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New World Pathogen Strategy Disclosed

Thomas Eisner and Paul R. Ehrlich

We have recently received, from a highly placed scientific source, a remarkable document. It was appended to an e-mail announcement about a computer virus and appears to be the keynote address from a convention of the World Pathogen Association (WPA). The text bears the label "as delivered" and is entitled "Our Infective Future: The New Agenda." In it, the WPA leader, the Presidential Prion, announces a profound change in policy that should be of grave concern to humanity, because it portends a shift in the goals of our major predators. We are grateful to *Science* for communicating the text in its entirety.

"I must inform the infective community," Prion warns, "that most of our natural hosts are disappearing. Never has our future been bleaker, threatened as it is by a reality that was unthinkable a mere 5000 years ago. Our food supplies are being displaced by a single species, *Homo sapiens*, which has come to reign supreme on Earth. It is dominant by weight of numbers and extent of spread, and has become--for all of us--the great challenge we can no longer afford to ignore.

"Action is called for. Indeed, in this disaster there is a germ of an opportunity and an opportunity for the germs. In our evolutionary tradition, we must prepare ourselves to change our tastes, shift hosts, and take advantage of the single most appealing and available addition to our menu. Homophagia is the way of the future.

"Before turning to the new opportunity before us, some congratulations are in order. To HIV, for making the big leap most recently and for killing slowly enough to share the host with many of the rest of us. To the tuberculosis bacillus, for its unexpected renewed success. To the viruses--Ebola, Hanta, Lassa, and Marburg--for their gallant efforts, in the sure knowledge that these will not long go unrewarded. To *Legionella pneumophila*, for its stealth. And to those already at the trough--the great pioneers such as *Plasmodium*, the dengue virus, and *Treponema*, and especially that great debilitator, the common cold virus--for setting splendid examples to ensure that success is within the grasp of us all.

"There are many factors that give us hope. *Homo* is remarkably hospitable to us. In extraordinary numbers, they are now undernourished and immunodeficient, and they have a penchant for keeping on the move, thereby not only spreading us veterans but providing many new opportunities for the novices among us to join in the feast. They expend their medical resources on the few while failing to exclude us, in so many areas, from the drinking water supplies and foods that serve the many. They misuse antibiotics, among their very best weapons against us, blind to our evolutionary capacity to develop resistance. They pay little attention to our important ability to evolve new levels of virulence. And they are recklessly changing the climate, releasing many of us from our historical geographical constraints.

"The only dark cloud on our horizon is *Homo*'s propensity for self-injury. They have on occasion threatened to modify some of us for use in intraspecific competition or "germ warfare" as they call it (as if we were doing the fighting). That might cause a food availability problem for us, but they are such prolific breeders that, with our notorious genetic patience, we could easily wait out a population crash until they had once again achieved the biomass necessary to satisfy our appetites.

"All in all, my fellow pathogens, *Homo* is the opportunity that ultimately can benefit us all. Aside from their prevalence in numbers, they show all the weaknesses that maximize our effective potential. Although they themselves deny that there is such a thing as a free lunch, we know better. There is a free lunch, and it is them."

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