**Physician Scientist Initiative- TEMPLATE AND EXAMPLE**

**Rationale for Recruitment**

Dr. XXX is exceptional in his innovative and creative approach to complex problems, which makes him the type of visionary researcher suited to PSI recruitment. Since 1999, his work has focused on screening, risk stratifying, and treating pulmonary embolism (PE) using a rat model of PE that he developed and in human patients. For this work he has received peer-reviewed funding, US and foreign patents, and have published approximately 100 original peer-reviewed papers on screening, diagnosis, risk stratification, mechanisms of acute pulmonary hypertension, and treatment of acute pulmonary embolism. He is internationally recognized as the author of the PERC rule (<http://www.mdcalc.com/perc-rule-for-pulmonary-embolism>) a clinical decision instrument used thousands of times daily in EDs around the globe. In 2011, he created the Center for Thrombosis and Hemostasis (CETH) within the System. This initiative will unify diagnostic and treatment protocols for venous thrombosis and will provide a platform for research data collection. His CV, in which the number of patents, grants, and scholarly products are too numerous to mention, exemplifies his productivity as an inventor and researcher, but also his outstanding mentorship. He also has experience with technology transfer having cofounded two companies that each has one medical device related to diagnosis of PE in final stages of clearance from the FDA. During his career he has mentored more than 20 residents and research fellows, most of who have gone on to productive academic careers. His career is successful by anyone’s standards however it becomes even more impressive when one recognizes that he has accomplished this at a Medical Center not a University. This leads one to speculate what he might achieve in a research environment that encourages collaboration, innovation, and scholarly productivity.

**Departmental Role**

Dr is being recruited as the Vice Chair of Research. The rationale is four-fold.

*First*, he brings substantial experience in the development of successful research infrastructure to the IUDEM. His basic science laboratory and clinical trials network at Carolinas were built from scratch. This expertise in designing and implementing a research network from the ground-up will be instrumental in developing a research framework for the IUDEM. We have three substantial assets that poise the IUDEM for research excellence: 1) our size; we are the largest academic Emergency Department in the country with >435,000 patient visits a year, 2) pre-hospital network; we are the nations only major city with a unified citywide, EMS system, 3) an integrated medical record system and access to a cohesive electronic database providing an opportunity to conduct outcomes based research that would be impossible to perform elsewhere. While these assets are great strengths, we currently lack the faculty and research infrastructure to take advantage of these attributes. Jeff Kline has the background, know how, and leadership skills to establish these critical systems for the IUDEM. Further, as one of the most preeminent research minds in emergency medicine Kline will be a rainmaker in terms of faculty mentorship and recruitment.

*Second,* in his position, would lead a program focused on developing innovative tools to exclude and diagnose, risk stratify, and treat life threatening cardiovascular and pulmonary diseases with special emphasis on venous thrombosis.

*Third,* in partnership with the XY Research and Technology Corporation is poised to deliver substantial technology transfer through new or existing intellectual property licensing. Continuing projects include:

* Pretest Consult: device is the first PE related diagnostic noted above.(IP position: US Patent Pending; Australian Patent issued to Kline “System and Method For Evaluating Pretest Probabilities of Life-Threatening Diseases”; US copyright “Computerized Attribute Matching to Predict an Outcome” to Kline)
* Breathscreen: Using existing patents and prior work, he will fund and build a new sidestream breath-based diagnostic device, perform a new clinical trial, and submit the results to the FDA for clearance of the device as an aid in the diagnosis and exclusion of major PE.
* Pneumotrap: XX will complete phase I trial at his current institution, then use the preliminary data to raise money to fund the devices manufacture and conduct of a pivotal clinical trial in anticipation of submission to FDA for 510K clearance using procalcitoinin as predicate

Examples of new projects:

