**1) Title: Health Research At UC Merced**

**2) Names of Principal Authors**

Prepared by Paul Brown on behalf of the Health Sciences Research Institute.

HSRI has 65 faculty affiliates. Our approach to developing HSRI has been fair and equitable in that we are open to all who want to join, have a decision making process in which all decisions are made by elected members of an Executive Committee (via Research Cluster), and have our main aim being to serve the faculty members. The members of the Executive Committee (and their Research Clusters) are:

Jan Wallander Health Disparities

David Ojcius Immunity & Infectious Diseases

Linda Cameron Cancer

Evan Heit (Deb Wiebe) Health Decision Making

Jeff Gilger Human Genetics

Susanne Sandi Bio-simulation

In developing this proposal, we first asked for input from all members of HSRI and volunteers interested in working with the Executive Committee on developing a strategic vision. Thus, we have been both transparent and inclusive in developing this plan.

Because we are an ORU and thus not involved directly in teaching programs, our proposed vision does not include specific mention of undergraduate and graduate education programs but rather focuses on supporting the research aspects of those degrees. However, we do discuss the potential for Medical Education on campus at some length. For the past year, HSRI has served to coordinate discussions of Medical Education on campus. Ultimately, the decision whether to have Medical Education and, if so, the administration of the program will lie with the Senate. But we will continue to serve as the catalyst for discussions for the time being.

**3) Executive Summary (150 word max)**

The 2009 Strategic Academic Vision included “Human Health” as a major theme. This Strategic Plan outlines how HSRI can help make UC Merced  a top health research institute by 2020. We will achieve this by helping to creating world renowned health researchers, providing a leadership role in helping introduce a Medical Education program, helping to identify and fund  strategic health research facilities, working with regional partners to create a Translational Research Center, and advocating for the development of a building dedicated to health research and teaching on campus. With nearly 1/3 of the faculty already members of HSRI and involved with health research, the campus is well placed to achieve this goal.

**4) Initiative Description**

**I. Advances in Human Health since 2009 Strategic Academic Vision:**

The 2009 Strategic Academic Vision included “Human Health” as a major theme, with 3 objectives: 1) to establish the Health Sciences Research Institute (HSRI), 2) establish a School of Medicine, and 3) evaluate the potential for a School of Public Health. We are well on the way to achieving each of these goals.

1) ***HSRI*** became an ***Organized Research Unit*** in 2012, with the goal to foster health related research.

2) ***HSRI*** has played a leading role in discussions regarding the future of ***Medical Education*** at UC Merced and in the San Joaquin Valley (SJV).

3) ***HSRI*** works closely with the ***Public Health Advisory Group*** to develop and promote public health research on campus.

**II. Goal for 2020**

HSRI's primary mission is to promote the development of Human Health research on campus, with the aim by 2020 of having UC Merced be recognized as a top-40 institution in health research in the US. Achieving this goal will require that we support faculty to:

* Increase research productivity - Promote a high volume of research output, large income from grants and foundational support, and international reputation as a research leader in specific areas. We will do this through:
  + Providing the research support, facilities, and infrastructure required to secure external funding,
  + Assisting with the development of new research collaborations and projects that take advantage of the assets already in place at UC Merced,
  + Identifying and coordinating research around specific areas (e.g., Valley Fever) that are likely to result in significant advances in knowledge and improved health, marked in part through publications and grant funding.
* Research influence - Research influence is traditionally determined by citations. However, because of our special mission in the region, influence might also include improvements in health status of the region, influence on local, state or national policies, and prominence in the region.
* Teaching and training - Promoting a learning environment that nurtures undergraduates and graduate students who are successful in promoting human health related research.

As HSRI grows, we will work with the Provost and Office of Research & Economic Development to determine a formula for indirect cost return rate. Combined with our other revenue generating proposals, including the Translational Research Center (see below) and donations resulting from our progress toward Medical Education, we anticipate being financially sustainable well before 2020.

