

PRESIDENTIAL ADDRESS*

CLASSICAL IS CRITICAL: ALLEVIATING THE BURDEN OF PARASITIC DISEASES

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Fellow parasitologists, friends, and distinguished guests, Dr. Nappi's introduction reminded me of a gentleman who was driving through the countryside in New England, when he was forced to stop his car for a flock of sheep that was crossing the road. After a long wait, he made a proposition to the sheep herder. "Sir, if I am able to tell you the number of sheep in your flock could I have one?" After a bit of contemplation, the herder agreed, and the traveler told him he had 400 sheep. Amazed, the sheep herder told him to make his choice. Upon carrying his selected animal to his car, the herder made his own proposition. "Sir, if I am able to guess your occupation, can I have my animal back?" Of course this seemed only fair, so the driver agreed. Immediately, the sheep herder said "You, sir, are a molecular biologist." Shocked, the traveler had to know how he could guess his occupation so easily. The herder responded, "You picked up my sheep dog!" Now, this good-hearted jab I just made is not new to ASP presidential addresses, and some of you might remember a story along the same lines told by Dr. Hoogstral many years ago (Hoogstral, 1985). My purpose is not to belittle a field in which I actively work, but rather to provide you with my thoughts on the critical need for a broad perspective of biology in our struggle to alleviate the devastating impact that parasites have on the majority of the world's populations who are less fortunate than us.

One of the most interesting and exciting research projects I have been involved with over the years was the discovery and description (Christensen and Calentine, 1983) of a new species of caryophyllid tapeworm, *Penarchigetes macrorchis*. This was especially fun for me because I was able to go back and spend some time working on this with my coauthor, Robert Calentine, the individual who initiated me into the world of parasitology. Since publication in 1983, my fellow parasitologists' interest in this work was so overwhelming that I received at least 5 or 6 reprint requests. In 1995, my laboratory published an article on restriction fragment length polymorphism mapping of quantitative trait loci (QTL) for *Plasmodium gallinaceum* susceptibility in the mosquito *Aedes aegypti*, and for this article, my supply of 300 reprints was exhausted in less than a year (Severson et al., 1995). Two weeks ago, I searched both Biological Abstracts and PubMed, with the key subjects of the search being the genera *Penarchigetes* and *Plasmodium*. I recovered 5 *Penarchigetes* and 25,749 *Plasmodium* references. In the short time since my search, I seriously doubt if more has been published on *Penarchigetes*, but several hundred *Plasmodium* articles might well have entered the literature database. Does this mean my tapeworm article is not valuable? Absolutely not, it is good-quality work of which I am very proud. Does this mean work with malaria parasites is more valuable? In the real world,

the answer has to be yes because my favorite tapeworm does not kill a million or more children every year.

I have gained immense satisfaction from my work with fish and herptile protozoans and helminths, and as well from a series of studies on hematozoan parasites of wild turkeys. But, I also realize that it is possible, at least that is my hope, that my studies with mosquitoes might some day actually make a difference in the control of mosquito-borne diseases, thereby reducing the burden of disease in the developing world. Please do not think for a moment that I am implying that all parasitologists should work with medically important parasites because this would be a tragic loss to biology as a whole. What I am going to do is provide my reasons for wanting young scientists, trained in the more classical areas of parasitology, to apply their much needed talents to the study of tropical diseases.

Martin Ulmer, in his presidential address titled "What's Past is Prologue," was troubled by the decreasing federal funding for research but excited because President Carter actually emphasized a need to support research on tropical diseases (Ulmer, 1978). I am sure he is pleased to see that President Carter's commitment was from the heart, and not politically driven, and that the federal government now has made a serious financial commitment to the study and control of tropical diseases. This verbal and financial support from the "top" has helped to propel the field of parasitology into the public light. Our area of study is now extremely popular, with parasites being regularly featured in newspapers, news magazines, television, radio, and other media outlets. When I was in graduate school, those outside of science, and even most individuals in other fields of science, knew nothing about the organisms with which I worked. Now, these same people approach me with questions about parasites and parasitic diseases. Our world has become very small, and globalization of economies and cultures is blurring the barriers that once existed. This increased awareness and financial support, coupled with a true revolution in biological technology, has created an unparalleled ability to address rapidly expanding problems in infectious and parasitic diseases.

Although modern *Homo sapiens*, at least mitochondrial Eve, have existed for 200,000 yr, we did not possess written communication until about 6,000 yr ago, and agriculture, maybe a bit earlier. Science as a discipline that actually influenced beliefs in educated persons has existed for maybe 300–500 yr, depending on one's perspective as to what constitutes influence. I think most of us consider the birth of parasitology occurring around the time that Linnaeus formally established the field of taxonomy. We are really young, but what has happened in the biological sciences during the past 2 decades is truly staggering. It took Professor Blattner at the University of Wisconsin nearly 7 yr to sequence the 4- to 5-million base pair genome of *Escherichia coli*, and today the rough sequence of a genome of this

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