

Concept Paper

Goal 1: Educate world leaders to advance veterinary medical practice, academic veterinary medicine, public and environmental health

Background: The faculty and staff of the University of California, Davis School of Veterinary Medicine (UCD SVM) have identified veterinary education as one of its strategic goals. Through the professional Doctor of Veterinary Medicine (DVM) curriculum, contributions to undergraduate education, advanced clinical residencies, and outstanding Master of Science (MS), Master of Public Health (MPH), Master of Preventive Veterinary Medicine (MPVM) and Doctoral (PhD) graduate studies, the school provides top quality educational experiences to support students and colleagues as leaders in veterinary medicine. The school specifically engages its collective community in the advancement of the profession through the broad spectrum of career opportunities in academia, industry, government, private practice, and in public health. An important bridging approach embedded within the School's educational missions is One Health, a growing area of the veterinary profession, which seeks to advance the health of animals, people, and the environment. To develop plans focusing efforts on this important goal, the school reviewed its academic programs, summarized its achievements and explored the lessons learned in the last seven years. This analysis addresses the key areas of DVM educational experiences including admission, curriculum, and outcomes assessment. It also addresses graduate academic education, undergraduate education, international programs, diversity, student support services and resources.

The School seeks to attract and mentor exceptional and diverse candidates for the DVM degree. In 2013, the UCD SVM implemented a new admission process with the overarching goal of recruiting the highest caliber DVM candidates with both outstanding academic performance and behaviors and values thought to be important by the faculty for a career as a veterinarian. At the same time, the revision of the admission process aimed to sustain or increase student diversity demographics and intended career path. Since 2013, the school has attracted more than 1,000 applicants for the admission process each year. Admitted students' grade point average has increased to the current 3.7 ranking UCD SVM second nationally among veterinary colleges, as well as, increasing the recruitment of students with diverse backgrounds and career aspirations.

The current curriculum was designed and implemented in 2012. The focus of curricular changes was to provide a strong core integrated by discipline between basic and clinical sciences and comparative across species. Curricular enhancements were also developed to promote critical thinking, problem solving and lifelong learning skills. Central to the curricular modification were the ideals of content immersion (system versus discipline), introduction of adult learning techniques (problem based learning and self-directed learning) and targeted outcome assessment focusing on entry-level veterinary knowledge, skills, and competencies. This paradigm shift in veterinary student education has prompted the development of a robust teaching academy at UCD SVM with the primary goal of educating faculty in new pedagogical techniques focusing on student self-directed learning, active learning strategies, and incorporating research of best practices in the classroom; thereby, providing a

continued enhancement of curriculum developments. The UCD SVM has reported program outcomes documented in the AVMA/AAVMC Council of Education Interim Accreditation Reports. The school currently has a low student attrition rate of 1%, a high pass rate of ~98% on the national board exam, and a student employment rate of >90% for those seeking positions at the time of graduation.

Faculty and staff in the UCD SVM support the education of approximately 100 graduate academic students in 15 of the 99 graduate groups on the UCD campus. Of particular note is the combined degree DVM/Ph.D. program which has continued to attract top candidates with 19 and 26 applicants in 2016 and 2017, respectively. The DVM/ Ph.D. program supports five students in the 2017-2018 academic year, this represents an acceptance rate lower than 5%. The Office of Research and Graduate Education administers programs that provide research experiences to students in the DVM curriculum including STAR, GSSP, and YEAR programs. These programs are designed to give veterinary students access to summer research experiences, and provide stable funding for dual degree students in the VSTP program.

Graduate student research training and mentoring is an essential component of the School of Veterinary Medicine. The School is the administrative home to four graduate groups; Comparative Pathology, Epidemiology, Immunology, and Preventative Veterinary Medicine. In addition, SVM faculty are participate in a large number of graduate programs administered through the UCD Office of Graduate Studies, ranging from Pharmacology and Toxicology, Neurosciences, Molecular, Cellular and Integrative Physiology, to Bioengineering and Genetics. Faculty in the School serve as primary mentors to over 100 graduate students representing a full spectrum of basic and applied dissertation projects. The School supports graduate education through GSSP funding, a variety of internal grant funding mechanisms, mentoring support for fellowship applications, office space for dedicated staff for each program, coordination of class room and laboratory support, and conference and recruitment funds.

