

SSPPS STRATEGIC PLAN

Pharmacy Education, Pharmaceutical Sciences Research, Clinical Pharmacy Practice

April 30, 2012

Overview

Here we present the 2012-2017 strategic plan for the Skaggs School of Pharmacy and Pharmaceutical Sciences (SSPPS). The plan emanates from the work of three committees and has been reviewed and approved by the entire faculty. The plan describes overarching goals and objectives in research, education, and clinical practice that will enable the SSPPS to fulfill its mission. The next step will be to develop an implementation plan that will include specific areas for faculty recruitment.

Mission

A. Educational Excellence in Pharmacy and Pharmaceutical Sciences

1. Provide a premier professional education program leading to the Pharm.D. degree and postgraduate programs including residencies and fellowships
2. Prepare students to be leaders in the profession of pharmacy and to provide them with the tools to practice effectively in a wide variety of currently existing and potential future roles in hospitals and medical centers, community pharmacy settings, academia, government and the pharmaceutical industry
3. Provide graduate education programs in the pharmaceutical and biomedical sciences leading to the Ph.D. degree
4. Promote interdisciplinary education and cooperation among pharmacy, medicine and other healthcare disciplines

B. Research Innovation in Pharmaceutical Sciences and Pharmacy Practice

5. Develop and maintain research initiatives in the basic, translational, clinical and computational sciences to discover new knowledge and new approaches to enhance health care
6. Foster collaboration with the UC San Diego Schools of Medicine and Engineering, the Supercomputer Center, the Scripps Institution of Oceanography, the UC San Diego general campus, La Jolla area research institutes, biotechnology firms, and health systems to enhance and expand research opportunities

C. Excellence in Pharmacy Practice and Community Service

7. Become a center of excellence in translational clinical pharmacy with emphasis on collaborative care and innovative practice models
8. Serve as a resource center for dissemination of drug, toxicology and pharmacogenomic information for health professionals and the public

Background

Since opening in 2002, the SSPPS has risen rapidly to the top ranks of the 115 accredited pharmacy schools in the United States. The SSPPS has achieved distinction for the stellar success of its students and graduates, the high caliber of its research and clinical programs, and its leadership in the community. The SSPPS currently has approximately 42 full-time salaried faculty members, a student body of 238 Pharm. D. students, and 30 pharmacy residents in training. Pharmacy students share curricula with UC San Diego medical students, a novel interdisciplinary model that enriches the student experience and prepares both Pharm.D. and M.D. practitioners to work together as members of the patient care team. At this time approximately 60% of SSPPS graduates pursue specialty training through residencies; 100% pass the national licensure board exam, and 98% pass the California licensure board exam on their first sitting.

Through internationally recognized programs in a variety of areas of basic and clinical research, the SSPPS ranks 7th among pharmacy schools in National Institutes of Health (NIH) total awards, and 1st in awarded NIH dollars per full-time faculty member, with total grant funding in 2011 exceeding \$27 million. The rapid rise to preeminence of the SSPPS as a major academic and research center has been fueled by interdisciplinary interactions with other units throughout the UC San Diego campus, in the surrounding research and biotechnology community, and elsewhere nationally and internationally. These collaborations and the resulting therapeutic advances contribute in turn to the economic vitality of the region and to the health of patients who benefit from these discoveries. Furthermore, the participation of students in basic, translational, and clinical research positions them to become leaders in clinical innovation as well as in scientific discovery.

Clinical pharmacy faculty in the SSPPS play leadership roles in a variety of novel programs at the local, regional, state, national, and international levels that are designed to improve outcomes and decrease costs and adverse events associated with medication therapy. Through close collaboration with other healthcare professionals within UC San Diego, SSPPS faculty lead hospitals and clinics that enhance care of patients with cardiovascular diseases, diabetes, infectious diseases, and kidney diseases among others. Faculty are also developing a variety of other approaches—using information technology, creating novel continuing education programs, and implementing technology for medication monitoring—to expand and improve pharmacist-provided patient care. In the growing area of pharmacogenomics, in particular, SSPPS faculty are national leaders in developing new programs to educate health care practitioners and students in the clinical applications of genomic information to optimize drug therapy.

