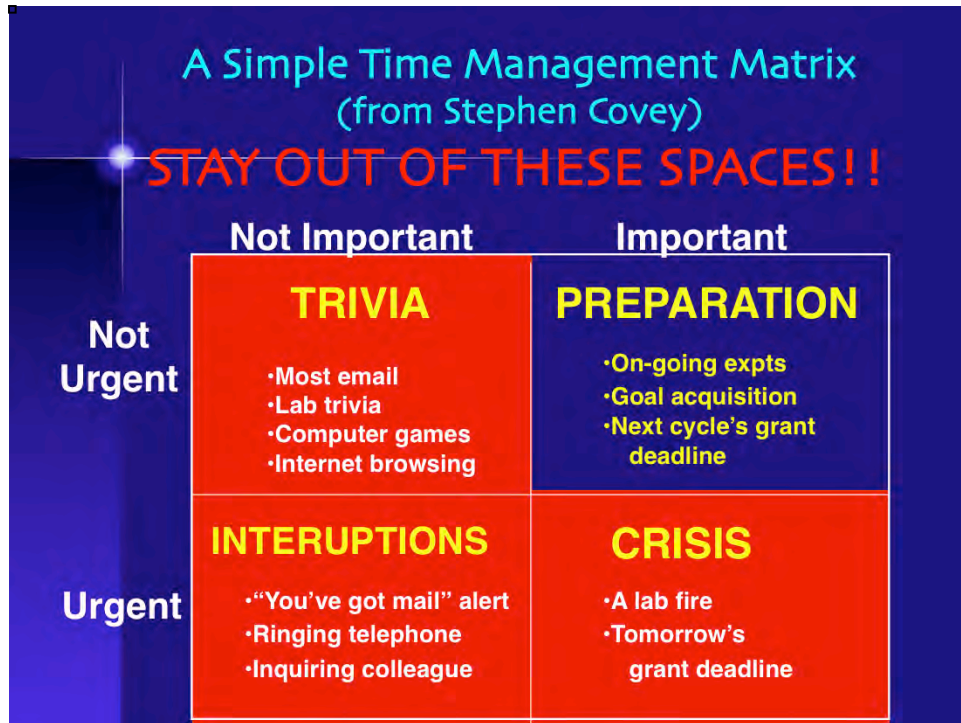
3) Ask for help!

Don't waste time/seek advice/another set of eyes

## The CNS (Cell/Nature/Science) Syndrome



In most—not all—cases the extra year you spend getting your paper into Cell is wasting your time. You are doing experiments that you know the outcome of (trivial controls, incremental extensions) just to satisfy anonymous reviewers and inexperienced editors. You could be making the next discovery. Also it is demotivating.



Think about what distracts you and how many unimportant things you spend your time on. YOU define what's important and work on it before it's urgent.

## Balance:



Not every day  
Maybe not every week  
It's an overall sense

**"A balanced life"**

Shifting priorities  
Engaging Partners  
Long-term Planning

□

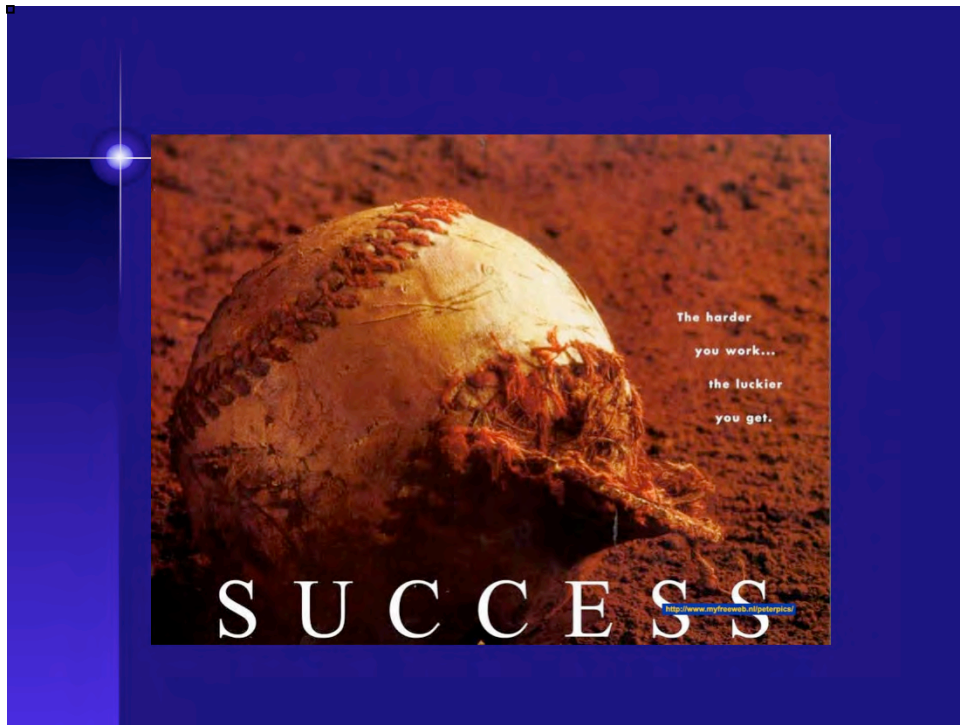
## One Size Does Not Fit All

Determine YOUR objectives  
Acquire the skills YOU need  
Seek the help YOU need  
when YOU need it  
Define YOUR success

Do what you are  
**UNIQUELY**  
qualified to do.







The harder you work, the luckier you get!!!