**III. Human Health and HSRI by 2020:**

The future of the signature theme of Human Health at UC Merced might look as follows:

1. **Health researchers and interdisciplinary health research programs with national and international reputations;**
2. **Medical education** program modeled on the UC Berkeley/UCSF Joint Medical Education model that engages faculty from across the campus;
3. **Research** **facilities** on UC Merced's campus, including research infrastructure in areas where there is clear cross-disciplinary effort or linkages with external research partners (e.g., UCSF-Fresno, local Health Departments, community groups, or biomedical research firms).
4. **Translational Research Center** located in Fresno, administered jointly with UCSF-Fresno and other regional partners (e.g., Fresno State, CSU Stanislaus, regional health providers, and local health departments) focusing on promoting T3 (moving evidence based guidelines into practice) and T4 (ensuring that patients and their families benefit from the medical innovations) translational research.
5. **HSRI physical presence** would include a Health Sciences Research and Education Building (HSREB) in which would be housed HSRI infrastructure, shared resources, and staff (15 to 20), the Medical Education program (one floor of the building), and the School of Public Health faculty (20 to 25).

**1. Health researchers and interdisciplinary health research programs with national and international reputations -** The key to our achieving the goal of being a top-40 institution in health research by 2020 is to have successful biomedical and behavioral science researchers at UC Merced. HSRI has and will promote health related research and support faculty in a number of ways, including:

* Facilitating health related research on campus through our research clusters and role in organizing research initiatives,
* Assisting with the development of applications for external funding,
* Mentoring junior faculty and supporting emerging researchers,
* Forming research partnerships with regional health providers (such as Children's Hospital, UCSF-Fresno, Mercy Hospital), and
* Identifying and promoting research that would improve the health status and access to health care for people in the region, and

One avenue for developing a national and international reputation is to develop and foster health research programs that will attract research funding, address critical needs in the region, utilize the existing expertise at UC Merced, and lead to national recognition and prominence. These programs will emerge organically through faculty efforts, but possible examples are: Valley Fever; changing the health disparities in San Joaquin Valley populations; applying cutting-edge technology to make health communications impactful; and human genetics.

**2. Medical Education** - Since UC Merced's inception, there have been proposals to start a Medical School. These initial discussions were not altogether fruitful, and left a bitter taste with many faculty members regarding the potential for UC Merced to have a medical education program. Among the concerns/comments were:

* The campus is too new to develop a Medical School;
* Medical Education will divert resources away from other areas;
* It will stretch our already over-committed biomedical faculty;
* The cost will be exorbitant;
* The program will struggle to meet the specific needs of the region;
* The potential regional partners are not prepared to host clinical training.

These concerns are valid for the model of medical education that was *initially* proposed. Fortunately, there is an *alternative* model of medical education that is exemplified by the Joint Medical Program at UC Berkeley/UCSF, which overcomes all these concerns. Over the past year, HSRI has led a process of examining alternative models of medical education. After much consultation and consideration of alternative models, a group of faculty consisting of representatives from all three schools recommended that UC Merced pursue a model similar to the UC Berkeley/UCSF Joint Medical Program (JMP; see below) in partnership with UCSF-Fresno.

The UC Merced-UCSF-Fresno model might involve students spending three years at UC Merced, completing case-based or problem-based learning sessions led by UC Merced faculty and selected people from the region and initial clinical training at Mercy Hospital and/or Golden Valley Health Centers. Students would emerge with a Master of Science in either Public Health or Biomedicine, and then complete their clinical training at UCSF-Fresno. The advantages of the model include:

* *Relatively low cost* and *quick start-up -* The case based approach does not involve a significant investment in laboratory facilities and the entire program could be housed on a floor of a building. It could be up and running within 5 years.
* *High probability of success* - This model is already in existence within the UC system (UCSF/UC Berkeley), UCSF-Fresno is already providing medical training and has the patient base to expand its medical training program, and regional health providers (particularly Mercy Hospital and Golden Valley Health Centers) would be appropriate for the initial clinical training. UCSF-Fresno can coordinate the provision of the anatomy lab. UC Berkeley has been very supportive and is eager to help us adapt their model for our use.
* *Takes advantage of our current faculty* - The case based learning model is perfect for our faculty as it works best when different backgrounds and perspectives are represented; moreover, it does not require physician instructors.
* *Would be unique in the world* - The case based learning model could be developed by us to provide health professionals specifically with training in working with diverse (e.g., culture, ethnicity, language) disadvantaged communities in rural areas, such as the SJV. Training specifically for work with culturally/ethnically diverse populations at the start and throughout medical school, rather than as a secondary add-on to pre-existing programs, would be unique in the country. Thus UC Merced would be able to offer a program that would be recognized around the world as a leader in training health professionals to provide appropriate care to disadvantaged and diverse peoples and communities in the U.S.

