

## TRIBUTE TO MARK WAINBERG



Without the contributions of Mark Wainberg to the prevention and treatment of HIV infections, the AIDS epidemic would be immeasurably worse. Today, more than 18 million people worldwide take antiretroviral medications, about half of the more than 36 million who are infected.

Mark played a lead role in the discovery and development of the drug called 3TC, or Lamivudine, which has been used in the therapy of both HIV/AIDS (as well as Hepatitis B) for more than 20 years: one of the HIV drugs in longest use. He discovered, with others, the problem of HIV drug resistance, which led to the development of other drugs that have now made AIDS a chronic disease that can be managed, rather than a death sentence.

The discovery of drug resistance led Mark to turn his attention to the prevention of HIV infection. To do this,

he became a politician-scientist, and a powerfully effective one.

His crowning achievement may be that, as President of the International AIDS Society from 1998 to 2000, he was instrumental in bringing the XIIIth International Conference on AIDS to South Africa, whose political leaders were in a state of denial about HIV as the cause of AIDS. This conference, in this country, at that time, established the hypocrisy of continuing to deny lifesaving antiretroviral HIV medications to people in developing countries, while such drugs were freely available to HIV-infected individuals in wealthier societies. This problem continues.

Mark became an outspoken advocate for the human rights of HIV-AIDS patients, denouncing the tendency of our society to regard HIV-AIDS as an ethical and moral issue, rather than an infection, and rejecting the criminalization of HIV-AIDS. He was that rare individual who combined scientific excellence with a social conscience on a global level.

Mark received extraordinary recognition for his achievements: the Order of Canada, Order of Quebec, Legion of Honour of France, the Killam Prize, many honorary degrees, and perhaps most significantly, election to the Canadian Medical Hall of Fame.

It was an honour for me to be asked to succeed Mark as Director of the LDI. He embraced my arrival with great warmth, and remained a constant and trusted advisor. To a very great extent, the Lady Davis Institute is Mark, and always will be.

We will miss Mark immeasurably, and often in ways that we will only discover over the coming months, waiting for his wonderful baritone, which is now gone. We have lost a leader and a friend, a man of extraordinary humanity.

- Dr. Roderick McInnes, CM, MD, PhD, FRSC  
Director, LDI; Acting President, Canadian Institutes of Health Research

Dr. Mark Wainberg, a gifted scientist and a wonderful man, also exemplified traits of commitment and a desire to make the future better for those in distress. Through his own perseverance and staying power, he greatly changed the lives of so many with his contribution to HIV/AIDS research.

Mark was a colleague and friend to many of us at the Jewish General Hospital and the Lady Davis Institute—in some instances, since as far back as the mid-1970s. A humble, but determined man, his smiling face and desire to do and bring good to the world are typical of the values of the many individuals who built and continue to push the JGH toward new heights.

I can only hope that this tragic loss will serve as a reminder of the impact that any of us can have on the world of health care and especially on those who look to us in their most difficult hour. As Mark ably demonstrated, our patients must be at the centre of all of our efforts, and it is to them that we must dedicate ourselves in providing the best possible healthcare.

May his memory be a blessing for us all.

- Lawrence Rosenberg, M.D., Ph.D.  
President-Director General,  
CIUSSS du Centre-Ouest-de-l'Île-de-Montréal

If it were not for Mark Wainberg, I doubt I would be alive today. The medication that Mark and his team discovered in the 1990s became an essential part of my treatment success over the next 20 years.

I first met Mark during those early years when I became an "AIDS activist" and discovered that we had no stronger ally than Mark. He was always prepared to speak his mind with bluntness and passion, whether in support of gay men donating blood, or criticizing the use of the criminal law to punish people who were unable or unwilling to disclose their HIV status to potential sex partners. These were and remain thorny issues, but Mark always stood with us on the side of social justice and wise public health policy.

Mark was my hero for getting the International AIDS Conference to Durban in 2000, so I was thrilled we could work together as Co-chairs of the Toronto Local Host, organizer of the successful 2006 Conference.

I will miss teasing him about his poor grooming habits. If Mark looked unshaven or as if he had slept on a plane, it was probably because he had.

