**Summary of a May 21, 2018 Panel Discussion on Preparing for a Center**

This document is based on the combined input of several simultaneous notetakers and is not a verbatim transcript.

**Panelists:**

**Naomi Ginsberg**, Associate Professor of Chemistry and Physics, is the UC Berkeley PI of STROBE, a multi-university NSF Science and Technology Center (STC) headed by the University of Colorado Boulder. The center, now in its second year, is focused on real-time imaging science.

**Susan Marqusee**, Professor of Molecular and Cell Biology and Director of QB3-Berkeley, was the Director of Education for the Synthetic Biology Engineering Research Center (Synberc), an NSF Engineering Research Center (ERC) that received ten years of NSF funding concluding in 2016. She also served as PI on an NSF Research Coordination Network (RCN) and, in her role as QB3-Berkeley Director, has been involved in the administration and management of many NIH and NSF center grants.

**Charles Marshall** is Professor of Integrative Biology, Director of the UC Museum of Paleontology (UCMP), Chair of the Berkeley Natural History Museums, and Co-Director of the Berkeley Initiative in Global Change Biology (BiGCB). He also wrote a proposal for an NSF Science and Technology Center (STC), and has been involved as lead or participant in several national and international research consortia, including the Paleobiology Database.

**David Sedlak**, Professor of Civil and Environmental Engineering, is Co-Director of the Berkeley Water Center, an organized research unit (ORU) on campus. He has been involved in multiple externally funded centers: as Deputy Director of the NSF Engineering Research Center (ERC) Re-inventing the Nation’s Urban Water Infrastructure (ReNUWIt), now in its 7th year; as a participant in an NIEHS Berkeley Superfund Research Center, headed by Martyn Smith of the School of Public Health; and as leader of the clean water hub of a US Department of Energy center, CERC-WET, headed by Ashok Gadgil.

**Moderator:** **Erica Whitney,** Associate Director for Strategy and Training, Berkeley Research Development Office

***Q: How has being involved in center research affected your career?***

Susan Marqusee stated that her engagement in center research has helped to define her career in science, allowing her to expand her research on the basic science of protein folding in a big way, with a huge effect on students: 50% of the students involved in Synberc went on to careers in synthetic biology. Despite the enormous amount of effort, she has found it gratifying to engage in work that is more than the sum of its parts.

Charles Marshall characterized his research as being on the theoretical side of paleontology and evolutionary biology. Working on centers has broadened his range of collaborators, expanded the breadth and depth of his knowledge, stimulated new directions in his work, and equipped him to author more diverse papers.

David Sedlak indicated that, as director of a number of centers, he no longer gives talks on his own research, but often gives talks at a higher level in contexts that influence the national dialogue. In addition, new connections with industry partners have made it possible for him to scale up ideas and to build technology demonstration projects (e.g., water treatment facilities) at a scale that would never have been possible through individual grants.

Naomi Ginsberg reported that her center involvement has allowed for greater leveraging of collaborations; everyone in her lab now collaborates with researchers at other institutions or from other departments on campus. She has been surprised at the huge amount of administrative time involved, even though UC Berkeley is not the lead institution in the center.

***Q: Did taking a leadership role/serving as PI on a center detract from your research?***

Ginsberg stated that leading a center involves challenges and trade-offs. She now spends much more time on budgeting and reporting; the volume of these administrative functions is challenging. On the other hand, participating in the center has transformed the research in her own lab and the labs of others.

Sedlak advised that, in balancing these trade-offs, it is important to consider that center leadership can take the place of other administrative service to the university, such as serving as vice chair. Leading a center allows you to focus your administrative service in an area you’re passionate about. You will be spending weekends, evenings, and extra time on the center; it makes sense to use this to satisfy some of your university service obligations.

Sedlak also noted that center funding usually includes some support for the PI’s research, so it’s not a question of giving up your research entirely. However, as a center PI, he’s not as involved in writing individual investigator grants as he was previously; instead, he focuses his grant writing activities on bringing in more money for the centers.

Marshall stated that it’s also important to keep in mind that center funding can allow you to do research that couldn’t otherwise be done. For example, because of technologies and synergies brought to bear through their work, he and his collaborators can now conduct research in two hours that would have taken decades in the past. He views center leadership as involving more of a balance than a trade-off. How much do you want the benefits of your work to occur at a large scale? Are you willing to pay the price?

