OU Postdoctoral Recruitment and Training Program
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Abstract
The interlocking objectives of the Aspire 2020 framework aim to fundamentally alter the overall research venture at OU. When generally considering the strength of university research programs, the potentially massive impact and foundational importance of postdoctoral researchers is often overlooked. Quite simply, in virtually all of the best research institutes, postdoctoral researchers are the essential glue uniting faculty scholarship and student (graduate and undergraduate) achievement. Postdoctoral researchers exist in a specialized professional niche - post PhD, but pre-complete independence - that, when properly nurtured, can completely change a university’s research culture. By comparison to the foremost US research universities and the Big 12, OU is currently well behind in recognizing the value of both training and recruiting postdoctoral researchers. The proposed Postdoctoral Recruitment and Training Program establishes a starting framework to consider how we might modify our postdoctoral training atmosphere and utilize non-traditional methods to rapidly increase our population of these high octane scientists.
Program Goal
The goal of this program is to double the current number of postdoctoral researchers on the OU Norman-Campus by 2015 and triple the number by 2020. Concomitant to this primary goal, OU will develop a world-class training postdoctoral training environment.

Rationale
The Aspire 2020 framework defines three major objectives encompassing the ambitious goal of transforming OU into the foremost public research university in the US. While the Postdoctoral Recruitment and Training Program is expected to positively affect all three inter-related objectives (i.e., transforming research competitiveness, engagement, and culture), the primary focus will be directed towards the research culture. The fundamental idea is to rapidly and simultaneously recruit large numbers of postdoctoral researchers to OU such that we immediately experience a foundational change in our research culture – i.e., fresh new ideas, novel data and capabilities, and increased connectivity within and between labs across campus and well-beyond.

Postdoctoral researchers represent a uniquely qualified subset of research professionals:

1) They have obtained their PhDs and finished their graduate training and are ready to take on technically demanding challenges
2) They have often been exposed to cutting-edge research techniques at other institutes and, thus, can both learn from their PI and relay new ideas. This influx of new ideas is essential for maintaining and improving the research culture at a university
3) They are uniquely motivated to perform at the highest levels
4) They serve as the essential glue between faculty and graduate students – they are able to perform science that is beyond the ability of most graduate students and they have developed communication skills allowing for dissemination of ideas both within and outside the university setting
5) They are typically free (or mostly free) from the service and teaching responsibilities of faculty and can focus on producing data and associated peer-reviewed papers and proposals

For future success in both academic and industry positions, top-notch postdoctoral research experiences are more important than ever. High quality research positions (e.g., academic tenure track) are limited and postdoctoral terms last considerably longer than for previous generations of scientists - i.e., postdocs typically stick around long enough to drive substantial cultural changes in their university homes (many of these postdocs will be in residence for as long or longer than our graduate students). The best research institutes have the highest relative numbers of postdoctoral researchers and they are increasingly looking for ways to make their institutions more attractive to these researchers. While one interpretation of this information is that the best research facilities
attract the most postdoctoral researchers, a non-mutually exclusive interpretation is that having numerous postdoctoral researchers actually creates the conditions for research success (as defined by funding, papers published, etc.) - in fact, attracting excellent researchers and creating excellent results are clearly self-reinforcing concepts.

So where does the OU-Norman Campus currently stand relative to other US institutions? As of 2006*, OU-Norman employed 63 postdoctoral researchers - compared to other US institutions, we ranked #134. To tie with the university at the #100 position (occupied by the University of Medicine and Dentistry of New Jersey in 2006), we would have needed 120 postdoctoral researchers. If we tripled our postdoctoral population by 2020 while growth at other universities remained stagnant, we would be comparable to the 79th ranked Virginia Polytechnic Institute - and being comparable to Virginia Tech is certainly the kind of aspiration that is both achievable and desirable for OU.

*[All 2002 to 2006 numbers are from The Center for Measuring University Performance]

To give an idea of the larger uphill climb we must envision when we aspire to become “the nation’s foremost comprehensive research university of our size,” we can compare OU-Norman to the 18th ranked and comparably sized University of North Carolina-Chapel Hill. In 2006, UNC-CH had 662 postdoctoral researchers and was considered one of the most stimulating and intellectual public research environments in the world. The UNC-Chapel Hill numbers may include the large research hospital, so we can also include the OU Health Sciences Center numbers from 2006. This would bring the total postdocs at OU (Norman plus HSC) to 123 - compared to 662 at UNC.

Because postdoctoral researchers serve as essential student supervisors in the labs of universities with the best research cultures, we might also wish to consider the ratio of postdocs to students (presented as postdocs per 100 students = “P/S100 ratio”). Taking the postdoctoral researcher numbers for UNC in 2006 (662) compared to their current student population (reported by Carnegie = 26,878), we calculate an impressive P/S100 ratio of ~2.5 - this would be an enviable ratio for faculty numbers at most universities! The current OU (Norman and HSC combined) P/S100 ratio is ~0.40 (30,881 students, 123 postdocs). For OU-Norman alone, the P/S100 ratio is ~0.23. Achieving the stated goal of tripling the OU-Norman postdoc population by 2020 would bring the Norman campus to a roughly calculated P/S100 ratio of 0.69 - certainly not UNC, but, nonetheless, a huge improvement.