- Ron Rosenes, CM

I knew Mark Wainberg for over 30 years. We first met as scientific colleagues, then as directors of research institutes, then as grantor/grantee when I was at CIHR, then as colleagues in the global HIV community where Mark was a world leader, and then in my role as chair of the International Scientific Advisory Board at the Lady Davis Institute.

It was at the LDI that Mark carried out his brilliant experiments leading to the development of 3TC, one of the first effective drugs against HIV and advancing our understanding of the mutations that confer HIV drug resistance. Mark's style and approach in each of the roles that I knew him can be summed up in two words: passion and intelligence.

Mark was perhaps most well known for his leadership as President of the International AIDS Society and his outspoken and universally admired role as an advocate for science and evidence as the only correct way of addressing the HIV pandemic. Mark was fearless in confronting politicians in this country, in South Africa and elsewhere in his condemnation of political compromise, of superstition, and of nothing less than total commitment to stopping the virus. With his passing, we have lost a great scientist, a great advocate for science, a passionate champion for people living with AIDS, and a great Canadian.

- Alan Bernstein, O.C., PhD, FRSC, FCAHS,  
President and CEO, CIFAR;  
Chair, International Scientific Advisory Board, LDI

I received a warm welcome from Mark when I moved from Université de Montréal to the LDI. I was given a small bay lab to work in with my students and staff, on the 3rd floor- all that could be spared at the time in a cramped LDI. I witnessed, first hand, Mark and his finely oiled and formidable machine at work, and quickly realized that each person magically contributed to his success as a scientist-politician.

Mark mentored innumerable people. His ideas pervaded the past, the current and future literature, as several of his papers are still appearing. During his career, he was one of the most prolific, outspoken and principled scientists in Canada. Alas, I only have but one regret and it is that I dare to say that I didn't make enough effort to know the man in all his forms. Mark's contributions have been substantial, more recently provocative and, above all, palpable.

- Andrew Moulard, PhD  
Senior Investigator, Lady Davis Institute  
Professor, Medicine, Microbiology & Immunology, McGill University

**M**ark Wainberg was, quite simply, a giant. By recognizing the process of drug resistance and identifying the applicability of combination therapies to counteract the mechanisms by which HIV mutates, he literally changed the course of AIDS research.

He was instrumental in developing 3TC, one of the first anti-retroviral drugs for HIV patients. At the time, being infected with HIV was literally a death sentence. With monotherapy, it was possible to extend the lives of HIV infected individuals by one to two years, at which point the virus mutated very rapidly and became resistant to the few drugs available. When Mark began looking at combinations of therapies – the so-called cocktail – we could block multiple pathways, limit drug resistance and, thereby, achieve dramatically better outcomes. This principle is what guides HIV treatment to this day and is responsible for our ability to manage HIV as a chronic condition.

He brought scientific authority to activism in Canada and internationally. He contributed greatly to destigmatizing the illness. By organizing the International AIDS Society annual meeting in Durban, South Africa in 2000 when he was President, he put the spotlight on the plight of AIDS sufferers across the developing world. On a personal level, he was instrumental in supporting my efforts to secure a post-doctoral fellowship on HIV/AIDS at Harvard Medical School and was of great help in launching my research career as a young investigator. Mark never stopped mentoring and inspiring trainees. At CanCURE we have a career development program to which he generously contributed by offering talks and advice to our next generation of trainees.

- Dr. Eric Cohen,  
Director of the  
Human Retrovirology Research Unit,  
Montreal Clinical  
Research Institute;  
Professor of Micro-  
biology, Infectology,  
and Immunology,  
Université de  
Montreal;  
leader and principal  
investigator for the  
Canadian HIV Cure  
Enterprise  
(CanCURE)



**I** first met with Mark in 1994 when he visited Nankai University and I was working day and night in the lab to get my PhD. When I asked him whether he would need a postdoc, he said “Yes, come when you finish your PhD.” So I flew to Montreal in the fall of 1995 and joined Mark’s lab at the LDI.

After working with him on the same floor at the LDI for 21 years, I never expected that Mark would part from me so suddenly, without even an opportunity to say farewell. When I now look back, I realize how fortunate I have been to have studied and worked with such a great guy who left behind a legacy that has touched the lives of so many people, and has made the world a better place to live especially for those unfortunate to have contracted HIV.

