# A Mentor Development Program for Clinical Translational Science Faculty Leads to Sustained, Improved Confidence in Mentoring Skills

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**Abstract**

Mentorship is crucial for academic productivity and advancement for clinical and translational (CT) science faculty. However, little is known about the long-term effects of mentor training programs. The University of California, San Francisco (UCSF), Clinical and Translational Science Institute launched a Mentor Development Program (MDP) in 2007 for CT faculty. We report on an evaluation of the first three cohorts of graduates from the MDP. In 2010, all Mentors in Training (MITs) who completed the MDP from 2007 to 2009 ($n = 38$) were asked to complete an evaluation of their mentoring skills and knowledge; all MITs (100%) completed the evaluation. Two-thirds of MDP graduates reported that they often apply knowledge, attitudes, or skills obtained in the MDP to their mentoring. Nearly all graduates (97%) considered being a mentor important to their career satisfaction. Graduates were also asked about the MDP's impact on specific mentoring skills; 95% agreed that the MDP helped them to become a better mentor and to focus their mentoring goals. We also describe a number of new initiatives to support mentoring at UCSF that have evolved from the MDP. To our knowledge, this is the first evaluation of the long-term impact of a mentor training program for CT researchers. Clin Trans Sci 2012; Volume 5: 362–367

**Keywords:** mentoring, faculty development, evaluation

## Background

Mentorship is a critical factor in academic productivity and advancement for clinical and translational (CT) research faculty in academic medical centers. Faculty with mentors are more productive as evidenced by success in obtaining grants and numbers of publications[1–4] and are more satisfied with their careers.[5] In addition, enhancing mentor training and availability has been proposed as a means to insure that faculty members are more likely to remain at their current institution, providing a "return on investment" to the institution for early career support.[6] As a consequence, there has been growing interest by academic medical centers to develop mentor training programs specifically aimed at mid-career and early senior CT research faculty who would be available to mentor the very candidates that programs and institutions are hoping to recruit and retain.

In 2007, the University of California, San Francisco (UCSF) Clinical and Translational Science Institute (CTSI) started a comprehensive mentoring program that includes the Mentor Development Program (MDP).[7] The MDP's primary goal is to train mid-career and early senior CT research faculty in the knowledge and art of mentoring so that they can more effectively mentor the next generation of CT researchers. The MDP consists of 10 case-based seminars held during monthly half-day meetings over 5 months. The seminars include a combination of skills-based exercises, case discussions, and key information relevant for all mentors. For example, the session that addresses grant funding provides the participants with helpful resources (such as examples of successful grant applications), case-based scenarios for discussion, and an opportunity for participants and facilitators to share their own experiences with grant writing and acquiring grants. Intramural grants and those offered by the National Institutes of Health (NIH), private foundations, and pharmaceutical companies are all discussed.

The case-based approach is designed to stimulate discussion about mentoring best practices, such as mentor relationships, fostering independence, challenges to communication, role of the mentor in promoting work-life balance, and mentoring women and members of underrepresented groups. Course faculty consists of senior faculty members with extensive mentoring experience.

The MDP goals and curriculum, as well as an evaluation of the MDP, have been described in previous publications.[8,9] Providing training and support for mentors is critical to expanding the available pool of mentors for clinical translational researchers. Although there is limited consensus on the core elements of effective mentoring practices[10] or the qualities of outstanding mentors[3,11] faculty development in mentoring is viewed as critical, and there has been increasing interest specifically in mentor training and evaluation in CT research. In a review of mentoring for K scholars, Burnham argues that providing mentor support and training is critical to insure the availability of an adequate pool of mentors for K scholars in CT research.[12] Meagher et al. point out that although evaluating mentor performance can lead to stronger mentoring and to increased success of new CT researchers, they conclude that the process is difficult both for the mentors and for the trainees, who may be reluctant to share negative experiences and to rate their mentors.[13] New models for evaluation of CT mentors have been proposed to enhance evaluation and feedback to mentors.[14] However, little is known about the long-term outcomes of mentor training programs such as the MDP.

