

Forced by scandal to leave Oxford University, infectious disease expert Roy Anderson seemed destined to be *persona non grata* in the scientific community. Three years later, however, Anderson is back in the thick of things, investigating HIV/AIDS, foot-and-mouth disease and, lately, severe acute respiratory syndrome.

## Roy Anderson

These days, Roy Anderson is busy fielding media calls about severe acute respiratory syndrome (SARS) and working with a team of experts to investigate the escalating illness (see page 487). Anderson heads the department of infectious disease epidemiology at Imperial College in London, is an advisor to the UK government on foot-and-mouth disease, and has several large grants, including £30 million from the Gates Foundation toward controlling schistosomiasis in sub-Saharan Africa.

It was not always so.

In early 2000, two independent investigations alleged Anderson had made inappropriate statements about a colleague at Oxford University, and criticized his management of the Wellcome Trust Centre for the Epidemiology of Infectious Diseases at the university. At the time, Anderson was widely considered one of Britain's most prominent scientists; he had been head of the university's zoology department between 1993 and 1998 and had directed the center since 1994.

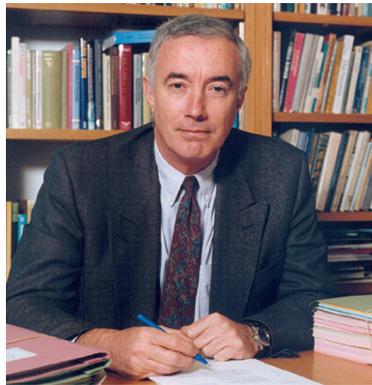
The investigations polarized the university. "There [was] a destructive series of votes," recalls Neil Ferguson, then at Oxford's zoology department. "Zoology returned a vote of no-confidence in Roy, whereas most of the center staff voted in his confidence—the atmosphere was dreadful."

Anderson was initially suspended and later forced to resign his post at Oxford; he also stepped down as governor of the Wellcome Trust (*Nature* 404, 802; 2000). "The experience taught me a lot about the less savory aspects of human nature and, indeed, about who one's true friends were," Anderson now says. "I had led a charmed life in terms of interactions [with people]. Now I take people less at face value, which is sad."

While attitudes toward Anderson may have changed within Britain, his stature in the international infectious disease community remained undiminished. Anderson has stimulated the field both through his training of a new generation of scientists and through his international leadership, says Simon Levin, a renowned evolutionary biologist and biomathematician at Princeton University. "[Anderson]

has been one of the most important forces for creating entirely new and powerful ways to study the dynamics of disease," Levin says. "His mathematical approaches...have served to revolutionize the subject."

The UK government relied heavily on Anderson's expertise in mathematical modeling during the foot-and-mouth epidemic. The crisis coincided with his move to the new epidemiology department at Imperial College and provided an immediate focus for the department's scientists, three-quarters of whom had followed Anderson from Oxford University.



"Foot-and-mouth disease kick-started the group," says Brian Spratt, professor of molecular epidemiology at Imperial. "All the computers were corralled to do real-time modeling of the disease outbreak." Spratt, who has worked alongside Anderson for five years, moved to Imperial along with nearly 70% of the center staff, including most of the researchers, secretaries, laboratory managers and administrators. "Staff feel great loyalty to Roy; that's why they moved," says Ferguson, now chair of mathematical biology at Imperial.

The move from Oxford to London has worked out quite well—for the most part. "I have a love-hate relationship with London," says Anderson. "You're closer to seats of activity such as government and societies, but in the summer I long for green fields." But working at Imperial has distinct advantages. Whereas tenure at Oxford is as rare and precious as 'gold dust', Imperial has provided enough

tenure-track appointments to allow Anderson to keep his interdisciplinary team together.

With that familiar team of theoretical physicists, statisticians, molecular biologists, population biologists and epidemiologists, Anderson worked hard to try and unravel the foot-and-mouth epidemic. Because the disease had such devastating consequences, there was no time to experiment with models of disease spread and control, Anderson says, adding he has never felt under so much pressure "to get it right quickly."

Anderson's main research focus is on HIV, however. He is currently evaluating optimal drug treatment strategies to minimize the evolution of drug resistance. The problem requires an understanding of drug pharmacology, immunology, viral replication and, most important, knowledge of human behavior in terms of compliance with drug regimens, he says. His team tries to combine these elements to create both a theoretical framework for analysis and to record real data.

He is also interested in the potential population value of HIV vaccines. "We're entering an era where the first sets of results from candidate HIV vaccines are coming through," he says. "If [the vaccine] doesn't protect against infection, but the vaccinated patient acquires the virus at a reduced viral load, will the vaccine be of benefit in a public health context?"

Anderson's latest project is one that is occupying the minds of infectious disease experts worldwide. To get a handle on SARS, his team is trying to determine how connected the world is in terms of people's mobility. "We're asking whether, in the early stages of the SARS epidemic, you can draw conclusions about how dangerous this is on the world scale," he says.

That Anderson is always on the cutting-edge of infectious disease research is, to some, one of the attractions of working with him. "There's always excitement around Roy. Whenever an emerging disease happens, he'll be in there and will get a group of very talented people to work on it," says Spratt. "[He's] never at the fringes of biology."

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