To me, Mark has been a great mentor, always encouraging, supportive, full of patience and expectations. I miss the moments when we sat down and corrected manuscripts, sometimes he would play Chinese songs although I doubted how much he understood Chinese, but I did feel relaxed. A high time was when he ran to my bench and said loudly, “Chen, your paper has been accepted!”. I also miss the wine and scotch from him, often during the weekends or holidays when his schedule was not that tight and he had time to joke with people at work in the lab. On some Sundays I was lucky enough to share one or two cookies that he got from his mom. I remember the day when my son was born, he showed up and said “This is the happiest part of the hospital!” and congratulated my small family wholeheartedly with his big and contagious smile. I miss his ever entertaining, witty, and engaging speech, something that you always look forward to.

Mark has been a passionate man, full of courage to fight for what is right. He bravely confronted those who denied HIV as the cause of AIDS, criticized those who had the power and responsibility but failed to promote HIV care and research. His contributions to society have gone well beyond the scope of research. He cared deeply about the well-being of his lab people, his colleagues, his friends, and those who suffer from HIV/AIDS. His sudden passing saddened so many people, leaving an emptiness in so many hearts, an emptiness that can no longer be filled, because Mark can never be replaced.

- Chen Liang, PhD  
Senior Investigator, Lady Davis Institute  
Professor, Department of Medicine, McGill University

I write this tribute in memory of Mark Wainberg with a deep sense of sadness. I first met Mark at a 1993 conference in Lyon, and over the years we became good friends. What endeared Mark to so many people was his friendly demeanor, extraordinary generosity, and sensitivity. In 1998 I attended the International AIDS conference in Geneva, at which Mark became the next president of the International AIDS Society. I knew very few people at that conference and Mark, although very busy, made it a point to introduce me to other scientists each time I ran into him.

Mark was a dedicated, creative scientist and performed important work on HIV proteins and drugs that inhibit their activity. However, his efforts were not limited to the laboratory, as a major part of his mission was to fight for the right of people the world over to have access to anti-HIV drugs and appropriate treatment for the devastating illness caused by AIDS. His vision was strongly influenced by his spiritual life and the precept of *Tikkun Olam*, repairing the world. I will miss having Mark as a dear friend and valued colleague and mourn his loss together with all who knew him.

- Judith G. Levin, PhD, Scientist Emerita  
NICHD, National Institutes of Health

I've known Mark Wainberg since 1984 while I was working as a technician at the Montreal Children's Hospital where Mark was acting as an expert for the virology lab. I had just completed my master's studies and was not interested in pursuing further scientific education. It was Mark who insisted that I should undertake doctoral training under his guidance. He was so insistent that I finally decided to start my PhD in his laboratory at the beginning of 1986, which I completed at the end of 1989. This period of my life was memorable because Mark initiated me to the joy of scientific research and the excitement of discovery.

I will always remember Mark as a man of integrity who thought that it was important to build honesty in personal relationships. He once told me that you should avoid making enemies because your peers will ultimately evaluate the quality, validity and relevance of your scholarly research. I will deeply miss Mark because he was my friend, mentor and the only reason why I embraced a career in basic research in the field of HIV.

- Michel J. Tremblay, PhD,

Professor, Département Microbiologie-Infectiologie et Immunologie, Faculté de médecine, Université Laval;  
Axe Maladies Infectieuses et Immunitaires, Centre de Recherche du CHU de Québec-Université Laval

Mark was my first professional contact in Canada in 1998. Although he was the head of the International AIDS Society at that time and very busy, he helped me with my recruitment and transition to the Lady Davis Institute. I am currently a senior investigator and a Professor at McGill University. Throughout the years, Mark has been a great colleague, always very enthusiastic about HIV research. He cared very much about the translation of his work to patients everywhere in the world. When I arrived at the LDI, I worked on the same floor and he was very active responding to those journalists who contested that HIV was the cause of AIDS. In addition to his work, he has been a great advocate to have all patients receive the best treatment. It is in large part because of him that companies accepted that generic drugs be made available for developing countries before the expiration of their patent rights. It is because of him that access to HIV treatment in the world has now reached more than 50%. He deserves that we continue his work and honour his accomplishments.