Because HSRI is not a Bylaw 55 Unit, we will continue to facilitate discussions on campus but look to develop an administrative structure involving groups from all three schools.

A key question to consider is "*Why now?"* There are several reasons why this is an appropriate time to move forward with medical education: maturation of UC Merced as a campus, closer ties between UC Merced and UCSF-Fresno, critical mass of health research on campus, and change of attitudes among UC Merced faculty. However, one reason that cannot be ignored is the views and expectations of UC Merced supporters and the broader community around us. Many have long advocated for us to move forward with Medical Education, and many are frustrated with the lack of progress. This includes the groups that would be our partners and financial backers in this venture. A decision to move forward does not commit us to action, and there are many factors that would have to fall in place for Medical Education to become a reality, Yet the alternative of delaying this decision would ultimately be a decision to kill the idea for a long time.

In summary, when HSRI was approved, Chancellor Leland asked us to help guide discussions regarding Medical Education on campus. To this end, HSRI has:

* Coordinated UC Merced's efforts relating to the SJV PRIME Program,
* Led the development of fund raising strategies for Medical Education with the Office of Development,
* Led discussions of the future of Medical Education with regional partners, including UCSF-Fresno, Mercy Hospital, Children's Hospital, regional and state medical associations, and other universities in the region.
* Held a Medical Education forum in which representatives from UC Berkeley, UCSF, UC Davis, and the Office of the President met with UC Merced faculty to discuss options for Medical Education,
* Developed a report and recommendations summarizing the options for Medical Education at UC Merced that was subsequently presented to and discussed with the Provost and the Chancellor, and
* Developed a plan for continuing our development of Medical Education at UC Merced.

We are prepare to continue providing a leadership role for Medical Education going into the future.

**3. Research** **facilities** - A key decision facing the university over the next several years is what type of research facilities should be provided for faculty. We anticipate that the Office of Research & Economic Development will work with Schools and with the ORUs to develop plans for efficient and rational investment in core facilities that will benefit faculty across campus. HSRI sees its role as providing leadership in identifying resources in four areas to support human health research:

* Facilities that promote multidisciplinary research - One limitation of a School or Graduate Group approach to identifying resource needs is that there can be too little investment in resources that span across resource groups. An example of this would a ***High Performance Computing facility.*** While this high performance computing facility is not directed at health related research per se (it is a more directed at promoting basic science), the members of HSRI will benefit from having this capacity on campus. HSRI’s role is to help identify these types of facilities and advocate with the Office of Research & Economic Development for investment.
* Facilities that promote biomedical research with outside organizations - As we promote research collaborations with external partners, members of HSRI will be identifying research facilities that would add to the resource base through the region and be used by multiple partners. The High Performance Computing facility is one example (researchers at Fresno State and Stanislaus State would benefit from having access to this type of facility), and another is a mobile BL3 lab that was identified by regional partners (e.g., UCSF-Fresno and the Public Health Departments in the San Joaquin Valley) as being key to addressing the Valley Fever epidemic in our region.
* Facilities that promote behavioral health research – the social and behavioral sciences (e.g., Public Health, Sociology, Psychology) contribute critical knowledge towards addressing health threats, especially in the population in our region. At least 50% of preventable causes of death in the US represent behaviors and social conditions, even more so in this region. This research however requires special lab facilities and equipment, possibly including a Survey Research Center to monitor health and health threats.
* Facilities that promote translational research - One of the key challenges and opportunities in this region is to give people access to innovative new treatments and interventions. The diversity and significant health disparities in the region provide the opportunity to quickly test the efficacy and effectiveness of new treatments, interventions, and approaches to delivering healthcare. This will require establishing a network of contacts (e.g., partners in rural areas) and procedures (e.g., joint IRB protocols) that will allow UC Merced researchers to quickly access rural and diverse populations.

HSRI will work with the Office of Research & Economic Development on developing research facilities that will promote growth in health research. HSRI will also work with the Office of Development & Alumni Relations and faculty members to identify funding sources for these research facilities.

