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Career Opportunities in Veterinary Medical Research

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There is a vague recognition in many students during the course of their professional studies that some members of their profession devote a significant amount or even the major portion of their careers to research. This discernment usually intensifies during the final phases of their professional studies. The selection of initial career direction that occurs during the final weeks or months of the senior year should be based on information that includes at least a general awareness of both the major rewards and the major drawbacks associated with a career in research.

There are two general levels of participation in research for graduates with a Doctor of Veterinary Medicine degree. The first is in a support service or support administration; while the second is as an active research leader or co-investigator. Both types of participation can make significant contributions towards achievement of the research objectives, but each uses the information and training represented by the DVM degree in a different way. Support service contributions can be illustrated by such activities as case selection, field trial evaluations or research animal procurement and supervision. On the other hand, participation of the DVM at the more fundamental research level as a principal investigator or co-investigator usually requires that the DVM degree be used as the base upon which a discipline specialization is built. This preparation then affords the type of opportunity in a research career that the senior veterinary student is usually searching for, but is not yet prepared to fulfill.

This prompts three very valid questions from the veterinary student or veterinary practitioner. The first is "How do I become prepared?"; the second is "How do I know if I should attempt to prepare myself?"; and the third is "What are the rewards and pitfalls if I do prepare myself?".

The formal preparation for a career in research is recognized by the granting to the individual of a Ph.D. in the specialty area and/or a board certification by the organized specialty group. It usually requires four to five years to fulfill the program of study and research required for the Ph.D. degree and up to five years of specialty discipline experience and training may be a prerequisite to be eligible to write the board certification examinations.

The operational philosophy and tradition of graduate study varies from university to university in some considerable detail and between certain countries in major concepts. The system at Iowa State University is, in my opinion, one of the best. The Graduate College of the University has general guidelines that must be met by all graduate students. The Graduate College Departments (which are usually the same as the College Departments with certain faculty members designated as Associate or Full members of the Graduate College Faculty) have more specific departmental requirements that must be met and most importantly the Program of Study Committee appointed by the Graduate College for each individual graduate student develops a Program of Study that identifies each course or activity that the graduate student must complete as a minimum to fulfill the Ph.D. requirements. This Program of Study is designed to fulfill the general Graduate College requirements and to insure that the graduate student is reasonably prepared to pursue his career objectives. This

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program is developed in collaboration with the student. One member of the Program of Study is given major responsibility for the direction of the graduate student’s studies and research and is designated as the student’s major professor. The Ph.D. degree at Iowa State University is primarily intended to prepare the student for a career in research. Therefore, all such programs of study include a significant research component and background courses to insure competence in general research procedures as well as depth of knowledge in the specific discipline. There is a certain truth to the public view that is expressed from time to time that a Ph.D. knows more and more about less and less.

The DVM who is contemplating entering the Graduate College should ask himself several questions and be certain that he knows himself well enough that he can believe the answers he receives back. The first and most important question is, “Why do I want to prepare myself for a career in research?” If the answer is “because I think researchers make lots of money” or “because I think research work is easier than practice” or “because I think research is more prestigious” then graduate studies to prepare for a research career are not for you and the idea should be dismissed forthwith. If, on the other hand, the answer is “because I can’t think of anything I would rather do than to help find the answers to some of the unknowns both in my current knowledge and in the total knowledge in this particular discipline, and I think I am bright enough, ambitious enough and determined enough to do it”, then you should definitely explore preparation for a research career.

It has been my observation that this question can best be answered by the majority of people after they have had the perspective of a few years of an alternate career. I find that the most motivated graduate students are usually those who have had one to five years of alternate career experience such as practice or similar employment before they enter graduate studies. The senior student who gives serious consideration to graduate studies but decides to try practice for a while is not lost as a potential graduate student. He very well may become the most strongly motivated when he does decide to take up graduate studies. If the decision to enroll in graduate studies is delayed more than a few years, then financial and family obligations may develop to an extent that precludes such an undertaking in spite of strong motivation and ability. For this reason the decision should not be delayed for more than a very few years.

