PLAYING THE GAME

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Whether in athletics or a professional career, everyone wants to be known as "player" rather than an observer or bystander. How does one become a "player" in the academic world? Great universities beget great departments, which beget great individual scientists. These could be ordered in reverse as well. The best of the best among American universities have high expectations for their faculty. One does not spend 40 years in academia without developing some strong ideas about the prerequisites for professional success, or put in another way, how to become an academic "player". My list of success qualities follow below.

INTEGRITY. In academia as in other endeavors, there are temptations to abuse the system, be it for financial gain or status gain. In my judgment, one's integrity, ethics, and honesty are the most important virtues any scientist can have attached to their name. Thus, one never should report research findings, whether in journals or in the popular press, unless convinced the research results are repeatable – and correct. Also, one should never withhold (important) research results just because a particular research sponsor is unhappy with the outcome. Short-term acclaim may result from plagiarism or misrepresentation (or outright falsification) of experimental results, but in the long run, cheating will be found out – by someone, if not by everyone.

A major worry of academic scientists is the integrity and honesty of the neophyte graduate students and post-docs under their direction. These trainees must be instructed in scientific ethics and integrity. If one's group of trainees becomes so large that the PI has insufficient time to monitor their activities and check their results, the group has become too large. Also, if the focus of the trainee's work is too far removed from the PI's area of expertise, the trainee should probably be moved to a different laboratory (and PI) where the expertise exists. In my experience, situations in academia involving ethics violations have often involved a trainee who was allowed to operate "under the radar screen" of his or her major professor. And when this happens, it is not only the student trainee who is in serious trouble, but also the major professor.

I could go on and on about integrity, honesty, cheating and abusing the system. Suffice to say, if a scientist loses his or her integrity, they have lost not only their professional reputation but also one of the most treasured commodities of life.

PERSISTENCE. Successful scientists are dedicated and persistent in seeking answers to important research questions. They work hard and think hard. They are not satisfied with just "what" but also the "whys" and "hows" of research questions. And they also have in the back of their mind how their research findings may benefit mankind.

EFFICIENCY. The stress inherent in academic life when trying to prioritize one's time for teaching, research, grant writing, mentoring undergraduate, graduate, and post-doctoral students, reviewing for journals and granting agencies, committee work, and service activities often leads to inefficiency. Successful scientists are those who find ways to become efficient in use of their time. This involves establishing priorities. An academic scientist quickly comes to the conclusion that he or she can't achieve 100% excellence in every activity that is part of their daily schedule. I'm sure every scientist has their own priority list (usually kept very confidential), but I chose early in my career to attempt as best I could to achieve 100% focus and attention on three things: (a) classroom teaching, (b) mentoring of graduate students, and (c) writing research papers. This is not to say the other things on my schedule were unimportant, just that giving 50 to 80% focus on these activities had to suffice.

Inefficiency in writing and planning (speaking) presentations is a major problem in academia. Thus, successful careers in academia involve not only effective writing and speaking, but also efficient writing and speaking. If classroom teaching is included in the mix, as much as 80% of our time is spent on writing and preparation for speaking. If a person has not learned how to be both effective and efficient in these endeavors, they shouldn't be in academia. Hence, less-than-efficient work in these activities may allow a person to be considered "average to good" in peer review, but "excellence" without efficiency is an oxymoron.

Today's public universities are going through budget cuts due to decreases in state and federal funding for higher education. This has been particularly painful for agricultural colleges in that their costs of operation are high relative to their peer colleges within a university. Thus, operation of farms, fields and off-campus research/extension stations is expensive. Infrastructure (secretaries, technicians, farm workers, state assistantships) has undergone drastic cuts. These budget cuts have clearly led to lower efficiency among faculty. Moreover, the applied problem-oriented research of agricultural colleges that has shown such a good return on investment has taken the biggest hit.

RELATIONSHIPS. No one can do it alone. Successful academic scientists are those that have good critical masses around them: good administrative support, good colleagues, good graduate students and post-docs, and good technicians. This is precisely why being a member of a great university, great college, and great department is so important – because these are the places where great critical masses exist. Being part of a great unit can be threatening. Clearly, it is more difficult to transcend one's peers in such a unit, but if true excellence is the goal, being part of a distinguished unit is very important.

In my own case, I have been known to not only bombard my departmental colleagues with questions, but also my less well-known colleagues in departments such as chemistry, biochemistry, physiology, and microbiology, not to exclude also, other colleagues in departments in the agricultural college. And it goes beyond one's own university. In reality, we have colleagues all over the world, many of whom have pieces of expertise greater than our own. Through e-mail or contact at scientific meetings, this large (external) critical mass can be very helpful. Seldom have I gone to a scientific meeting without having a list of questions for which I sought answers from others in attendance. I learned to be very aggressive in seeking out these "experts", many of whom were hard to track down because of their busy schedules. Now, I find

that young scientists are tracking me down, and I always try to answer their questions as best I can, remembering that I was once in their shoes.

Relationships also involve being relational and approachable by faculty colleagues whose interests may differ from your own. One should appreciate the accomplishments of others, and feel sincere joy and pride in their accomplishments. To have said of you that you are a good departmental citizen is a supreme compliment.

TEACHING AND LEARNING. For scientists, learning never stops. It is a life-long process. I have learned that no matter how much I know, someone else knows more. I have also learned that the more I know, the more I realize I don't know. Teaching, whether in the classroom or in one-on-one situations, is complementary to research. I cannot think of a single time in 30 years of teaching my graduate course on protein-amino acid metabolism that I didn't get a new idea for research, or uncover new knowledge that aided my research program. Moreover, passing on what we know to others who are less experienced in the research endeavor is a responsibility for academic scientists.

ALTRUISM

Helping others often pays unanticipated dividends. And by helping others, I am referring to helping those students or young professors who are not part of one's own laboratory group. Thus, passing on one's expertise to young professors with great potential, who may need help and advice with writing, teaching, dealing with editors and editorial boards, biometrics, etc. is something that can be very satisfying. Also, graduate students under the direction of a different professor often need help outside of their own critical mass, and giving them the benefit of your advice is also very satisfying. I guess the word here is mentoring, and this is something many (most) academic scientists are unwilling to do – at least to those outside of their own individual laboratory group.

Agriculture has enjoyed a proud history of extension and service. Extension faculty, those communicating to the (often unscientific) masses, need help and support from the research faculty to transmit their information to the general public, whether by direct contact or in media outlets such as newspapers and magazines. We need to help them do their assigned job of translating research language into language understandable to the nonscientist.

COMMUNICATING RESEARCH

It is often said that research scientists, particularly those in academia, are among the most misunderstood and under-appreciated members of society. In the main, the fault rests with us. We are not good at communicating and justifying our research output to the general public. Clearly, terms like "originality" and "creativity" are words we like to have associated with our research work, but we should also strive for "relevance" and "importance" in the work we do. If an academic scientist achieves originality, creativity, relevance, importance – and productivity in their research, they will indeed be considered a "player".