Education and Training Strategic Plan

The SSPPS has an overarching vision to educate and train doctorates of pharmacy and post-doctoral scholars to become leaders of the profession. To supply this forward thinking education, the SSPPS rigorously trains doctorates of pharmacy with a strong scientific foundation in biomedical education combined with an advanced clinical pharmacy practice. Our ultimate goal is to provide an exceptional educational experience that embraces effective new models and methods for teaching and to encourage a scholarly attitude to inspire students for a future of life-long learning, innovation and entrepreneurship. We will prepare leaders in the field who will bring about innovative changes in the discovery, delivery, and use of safe and effective medicines.

Goal 1. Provide a strong educational foundation in the following three areas as they relate both to the clinical practice of pharmacy and the generation of new knowledge

- a) Basic biomedical sciences
- b) Pharmaceutical sciences
- c) Clinical sciences

Goal 2. Continuously develop a curriculum that fosters student engagement with clinical and basic sciences faculty. Examples include:

- a) Required Student Research Project
- b) Joint degree programs (e.g. Pharm.D./Ph.D., Pharm.D./MBA, Pharm.D./MPH, Pharm.D./MAS)

Goal 3. Provide and innovate interdisciplinary learning and teaching in the basic and clinical sciences based upon the founding principles of the SSPPS

- a) Continue to draw on the strength of the collaborative curriculum within the UC San Diego Health Sciences
- b) Provide a collaborative education with other health professions
- c) Develop collaborative educational opportunities with other disciplines such as the life and physical sciences, engineering, law, and business

Goal 4. Incorporate effective new teaching technologies and modalities so as to advance the training and professionalism of pharmacy students

- a) Maximize the use of new technological advances in information gathering and generation for an optimal learning environment. Harness the power of technology to individualize student learning
- b) Promote interactive learning and team building through utilization of small groups and clinical simulation modalities
- c) Provide education of pharmacy professionals that is broad based and includes teaching of healthcare systems, electronic medical records, and related topics as they emerge or are anticipated to emerge in the field
- d) Continue to develop the curriculum content to incorporate new knowledge and research; identify ways to interface shared content across courses, to include where appropriate, shared lecture material with other schools or for lifelong education

Goal 5. Become a leader in national and international learning and research, a widely recognized strength and overarching theme within UC San Diego

- a) Develop our experiential, graduate and post-graduate programs nationally and internationally
- b) Develop a 10 year educational and research plan with new international medical affiliations
- c) Continue to develop global exchange programs with Schools of Pharmacy and other health science professionals in Asia, Europe, Africa, and South America
- d) Partner with other Skaggs Schools of Pharmacy through the Skaggs Symposium and various other synergistic activities

Pharmaceutical Sciences Research Strategic Plan

The vision of pharmaceutical sciences research in the SSPPS is to improve human health by discovering new therapeutic strategies and improving the efficacy and safety of therapy with existing medications. In drug discovery, we will build upon our strengths and opportunities in target identification, lead compound discovery, pharmacological bioassays, and drug disposition and pharmaceuticals, coupled to state-of-the-art technologies that enhance basic and translational research (Figure 1). The recently established UC San Diego Drug Discovery Institute (DDI) will be an important vehicle for strengthening the existing partnerships between the SSPPS, the School of Medicine, Scripps Institution of Oceanography, several main campus departments, local research institutes, and pharmaceutical and biotechnology companies. Through these and innovative new partnerships, SSPPS faculty will utilize knowledge of human disease mechanisms as opportunities for identifying new targets for drug discovery and new therapeutic agents to address unmet medical needs for improving human health. In support of drug discovery, the SSPPS will build on its university-wide leadership in enabling technologies such as mass spectrometry, nuclear magnetic resonance, natural products chemistry and chemical biology, and computational drug design.

Expanding our efforts in clinical health services and outcomes research will be our second major focus. We will work in close collaboration with the Clinical and Translational Research Institute (CTRI), and numerous clinical programs at UC San Diego, to train new investigators in translational research and to bring new therapeutic agents into clinical practice. Clinical pharmacy faculty will lead efforts within UC San Diego Health Sciences to establish research areas focused on developing, implementing and evaluating innovative practice models and applying economic, clinical and humanistic outcome measures to enhance the quality of health system interventions.