In our prior research we reported on the pre- and immediate post-MDP evaluation and described the positive impact of training on self-assessment of mentoring skills.[8] Most mentors in training reported increased confidence in a variety of important mentoring skills and said that they would alter their approach to mentoring as a result of the training.[8] In this paper, we

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DOI: 10.1111/j.1752-8062.2012.00419.x

expand on our prior work and report on long-term evaluation of the first three cohorts of graduates from the MDP. We also describe the expansion of the MDP, as well as a number of new initiatives to support mentoring at UCSF that have evolved from the MDP. To our knowledge, this is the first evaluation of the long-term impact of a mentor training program for CT science researchers.

## Methods

### Follow-up of MDP graduates

In 2010, all faculty members who had completed the MDP from 2007 to 2009 ($n$ = 38) were asked to complete an online survey about the impact the MDP had on their mentoring satisfaction, skills, and knowledge. The MDP Graduate Survey was modified from the initial survey conducted immediately before and after participation in the MDP and described in an earlier paper. We limited this analysis to the first three faculty cohorts to assess the long-term impact of the MDP 1 to 3 years after their participation. We include descriptive analyses of their responses and report on the proportion that indicated that they "agree" or "strongly agree" with answers provided. Descriptive statistics were performed using SAS Version 9.1 (SAS Institute, Cary, NC, USA). For those who had left UCSF, we identified their title in their current positions.

### The MDP graduate follow-up survey

All questions in the MDP Graduate Follow-Up Survey included phrasing that related the graduate's responses to their MDP training, for example "*As a result of the MDP*." Responses were on a 5-point Likert scale from "strongly disagree" to "strongly agree" or as appropriate "never" to "very often." Questions on general mentor effects of the MDP included frequency of the application of knowledge, attitude, or skills obtained in the MDP, importance of being a mentor to career satisfaction, confidence in mentoring skills, focus of mentoring plans/goals, and assistance with becoming a better mentor. The MDP graduate's confidence in specific mentoring skills were also assessed including their ability to assist their mentees with professional goals, development of a research focus, and others listed in *Table 2*. We also collected qualitative data and include some illustrative quotes in the results section.

Specific questions about the NIH K24 National Institutes of Health Midcareer Development (K24) grant were included, such as if the MDP: influenced their decision to apply, improved their application (5-point Likert scale as above), if they applied, and if they had been awarded a K24. Responses to the K24 questions were "yes," "no," or "not applicable." MDP graduates were asked about barriers to serving as a mentor such as administrative, clinical, and research responsibilities (Likert scale as above). In addition, they were asked to identify important resources that would assist them in mentoring their mentees such as formal research training courses, grant writing, and manuscript writing.

### New initiatives of the comprehensive mentoring program

Through the annual UCSF MDP graduate retreat, the annual Comprehensive Mentoring Program Leadership retreat, and consultation with the Clinical and Translational Science Institute Board of Directors, new initiatives of the Comprehensive Mentoring Program have been launched as described in the results section below.

| Characteristic | | *N* (%) |
|---|---|---|
| Gender | Female | 20 (53%) |
| | Male | 18 (47%) |
| Race | White | 30 (79%) |
| | Asian | 5 (13%) |
| | Multi | 1 (3%) |
| | Other | 1 (3%) |
| Degree | M.D. | 26 (68%) |
| | Ph.D. | 14 (3%) |
| | M.C.R./M.P.H./M.S.C | 11 (29%) |
| | Pharm. D. | 1 (3%) |
| | Other | 4 (11%) |
| School | Dentistry | 2 (5%) |
| | Medicine | 30 (79%) |
| | Nursing | 4 (11%) |
| | Pharmacy | 1 (3%) |
| Faculty rank | Assistant Professor | 4 (11%) |
| | Associate Professor | 26 (68%) |
| | Professor | 8 (21%) |

**Table 1.** Characteristics of UCSF faculty graduates of the mentor development program 2007–2009 at the start of their program ($n$ = 38).

## Results

### MDP graduates

*Demographics*

A total of 38 faculty members completed one of three MDP courses that took place between 2007 and 2009. MDP graduates completed the follow-up survey in 2010 for a response rate of 100% ($n$ = 38). At the time of training, 68% were at the Associate Professor rank, 79% were White, 53% were women, and 79% were from the School of Medicine (*Table 1*). At the time of the follow-up survey, 6 (16%) of the MDP graduates had left UCSF, half had taken other university positions (Chair, Associate Professor, and Professor positions), and half had taken nonuniversity research positions (Associate Group Medical Director, Global Product Development—Immunology & Respiratory, Genentech; Associate Chief Nursing Research, Department of Veterans Affairs, Palo Alto; senior research scientist at the Kaiser Permanente Northern California Division of Research, and the research director of the Women's Health Research Institute, Oakland, California).

