

Mentorship: lessons I wish I learned the first time

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My challenge here is to convey the lessons I have learned in serving as a mentor to budding physician-scientists; yet, this is not as easy as it seems at first blush for at least two reasons. First, so many outstanding scientists, including Nobel laureates, have extolled the virtues of their own mentors who were central to their success. Thus, it feels pretentious to explain how to be a mentor, as if I have now reached some Olympian stature. Furthermore, I realize that those who might at first glance at this article have already thought about the topic throughout their career and acknowledged its importance. I certainly do not wish to provide obvious and unneeded advice.

To tackle the challenge, I turned first to my most useful sources of information, the *Oxford English Dictionary* and *MEDLINE*, for insights and assistance on the topic of mentorship based on the writings of others. I quickly learned that despite the astounding influence of Homer's *Odyssey*, where the name Mentor has its roots,* mentor was not used in English literature until 1750. Moreover, there were no references to mentor in *MEDLINE* until the mid-1980s. However, since then, there has been an explosion in citations. I then went to Google, which had more than four million citations on the topic. These observations regarding recent references made me wonder whether, following a long delay, the word mentor has become so commonplace that there is a risk of diluting its value by discussing it further in

public. One certainly hears it too often in such phrases as “I need more mentorship” or “I aspire to be a good mentor.” I have come to realize that the term is fast becoming overused and that good mentorship may depend as much on the attributes of the student as it does on the mentor. Let us be clear at the outset; mentorship is not about fostering imitation and it is certainly not about providing instruction—lessons that are not necessarily apparent. Thus, rather than explaining how to be a good mentor, I shall take the low road and discuss what I have learned from my own mistakes in this role and from those who may have seen me as their mentor.

My lessons come from a variety of areas including education, scholarship, research, and clinical medicine, but I hope the message transcends these specific areas. I do not offer myself as an expert. Rather, I take this opportunity to relate what has taken me a career to realize. In the process, I hope that these thoughts are useful for you, the reader, to consider. For many, what I have to say may seem to be common sense. But, in response to this risk, I will steal the wisdom of Will Rogers, who said “Just because it is common sense doesn't mean its common practice.”

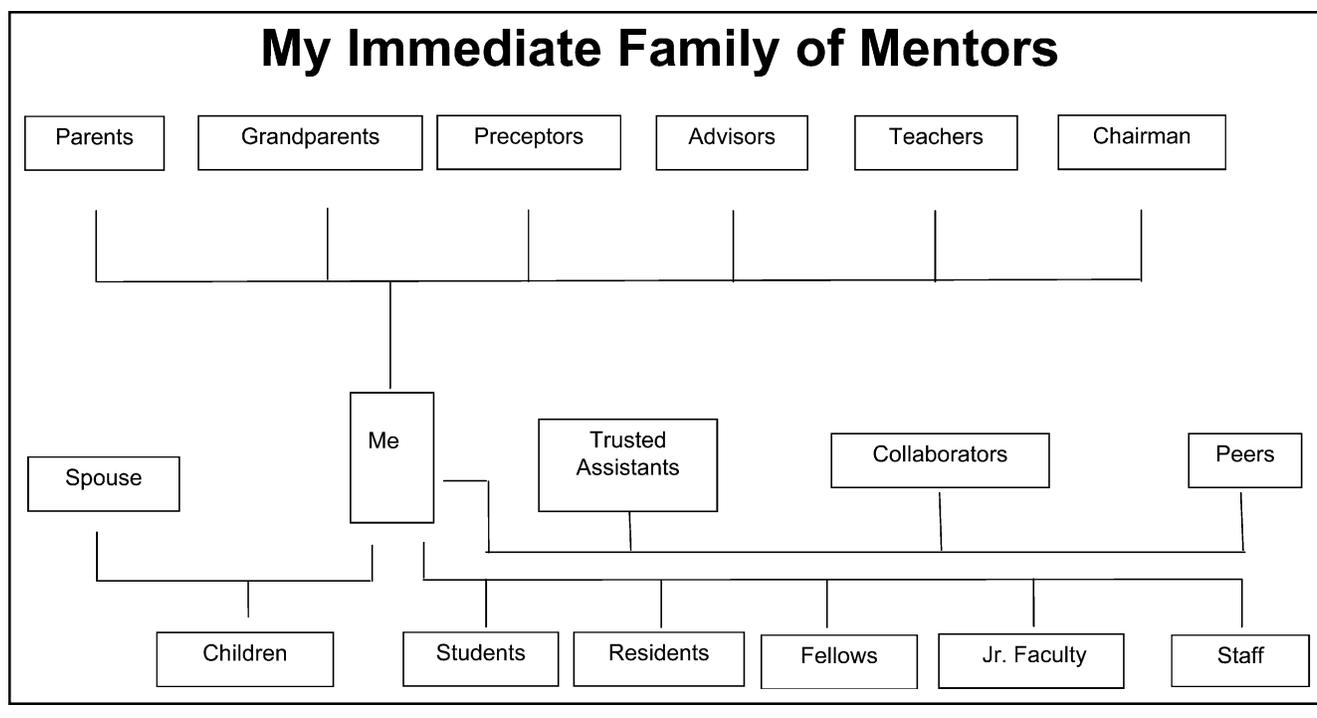
The first lesson relates to the most important force in my career development.

