

University of Nebraska-Lincoln

Institute of Agriculture and Natural Resources

**College of Agricultural Science and
Natural Resources**

**School of Veterinary Science
and Molecular Biosciences**

2022 Academic Program Review

BACKGROUND / EXECUTIVE SUMMARY

Overview

The School of Veterinary Medicine and Biomedical Sciences (SVMBS) is an academic unit within the UNL Institute of Agriculture and Natural Resources (IANR), and specifically within the College of Agricultural Science and Natural Resources (CASNR). SVMBS was formerly the Department of Veterinary Science until 2006, when the department was recognized as a school after the Professional Program for Veterinary Medicine (PPVM) was established with Iowa State University College of Veterinary Medicine (ISU-CVM). The SVMBS maintains strong research and training programs including undergraduate, graduate, and professional degree programs, and operates two additional large facilities to support and enhance the IANR mission. The Great Plains Veterinary Educational Center (GP-VEC) and the Nebraska Veterinary Diagnostic Center (NVDC) support the SVMBS mission: to advanced animal health and well-being and the One Health concept through discovery by innovative research; timely extension and outreach; accredited diagnostic services; high quality, affordable and accessible education to undergraduate, graduate, and professional students.

2022 Site Visit

The UNL SVMBS site visit was conducted on October 3-7, 2022, by an external review visit team consisting of Dr. Kim Dodd (chair), Dr. Amanda Fales-Williams, Dr. Alejandro (Alex) Ramirez, Dr. Jessica Robb, and Dr. Ruth Woiwode (IANR Faculty representative). Three students participated in portions of the review, including Ranger Gunville, Francine Watkins, and Jaden Carlson. This site visit report includes information provided in the UNL SVMBS self-study packet and appendices, on-site observations, as well as meetings and interviews with UNL SVMBS and associated personnel.

Major Findings

To capture the breadth and depth of the SVMBS mission, the following includes a summary of the strengths and challenges faced by the school, and recommendations to leverage capabilities and mitigate risks.

SVMBS Strengths

- **Faculty:** SVMBS faculty are nationally and internationally recognized for their expertise and contributions to their respective scientific fields. Research faculty are well-equipped and successfully lead collaborations internally and externally. Teaching faculty are clearly invested in ensuring individual student success at the undergraduate, graduate, and professional levels.
 - *Recommendations:*
 - Highlight SVMBS success stories to facilitate recognition of faculty contributions through newsletters and/or social media. This will enhance morale across faculty and increase SVMBS visibility. Specific efforts may be initiated through research programs, GP-VEC, NVDC, and/or PPVM.
- **PPVM program:** The PPVM provides unique intensive, hands-on, and customized training to ensure student success. Small class size, coupled with extensive efforts to enhance the

clinical skills laboratory, uniquely prepares students academically and technically for a successful transition to ISU-CVM in their third year. During a discussion at GP-VEC, a DVM student from another university made clear that she envied the hands-on opportunities offered at UNL, including the clinical skills laboratory. The PPVM is successful in its primary mission – to train the next generation of highly competent veterinarians to support Nebraska animal health, as evidenced by the fact that most graduates return to NE.

○ *Recommendations:*

- There is a great deal of discussion about expanding the PPVM program to include additional students per class. The two primary limitations are (1) space limitations at SVMBS and (2) importantly, ISU-CVM's stated position that they are unable to accommodate additional PPVM students. Due to the widely differing DVM programs across the country, it is not likely to be feasible to partner with another university without having to revamp the PPVM curriculum to meet that program's needs.
 - Before considering growth of the PPVM program, SVMBS must be confident that there are sufficient teaching FTEs to maintain (and grow) the teaching load required for the professional program. Much of the first- and- second year pathology courses are currently taught by faculty intending to retire in the coming months.
 - The existing agreement with ISU-CVM was established in 2007. Over the last 15 years, there have been changes to curricula and class sizes. It would be beneficial for the PPVM leadership to revisit the ISU-CVM Memorandum of Agreement to ensure shared vision and expectations for the future.
 - There are opportunities to continue to leverage the PPVM's unique capabilities and small class size to enhance veterinary education of students outside UNL/ISU, as seen with the new partnership with Long Island University. There are massive opportunities to recruit food animal-focused veterinary students at other universities for elective food animal rotations at GP-VEC.
- **Residency and graduate training opportunities:** small numbers of residents and graduate students at NVDC and GP-VEC, respectively, provide an intensive 1:1 training opportunity that is highly valued by graduates.
 - *Recommendation:*
 - Develop and support a community for graduate students and trainees, including all campuses.
 - **GP-VEC:** Through collaborations with USMARC, GP-VEC is uniquely situated as part of an extraordinary facility established to support high-priority research initiatives that are directly relevant to NE practitioners and producers. Access to this space provides unique training opportunities for UNL students, as well as DVM and animal science students across the country, in husbandry, clinical care, and necropsy.
 - *Recommendation:*
 - SVMBS and specifically, the GP-VEC leadership team, developed and maintain a mutually beneficial, collaborative partnership with USDA ARS at USMARC. Given that the USMARC is a restricted access federal facility, there