*Mentoring practice and skills*

Two-thirds of MDP graduates reported that they often or very often apply knowledge, attitudes, and skills obtained in the MDP to their mentoring practice. For example, one graduate said: "I will use what I learned in this series to focus my mentoring, allowing me to better choose my mentees and to be a more effective mentor to them." Nearly all graduates (97%) considered being a mentor important to their career satisfaction and the majority reported that they were confident in their mentoring skills.

| Mentor Skill | MDP training survey** | | MDP graduate F/U survey*** | |
|---|---|---|---|---|
| | *N* (%) who Agree or Strongly Agree† | Mean (±SD) | *N* (%) who Agree or Strongly Agree† | Mean (±SD) |
| Identify professional goals and interests | 37 (97) | 4.5 (±0.6) | 35 (95) | 4.4 (±0.8) |
| Acquire pertinent skills | 37 (97) | 4.5 (±0.6) | 35 (95) | 4.4 (±0.8) |
| Understand the expectations for advancement in the different UCSF academic series | 35 (95) | 4.4 (±0.7) | 33 (92) | 4.2 (±0.9) |
| Develop a research focus | 31 (84) | 4.3 (±0.7) | 33 (92) | 4.3 (±0.8) |
| Determine long-term career plans | 33 (89) | 4.3 (±0.7) | 32 (91) | 4.3 (±0.6) |
| Design a research project | 27 (73) | 4.2 (±0.9) | 29 (82) | 4.2 (±0.9) |
| Provide emotional support | 32 (86) | 4.3 (±0.7) | 30 (81) | 4.1 (±0.9) |
| Communicate research findings | 27 (73) | 4.3 (±0.9) | 27 (77) | 4.1 (±0.9) |
| Obtain research/grant funding | 31 (84) | 4.1 (±0.6) | 28 (78) | 3.9 (±0.8) |
| Prepare and publish manuscripts | 28 (74) | 4.2 (±0.9) | 26 (76) | 4.1 (±0.9) |
| Understand research group/lab management | 30 (81) | 4.2 (±0.8) | 27 (77) | 3.9 (±0.9) |
| Balance professional and personal demands | 30 (79) | 4.1 (±0.7) | 28 (76) | 3.9 (±0.9) |
| Understand economic and fiscal realities for successful academic careers | 31 (86) | 4.2 (±1.0) | 26 (70) | 3.9 (±1.0) |
| Improve time management skills | 30 (81) | 4.1 (±0.8) | 24 (65) | 3.7 (±1.0) |
| Find resources | 24 (65) | 3.8 (±0.7) | 21 (58) | 3.6 (±0.9) |

*All values on the scale: Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4), Strongly Agree (5).
†Percentages calculated among MDP participants who responded to the question.
**MDP Training Survey data were obtained at the end of the MDP Training (2007–2009).
***MDP Graduate Follow-Up Survey data were obtained 1–3 years after training.

**Table 2.** UCSF faculty reported confidence in skills as a result of the MDP, at end of MDP training and 1–3 years after participation ($n = 38$)*.

MDP graduates were also asked about the MDP's impact on specific mentoring skills (*Table 2*). Overall, MDP graduates reported strongly positive effects that generally persisted for at least 1–3 years from the immediate post-MDP evaluation. For example, 97% of graduates reported increased confidence in helping their mentees "identify professional goals and interests" immediately after the MDP course compared with 95% of MDP graduates surveyed 1–3 years later. One MDP graduate put it this way: "I learned to listen more and put myself in the mentees shoes, to explore and develop their goals, not mine." Likewise, 89% felt that the MDP helped them work more effectively with mentees to "determine long-term career plans" and 86% reported that it helped them "provide emotional support"; the follow-up survey 1–3 years later found 91% and 81%, respectively, continuing to endorse these statements. For example, one graduate stated: "It was extremely helpful to hear from my colleagues about their experiences with mentoring. I have a better understanding of how to handle sensitive situations related to career advancement and life-work balance." Another graduate said: "The MDP helped me to better understand academic process; promotion, advancement, networking were all demystified in a way that will enable me to explain them clearly to my future mentees (funding too)."