**4. Translational Research Center** - The San Joaquin Valley is an underserved area with tremendous health disparities. It is also a region with significant diversity on multiple dimensions, making it a unique laboratory for examining the efficacy and effectiveness of new interventions and treatments in underserved, hard-to-reach populations. This has not been unnoticed by others in California, with both UC Davis and UC Irvine looking to establish networks for providers in the region. Their efforts are motivated by a recognition that the SJV is an underserved area that is rife for expansion, and by pressure from funding agencies (e.g., NIH) to expand their study populations to include more ethnic and socioeconomic diversity.

This confluence of needs by outside groups and by UC Merced researchers for access to diverse patient populations creates an opportunity for UC Merced to develop a Translational Research Center in conjunction with our regional partners. At present, HSRI and UCSF-Fresno have a small grant from UCOP to develop a translational center. The goals of this center will be to provide UC Merced and UCSF-Fresno researchers and clinicians with the support they need to involve hard to reach, low socioeconomic, and ethnically diverse communities in clinical trials and intervention research.

While HSRI will play a large part in the organization and development of this center, it is expected be a true partnership between UCSF-Fresno, CSU Fresno, and HSRI. Each comes with different areas of strength - UCSF-Fresno has clinicians and access to clinical partners, CSU Fresno has a research infrastructure that can provide access to hard to reach communities, and HSRI has faculty with diverse areas of expertise and the commitment to research. These areas of strength complement each other and provide us with the opportunity to form a working partnership that will benefit the region.

We expect that the infrastructure underlying this Translational Research Center will be in Fresno. Fresno has a wider patient and community base than Merced, and thus it makes sense for the main facilities to be housed at UCSF-Fresno. But we anticipate HSRI having a presence in Fresno as well, and will work with our partners to develop this space as the initiative progresses.

**5. HSRI physical presence** - As health research grows on campus, we anticipate there being two centers of operations: A Health Sciences Research and Education Building (HSREB) at UC Merced and a Translational Research Center at UCSF-Fresno. In Merced, HSRI envisions three types of staff:

* Administrative and support staff - includes staff who can assist with pre and post award grant development and support. Anticipated: 8 FTEs.
* Research support - providing faculty members with project management, help in facilitating research with community groups and health care providers in the region, data management, and biostatistical expertise. We collaborate with our regional partners to develop our capacity in this area, but we would expect UC Merced to be the central location for this support. Anticipated: 8 to 10 FTEs.
* Research Scientists, Post-docs, and Visiting Academics - As with other research institutes, HSRI will host a number of grant-funded Research Scientists, post-doctoral fellows, and visiting academics. A conservative estimate would be that by 2020, we would have 6 to 8 Research Scientists, 4 to 6 post-doctoral fellows, and 4 visiting researchers. Anticipated: 16 FTEs.

Given this, HSRI is anticipated to require between 30 and 35 offices, one large meeting room, several smaller breakout rooms, and a central area for informal gathering.

**IV. Summary**

This strategic plan has outlined a vision for Human Health as a signature theme at UC Merced through 2020. In order to realize this vision, UC Merced needs to be prepared to continue to invest in health research and education. The specific steps include:

1. *Health researchers and interdisciplinary health research programs* 
   * HSRI will continue to support faculty in securing grant funding and developing successful research projects
   * HSRI will continue to work with faculty to develop interdisciplinary health research programs
   * Resource needs:
     + Continued funding of HSRI through the annual budget cycles
2. *Medical Education* 
   * HSRI works with the Senate to convene a committee of UC Merced faculty to explore the feasibility of adopting a JMP-style Medical Education model for UC Merced/UCSF-Fresno. (Spring 2014)
   * As part of this process, HSRI commissions a feasibility study to identify more fully the resources that would be required to implement the model and the financial support that is available in the region to support such a model. (Fall 2014)
   * Once the plan is finalized, UC Merced hires a faculty member with the appropriate background to lead the development of the program (advertise in Fall 2014 to start in Fall 2015)
   * HSRI commits to assisting in process until and after the introduction of the Medical Education program (Fall 2017)
   * Resource needs
     + Funding for feasibility study
     + Majority of funding should be provided by donors/external sources
3. Research facilities
   * HSRI works with the Office of Research & Economic Development to develop a committee to review health-related facilities needs (Spring 2014)
   * For those facilities identified as meeting the needs of external partners, HSRI works with faculty and external agencies to develop business plans including recharge rates, host institution, and funding sources (ongoing)
   * HSRI works with Office of Development & Alumni Relations to identify foundation and donor support for key research facilities (ongoing)
   * Resource needs:
     + The management of facilities will need to be coordinated with the Office of Research.
4. Translational Research Center
   * HSRI will work with regional partners to develop a translational research center (ongoing, with proposed center by September of 2014)
   * Resource needs:
     + Can be provided with HSRI's existing resources
5. HSRI physical presence
   * Health Sciences Research and Education Building (HSREB) that would house the groups associate with Medical Education or health research.