Surround yourself with people smarter than you . . .
then look over their shoulder.

I, like many others, have been fortunate to be surrounded with talented individuals, who have shaped my career. This is demonstrated by this family tree of my mentors in Figure 1, which demonstrates common personal relationships in our academic careers. While nurturing me, my parents and grandparents constantly prodded me with questions or returned my questions and challenged me to learn “why” rather than “what.” My preceptors, advisors, teachers, and others, who in a traditional sense served as my academic mentors, have had this same generosity of spirit and an unwavering adherence to high standards. With incredible patience, they have all assiduously avoided answering my questions and thereby have forced me to search for potential solutions and strategies to solve problems. My wife and children have challenged my ideas and taught me novel and essential insights to complex problems in human relations, which are crucial for functioning in a role with responsi-

* In the *Odyssey*, Athena occasionally assumed the guise of Mentor, a trusted friend of Odysseus. In this role, Athena became the guide and wise counsel for Odysseus' son, Telemachus, while Odysseus was on his journey.

Figure 1. My immediate family of mentors



bility. And, my academic offspring have provided me, through their experiences and responses to my comments, never-ending lessons for my own career growth. An important point that I wish to convey by this figure is that distinction between mentor and student is very blurred. I have learned as much from those who may see me as their teacher, supervisor, or mentor as I have ever imparted to them. In fact, many of my quips come directly from their wisdom. Thus, I shall use the term student very broadly in my comments to follow but emphasize that the exchange of ideas goes in all directions.

Do not ignore an observation . . . just because you disagree with the explanation.

The risk of discarding valuable data because of preconceived notions is well illustrated by a quote from *The Physics of Baseball* by Robert Adair [1]. The book originated from a request of the late Bart Giamatti, English scholar, former President of Yale, then President of the National League (of major league baseball) and briefly the Commissioner of Baseball, for Adair to provide advice about some of the complexities of baseball. Adair, who was subsequently dubbed “Physicist to the National League” from 1987 to 1989, was intrigued by the challenge; he apparently decided to expand his report and inquiry into a book, the introduction of which provides valuable commentary that translates well to the field of medicine.

In all sports analyses, it is important for a scientist to avoid hubris and pay careful attention to the athletes.

Major league players are serious people, who are intelligent and knowledgeable about their livelihood. Specific, operational conclusions held by a consensus of players are seldom wrong, though—since baseball players are athletes, not engineers or physicists—their analyses and rationale may be imperfect. If players think they hit better after illegally drilling a hole in their bat and filling it with cork, they must be taken seriously. The reasons they give for their “improvement,” however, may not be valid.

I believe that the athletes here are metaphors for the parents (or grandparents) of our patients who make incredibly insightful observations but then attach a rationale that we often reject because it does not fit our biases. In the process, we inadvertently forget or discard that important observation. These parents have intense focus on their child, they can detect subtlety that we may miss, and, they spend much more time observing their child than we do. Our challenge should be to understand the mechanism for their observation. In a very similar manner, we may dismiss findings of our students when it would be wiser to explore possible novel causes. Clinical or research observations that do not match our experience are a chance for discovery.