Figures 1 and 2 show the total postdoc numbers and P/S100 ratio comparisons, respectively, between OU and the rest of the Big 12. The numbers for the University of Colorado-Boulder are very similar to UNC-Chapel Hill. Relative to the rest of the Big 12, the OU-Norman numbers typically place us in the 9th
through 11th position, depending on the year examined. Interestingly, while the underlying reasons have not been confirmed, it appears that a number of these schools have undergone approximate doubling in postdoc populations since 2006 (this is true for OU-Norman which now has 102 postdocs, but also for UT-Austin which has jumped to 485 and UNC-CH at almost 1,200!). It is reasonably likely that these big jumps have been due to simultaneous shifts in the expectation of postdoctoral research prior to obtaining academic positions combined with the recent economic downturn (and concurrent reduction in available faculty positions). Similar to investments in stocks, it appears that the institutions with a well-established postdoctoral culture and population were in the best position to employ these excess PhDs - and will likely reap the benefit as their value returns to normal levels.

Ultimately, changing the research culture is what this program aims to achieve, so we will want to see major improvements in both the S/P ratio and the absolute numbers of postdoctoral researchers on the OU-Norman Campus. Obviously it would be ideal to have the numbers at UNC or UT, but we must also recognize how our disadvantage becomes a funding advantage – state and federal agencies will readily understand these numbers and the transformative potential of changing them will be apparent.

![Figure 1. Comparison of Big 12 schools by postdoctoral populations.](image)

All numbers were taken from The Center for Measuring University Performance. Although these number have changed since 2006, the general trends and relative comparisons have remained largely unchanged.
How should we go about bringing in these postdoctoral researchers?  
In short, “Be Bold!”

Traditional methods to achieve the stated goal of this program might be ideas like  
1) assisting current faculty with funding success such that they can afford these  
hires (e.g., proposal writing centers) or 2) hiring new faculty that might be more  
aggressive or just more successful at recruiting postdoctoral researchers (e.g.,  
cluster hires including senior personnel). We can think of these types of long  
term recruitment efforts as “trickle down” – basically we improve funding and this  
leads to hiring more postdoctoral researchers. Trickle down methods are  
important and will slowly and sequentially achieve the stated goal of recruiting  
more postdocs, but they also have some clear drawbacks - not the least of which  
is that they are slow and sequential. Further, campus-wide increases in  
postdoctoral researcher populations are not primary goals of these other  
methods, but simply one anticipated outcome. This, in turn, means that we are  
not likely to make other cultural changes to both attract and retain quality  
postdocs. While bringing in a few big new labs will certainly result in increased  
postdoctoral researcher numbers, the present need for these researchers is  
already enormous and, if we agree that postdoctoral researchers can form the  
foundational basis of a vastly improved research culture at OU, we must  
recognize that the trickle down methods are simply too slow for the  
transformations envisioned and embodied in the Aspire 2020 framework.
What we need to do is conceptually simple - first, we need to acknowledge that we already have top-notch faculty who are completely ready to absorb a reasonable influx of postdoctoral researchers. With this acknowledgement, we simply need to flip the normal order of things and find the funds to hire these postdoctoral researchers all at once, right now (or over a few years). Everybody is doing cluster faculty hires and everybody is trying to recruit the best new labs, but large-scale recruitment and hiring of postdoctoral researchers (cluster postdocs hires, if you will) as a university initiative – now that’s bold, novel, and potentially transformational for our research culture.

As an example of the type of foundational research culture change envisioned in this postdoctoral recruitment and training program, consider the current idea to improve our research competitiveness by attracting National Academy members to OU. Relative to this fine idea, please permit a brief sports analogy - how often do any of us remember the superstar for any team requesting a transfer to a weaker team to help it grow? The answer is not very often. And in the few instances when these trades did take place, what was the cost (answer: huge!) and what was the result? I would submit that the result typically depended on the team already in place or, in the case of a university, the intellectual atmosphere and infrastructural elements already in place. No one program can change all these elements at once, but we must honestly acknowledge that our current team is not well prepared for the talents of many superstars (there are some areas of exception). Thus, the postdoctoral recruitment and training program is a key element towards changing our competitiveness and culture in a big hurry - and simultaneously making us considerably more attractive and prepared for the superstars.

**Why cluster hire postdoctoral researchers?**
Quite honestly we have some issues that are difficult to overcome at OU. First, there is a research stigma to the Midwest and OK is certainly not on everyone’s radar for places to go. Second, we do not currently have the culture of the most competitive universities – clearly this is the point of the Aspire 2020 framework, but we must look it in the eye again and again if we hope to make real changes. Third, we have too much researcher isolation (i.e., single or very small groups of researchers without intellectual peers in their areas of expertise) at OU. Cluster postdocs hires can address each of these problems.