is an inherent risk in increasing the number of veterinary students attending GP-VEC each year. It is critical to ensure students (especially those attending as a mandatory rotation) understand the nature of the work they'll perform as well as the expectations for behavior – before they arrive at the facility. The relationship with USMARC is strong but USDA will not continue to host students if there are concerns or evidence of inappropriate student behavior.

- **NVDC:** The new laboratory building has extensive diagnostic capabilities, including substantial BSL-3 laboratory space, that can be used to support and enhance research initiatives.
 - *Recommendation:*
 - New commercial diagnostic laboratories are rapidly expanding their business models, and new local competitors have emerged in Lincoln. It's critical for the NVDC's continued success to develop a clear identity to leverage new business opportunities in the face of external competitors.
 - The unique BSL-3 research facility capabilities and select agent registration are a high-demand research capability that would support both research initiatives as well as federal partnerships through the NVDC.
 - The NVDC is uniquely poised to pursue additional federal funding to support fellows interested in public/animal health (Association of Public Health Laboratories) and building the next generation of diagnosticians (USDA).
- **Future leadership:** Early-mid career faculty across the SVMBS share great energy and a vision for the future of the School. Senior faculty actively integrate junior faculty in the Peer Review Committee, emphasizing collegiality and inclusivity, and demonstrated respect for faculty across all faculty streams (tenure and non-tenure).
 - *Recommendation:*
 - Early-mid career faculty scattered throughout the SVMBS are looking to the future with a focus on enhancing the UNL SVMBS mission – providing appropriate leadership and strategic planning training to these individuals would give them the tools to bring their ideas to the surface.

SVMBS Challenges

- **Visibility of SVMBS:** The PPVM, GP-VEC, and NVDC are all well-established within their respective stakeholder groups, but overall, there is limited visibility of the breadth of the SVMBS both within UNL and across the state.
 - *Recommendations:*
 - Utilize IANR resources to develop an active communication and marketing strategy and elevate visibility of SVMBS internally and externally, including internationally.
 - Leverage the extensive networks championed through UNL extension to develop strategies to increase stakeholder's science literacy across Nebraska.
- **Lack of clarity regarding SVMBS core mission:** The SVMBS has a broad mission encompassing undergraduate, graduate, and professional training; a highly regarded research program; a strong animal health diagnostic laboratory; an established outreach and extension mission, including the GP-VEC facility. The breadth of the SVMBS activities

and overextended faculty, coupled with the fact that faculty are distributed across multiple building and locations, contributes to the absence of a shared understanding of SVMBS goals and priorities. Efforts to develop a shared vision is hampered by the complexity of the IANR structure; the multiple layers/reporting lines complicates communication and creates confusion around how resources are allocated, and decisions are made.

○ *Recommendation:*

- SVMBS faculty should work together to develop a shared research identity and embrace creative ideas for success in resource-limited setting.
- With a shared vision, the faculty will be better poised to pursue larger collaborative grants and federal funds for training funds.
- Faculty disengagement is driven by limited communication with IANR leadership. Regular updates from IANR Deans, as well as scheduled meetings with IANR leadership and SVMBS faculty, will be valuable in fostering engagement and innovation.

- **Limited teaching faculty for PPVM:** The current FTE allocation model strains faculty capacity to cover teaching obligations and does not differentiate high teaching demands in the professional (PPVM) courses relative to undergraduate courses. There is also limited redundancy in teaching expertise and experience, creating vulnerabilities in offering the required courses each year. This is exacerbated by the planned retirements of 5-6 tenure track faculty retiring in the next few years.