In assessing the financial rewards from a career in research it is necessary to view the total earnings of the individual on a total career basis. Not only is there the added expense of four or five years of graduate study to be recouped, but there is a shortening of the earning period by those same 4 or 5 years. This necessitates that the research career return at least 15% greater yearly income per earning year than the alternate DVM career choice to be financially equal. This is probably a little higher return than actually exists at the present time. However, there are some research career accomplishments that may allow some researchers to greatly exceed this “breakeven” level of financial reward.

By far the greatest reward from a career in research must be realized from the inward satisfaction that stems from accomplishments that make significant contributions to the betterment of animal and human welfare. One must be cautious not to make this the only goal however, since this inward satisfaction cannot be turned into cash to pay the bills. This concept was very succinctly expressed by a now departed faculty member of the University, Dr. Becker, as “A good researcher must keep his head in the clouds but his feet on the ground.”

Once the DVM has adequate preparation for a research career as signified by receipt of the Ph.D. degree and/or board certification in a specific discipline, then the challenge of finding employment in a suitable research environment must be faced. There are far fewer applicants for these positions so that there is less competition than exists for individuals with only the DVM degree. However, there is still a great disparity in the number of opportunities in the various disciplines. The graduate student is well advised to be aware of the potential job market when reaching a final decision concerning the specialty he will enter. At the present time numerous research openings exist in either universities, industry, or state or federal government. For the past decade by far the greatest number of opportunities have been with the federal government. There are signs that this expansion of (Continued on page 30)
federal research activity may be slowing and that the number of available research opportunities may be increasing in industry. Specialties that are undersupplied with qualified applicants at the present time are pathology, clinical pathology, toxicology, microbiology, endocrinology, immunology, and physiology among others.

On the national level there is good evidence that a reasonably adequate number of DVM's are being prepared. At the same time there is a well documented shortage in the number of Ph.D.—DVM's that are available or likely to be graduated in the near future. The need for such qualified graduates is expanding faster than it can be filled. It is hoped that a national recognition of this need will result in development of programs to meet the need. At the present time there are more potential graduate students than there are resources available to train them.

There are three major needs that must be met to increase this number of graduate student training opportunities. One of these is available means to finance graduate student stipends. There has been a remarkable change in this area in the past 30 to 35 years. In the 1940's it was unusual for a graduate student to be paid a stipend. This limited such training to those students who came from backgrounds that could afford the cost of the extra four or five years of college or to junior faculty members who were allowed to take a limited amount of graduate work if it did not interfere with the fulfillment of their assigned duties. This usually meant that seven or eight years were required for them to finish a Ph.D. program. At the present time most DVM graduates expect to receive some level of stipend while engaged in graduate studies with duty assignments that cause a minimal interference with their graduate studies. The limited number of such stipends available is not currently adequate for the number of requests from students to do graduate work. The research component of the Ph.D. training requires additional funding. Some thesis research problems require only modest additional funding for equipment and current expense while others are much more demanding. Such funding must usually come from departmental sources. They are frequently met by assigning the student responsibility for some portion of a research project the major professor has underway. This consideration should receive considerable thought from the major professor before accepting the responsibility of guiding the student's program of study. The training of a graduate student should receive a considerable amount of daily input from the major professor. This is best accomplished when the responsible faculty member has enough time to spend with the student. As a result the adequate training of graduate students is a faculty time intensive undertaking. Increasing the graduate student training program of a college must carry with it a corresponding increase in the number of available senior faculty. This is implemented by increasing the operating budget so that the necessary faculty can be developed or hired and adequate facilities developed.

In summary, there is a serious shortage of trained research workers in many of the veterinary medical disciplines both now and in the foreseeable future. The need is only partially being met because of lack of adequate funding for stipends, lack of adequate qualified faculty to serve as major advisors and lack of adequate current expense and facilities to support the student's research. The quality of research training currently being provided to graduate students is, in general, at an all time high. The costs involved and the shortened career earning period make the undertaking approximately on a financial equivalent with many other alternate career opportunities. There are some of the specialty disciplines where the scarcity of an adequate number of qualified applicants has driven the salary range sharply upward. As additional acute shortages continue to develop this is expected to happen in additional areas. When enough acute shortage areas accumulate there may well be a national recognition of the need to develop expanded graduate training programs for careers in research.