At the end of the MDP training, the mentoring skills that had the lowest reported confidence were "design a research project" and "communicate research findings" with 73% reporting confidence in these skills. Interestingly, reported confidence increased for both of these on the longer term follow-up survey with 82% and 77%, respectively, reporting confidence in these mentoring skills.

Almost half (43%) of graduates stated that the MDP influenced their decision to apply for a NIH Midcareer Development (K24) grant; 12 (32%) have applied for a K24 grant, and of these 7 (58%) have been funded. Of those who applied for a K24 grant, 83% reported that the MDP helped improved the application.

*Barriers to mentoring*

Graduates were asked about potential barriers to their ability to serve as research mentors. The most commonly cited barrier was the responsibility for their own research program (63%). Nearly half reported that clinical responsibilities (45%) and administrative responsibilities (47%) limited their ability to serve as mentors. Finally, graduates reported a number of resources that would help their mentees directly as well as help them with mentoring (*Table 3*). The most commonly cited were those that would help them provide assistance to their mentees with grant writing (87%) and manuscript writing (82%).

**New mentorship initiatives at UCSF**

One measure of the success of the MDP is that many graduates have taken on new leadership positions at UCSF, such as Assistant Directors of the MDP or as leaders of new programs that support mentoring. New initiatives include development of an Early Mentor Development Program aimed at Scholars who hold NIH or other Career Development Awards (K12) and an annual retreat for MDP graduates focused on networking and brainstorming about new mentoring initiatives. The UCSF Profiles application, an online tool that facilitates collaboration, now has a mentoring "gadget," and a new Mentoring Consultation Service provides support for challenging mentoring issues. Finally, we have plans to

| Barrier/resource | *N* (%) who Agree or Strongly Agree |
|---|---|
| Potential barriers | |
| Administrative responsibilities | 18 (47) |
| Clinical responsibilities | 17 (45) |
| Their own research program responsibilities | 24 (63) |
| Resources | |
| Grant writing | 33 (87) |
| Manuscript writing | 31 (82) |
| Formal research training/courses | 30 (79) |
| Statistician/programmer | 30 (79) |
| Budgeting/financial services | 26 (68) |
| Project director | 22 (58) |
| Research assistant | 30 (79) |

**Table 3.** UCSF faculty-reported barriers to serving as a mentor and resources that would help with mentoring, reported 1–3 years after participation in MDP ($n = 38$).

develop an online Mentor Development Program and to expand social networking opportunities.

*Early mentor development program*

To expand our pool of superb mentors and to encourage young faculty who hold Career Development Awards to begin mentoring, we have begun an Early Mentor Development Program. Career Development awardees typically do not have a long track record of research and do not have datasets, infrastructure, or funding to allow them to act as lead mentors or comentors. However, they have cutting-edge clinical skills, superb training in clinical research methods, and the time and energy to function as outstanding research mentors. In addition, we believe that young faculty who hold Career Development Awards are at a point in their careers when they should begin to mentor younger trainees and start to reap some of the many benefits of mentoring—new ideas, new energy, growing a research team, and building life-long collaborations. In 2009, we introduced a new workshop entitled, "*How to Become a Mentor and Thrive*" that provided information on types of mentors, the benefits of mentoring, and advice for developing successful mentoring relationships. Discussion during the workshop made it clear that young faculty are being approached to mentor professional students, residents, fellows, and even other junior faculty, that they are enthusiastic about mentoring, but need additional mentor training to avoid pitfalls. Thus, we are developing a quarterly workshop on mentoring for Career Development awardees and other junior faculty who are interested that will cover topics such as why become a mentor, creating a mentoring agreement, and difficult mentoring cases. Experiential training will include shadowing experienced mentors, and pairing young faculty as mentors for the professional students in our NIH-supported CT research training programs, and young faculty mentoring activities.

*Annual MDP graduate retreat*

The MDP holds an annual half-day retreat to bring together leaders and graduates to provide updates on the latest activities of the UCSF MDP and the Comprehensive Mentoring Program, a forum for ongoing mentoring issues, and to create opportunities for networking. Invited speakers present on topics such as changes in NIH Mentored Career Development Awards (K12) and Midcareer Investigator Awards (K24) grants. An essential component of each retreat is the sharing of mentoring successes and challenges. These cases, accompanied by comments and suggestions from the participants, are posted on the MDP Web site (*http://ctsi.ucsf.edu/training/mdp-graduatesmdp*), thereby providing an online library and enduring mentoring resource for the community. The annual retreat serves as the foundation for ongoing dialogues and exchanges among participants throughout the year and a forum for development of new mentoring tools and activities.