Our strategic goals for research encompass four broad areas:

Goal 1. Apply knowledge of human disease mechanisms in new strategies for discovering therapeutic agents to improve human health

- a) Identify unmet therapeutic needs in human diseases
- b) Collaborate with other faculty in UC San Diego Health Sciences and main campus departments to define fundamental human disease mechanisms, novel biological models of pathogenesis, and key opportunities in target identification and drug discovery
- c) Partner with La Jolla Mesa research organizations (Salk Institute, The Scripps Research Institute, Sanford-Burnham Institute, La Jolla Institute for Allergy and Immunology, J. Craig Venter Institute and others) to optimize strategies for curing human disease
- d) Partner with pharmaceutical industry and biotechnology firms in strategic therapeutic areas for human disease cures

Goal 2. Expand drug discovery and development to enhance translational research

- a) Develop Center Grants, Program Project Grants, T32 Training Grants, industrial partnerships, and related funding mechanisms to build new opportunities based on the unique strengths of SSPPS and UC San Diego faculty in translational sciences
- b) Enhance and implement computational drug design strategies aligned with expertise in structural biology
- c) Implement a compound screening program composed of marine natural products and other diverse small molecules, and enhance this effort through partnerships within as well as outside the University for a thorough evaluation of small molecule drug candidates in disease relevant assays

- d) Continue pioneering, innovative chemical biology approaches to produce natural products and their derivatives for pharmaceutical evaluation
- e) Expand medicinal chemistry expertise for drug design and synthesis
- f) Develop systems pharmacology applications for drug discovery, including bioinformatics and systems biology analyses to define new drug targets, detrimental off-targets and drug mechanisms
- g) Develop pharmacogenomics and pharmacoproteomics programs for personalized medicine
- h) Develop a leading program in drug disposition and pharmaceuticals
- i) Develop expertise in biopharmaceuticals

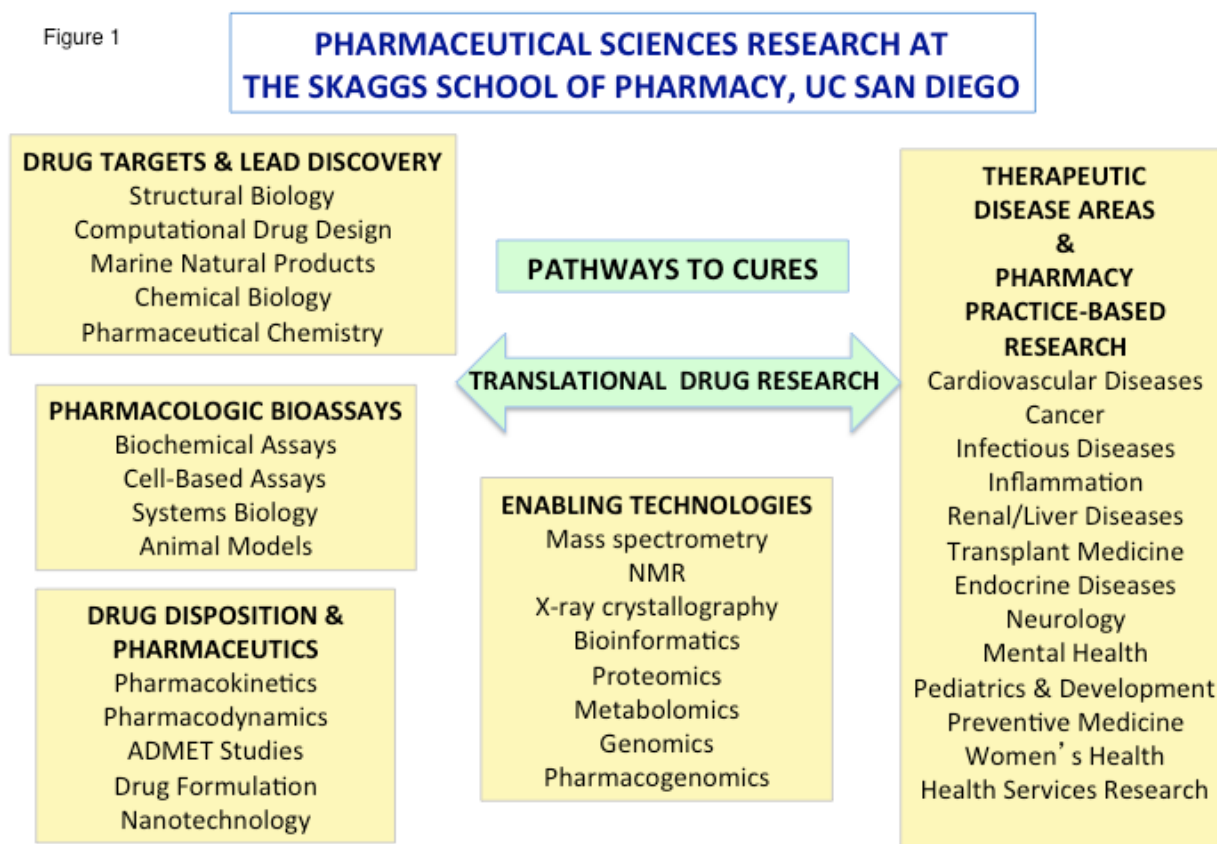
Goal 3. Develop innovative technologies for pharmaceutical sciences research