- Anne Gatignol, PhD  
Senior Investigator, Lady Davis Institute  
Professor, Department of Medicine, Division of Experimental Medicine; and Department of Microbiology and Immunology, McGill University

I first met Mark around 1996 when I ended up the same taxi with him in Taipei. We were invited by our mutual friend, the late Kuan-Teh Jeang, to speak at a national Taiwanese AIDS meeting. Mark soon found out that we were both doing some fundamental 3TC studies, the anti-HIV drug that he helped develop. It became an intense taxi trip. He wanted to know all that we had done, were doing, and were planning to do, and even more. After some 3TC publications, we moved on to different topics, while he continued for many years to pursue this intriguing 3TC story, e.g. towards macaque studies, demonstrating his enormous dedication.

A few weeks ago, I happened to see him from a distance when I just arrived in Montreal for the Canadian AIDS meeting. I registered and heard a well-known voice coming from the meeting room. Mark was speculating about his retirement and joking that that would mean that somebody else in the room would be the oldest. I spoke at the meeting early the next morning and soon received an email from him: "I am so sorry to have missed you in Montreal. My grandchildren, whom I have not seen in 6 months are in Florida and this was my best chance to be with them. I'll see you soon again, I am sure." Well things took a different turn. We will miss his unparalleled enthusiasm.

- Professor Dr. Ben Berkhout,  
Laboratory of Experimental Virology  
Department of Medical Microbiology  
Center for Infection and Immunity Amsterdam (CINIMA)

**M**ark Wainberg was an international rock star in HIV and AIDS research – a global leader in his field. I knew Mark for more than 25 years through his tireless support for the Canadian Foundation for AIDS Research, where he co-chaired our Scientific Advisory Committee.

Mark was charismatic, enthusiastic, focused, funny, passionate, and so very committed to his life's work. He was one of those people who wore his love of life on his sleeve. After decades of dedicating himself to this difficult and challenging cause, he had the same excitement and wonder as I am sure he did on his first day on the job.

One of my favourite memories of Mark occurred in 2012 when I attended a ceremony at Rideau Hall in Ottawa where he would receive the prestigious Killam Prize in Health Sciences. When his name was called, he marched up the aisle toward the waiting Governor General with the face of a boy – beaming with joy, unbridled enthusiasm and pride. Typically, he made use of the occasion to remind his audience of the need for continued strong funding for medical research. That was the Mark Wainberg I shall remember.

- Christopher Bunting, Deputy Chair,  
Canadian Foundation for AIDS Research (CANFAR)

**M**ark was not only a stellar scientist, but one of the classiest human beings I met in my career. We planned to see each other in Paris, for the International AIDS Society conference 2017. "We're gonna have some fun!" – these are the last words I have from him. There are many great things I can think of when describing Mark, but more than everything else I like to remember his incredible energy and optimism that were reflected in his always infectious smile. It could transpire when he was telling me about the potential of dolutegravir monotherapy as an agent to cure AIDS infection, his new exciting data on how the JAK/STAT pathway affected the downstream events of HIV entry, or the beauty of a Mozart opera – like the one we saw together in Rome in July 2011. Mark was a great scientist, an inspirational leader, a good friend, and an example of what true love of science should be.

- Guido Silvestri, M.D.  
Georgia Research Alliance Eminent Scholar in Comparative Pathology  
Professor & Vice-Chair for Research,  
Department of Pathology and Laboratory Medicine  
Emory University School of Medicine

**I** first met Mark at a meeting at Brocket Hall in Hatfield, Hertfordshire, England in 1992, the most lavish occasion either of us had ever experienced. The talks were held in a lavishly decorated converted salon. When it was Mark's turn to speak, he pulled back the screen to reveal a Van Dyke painting and declared, "Nothing we say here is going to last as long as this or be as valuable." That was typical of Mark, who loved his science but recognized there were many other important things in life. Mark was a member of the Scientific Advisory Board for the CWRU CFAR, which I direct, so he would come to Cleveland to visit at least twice a year. I admired his ability to quickly get to the essence of any issue, be it scientific or political. Over the last two years, we served together on the Board of Scientific Counselors for the National Cancer Institute. He would always introduce himself and then add in his booming voice, "And I want to Cure HIV before Jonathan does!" Sadly for all of us, he didn't get the chance.