What you write is associated with your name forever. Make it the highest quality imaginable.

There is a great temptation to rush what we write and to fail to take the time to ensure its quality. However, once

in print, it is indelibly linked to us. Although the admonition may be well appreciated when it comes to submission of grants or manuscripts, abstracts are not accorded the same scrutiny. The linkage created between the author and the idea is formed even if the composition is brief and *even if it is not accepted!* If a written presentation is sloppy or contains errors, the author is identified as someone whose thinking or research is careless or flawed. Unfortunately, and perhaps unfairly, that association taints the view of subsequent work by an author.

E-mail correspondence is even worse. These notes are often written in haste, poorly proofread, and distributed widely (sometimes to unintended recipients); they are more likely to be read than our formal composition and certainly become associated with our name. A passage from *Eats, Shoots & Leaves* [2], an extremely witty book on punctuation, mercilessly captures this crux of this issue:

... by tragic historical coincidence a period of abysmal under-educating in literacy has coincided with this unexpected explosion of global self-publishing. Thus people who don't know their apostrophe from their elbow are positively invited to disseminate their writings to anyone on the planet stupid enough to double-click and scroll.

Although lax punctuation is lamentable, careless content ultimately condemns much of what is typed and shared with a large audience, thereby leaving an indelible stain on the author.

Obtain your harshest criticism from your friends . . . *before the anonymous reviewers have a chance.*

Although we may, at times, cower at the thought of having our close colleagues scrutinize our work, their critical input is invaluable for refining our ideas and improving the quality of our product. I think the time, attention, and serious criticism of our ideas is the most valuable gift that we receive from our colleagues. It is precisely what a vibrant academic environment has to offer. There is a tendency to hand someone a written document just before (or even after) it is to be submitted. Under these circumstances, one must ask whether this is really a request for approbation rather than an opportunity for genuine evaluation.

Another lesson I have learned about obtaining criticism is that there is merit in providing some focus on the issues in question. A colleague may not be able to read an entire manuscript or grant within your required schedule. However, there may be specific areas for which you wish comment. I encourage students to provide the entire document but to highlight these areas of specific interest and articulate the questions for each reader. Al-

though too busy to read a lengthy document, rarely is someone unable to read some selected paragraphs and respond to an inquiry. This permits you to focus the attention of colleagues on their areas of expertise while still providing the complete document for reference, perspective, or complete reading if time permits.

The successful individual is not one who gets everything accepted . . . *it is one who responds to criticism and keeps trying.*

Our students may assume that we have reached the status of mentor because we had immediate acceptance of every manuscript that we submitted or success with every opportunity that we sought. Any rejection that they suffer thereby is interpreted as the beginning of a lifetime sentence rather than an opportunity to reassess and improve. This is highlighted by the "scientific critique" provided from a conservative study section to Christopher Columbus for his proposal to sail west (Fig. 2). In our role as coaches, we are obligated to reveal the obstacles and failures that we endured; this will bring reality to the process of career development and provide some recognition of the need for hard work even by individuals who have attained some stature.

Men at Work, the book about major league baseball by George Will, recounts the story of four very accomplished individuals, two of whom are destined for the Hall of Fame. The central point is that very talented, very accomplished individuals also make errors or strike out, but they work incredibly hard and constantly improve themselves based on their mistakes.

It is also our responsibility as mentors not just to promote the safe route, but to encourage imagination and novelty by our students, which will require some element of risk taking by them. They will face resistance that requires persistence.

Never underestimate the value of doing your homework.

This was certainly the lesson that my parents put forth, and I learned from my failures to heed their advice. In this vein, I have been quite surprised by how frequently individuals are hired before an evaluation is obtained or references are pursued. I have had more than one junior colleague or fellow offered a position without any inquiry about strengths, weaknesses, or qualifications. I have even been asked to change my assessment because someone could not be appointed with such a letter. Similarly, research proposals are often submitted or studies initiated without apparent knowledge of virtually identical work that is published. This very quickly undermines the credibility of the author of the proposal; it has the risk of diminishing the apparent value of other com-

Figure 2. Summary statement for proposal by Christopher Columbus to discover a western route to the Indies