*Mentor profile: "Finding a mentor"*

UCSF Profiles, developed in collaboration with Harvard, is an open-source research networking software tool that uses publicly available national databases, searchable local databases, and sophisticated algorithms to automatically collect and present contact information, research interests, key words, and publication lists for all UCSF faculty members and trainees. Each faculty or trainee can augment their own Profile and the format of the Profile can easily be tailored using standardized formats to provide additional data. UCSF Profiles can be used to assist mentees to find mentors (and in some cases, vice versa) with appropriate research experience and expertise. A "Mentor Profile" section of the standard Profile has been developed, where interested faculty can add mentor information, including type of research, areas of research, type of mentor role, and mentee for which they are available. After an additional year of feedback and refinement, the Mentor Profile was made available to others outside UCSF who are using Profiles.

*Mentor consultation service*

Building on the success of the MDP and the broader consultation services offered by the UCSF CTSI, a Mentoring Consultation Service was started in 2010 by an MDP graduate. The consultation service is staffed by MDP faculty and graduates, and is accessed by faculty through the general CTSI Consultation Service portal. A mentor or mentee can pose a question or issue through the portal. The consult is forwarded to the assigned consultant mentor and either a response is submitted within one week or a telephone meeting is arranged between the consultant and the faculty member who submitted the query. Response to the service immediately following the consultation has been favorable and a more formal follow-up evaluation is planned.

## Discussion

The UCSF CTSI Mentor Development Program was launched in 2007 with the goal of training the "*next generation*" of clinical translational research mentors. In this paper, we report on outcomes up to 3 years after completion of the MDP. Notably, we found that the MDP graduates had sustained, increased confidence in their mentoring skills. Equally important, most reported that being a mentor is important to their career satisfaction. Although we do not have data on actual mentoring performance, prior research on self-efficacy supports the hypothesis that improved confidence in one's ability to perform a task is associated with improved mastery of that task.[15]

We found that most MDP graduates reported that lack of time and resources were the major barriers to their ability to serve as effective research mentors. During the MDP and annual MDP graduate retreats, time is devoted to understanding and encouraging MDP graduates to apply for NIH funding through the Midcareer Development (K24) program that provides