While not the primary focus of the UCD SVM faculty, contributions to undergraduate education, which enhances our connections to the main campus and serves to prepare students for admissions to our professional veterinary and graduate programs. Faculty participate in or lead diverse courses across campus in programs such as Animal Science and Biological Sciences. As an example, the increase in national awareness of global health and the role of animal health therein has fostered the development of a new undergraduate major at UCD, Global Disease Biology. The SVM Office for Global Programs has a strong track record of supporting students in international veterinary medicine. From 2014-2017, the number of students involved in global programs has increased steadily from 25 students in the 2014-15 academic year to 30 students in 2015-16 and 35 students in 2016-17. Students enrolled in the program have completed research and externships in more than 20 different countries. The Office serves DVM students, as well as graduate students and faculty of the School.

Through the new admission process and development of the Career, Leadership and Wellness Center (CLaW), the SVM has implemented methods to foster an environment of inclusion. The efforts

supporting diversity have focused upon developing a DVM candidate pool that accurately represents the population of California. Table 1 provides data for the classes of 2017 through 2021 showing that the number of underrepresented minority students admitted has increased under the current admission process, despite the limited number of underrepresented minority applicants. UCD SVM continues to have a diverse class of graduates based on chosen career paths in academics/research teaching, private practice/specialty practice, and public health.

Table - Number of students in classes by ethnicity group

Ethnicity Group	Number of Students in Classes					
	Class Of:	2017	2018	2019	2020	2021
African American/Black		0	1	1	1	1
African Indian/Alaskan Native		0	0	0	0	0
Asian		15	24	28	30	30
Hispanic, Latino, or of Spanish Origin		2	5	5	7	7
Native Hawaiian or other Pacific Islander		2	0	0	0	0
Multi-Ethnic		17	17	19	24	26
White/Caucasian		102	93	87	83	83
Total Applicants		138	140	140	145	147
<i>Proportion of underrepresented minority students</i>		<i>26%</i>	<i>34%</i>	<i>38%</i>	<i>43%</i>	<i>44%</i>

DVM students graduating from UC Davis have lower than average debt load compared to the national data. Student scholarships remain a top priority for the School and our scholarship endowment has grown to \$67 million. This endowment earns \$2.7 million each year and this \$2.7 million in addition to the return-to-aid from Professional Fees (\$2 million) and return-to-aid from student tuition (also \$2 million) is allocated to students annually to offset the cost of tuition and fees. For the class of 2016, the median student debt was \$101,302 and the mean was \$96,673. Across all US veterinary schools, the median student debt for all students in the class of 2016 was \$150,197 and the mean was \$132,901. The UC Davis SVM facilities were renovated beginning in 2012 to increase the number of small group learning spaces to accommodate the changes in teaching style and focus. The rooms were equipped with video-capture equipment to facilitate client communication labs where students' client communication sessions could be captured and available for review and self-assessment.

Lessons Learned: A review of the past seven years reveals substantial change in the area of veterinary education at UCD SVM. The school learned that major change is possible but difficult and best accomplished in ongoing, regular processes with multiple opportunities for improvement. Through curricular change, the school learned that incorporating new teaching techniques, technology, and delivery methods are important to assist with curricular enhancement. Further development of new methods and content area are needed to adapt to changes in learning styles, advancement in knowledge, and new areas of educational focus. The school's revised admission process has increased the diversity of the student population as well as the academic standing among veterinary schools in

the United States. Continued efforts and support in this area are a priority for further advancement of Goal 1. In order to continue to educate world leaders within the veterinary profession, it is necessary to attract and retain highly motivated, enthusiastic, and dedicated faculty that can lead and participate in the educational endeavors of the School. It is therefore necessary to invest in faculty professional development with respect to teaching and curriculum enhancement, as well as, provide administrative support. Strategies to promote faculty wellness and work life balance are a priority for supporting the school's mission of continued success.