○ *Recommendation:*

- Access IANR shared resources including curricular and grant development, and other services offered through ARD and CASNR.
- Propose a model to calculate teaching FTE that captures and rewards level of effort for teaching in the professional curriculum.
- Unless properly addressed through succession planning, anticipated retirements will threaten program's ability to maintain accreditation
- If unable to maintain accreditation, UNL will not fulfill obligations in MOU (ISU/LIU).
- Lack of resources for attractive startup packages contributes to limited diversity in candidate pools
- Failure to solidify inter-institutional expectations for GP-VEC rotations would have devastating consequences to relationships between USMARC, GP-VEC, and future partnerships.

- **Limited funding for graduate/resident training:** Despite enormous opportunities within the research programs at SVMBS, opportunities at GP-VEC and NVDC, and several highly qualified applicants, the training programs offered by SVMBS is extremely limited due to gaps in funding. There is no funding available at the university or department to support graduate students or residents. This creates two challenges: (1) prevents development of a unifying structure for graduate training programs; and (2) does not foster a sense of community among the limited number of graduate students and residents, creating a sense of isolation, particularly for students/residents based off-site.

○ *Recommendation:*

- Strategically pursue partnerships within government and the private sector to support research initiatives, and graduate and residency training programs
- **Low enrollment in the MS in Veterinary Science:** Enrollment in the Master’s program in Veterinary Science has varied over the years, with similarly low enrollment in 2015 and 2016 that was noted in the previous APR. The benefit of the MS program for individuals who do not pursue a DVM is unclear and may contribute to poor enrollment.
 - *Recommendations:*
 - Reevaluate the intended value of the MS in Veterinary Science and consider reimagining to meet the current needs of potential students. Faculty at GP-VEC are enthusiastic about the program to support needs in production medicine – perhaps there is room to reconsider the title and focus of the MS program to recruit students from outside Nebraska.
 - As noted above, look to outside funding opportunities to support MS students, potentially driving increased interest in the program.
 - Consider the value of the MS program for SVMBS as a whole – given limited faculty bandwidth, is the MS program a worthwhile enterprise?
- **Competition from other undergraduate programs:** SVMBS offers two undergraduate degrees – Veterinary Science and Veterinary Technology. While both have potential to provide more intensive preparation for careers in veterinary medicine (as a veterinarian or veterinary technician), neither are required for pursuit of those career paths. Applicants for the PPVM are frequently from either Animal Science and Veterinary Science, and both are successful in obtaining acceptance to the program. The Veterinary Science degree is widely considered more challenging for the student, so students often pursue the Animal Science degree, as it provides valuable experience for students who are not accepted into veterinary school. There is also a suggestion that some guidance counselors advise undergrads to major in Animal Science to bolster their GPA.
 - *Recommendations:*
 - Reevaluate undergraduate program to leverage veterinary expertise to create programs that either (i) make graduates more competitive for acceptance into veterinary school, or (ii) provide advantage for individuals who are not accepted into veterinary school and choose to pursue additional career paths.
 - Consider offering Veterinary Science as a minor to provide additional experiences for individuals interested in pursuing vet school but opting to major in another degree.
 - Utilize the energy, enthusiasm, and experiences of current and past PPVM students - create opportunities for increased exposure between Pre-Vet and PPVM students.

Questions posed in SVMBS Self-Study document (questions presented in *italics*):

1. *Basis for growth and effectiveness of our educational programming is a diverse, talented, and motivated pool of students. These students will eventually become the people that enter critical sectors of the Nebraska economy such as food and animal agriculture and the*

regional One Health biomedical system as workers, educators, veterinarians, technicians, and research scientists.