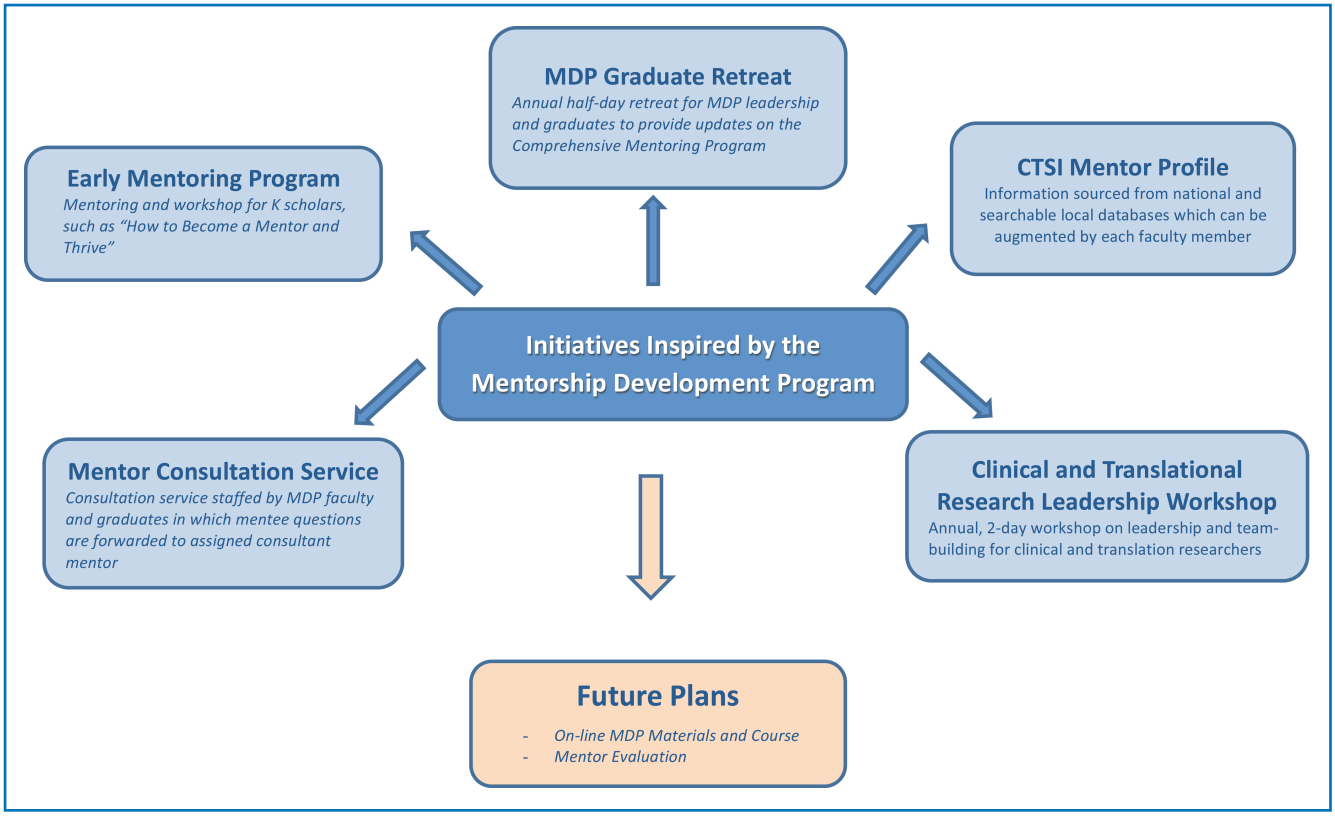


**Figure 1.** New mentorship initiatives at UCSF.

dedicated support for mentoring. We were especially gratified that two-thirds of the MDP graduates who applied were awarded a Midcareer Development award. This funding provides a tremendous opportunity for MDP graduates to provide service as CT research mentors.

We also describe a number of new initiatives aimed at further supporting a culture of mentorship at UCSF. The annual retreat of MDP graduates facilitates further sharing of mentoring innovations and helps to support a community of CT mentors at UCSF. The mentor consultation service provides a confidential approach for mentors and mentees can seek assistance with common mentoring conundrums, and the new UCSF Profiles mentoring "gadget" allows mentees to find appropriate mentors via the Web and allows mentors to specify the type of mentee, the subject area, and the level of mentoring for which they are available.

All of these new mentoring programs and resources have helped to address some of the barriers to mentoring uncovered by the MDP survey and have contributed to what can only be described as a cultural shift at UCSF, from one that has placed the highest value on individual achievement (the Principal Investigator and first/senior author with little recognition for others who may have played a crucial role in the success of the research) to one that recognizes the key role of mentorship. Modern translational research requires the collaboration of researchers with a wide variety of expertise. Training and advocacy activities of the UCSF CTSI, the MDP, and other activities that support mentorship have begun to change the academic culture at UCSF to one that places more value on multidisciplinary CT research, as well as supporting the recruitment and retention of underrepresented CT researchers.

Our findings are limited by lack of a comparison group and the fact that our MDP graduates were not randomly selected and may not be representative of all UCSF faculty members or faculty members from other institutions. However, we believe that our MDP graduate's sustained increased confidence in their mentoring skills is evident and will translate into improved mentoring effectiveness and ultimately into enhanced productivity for their future mentees.

## Conclusion

In this paper, we expand on our earlier work by reporting on longer-term follow-up of clinical translational research faculty members who participated in an intensive mentor training program. Notably, we found that the MDP graduates had sustained, increased confidence in their mentoring skills for up to 3 years after the end of their training. We also report on some of the other key innovations that have been implemented to support mentoring at UCSF.

## Acknowledgments

"This project was supported by NIH/National Center for Research Resources UCSF-CTSI Grant Number UL1 RR024131 (Dr. Feldman and Brown), the National Institute of Diabetes and Digestive and Kidney Diseases K24 DK059294 (Dr. Brown), and the National Heart, Lung and Blood Institute K24 HL087713 (Dr. Huang). Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the NIH." We wish to acknowledge the valuable contributions of Dr. Stuart A. Gansky, and Ms. Rachael Sak in the preparation of this manuscript.

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