Trends in Higher Education: There are 30 colleges or schools of veterinary medicine in the United States collectively graduating approximately 3,000 students each year. Class size nationally has risen by an average of 1.8% each year. The national median annual tuition is \$50,123 for out-of-state students and \$23,664 for in-state students. The 2017 American Veterinary Medical Association (AVMA) Report on Veterinary Markets states the mean debt acquired in veterinary college by 2016 graduates nationally was \$141,000. While 11.2% of students reported that they were graduating from a DVM program without debt, 5% reported student debt totaling more than \$300,000. When compared to the national labor market, the market for veterinarians was slower to react to the recession, has a smaller variation in the supply/demand ratio, and is considerably more volatile month to month. The total number of new veterinarians entering the profession in 2016 was 4,477, as represented by the number of exam takers who passed the North American Veterinary Licensing Examination (NAVLE).

The number of racially and/or ethnically underrepresented students currently stands at 17.4% of total enrollment across all colleges and schools. That figure continues to grow and has increased 134% since the Association of American Veterinary Medical Colleges (AAVMC) launched the Diversity Matters initiative in 2005. In 2016, industry employment, lower income and hourly compensation were negatively associated with compassion satisfaction, whereas employment in academia, living in a smaller community and increased age were positively associated with compassion satisfaction. Projected growth opportunities include recruitment of students of underrepresented minorities balancing the gender ratios to increase male students, recruitment of non-traditional students, enhancements of online learning and alternative educational technology, and clinical simulations.

Options and Strategic Opportunities for the Future: To educate world leaders to advance veterinary medical practice, academic veterinary medicine, public and environmental health requires a careful balance of providing world-class education, while attracting and maintaining exceptional talent from diverse backgrounds. To do so, the school will need to continue to attract stellar students to programs offered by the School and ensure proper resource allocation to meet changing trends. The School will need to increase institutional flexibility to accommodate change efficiently and effectively. It will be important to identify or leverage existing faculty development opportunities, such as the Teaching Academy, and provide tools to help manage fatigue and burn-out, creating a positive work and learning environment. This will require identification of both internal and external opportunities for collaboration and cooperation in program development. To strengthen the ability to meet societal

needs students will need to represent the demographics of the communities we seek to serve. New technologies such as online learning and telehealth will continue to be important to reach those we seek to educate.

Projected Costs: The School will be expected to maintain a considerable investment in this key strategic goal if it is to maintain its reputation as a world leader. These investments will be provided by a foundation of central support from the Provost's Allotment in our current budget model. To accomplish new initiatives the School will need to seek funding sources beyond the State of California including development and through partnerships with alumni, industry, government, and other academic units. For example, new initiatives to create new educational opportunities in business and financial knowledge and skills will require partners such as the Graduate School of Management. It is expected that staffing of laboratories and educational programs will continue to be a central part of the budget within the School.

Short and Long Term Plans:

- Continue to monitor and improve the recruitment process to attract the best professional and graduate students from California and beyond.
- Continue to provide a supportive environment for students that includes resources to offset the costs of education and enhancements of career knowledge and skills.
- Seek opportunities to support faculty and staff career development dedicated to education.
- Continue to assess the curriculum and opportunities to ensure that outcomes are accomplished and provide students with the highest quality of educational experiences worthy of a global leader in veterinary and graduate education.
- Seek opportunities to enhance educational experiences using the latest technology.
- Continue to promote diversity and inclusion in all aspects of the educational programs from recruitment to the environment/cultural experiences of our students and trainees.
- Promote multicultural experiences for students through global programs in education, research, and services.
- Enhance graduate programs through financial support, mentoring, and cutting-edge experiences to promote discovery of new knowledge and enhancement of creativity in research programs.
- Continue to provide wellness, career, and leadership programs to promote the development of leaders in academic, private practice, public health, and other career paths offered from our educational programs.
- Continue to establish collaborative partnerships with industry, government, and other academic units to enhance our educational delivery and program development.