Marqusee responded that it takes a long time to establish that balance, and the process isn’t always pleasant. Some center reporting requirements are “over the top.” For example, ERC reporting and oversight requirements take an inordinate amount of time. It is, therefore, especially important to build a strong administrative infrastructure and to begin to establish institutional memory for your center from the start. Careful attention to these areas can make the unpleasant parts go more smoothly.

Marshall noted with respect to “over-the-top” reporting requirements that it is important to assess each funding opportunity for a balance between overhead funds coming in and the amount of reporting required. In some cases, he may decide not to apply for a particular opportunity if the reporting requirements are too onerous.

Sedlak added that centers often include funding for staff, and he stressed that hiring the right people for these positions is crucial. Try to get staff positions classified at the highest level you can, as you really need much more than administrative assistance; you need people who can take on some of the reporting burden.

Marqusee pointed out that the QB3-Berkeley bioscience infrastructure makes grant application and reporting a little easier. Working jointly with the Berkeley Research Development Office (BRDO) also makes the development of center proposals easier and more productive.

Ginsberg stated that, in her role with a start-up center now in its second year, she has found NSF’s emphasis on broader impacts useful. This has required her to learn about the many resources already available on campus, which has been an enriching experience for her and her team.

Marqusee reiterated that ERCs require a lot of education and outreach and broader impacts activities. A position was written into the original Synberc grant for someone to work specifically in those areas; this gave the center the ability to do things they wouldn’t have been able to accomplish otherwise.

Marqusee has found one of the most gratifying aspects of working on a center to be the knowledge that she has worked on something that made a significant difference in the direction of the field. NSF openly credits Synberc with laying the groundwork for the field of synthetic biology. Although Synberc has sunsetted, some of the programs it launched live on at UC Berkeley (e.g., Lab Fundamentals Bootcamp).

Sedlak said that his team learned a lot from Synberc faculty, students, and diversity specialists; in fact, they hired one as a consultant. He recommends going to existing centers and asking for their advice and experience.

Marshall noted that infrastructure was already in place through the Berkeley Natural History Museums for working with minority-serving colleges and universities, including ongoing collaborations with colleges in Louisiana, East Texas, and the Bay Area. Center applications should capitalize on such connections.

Marshall reminded the group that BRDO can be helpful in assisting with the center proposal writing process; integrating science, education, and outreach; and sharpening applications.

**Q: *What are your thoughts and experiences in planning for a center?***

Ginsberg stated that she knew her collaborators but hadn’t worked with them directly before the center application. It was an ongoing challenge to learn each other’s organizational/management styles in order to work together on the proposal. The planning process required extensive back-and-forth coordination of not just scientific but also administrative components. This coordination was critical, as was the ability and willingness of all partners to work in sync in response to specific requirements. BRDO helped her with advice about the required alignment of various components (e.g., data management and postdoc mentoring plans), an aspect of the center proposal development process that participants from the lead institution appeared unfamiliar with.

Dave Trinkle, BRDO Director, noted that BRDO can sometimes help with coordination challenges by reaching out to its counterparts at the partner institutions and engaging their assistance.

Ginsberg cautioned that people at other institutions are sometimes put off by Berkeley’s institutional power and prestige. This is a delicate issue; institutional power dynamics should be approached with sensitivity.

Ginsberg also indicated that some of the coordination challenges she encountered were particular to working with a geographically distributed team. Once they had all met in the same room for a mock panel review, it was easier to coordinate their work as a team. In the beginning, you need some in-person meetings, not just teleconferences.

Marqusee concurred that in-person meetings can dramatically improve the quality of the planning process. In the beginning, she had to make several trips to the Chicago Airport Hilton for day-long cross-institutional meetings. She expected this to be a waste of time, but it turned out to be very valuable. She strongly recommends building mock panel review sessions into your proposal preparation timeline. Prepare what you will focus on when you get together. Set a strong agenda but be flexible enough to pursue new sparks that emerge.