* Resubmit [UM1HL113203-01 to NHLBI “Randomized Trial of Inhaled Nitric Oxide to Treat Acute Pulmonary Embolism” (Total $3,024,056.00).](file:///\\dcr-vsfl3-ms-03\Users-R3\jkline01\CV\2011\KLINE_CV_2011%20Oct.doc)
* Design and execution of RCT with corporate partner/NIH to test POMPE-C as a tool to allow outpatient treatment of incidental PE in patients undergoing staging imaging for cancer. Goal is FDA clearance to use POMPE-C as adjunct to apixiban. <http://www.studymaker.com/projects/pompe/index.php>
* Development of a low-cost smart phone application that predicts the D-dimer concentration. This does not require FDA submission, but is potentially copyrightable.
* Development of bedside psychoautonomic diagnostic tool that uses facial recognition, skin galvometry, and bispectral EEG together with clinician derived predictor variables to estimate probability of life threatening cause of any pain complaint in the ED setting (preliminary data only on facial recognition part)
* Test of carbonic anhydrase-1 as biomarker of hemolysis (patent pending).

*Fourth,* He will create a clinical research fellowship for the SOM. The research fellowship is a fundamental building block for the long term success of the research program for it will serve as a means to identify, train and successfully mentor to funding, a cadre of new clinician scientists for central Indiana and the nation. Last year, the National Heart, Lung, and Blood Institute (NHLBI) for the first time ever provided a K-12 grant mechanism for institutional research career development awards to promote multidisciplinary clinical research training programs in EM and PedsEM. While such NIH K offerings are not guaranteed, viewed in the context of our institutional and clinical assets, and with the development of our research infrastructure, clinical trials program, technology transfer applications, and fellowship training programs the IUDEM would be a natural fit for future RFPs of this type.

In addition to the direct impact Dr. would have on our department, there is a significant potential for developing scientific collaborations and for the creation of a center for thrombosis and hemostasis. Jeff’s work has immediate applicability for collaborative projects with a number of outstanding local researchers. He will be meeting with potential collaborators during his upcoming visit (draft itinerary attached) to gain both a better understanding of the culture of our scientific community as well as identify future collaborators. Furthermore, at his current institution, Jeff has established a center for excellence in thrombosis and hemostasis. With IU Health being one of the premier health care systems in the country and with a research focus on cardiovascular disease and cancer research, a similar hemostasis and thrombosis institute housed with the school of Medicine and IU health would be a natural fit.

**Potential Partner Departments**

Discussions with potential partner departments are preliminary at this time. The Department of Physiology has indicated they are a potential partner, however, the final decision will rest with the Basic Science Council.

Dr X has indicated his initial need for laboratory space can be largely met by a core facility that provides centrifuge and -80F freezer space. Space and resources to restart his rat model and associated studies is an additional need.

**Five-Year Plan for Programmatic Development**

Year 1

* Establish Clinical Research Fellowship submit first call for fellows
* Establish network and begin the development of infrastructure for emergency cardiovascular and pulmonary clinical research trials utilizing existing IU Health, IU School of Medicine, and Methodist Research Foundation resources.
* In conjunction with the Department of Physiology, establish a basic science laboratory capable of blood sample analysis including measuring platelet function, oxygen consumption
* Submit three federal grants for funding

Year 2

* Begin clinical trials at academic sites and continue basic science research program
* Develop significant collaboration with engineering, computer science, psychology for beta testing of psychoautonomic diagnostic device
* Submit an Institutional Research Training Grant (IRTG) to SAEM ($150,000). Resubmit NIH grants as determined by round one scores
* Begin training of first IUDEM research fellow recruit second fellow

Year 3

* Expand clinical trials to the community utilizing IU Health partners and the Regenstrief health records system to track outcomes.
* Submit a T32 training award application
* Initiate grant based activity from NIH submissions
* Maintain fellowship recruitment and training

Year 4

* Identify funding and support for the development of a Center for Thrombosis and Hemostasis
* Be named as a regular reviewer for an NIH review panel
* Develop an advocacy group for research in diagnosis and treatment of venous thromboembolic disease
* Begin training of third IUDEM research fellow recruit fourth fellow
* Maintain fellowship recruitment and training

Year 5

* Establish the IU School of Medicine and IU Health Center for Thrombosis and Hemostasis.
* Maintain fellowship recruitment and training