SUMMARY STATEMENT				
(Privileged Communication)				
			Application Number: 1 R01 00001-01	
			Dual Review:	
Review Group:	CMY (Cosmography)			
Meeting Date:	JANUARY 15, 1492			
Investigator:	COLUMBUS, CHRISTOFER	Degree:		NAM
Position:	CAPTAIN OF CARAVELLES			
Coinvestigator:	NONE	Degree:		
Organization:	SPANISH ADMIRALTY			
City, State:	SEVILLE, SPAIN			
	Requested Start Date: 06 01 92			
Project Title:	DISCOVERY OF A WESTERN ROUTE TO THE INDIES			
Recommendation:	DISAPPROVAL			
	Priority Score:			
Special Note:				
PROJECT YEAR	DIRECT COSTS REQUESTED	DIRECT COSTS RECOMMENDED	PREVIOUSLY RECOMMENDED	GRANT PERIOD
01	15,853			
02	5,647			
RESUME:	This project requests two years of support for equipping a small fleet of vessels for a westward voyage from Spain beyond the Azores to the Indies. The entire basis of the proposal rests on the thesis, as yet unproven, that the world is round.			
	Disapproval is recommended based on a lack of scientific merit.			
DESCRIPTION:	The sole purpose of this proposal is to find a westward route to the East Indies, thus avoiding the lengthy and hazardous overland route and the equally dangerous and time consuming sea voyage around the southern tip of Africa. The principal investigator plans to investigate marine life enroute and test recent innovations in the art of celestial navigation. Various other observations and data will be recorded including nutritional needs and the psychological effects of long voyages on uneducated and superstitious Spanish sailors. Several innovative techniques for maintaining discipline and order will also be investigated. Provisions have been made for the welfare of the crew's survivors should the basic thesis be in error and the ships be lost as a result of falling off the edge of the world.			
CRITIQUE:	The aims of this investigation are certainly laudable, but the rather naïve approach reflects a serious lack of academic research experience and training by the principal investigator who is well known as a competent coastal navigator, but who does not have the background for a navigational venture of this sort. In other words Mr. Columbus would be ethically wrong in risking the lives of his crews and the money of his sovereigns in this obviously pedestrian (sic) proposal.			

ponents of the application or, if the study is underway, squanders an opportunity to improve on prior efforts.

Find out what someone is seeking . . . *before giving advice or consultation.*

I have been asked often to provide informal comment about the care of a patient while I am caught in a hallway or in a rush during a telephone conversation. Such casual advice, especially to my students, can be disruptive and counterproductive. The information that I provide during a cursory discussion may inadvertently leave out crucial elements that could influence the opinion. Although the best means to avoid giving erroneous advice based on incomplete background is to gather the information first hand, this solution is not always practical. Alternatively, one should take the time to ask pertinent questions that can inform the response or offer some constraint with the opinion. It is worthwhile to learn how to ask these background questions in a manner that does not require the respondent to interpret data. These thoughtful, well-constructed questions can be instructive to others and can avoid vague responses by an individual who has already expressed uncertainty about a course of action.

In a similar vein, I have often been asked about the talents of a colleague or professional acquaintance. I have been tempted to provide a pithy, albeit accurate, response. However, I have learned that it is quite important to understand first whether this is a request for endorsement or evaluation. For example, one probably does not want to proffer opinion about the skills of a surgeon while a colleague's mother is being operated on by the physician in question. Without understanding the context for a question, this becomes an opportunity for an opinion to be misunderstood or misquoted. A simple inquiry about the reason for the advice will save embarrassment or gratuitous statements.

First try to make your decisions thoughtful.... *Then figure out how to make your decisions work.*

I have had many talented students request advice while they are struggling with a number of options for their career. With their assistance, I may be able to help them identify the issues of importance. However, only they can add the weight to these issues to determine what is of most value. It stands to reason that they are at a stalemate because the options are equally appealing. I have then asked them to reflect on which decisions in their career or education that they have previously made that they regret, and the answer is invariably "none." I use this to help them understand that it is not that they make the *correct* decisions each time, but they have learned to adapt and make the most of their thoughtful choices. Were they so capable of making perfect decisions, per-

haps they should spend their time working in the stock market.