- a. *How do we develop effective outreach and recruiting systems for Nebraska to identify a strong pool of students and ensure diversity, equity, and inclusivity?*
 - i. More effective outreach and recruitment will require enhancing visibility of SVMBS and PPVM – suggestions outlined above.
 - ii. Develop programs with a focus on ensuring the success of diverse students, including accommodations for a broad spectrum of disabilities, and academic programs to support the academic achievement of students from low-resource settings.
 - iii. Develop a DEI program that mirrors the diversity in Nebraska – and recruit faculty that mirror the qualities of the students UNL is looking to bring on.
 - iv. Create internal (UNL/IANR) funding opportunities to support strategic initiatives where veterinary medicine directly supports One Health initiatives – zoonotic diseases, climate change, translational medicine.
 - b. *Are there strategic gaps in content and/or delivery in the educational programming for undergraduate students in the pre-veterinary or veterinary technology programs that enhance student success? Can the length of time required for the pre-veterinary program be reduced, reducing time and costs to acquire a D.V.M. degree? The rising financial burden on professional students is significant. Some specific examples of targeted recruitment programs could include urban high schools, community colleges, and students from rural regions of Nebraska.*
 - i. The biggest challenge with the undergraduate program is that it lacks a clear and cohesive goal – it is difficult to determine strategies to increase enrollment in the SVMBS undergraduate programs without a deeper understanding of the mission.
 1. Can the undergraduate program become the new national model for training the future paraprofessionals for livestock production?
 - ii. One opportunity to enhance enrollment in Veterinary Science is to offer it as a minor as well, for pre-vet students planning to major in Animal Science.
 - iii. There are models of three-year undergraduate programs that coupled with early acceptance to veterinary school, reduces the time to receive the veterinary degree. This is something that UNL SVMBS may choose to research.
 - c. *What internal and external partnerships would enhance these efforts?*
 - i. SVMBS is uniquely positioned to pursue partnerships with federal agencies (USDA (ARS, APHIS, NAHLN), FDA, CDC); state agencies (departments of agriculture, natural resources, and public health); and industry (diagnostic laboratories, pharma companies, commodity stakeholders – on local, regional, and national levels).
2. *The PPVM and graduate degree programs are key components of the mission of SVMBS and there is demand for these graduates.*
 - a. *What is the appropriate structure and approach for the M.S. degree program(s) for SVMBS? One possible approach to continue an M.S. program would include using the*

- CASNR managed Master of Applied Science degree program to re-establish the program within SVMBS. As the School includes many missions and teams, the M.S. program needs to provide the flexibility to support students with diverse educational goals.*
- i. This may be a viable option but depends on SVMBS' goal regarding the MS program. Only once that is defined for SVMBS can the appropriate structure and function be determined.*
 - b. What possible novel and unique mechanisms of support for graduate students and veterinary residents can be developed (in addition to grant funding) to support and sustain growth?*
 - i. Federal grants (USDA, APHL, FDA)*
 - ii. Industry collaborations – especially pharma companies*
 - iii. Building team-based approaches to faculty recruitment to facilitate resource sharing, including students, technicians, and postdocs.*
 - c. For the PPVM program, what is the appropriate strategy to realize supported growth? There is currently sufficient demand and well-qualified students to support expansion of the class size (by approximately 10 to 20 students). This will require additional and new professional program partners for the third- and fourth-year training opportunities.*
 - i. Supported growth first requires addressing the current challenges must first: meeting the teaching needs in the PPVM program, including redundancy in faculty teaching expertise and capacity.*
 - ii. ISU indicates that they will not be able to support additional students through the existing PPVM program. UNL will find it difficult to identify other 3rd and 4th year partners that can utilize the existing program as defined for ISU (veterinary programs across the country vary significantly in the expectations for students at the end of the second year). UNL must also consider additional Council on Education (COE) requirements. Bringing on additional 3rd/4th year partners for the PPVM is not an advisable path.*
 - iii. The small class size and low student: instructor ratio is core to the PPVM's success in preparing the next generation of veterinarians. The small class size and current ratios are a significant marker of the program's appeal.*
 - iv. Aspects of the PPVM program (i.e., rotations at GP-VEC and/or NVDC) are unique opportunities that would benefit veterinary students across the country (and world). Recommend identifying ways to recruit and cater to students interested in food animal medicine and production but have limited opportunities to gain hands-on experience at their veterinary school.*
 - d. What internal and external partnerships would enhance these efforts? (This could include development of unique clinical training programs, such as rotations/clerkships, etc., utilizing resources across Nebraska. And such programs can be coupled with efforts to recruit veterinarians to underserved counties in Nebraska.)*
 - i. As noted above, recommend development of new clinical/diagnostic training programs, including rotations/clerkships at GP-VEC and NVDC, to fully realize*

the SVMBS capabilities to train food animal veterinarians. There are additional opportunities to grow residency and graduate training programs by leveraging these unique facilities. Federal funding for training programs (outside NIH) exists at USDA, FDA, CDC, to support training in these areas.