**4) Impact metrics including enrollment and FTE actuals and estimates**

HSRI's ultimate goal is to be identified as a top-40 institution in health research in the US by 2020. Since we will achieve this only through having world-renowned faculty, HSRI's ultimate metric is the degree to which we support our affiliated faculty. While these are subject to review and amendment, we are assessing our success accordingly.

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| --- | --- | --- |
| **Area** | **Specific Strategies/Activities** | **Metrics** |
| **Health Researchers and research programs** | Assist faculty with grant submissions | Submit 2-3 grants per month |
| Develop  research  MOUs with major health care providers in the San Joaquin Valley | Faculty report being able to quickly establish research projects with area hospitals and healthcare providers |
| Assist faculty to develop research projects  with health care providers in the San Joaquin Valley | Five to ten research projects with major healthcare partners at any one time |
| Increase research productivity | Faculty research output average of 4 to 7 publications per year, depending on the discipline |
| Research influence | High average H-index among faculty  Faculty appearing regularly in state and national media |
| Teaching and training | Training grants organized by HSRI to support graduate students |
| **Medical education** | Facilitate discussions and decisions about Medical Education | HSRI plays a leadership role in Medical Education |
| **Research** **facilities** | Identify and prioritize health facilities | Annual plan outlining the key health research facility needs on campus |
| Secure funding for key research clusters | Key research facilities have sufficient funding |

|  |  |  |
| --- | --- | --- |
| **Promote Translational Research** | Develop  and promote  a Translational Research Center in partnership with other regional universities and healthcare providers | Financially viable TRC that is serving to connect HSRI researchers with community and clinical populations |
| **Operations** | Maintain governance structure using an Executive Committee of elected members | Support among HSRI faculty for governance and administration |
| Financial sustainability | Be on course for financial independence |

**5) Other supporting documents, such as charts or graphs**

Document 1 - Medical Education Summary:

U.C. Berkeley/UCSF Joint Medical Program (JMP)

The Joint Medical Program (JMP) is an accredited, five-year Master of Science/Medical Doctorate Program at the University of California. The program is coordinated by UCSF, with students spending their first three years at UC Berkeley and their last two (clinical) years at UCSF.

Admission - The JMP students are admitted through UCSF, with students applying directly to the JMP program. The selection committee includes representatives from UCSF and UC Berkeley.

There are forty-eight students enrolled in the UC Berkeley JMP, 16 in each of three classes.

Years 1, 2 and 3 - JMP students spend their first three years on the UC Berkeley campus. The medical education "exposes students to the human, sociocultural and bioethical dimensions of health and disease," including the "complex interrelated nature of health, illness, and community while promoting discovery, self-reflection, and life-long learning." [http://jmp.berkeley.edu/] The program focuses on providing students with an understanding of the social, behavioral, and ethical aspects of medicine by covering three areas:

1. Pre-clinical medical curriculum
2. Clinical skills
3. Health and Medical Sciences

Except for the initial human anatomy course, the pre-clinical medical curriculum is based on an entirely Problem-Based Learning model (PBL). The pre-clinical curriculum constitutes more than 2/3 of the time commitment of JMP students during the 3-year course. The clinical skills course prepares students to demonstrate readiness for clinical rotations at UCSF beginning in April of the third year. The health & medical sciences curriculum leads to a research-based masters degree awarded through the School of Public Health.

Thus, students emerge from the UC Berkeley years with a Master of Science (Health & Medical Sciences) and the preparation needed to join their UCSF medical student counterparts in the clinical training years (Years 4 and 5) at UCSF.