Hiring numerous postdocs means that we will have to generate a large-scale advertising campaign that will be disseminated to other universities - BUT this is a good problem! Smartly done, this type of campaign will generate a community “buzz” about OU and will peak the curiosity of many potential candidates. This is completely the opposite of the traditional method of recruiting on a lab-to-lab basis. Here we are saying, “Look at OU – we (collectively) want the best and brightest postdocs. We want to become the foremost research university in the US and we need you to do it.” This also gives us an avenue to broadly boast about the fantastic Norman lifestyle and the many amenities we actually offer.
Thus, by the time potential postdoctoral candidates are searching our listings for possible labs, they are already hooked on the idea. If we couple this to competitive compensation packages and specialized attention, like a dedicated postdoctoral training center to assist with writing and CV, interview, and job talk preparation, we could really turn OU into a place that postdocs actively seek.

What would this cost?
To consider what this would cost, we need to include salaries, recruitment, training, and possibly host lab materials and supplies. Ideally, training would encompass creating a center specifically devoted to recruiting postdoctoral researchers and attending to their specialized needs. None of this would come cheap, but there are some very big advantages to increasing the OU PhD presence in this manner over, for example, a faculty hiring initiative. First, there are no (or only minimal) startup costs to consider - these are researchers who would immediately integrate into existing labs. Second, the salaries are lower than new Assistant Faculty positions and we would not need to focus on tenure, teaching, and service issues. In short, this is all about giving a much needed adrenaline boost to the OU research venture.

Based on the current NIH-NRSA salary guidelines, a three-year appointment would cost approximately $40,000/year plus fringe - rounding up, this comes to approximately $140,000 to employ a postdoc for three years. Therefore, if we wanted to bring in 25 postdoctoral researchers in year one, our three-year compensation costs would be approximately $3.5 million. This same amount of money might cover 6-8 Assistant Professors or 1-2 superstar Professors through their first year. Therefore, we would get a huge boost in our PhD presence for relatively cheap, while simultaneously enhancing the entire university research culture. If we assume we want to repeat this hiring of 25 postdocs in year two (which would get us very close to our first doubling goal well prior to 2015) and we added some materials and supplies costs for the host lab (say $15,000 in year one), and we hired an OU Director of postdoctoral training with an assistant, we should still come in at under $10 million for four years. It is my opinion that the potential of this kind of large scale hiring would be transformative to OU’s research competitiveness and culture.

The tough question is where do we find the funding? This is where a strategy would need to be developed with the VPR and other university administrators to look for internal, state, and federal funds. If this program is envisioned within the Aspire 2020 framework, where we currently have large-scale university acceptance of the need to change the research culture, I expect that we should be able to find some of these funds internally. NIH, NSF and other federal funding agencies have many postdoctoral training funds, but I am not currently aware of any for the suggested type of cluster hiring. At this point more research on the options is required, but that effort will be delayed until we decide there is administrative interest in the idea of a postdoctoral recruitment and training program.
Other Considerations
To implement this type of bold initiative, many problems would need to be considered - below are just a few topics as conversation starters, followed by a few sentences related to their need for consideration.

Sustainability and Growth
Beyond the initial four year period, where we would see an influx of approximately 50 new postdoctoral researchers, we would need to carefully examine the sustainability of this campus-wide change. I believe this initiative will lead to increases in external funding and permanent changes in the numbers of postdoctoral researchers. Nevertheless, we will need to develop methods to measure performance and nurture the program towards self-sustainability - and towards the 2020 goal of tripling the postdoctoral population.

Training
As suggested above, this type of recruitment program requires (I think) a specialized training center and culture for postdocs. We might want to begin developing the training center (and associated buzz) as a service to current OU postdocs prior to starting an actual hiring initiative - once again, many of the best schools already have these types of programs in place and they have genuine, tangible effects on recruitment and school rankings.

Examples:
UNC - http://postdocs.unc.edu/
Stanford - http://postdocs.stanford.edu/
University of Washington - http://depts.washington.edu/pdafrs/
Vanderbilt - http://bret.mc.vanderbilt.edu/postdoc/

Implementation
How, exactly, would we distribute these postdocs? How would we establish priority for disseminating these postdocs to individual labs? How would we advertise? Perhaps we would list available labs and allow postdocs to self-identify their preferences. Perhaps we would develop an internal ranking system for faculty based on demonstrated need or funding success? There are many additional questions that would need to be addressed, but that is the nature and excitement of trying something new.

Final Notes
Clearly, this is very far from a finished idea. In a nutshell, I am proposing that we 1) recognize the particularly high value of postdoctoral researchers on the OU-Norman campus, and 2) develop a novel mechanism to rapidly recruit these individuals. The need is quite genuine and I believe this kind of recruitment program has the potential to fundamentally and positively change the research culture at OU.