- e. *Can such programs be used to leverage partnerships with other veterinary colleges to increase and enhance both the numbers of and diversity of PPVM-trained veterinarians for the unique veterinary service needs of this region?*
 - i. Limitations are in the class size – if UNL is willing to accept PPVM students from outside Nebraska, it creates an opportunity to create diversity – the question is whether these students will return to Nebraska following graduation to meet the needs in Nebraska. That said, it would allow UNL to be a destination for food animal-focused veterinary students.
 - ii. The review team recommends utilizing SVMBS resources to make UNL a destination for food animal veterinary students, through creation of new clerkships/rotations. The review team does not recommend creating partnerships with other veterinary programs that will require that all students (including those not interested in food animal medicine) rotate through UNL’s facilities.
3. *There are multiple drivers of success for numbers 1 and 2 above. These questions address issues associated with these critical resources. A diverse, talented, and motivated faculty will be essential for the success of the SVMBS.*
 - a. *Assuming increased needs to recruit faculty after attrition and to support new programs, what is the best model for critical succession planning for both faculty and staff for SVMBS? How can we train, recruit, and retain faculty and staff in a highly competitive environment for veterinarians that may have to realize significant opportunity cost? These efforts must realize critical needs among disciplines as well as needs for essential multiple accreditation and certification processes.*
 - i. Succession planning is critical to ensure transfer of institutional knowledge and maintenance of all training/teaching requirements from COE. It is critical that SVMBS actively pursue recruitment of new faculty ahead of planned retirements to limit the risk of gaps in teaching expertise and capabilities.
 - ii. Recruitment of veterinarians into academia is a national problem – highlighting the unique benefits of a faculty position (flexibility to pursue teaching, research, extension/outreach; opportunity to work with students and residents) will be critical to facilitate recruitment. Given the high debt load of many new veterinarians, SVMBS may explore additional opportunities for veterinary loan repayment and share those with potential faculty (public service loan forgiveness, VMLRP, etc.) – and if possible, to have IANR provide student loan repayment as a condition of employment.
 - b. *How best should inclusivity and a supported sense of belonging be purposefully included in this planning effort (and eventual recruitment actions)? This will be an important topic for the senior leadership team, and this may require establishment of a recruitment committee.*

- i. To recruit with a supported sense of belonging, the faculty must first come together to develop a shared and clear sense of identity, including mission/vision, priorities, and willingness to compromise.
 - c. *What other needs exist for facility and infrastructure improvements?*
 - i. None noted.
- 4. *To achieve operational success and efficiency, program integration and coordination is a subject of interest to clients and stakeholders.*
 - a. *How might integration between units/areas within and outside the school be leveraged (such as resident training positions involved in teaching and GP-VEC program integration with undergraduate programs as examples)?*
 - i. Success may be more easily achieved through collectively defining and focusing on a core, shared identity making it easier for everyone to feel they are working together as a unit rather than operating in independent silos.
 - ii. Having separate units work together in funding positions collaboratively while still establishing clear expectations for each unit.
 - b. *Would there be advantages in better integration of research, diagnostic service, and extension programming in key areas (cow/calf, feedlot management, related infectious diseases of livestock, and infectious disease/livestock ecology)?*
 - i. UNL and SVMBS are uniquely positioned to leverage novel food animal opportunities (cow/calf, feedlot management, infectious diseases of livestock) as well as unique opportunities in production and theriogenology. By partnering with Extension personnel to a greater extent, the potential to serve the people of Nebraska is elevated. The NVDL, GP-VEC, and Extension personnel, and producers across the state all stand to benefit from increased integration of programming.
 - ii. There is a great deal of discussion nationally (and globally) regarding the challenge of bringing on more food animal veterinarians to meet the need for production in the US. There is increasing discussion of using veterinary paraprofessionals (e.g., veterinary equivalent of a veterinary technician) to meet needs in food animal medicine. UNL is uniquely poised to take a leadership role in these discussions and develop early programs to meet these needs – at middle-ground between undergraduate and professional (PPVM) education.
 - c. *Relative to efficient uses of resources and succession planning, should SVMBS define two to three core areas of research strengths?*
 - i. YES! SVMBS should identify no more than three core areas of research and teaching strengths to inform the future of the research, undergraduate, and graduate training programs and to leverage talent and resources more strategically in each of the mission areas.