Management of the JMP - As the Degree Granting Institution, oversight and responsibility for the Medical Education program lies with UCSF, with UC Berkeley having responsibility and control over the curriculum for the Master of Science (Health & Medical Sciences). The JMP program at UC Berkeley is overseen by the School of Public Health (SPH) and managed by two UC Berkeley faculty members assigned to the program with contribution from other UC Berkeley School of Public Health faculty. The two JMP-assigned faculty have other UC duties as well, with one having a shared appointment with UCSF and their other having responsibilities within the SPH.

The medical school curriculum is reviewed and approved by the relevant graduate faculty of both UCSF and UC Berkeley; the public health curriculum is reviewed and approved by the relevant School of Public Health and overall campus committees of UC Berkeley.

Resources required to administer the JMP program at UC Berkeley

*Physical space requirements* - The JMP program is housed in one floor of a building on campus. The space required for the pre-clinical PBL program physical facilities of the JMP include office and classroom space occupying approximately ¾ of one floor of University Hall on the UC Berkeley campus. The only formal laboratory component of the medical curriculum is the human anatomy course that students take during the first summer enrolled in the JMP. The course is conducted in the human anatomy laboratory on the UC Berkeley campus. The PBL program requires no other special lab or teaching facilities.

*Administrative staff* - Admissions, student services, curriculum supervision, and other administrative activities require approximately 4 FTE staff.

*Oversight of the program* - As mentioned above, two UC Berkeley faculty are assigned to the program, both of whom have other duties. Total of 1 to 2 FTEs.

*Administering the problem based learning curriculum* - The PBL curriculum is presented to students by two groups of educators: faculty Tutors and faculty Stewards. For ease of understanding, Tutors can be thought of as the “front-line educators” (e.g. with direct teaching role responsibilities), whereas Stewards can be thought of as “course directors/administrators” (e.g. with curriculum oversight role responsibilities).

Tutors attend thrice-weekly formal sessions of small groups of eight students with sequential disclosure of case material—once case per week. Tutors and student groups are assigned together for 8 weeks (1/2 a UC Berkeley semester); the tutor spends 7.5 hours per week in meetings with the student group during the 8 weeks. At the UC Berkeley JMP, the PBL program requires participation of 12 tutors during the Fall semester and 10 tutors during the Spring semester (2 groups of 8 students in each class, two 8-week sessions per semester; third-year students participate in PBL meetings only during the first-half of the Spring semester). This permits the pre-clinical curriculum to end in February, thereby freeing students to have a protected 5-6 week period of intense studying for a nationally required licensing exam. Graduates matriculate to the UCSF third year, which begins in April. The two UC Berkeley faculty assigned to the JMP each serve as a tutor once each year. Two other UC Berkeley School of Public Health faculty serve as tutors; the majority of tutors are community physicians who do not have other UC Berkeley responsibilities. For the Public Health faculty, two 8-week sessions as a tutor are judged the equivalent university workload of one class assignment. Tutors drawn from the community are often retired physicians; the JMP administrators report no difficulty in filling the tutor positions. Community members who serve as tutors are currently provided a stipend of $6000.

The PBL program incorporates UC Berkeley faculty supervision and assessments that do not involve the tutors in formal student evaluations. Direct control of the PBL curriculum and group and individual performance evaluations are the responsibility of Stewards, as well as the JMP “Head of Assessment.” During any 8-week session, the Steward takes responsibility for two 8-student groups. The JMP faculty includes 11 stewards of which two are UC Berkeley faculty members (biochemistry; physiology); the other stewards are not members of other UC Berkeley departments. The steward position is thought of as a 7% FTE (though in practice this is quite variable depending on both the ladder rank & faculty series of the individual faculty members).

Volunteer community members also participate in the PBL program as evaluators. Periodically through the year, these volunteers spend a two-session evaluation event with sequential individual students (Monday and Wednesday), presenting a PBL problem that is completed by the student without group support (called at the JMP, ‘triple-jumps’).

Summary of resources required to administer the PBL for 48 students for one year:

20 tutors @ $6000 per tutor = $120,000

10 Stewards @ 7% FTE = (approximately) 1 FTE

*Requirements for the* Health & Medical Sciences *program* – In support of their individualized masters’ degrees, JMP students take public health classes with other UC Berkeley students and commonly enroll at classes at UC Berkeley outside of the School of Public Health.