

virology

Hunting Down the Links

Few scientists become celebrities outside their narrow field of specialty. But mention the name of Bob Gallo, the US virologist who co-discovered HIV, and ears prick up all around. Claire O'Connell spoke to Prof Gallo about his appointment as Visiting Professor at UCD.

Thanks to the impact of his work, and the controversy that has sometimes surrounded it, Prof Gallo has become a giant in the global fight against AIDS. And from now on you may occasionally spot his towering figure around campus - he was recently appointed visiting professor to UCD's School of Medicine and Medical Science. His new post formalises a long and friendly relationship with the College through fellow virologist Prof William Hall (Director of the Centre for Research in Infectious Diseases - CRID).

But despite his track record, Prof Gallo surprisingly insists he had no innate curiosity about the natural world as he grew up in an Italian-American family in Connecticut. "I was very typical, and I wasn't very serious. I liked basketball", he says, holding up the crooked little finger he still sports from a playing injury.

However, family tragedy meant he came into contact to the medical community more than most when his sister developed leukaemia and was treated at Harvard medical school's hospital. "I saw research doctors at an impressionable age of 12 or 13 and you hold that somewhere", he says.

One doctor in particular, Irish pathologist Marcus Cox, was to become a mentor for the teenage Gallo. "He was the first cynical rationalist I ever met. My family was not like that. He was impolite to people and there was the disbelief angle of science: prove it to me." When Gallo injured his back playing basketball, he took time to focus on a future career and Marcus Cox convinced him to go to medical school. Following his training at the University of Chicago, Gallo next took up a research post at the National Cancer Institute. The usual track for medical doctors was to return to clinical care, but he saw that research was becoming more complex and opted to stay in the lab.

He developed a passion for hunting down links between viruses and cancer. This was an unpopular theory in the 1970s, and he felt the brunt of mainstream disapproval. "It was a rollercoaster ride. There was a lot of pressure, there were a lot of criticisms. It was a lonely business, and I always kept some other work going just to show I was able." But thanks to a supportive NCI director, Prof Gallo ploughed on and eventually discovered HTLV-1, the first human retrovirus, which was associated with an aggressive form of leukaemia. His approach was further vindicated when other cancer-associated viruses came to light in later years, including herpes, papilloma and hepatitis.

However by the early 1980s, a mysterious disease called AIDS was pulling Prof Gallo's

attention. "In 1981 it was identified but nothing was known really, it was thought to be trivial", he recalls. "Half a dozen people here and there, nothing that would stir your imagination. But by early 1982 it was clear." When a French team led by Luc Montagnier found a potentially new virus in a patient, they sought Prof Gallo's help in figuring out what it was. The US team crucially developed a way to grow the virus in cells in the lab, allowing the virus to be analysed, and so HIV was identified and linked with AIDS. There followed years of controversy over who had officially discovered HIV, but in 1987 Gallo and Montagnier were declared co-discoverers.

Following the initial discovery, Prof Gallo's team went on to develop the blood test to screen for HIV, and his lab hosted researchers who discovered drug therapies to keep the virus down. His team also discovered that chemokines produced by the body can inhibit HIV. This opened up new avenues of research into how the virus attacks cells and raised possibilities for a vaccine against the virus. His work on the HTLV and HIV retroviruses earned him a string of prestigious scientific awards, including an unprecedented two Lasker awards in the 1980s for basic research.

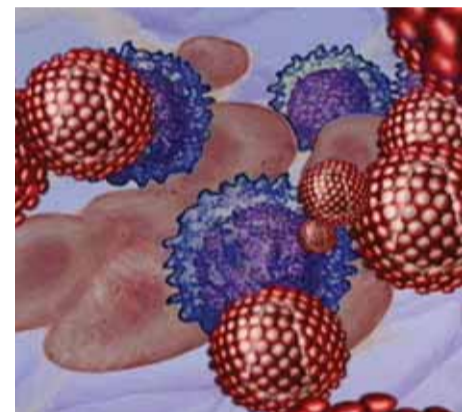
The vaccine is now where Prof Gallo trains his research efforts at the Institute of Human Virology (IHV), which he co-founded and directs at the University of Maryland's School of Medicine.

He was recently awarded a \$15 million grant from the Bill and Melinda Gates Foundation to continue research into a vaccine that recognises the shape of the virus as it tries to infect and weaken cells of the immune system. "The preventative vaccine is the only way to answer this", he says. "And ultimately I think we are solving the problem with the vaccine candidate we have at IHV. However, we also still need to develop new drug therapies to support people who are already infected." And the issue remains of getting medication to the people who need it, particularly in developing nations.

Prof Gallo sings the praises of the US Government's PEPFAR programme, which funds clinical work with local communities in HIV-ravaged countries, and by next year his own Institute will treat around 130,000 people around the world. He also notes the importance of keeping HIV/AIDS in the public eye. "Every month around 258,000 people die of AIDS, but does it get the attention?" he asks. "If Eastern Europe explodes and it starts to come into Western Europe, then it will get the headlines." Before he leaves for a function, Prof Gallo muses on the presentations he had just heard from researchers at CRID. "It was a good

experience", he says. "I would say the work was quite outstanding, they are doing really good work and the young people are quite mature." He now plans to come to UCD twice a year, and the connection will promote collaborations with the IHV in Maryland, where Prof Bill Hall sits on the advisory board. "Bill is a great and much respected scientist and our interests overlap and complement each other", he says. "We speak the same language so it's easy to collaborate, there are no barriers. And the people here are so welcoming - nobody would not want to come over. And vice versa, we would welcome people to come over and work in our lab."

Claire O'Connell (BSc 1992, PhD 1998) is a freelance journalist.



During HIV infection, millions of viral particles are present in the blood stream. They continuously infect cells of the immune system. As the immune system becomes progressively more damaged, HIV disease becomes more advanced and eventually the Acquired Immunodeficiency Syndrome (AIDS) develops.

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