- Jonathan Karn, PhD  
Reinberger Professor of Molecular Biology  
Director, Case Center for AIDS Research  
Case Western Reserve University



**M**ark Wainberg was President of the International AIDS Society when 5000 scientists signed the Durban Declaration as a protest against AIDS deniers. He gained notoriety, and criticism, for his harsh attitudes and statements aimed at distinguished cancer researcher Dr. Peter Duesberg, President Thabo Mbeki of South Africa, President Aniel Arap Moi of Kenya, ABC News journalist Nicholas Regush, and many others. Many of us, including me, were aghast by some of Mark's statements such as, "Those who attempt to dispel the notion that HIV is the cause of AIDS are perpetrators of death. And I would very much, for one, like to see the Constitution of the United States and similar countries have some means in place that we can charge people who are responsible for endangering public health with charges of endangerment and bring them up on trial. I think that people like Peter Duesberg belong in jail. Perhaps there might once have been good ground to dispute the linkage between HIV and AIDS. It's indisputable now."

If Mark had not spoken out, if the Durban Declaration was not signed, if the general public and African population had believed the falsehoods perpetrated by these leaders, how many more people would have been infected, refused treatment, or died of AIDS? We forget this dark history of the AIDS epidemic, like when Christina Maggiore, diagnosed with HIV, met with Dr. Duesberg and later started the HIV denialists movement, Alive & Well AIDS Alternatives. After Maggiore's daughter's death of AIDS in 2005 and Maggiore's own death in 2008, Dr. Wainberg was blunt in his statement, "Christina Maggiore and her daughter died because they didn't get treated. Their story is tragic, but the reality is, Christina Maggiore was so misguided in believing this concoction of bullshit, that it cost not only her life, which is her business, but also the life of her 3-year-old kid, and that is everybody's business."

Mark's activism and outspoken nature did not stop with the AIDS denialist movement. As organizer of the XVI International AIDS Conference, Mark was highly critical of the Canadian government's response and minimal participation at the opening ceremony stating, "Mr. Harper, the role of Prime Minister includes the responsibility to show leadership on the world stage. Your absence sends a message that you do not regard HIV/AIDS as a critical priority, and clearly all of us here tonight disagree with you." He supposedly called the Prime Minister of Canada's office more than dozen times before the conference and never received a response from Mr. Harper. However, I believe the political pressure applied by Mark was effective and the Canadian government announced \$120 million in funding later that year.

- Eric J. Arts, PhD  
Chair and Professor,  
Department of Microbiology and Immunology  
University of Western Ontario

**D**r. Mark Wainberg and I worked at *Retrovirology* as Associate Editors since it began in 2004 and were latterly co-Editors in Chief. Until then, he was known to me only through his research, some of which coincided with mine. Others will undoubtedly talk about his research output. In areas in which we overlapped I always found his research provocative, interesting and insightful.

As co-Editor Mark was an ideal colleague. His energy and enthusiasm were boundless. His judgments on manuscripts and other aspects of the journal were fair minded and wise. Most of all he was a loyal and highly likeable person to work with. His activism for the treatment of HIV infection and AIDS and his knowledge about drug therapy was wide (and often led to him being mistaken for a clinician and being asked for advice!). He could talk seriously and passionately about issues to do with AIDS but the friendly smile was never far away and the warmth of his nature, together with his distinction, won him much influence in the field. He was a reliable and hard-working co-Editor, an asset to the journal, and someone who made a real impact in his field. I shall miss him enormously.

- Professor Andrew ML Lever FRCP FRCPath  
FMedSci FLSW  
Professor of Infectious Diseases  
Honorary Consultant Physician  
University of Cambridge Department of Medicine  
Addenbrooke's Hospital, Cambridge

*Combining scientific excellence with a social conscience on a global scale, Dr. Wainberg's research and collaborations are acknowledged as having helped save millions of lives.*

- Canadian Medical Hall of Fame