As in the wonderful poem by Robert Frost, *The Road Not Taken*, the path that an individual chooses to follow does not necessarily determine the success of that individual; on the other hand, the choice and the manner in which it is approached is defining of the individual.

Help find a role that highlights someone's strengths and interests . . . *not their shortcomings.*

When assisting someone who is seeking a professional position, an important goal is to help match someone's talents with opportunity. The individual's strengths are often easy to discuss. It is important to understand any weaknesses. A trusted advisor can help identify and discuss these with clarity in a fashion that avoids embarrassment and is not judgmental. Such a frank discussion often puts the options into focus with little need to render the obvious conclusion.

You cannot force someone to be interested in an endeavor . . . *but you can help clear the path when he or she identifies an area of excitement.*

There is a strong tendency for our students to emulate us because they admire us. They may believe that we would be pleased to have them follow our path—a message that we sometimes convey very loudly. Rather, our aim should be to assist them in identifying what activities are exciting and so satisfying that their interest is sustained even when the hurdles are high, opportunities for discouragement omnipresent, and major successes infrequent. The discussions to identify such professional endeavors may take quite a while because this requires the student to have familiarity with a variety of options (a major goal of a broad education) and an honest appraisal of what he or she enjoys (which is frequently shrouded by the desire to please others). However, even if the decision does not prove to be the student's life long passion, there is the opportunity for him or her to learn about personal values and interests during the process; this can certainly shape future choices.

If you do not share goals with your colleagues, *every action requires negotiation.*

A crucial issue to resolve during the course of one's career is whether you share goals and values with your colleagues, especially those who provide your resources or whose career is tethered to yours. If your supervisor does not view what you are doing as important, your accomplishments will not be valued; this will cause you major disappointment, frustration, or anger. Requests for additional resources will be dismissed, and reward for your achievements will be minimal, certainly less than

you anticipate. Thus, there is a compelling reason to understand reward and reinforcement as signals of your ultimate value to those around you. If you and your colleagues do not have the same ultimate aims, discussions are often mired in details. The negotiations become tedious and never ending, even over minor details, which makes progress painstaking or impossible.

If you are viewed as an authority, be very careful about what you say . . . *someone might listen to you.*

With authority comes the responsibility of having one's comments and advice taken seriously. That authority changes the perception or implication of any comments. Hypotheses can become accepted as facts, and suggestions become interpreted as dictates. We are obligated to be careful.

Each of these points can be expanded with additional examples. However, rather than embellishing the points, I am mindful of the book review by the author and acerbic wit, Ambrose Bierce, who said:

The covers of this book are too far apart.

Accordingly, it may be best to state the issues and let the reader apply them to personal experience.

I would summarize what I have learned by describing my "tools of the trade," the instruments that are most useful to me as I assist my students to find their passion and strive for excellence. A *mirror* affords them the chance to reflect on who they are and to identify their true interests, not mine. Reflection can be a difficult process for students because of the natural tendency to try to replicate the interests as well as the personal qualities and achievements of those whom they respect. A *telescope*

helps students see their ultimate goals at the horizon and avoid changing their view with each rise and fall of the landscape. A *microscope* reminds them to remain focused on their immediate tasks and limit distraction. And, I suggest that they create a professional *development chart*, like a Denver Developmental Scale, so that so that they can gauge their progress. I show them scales that I designed [3] to provide a tangible example. However, it is important that they create some of the landmarks based on factors important to them. The spacing of the landmarks depends on individual needs. If a marker is past the horizon, it provides no guidance; if there are markers every few feet, more time is spent in the assessment than in the activity. A line is not defined by a single point; so in general, one needs a few markers in sight to stay aligned and on course. Last, a *very slow clock* reminds me that we need time and considerable patience for the process of mentorship.

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References and recommended reading

Papers of particular interest, published within the annual period of review, have been highlighted as:

- Of special interest
 - Of outstanding interest
- 1 Adair RK: The Physics of Baseball. New York: Harper & Row; 1990:3
 - 2 Truss L: Eats, Shoots & Leaves. New York: Gotham Books; 2003:182
 - 3 Lister G: Society for Pediatric Research Presidential Address 1993: development of the academic pediatrician. *Pediatr Res* 1993, 34:397–402.