Marqusee pointed to the importance of recognizing that not everyone on the team will pull their weight. Often a few people at a time will do most of the heavy lifting (not unlike a middle school group project).

Marshall agreed that regularly scheduled meetings are important in helping to build the team early on. You need both a strong vision and a little flexibility to take advantage of personnel/team chemistry. Start EARLY.

Sedlak stated that weekly web meetings make sense. Different people will be involved differently. There are usually one or two leads for each campus on the core team, and many others in the broader orbit. You need to get all hands into a room together at least once during the planning process, with ample unstructured time to socialize and talk informally; this is crucial to building the camaraderie essential for a successful center.

Marqusee stressed the importance of providing faculty with concrete rewards for being part of the center. Funding one student per researcher doesn’t provide center investigators with enough of an incentive to stay engaged.

Marqusee also pointed out that centers can get too big, diluting their funding.

Marshall indicated that it’s critically important to get the core team right at the very beginning. Early on, the PI will need to make executive decisions about whom not to include. Your center will live and die by those decisions.

Ginsberg emphasized the importance of fostering the notion of “centerness,” as this is constantly being evaluated by funders. Everyone resists at first, wanting to stay in the comfort zone of their individual research. You will probably need incentives to mix and match, including money, postdocs, and students.

Sedlak cautioned about the temptation to look at a center as a series of mini research grants. This is disastrous for cohesion and can cause a center to fail or, even more likely, prevent it from being funded. Centers are a top down mechanism in many ways. Their leadership is most effective when it makes a committed effort to direct funding to those who support the vision most intensively. He suggests planning to get rid of 5-10% of the programs or investigators every year or two. As they rotate out, you will have opportunities to bring in enthusiastic new players who are strongly committed to the vision. Making these expectations clear from the start will also help participating researchers take their involvement more seriously.

Marqusee noted there is often a rush to bring in certain types of external partners (e.g., minority serving institutions, industry). It can be a mistake to add a partner just because you have an acquaintance in that organization. You need to select partners carefully to ensure the right fit so that all parties benefit.

Marqusee added that funders generally find it hard to critique the science in a center–if you’re being considered for a center, you have established yourselves among the world experts–but it’s easy for them to scrutinize and criticize education and outreach activities, management plans, and other such components.

Marshall stated that it all comes down to deciding how you will pick key players. What is the ideal profile for people critical to center success? You will know it when you see it. Be aware of this in all dealings with your colleagues, well in advance of even applying (or thinking of applying) for a center.

Marqusee cautioned against being afraid to change things that aren’t working.

***Q: Building in flexibility and nimbleness and allowing for course corrections: these are important concepts to funders. How do you achieve these qualities in a center?***

Sedlak highlighted the importance of regularly analyzing your strategic plan, revising it if necessary and making course corrections annually. Center-specific dynamics may come into play. The center director typically plays the role of the nice, friendly convener, bringing everyone together to collaborate in harmony. More often than not, the deputy director or another member of the leadership team will play the “Dick Cheney” role. You need someone good at playing the heavy to help make the hard decisions. Consider in advance how you’ll handle tough decisions. By executive committee? Advisory group? You need someone appointed as guardian of the strategic plan (besides the director) who will remain vigilant about what is and is not working.

Marshall explained that it is essential to beware of mission creep. This is tricky, but critical. Flexibility is important, but you absolutely must retain a strong central vision. Regularly consult your management team and seek advice from those guarding the mission.

Marqusee recommended building in a mechanism for postdocs to continue their involvement with the center as they move into faculty jobs. This both supports their ongoing professional success and ensures a steady flow of fresh energy and ideas into the center, an important consideration as some center faculty will inevitably fatigue out.

Ginsberg elaborated on a point made earlier about the need for members of the advisory board to have a strong investment in the center’s success and to be willing to give tough advice. It’s important to have people on your advisory board with experience running centers who can advise about management, not just science.

**Questions and Comments from the Audience**

***Q: Different grants and different centers are structured in different ways. Is there some way to learn about best practices, especially about how to structure advisory boards?***

Erica Whitney enumerated several sources of information about best practices for center structures: executive directors of campus ORUs, who meet periodically to discuss common issues and challenges; campus research development professionals on the proposal side; and the literature on team science, which deals in part with how to draw teams together.

