

Irwin Sherman is a Professor emeritus of Zoology at the University of California, Riverside. Prior to his retirement in 2006, Dr. Sherman led a research program that revolved around the malaria parasite, Plasmodium falciparum, and served as Dean of the College of Natural and Agricultural Sciences and as Director of the Agricultural Experiment Station.



During your career at Riverside, much of your research focused on the malaria parasite *Plasmodium falciparum*, and the details of how it binds to the surface of human blood cells. Malaria, of course, kills over 1 million people every year worldwide. Do you think enough is being done about malaria?

The problem with malaria is there's a tendency to have it forefront during crises, and then people lose interest. Recently, thanks to the Gates Foundation, more money has been poured in. Unfortunately, some of the focus has been solely on vaccines because the feeling is that a vaccine is cheaper treatment and there won't be any resistance to it. My feeling is you have to attack it on multiple fronts. Drug therapy, insecticides, and they're now using impregnated bed nets. It's going to require a three-pronged approach.

Why do you think malaria is so difficult to develop a vaccine for? It sounds like companies have been putting loads of money and resources into vaccine development, but they've been unsuccessful so far.

Most of the vaccines we have today are against bacteria, bacterial products, or viruses – which tend to be rather simple organisms. The malaria parasite has 5,000 genes, so potentially you have 5,000 components that might serve as a protective antigen. And there's never been a vaccine for any protozoan or any multicellular parasite.

You were also involved with teaching at Riverside, notably in that most dreaded category of undergraduate curriculum: the compulsory science course for non-science majors. I understand you used performance art as a way to engage students.

I put together a course on infectious diseases and the impact of infectious disease, and after three or five years, I had the course under reasonable control and I was conferring with some of my colleagues over coffee one morning. I posed this question, what can I do to increase the enthusiasm or interest? They said, why don't you impersonate people who have made contributions to our understanding of infectious diseases? I went to the theater department and got mustaches, beards, spectacles, suits appropriate for the time, and I listed the individuals on the syllabus as if they were guest lecturers. So there would be a lecture by Pasteur or Goldberger or Robert Koch, and I would come in in costume at the beginning of the hour and I would perform, sometimes with a very bad German accent, sometimes with a very bad English accent. My colleagues said I should have dressed up as Florence Nightingale, but I never had the guts to do that.

What do you think is the most understudied microbial system?

I think one of the more fascinating ones is the prion diseases. And if you asked me which of the diseases are the most important, I would say malaria and tuberculosis.

What is your favorite microbe? Why?

You can't work for 50 years on a microbe and not love it, so I love plasmodium. I almost think like a plasmodium: I sometimes feel that I'm sitting inside a red blood cell, swimming around, trying to obtain the essentials for my growth and reproduction.

What advice would you give students about life as a microbiologist working in academia?

The advice that I always give students is they have to find something that really interests them and in which they can excel. They have to recognize their strengths and weaknesses; trying to pick a field because it's fashionable is the wrong approach.

What is something about you that most people don't know?

I can't think of anything. My life is an open book.