- a) Continue implementing top-notch mass spectrometry technologies for proteomics, peptidomics, metabolomics, biomarkers, and chemical structure determination
- b) Continue implementing state-of-the-art NMR and X-ray crystallography analyses of protein structures
- c) Continue to develop novel drug delivery strategies, including nanotechnology

Goal 4. Build excellence in health services and outcomes research

- a) Develop, implement, and evaluate Medication Therapy Management and pharmacy practice models that are innovative, sustainable, quality-driven, and cost-effective in various therapeutic areas
- b) Evaluate educational and clinical interventions programs designed to improve knowledge, attitudes, self-efficacy, and adherence behavior of patients and providers
- c) Conduct population-based studies of medication and service utilization that apply economic, clinical, and humanistic outcome principles
- d) Conduct research using clinical bioinformatics tools for medication safety surveillance and medication reconciliation
- e) Create and evaluate research programs that improve delivery of clinical testing (e.g., pharmacogenomics), patient and provider behavior, and clinical outcome measures
- f) Engage in Phase III or Phase IV clinical studies to test effectiveness of pharmacologic agents in the treatment of disease
- g) Partner with UC San Diego and other health systems in pharmacy practice and medication related clinical research

Figure 1



Clinical Pharmacy Practice Strategic Plan

The vision of SSPPS clinical pharmacy is to deliver excellence in translational clinical pharmacy with emphasis on collaborative care and innovative practice models. To reach this vision, the faculty, staff and leadership of the SSPPS are committed to the following five goals:

Goal 1. Design, develop, implement and disseminate innovative, inter-professional, financially-sustainable, and cost-effective pharmacist practice models

- a) Build innovative, entrepreneurial and sustainable business models
- b) Market to a wider network of healthcare providers and consumers
- c) Incorporate perspectives from inpatient, ambulatory care, community and population-based practice settings
- d) Establish a robust clinical telepharmacy service
- e) Integrate the role of the pharmacist into the medical home model
- f) Enhance excellence in pharmacist-provided patient care

Goal 2. Build on the unique expertise and position of pharmacists to improve the efficacy and safety of medication therapy

- a) Create a locus of excellence in medication safety
- b) Respond to medication needs in health care reform (e.g., Medicare Part D, medication coverage, safety monitoring)
- c) Promote and enhance health literacy
- d) Design, implement, and evaluate medication use systems and technologies (e.g., barcoding, electronic decision support and best practice alerts, robotics, tablets and other devices, video, electronic medical records)
- e) Implement strategies to optimize safe and effective medication use

Goal 3. Use health information technology for clinical service

- a) Design, implement, and evaluate technologies for pharmacotherapy consultation services and medication counseling (e.g., tablets, video, electronic medical records)
- b) Implement and evaluate technology to facilitate medication monitoring for safety and efficacy (e.g. – remote BP monitoring, glucose monitoring, etc.)
- c) Utilize informatics tools to enhance the safe and effective practice of clinical pharmacy

Goal 4. Collaborate with healthcare professionals outside UC San Diego at local, regional, national, global levels

- a) Provide inter-professional opportunities in clinical areas (e.g., anticoagulation, pain management, diabetes, cardiovascular, infectious diseases, transplant, psychiatry, internal medicine, family medicine, pediatrics, geriatrics, critical care, chronic kidney disease, pharmacometrics, pharmacoeconomics, pharmacogenomics)
- b) Create pharmacy curricula for developing clinical programs

Goal 5. Develop and expand community partnerships

- a) Educate patients, caregivers, and the wider community about health issues and medication use (including underserved patients and free clinic service)
- b) Conduct health screening, immunization, and health specific events
- c) Collaborate with community leaders and organizations to implement health and medication use programs to improve the health of the community