Whitney also reiterated that, with respect to advisory boards, it’s a good idea to have some members appointed on the basis of their experience managing centers who can advise specifically on center management practices.

Marqusee added that BRDO’s Kate Spohr is the best campus resource on broader impacts/education & outreach.

***Q: How do you engage/empower/integrate more peripheral players in a center?***

Marshall stated that centers are inherently hierarchal. You need to find the right rewards to nourish the second and third tier groups within a center. What are they getting out of their participation? What sort of commitments does the center need to make to them, and vice versa, to ensure buy-in? BiGCB has found that one of the best ways to gain faculty cooperation is through their postdocs and grad students.

Sedlak strongly endorsed the importance of grad students and postdocs in reaching second and third tier participants. He also advised center leaders to consider career stages carefully in making appointments. It can be effective to establish co-leaders of various research thrusts, where the primary leader is a senior scientist and the co-leader is an early career faculty member who works closely with them to learn about center management. Such appointments are invaluable to the career development of newer faculty, who are then well positioned to become thrust leaders themselves later in the life of the center or in other centers funded in the future.

Marqusee urged mindfulness with respect to junior faculty and their tenure process. It’s crucial to ensure that their involvement in the center is recognized and not to overburden them. Synberc leadership paid particular attention to this in terms of publications and in communications with campus leaders. The same goes for the involvement of students.

***Q: How do you share information across the center? How often do you get everyone together?***

Marshall indicated that the inherently diffuse BiGCB hosts annual retreats with 80-90 people which included a lot of planning of new activities and breakout groups to explore new ideas. They also send out periodic group email updates and engage grad students and postdocs in giving workshops.

Marqusee noted that Synberc always held two retreats annually, one on the East coast and the other at Berkeley. She felt that was excessive, given all of the faculty’s other obligations. One all-hands retreat per year probably would have worked better for most participants.

***Q: Most of the information about center funding sources in the handouts relates to STEM fields. What about resources for center grants in the social sciences?***

Dave Trinkle of BRDO acknowledged that the funding opportunities handout includes few opportunities in the social sciences and humanities, although not for lack of effort. In general, recurring scheduled funding opportunities at the center level tend to be less predictable in the social sciences. It can pay to develop relationships with potential funders in advance, particularly on the foundation side. NSF includes social science among the fields it funds, so the Science and Technology Centers (STC) program is one possible avenue for funding centers in the social sciences.

Erica Whitney added that, unlike NSF, NIH doesn’t have a recurring slate of center opportunities, so it’s difficult to predict when such opportunities will arise at NIH.

Trinkle went on to say that social scientists might also want to find ways to partner with faculty who are developing center concepts in other fields, where the addition of social science expertise may supplement the scope or impact of the concept. Additionally–and this information is useful for *anyone* developing a funding strategy–many funders have publicly accessible databases of their previously funded projects; searching for projects on topics similar to yours can help you identify potential funders or specific program niches within larger agencies like NIH and NSF. Finally, colleagues may have other suggestions.

[This ended the audience Q&A period.]

Whitney then resumed her role as moderator, posing a final question:

***Q: I’d like to thank everyone for joining us, with a special thanks to our panelists for taking the time to share their experience and insights as center leaders. Are there any last thoughts you’d like to leave us with?***

Marshall stated that, in terms of center proposal writing, it’s important to note that almost all of your scientific colleagues will be conflicted out of serving as reviewers. When all conflicts are removed, there aren’t many people left. It is, therefore, especially important that you clearly and compellingly articulate your big vision in the first few pages of the proposal. Balance the amount of technical detail you include, and keep in mind that you’ll be writing for a more general audience than usual.

Marqusee reiterated her earlier point that participating in a center can be one of the most rewarding activities of your career and can have a major effect on positioning your research.

Marshall encouraged faculty to remember that Berkeley is a great, generative environment for centers, particularly in terms of the access it provides to large numbers of potential partners across disciplines.

Sedlak closed the discussion with the practical caveat that center proposals are won not on the basis of technical details of the individual projects but on the clarity of a compelling vision in first three pages, and then on other factors like broader impacts, management structure, and institutional support. Keep the vision front and center.