My Story

In the beginning …

Growing up in a well-to-do middle-class family in the wheat growing area of Saskatchewan, there never was any doubt that when I finished High School I would go on to university. Such was the expectations of my family and the friends of my family. I had a flare for chemistry and English literature and even did some acting in High School plays. When it came to choosing direction — arts or science, it became a problem that led to a somewhat checkered academic beginning. I attended the University of Saskatchewan in Saskatoon in 1958 taking English and Chemistry — putting off the decision of becoming a scientist or a writer. By the end of that year I was no further ahead in choosing which direction to take so I chose the glamorous route of being a poet and I headed off to the jazz scene in Vancouver. I spent a winter there doing poetry. During that time I met Lorene who would later become my wife and we put together a couple of self-published poetry books. The first one was called 'Garbolish' which is available as an ebook.

After running out of money for coffee, German Black Forest cake, poetry readings and rent, I decided to give journalism a try. I moved to Ottawa (capital of Canada) and enrolled at the Journal School at Carlton University. At that time Carlton University was pretty much a finishing school for the children of the civil servants that populated the city. After awhile it didn't suit my dissidence and anti-establishment temperament. I dropped out of University and got a

job as a lab technician in a government research facility — primarily based on the chemistry courses I had taken. The work involved studying exotic animal viruses and the facility was the reference laboratory for the whole country. Working with viruses I became fascinated with the question of: where does chemistry end and biology begin? Viruses seem to sit somewhere on the boundary.

After working for two years as a lab technician, I enrolled (1962) for a BSc in Microbiology at the University of British Columbia and was clever enough to get a Canadian government scholarship to do a PhD. I found a compatible PhD supervisor, Jack Tremaine, at the on-campus Agricultural Research Station. I embarked on the studies of a plant virus and an insect virus using the biophysical tools of the day.

Along the way I acquired a wife, a house and two kids and a PhD. I managed to finish the PhD in 18 months, the minimum time allowed.

At the end of my PhD studies there was the usual problem of 'finding a job'. Fortunately, this was delayed, in the short term at least, by being awarded a no-strings-attached post-doctoral fellowship again courtesy of the Canadian government. This was now the late sixties and my choices were either Mill Hill in London or the Molecular Biology lab at Berkeley, California. Needless to say the 'flower power' of Berkeley won.

Stefanie, Lorene, Ian and James 1968

In the autumn of 1968 we sold our house and bought a VW Combie van that my father-in-law and I modified to provide camping facilities and we headed south along the coastal route to California.

Postdoc at UC Berkeley

The first priority for starting my postdoc at UC Berkeley was to find a place to live that was close to the UC Berkeley campus. We were directed by the University Accommodation Office to a new housing development in Richmond (an adjoining Bay city). Richmond was predominantly a 'black' area and the Federal government, as part of the urban renewal plan, had built a housing estate which was to consist of 60% blacks, 30% whites and 10% others — to avoid it becoming another black ghetto. These were still the days when blacks were expected to sit at the back of the bus. Upon arriving at the office of this housing estate we were greeted with open arms since it meant that if we took a place, they could house two more black families. We were offered the pick of the bunch. The units were two-bedroom duplexes with adjoining garages, a front lawn and a fenced back yard. They were tastefully designed with polished concrete bench-tops and solid walls. Our neighbor was a fireman with a wife and two small kids.

Eldridge Cleaver-1968

Most of the people in the community where professional families: teachers, nurses, social workers. In general, it was the women of black families that had jobs while the men odd-jobbed or otherwise occupied their time with children and 'hobbies'. This was the time of the Black Panther Party and the 'Black is Beautiful' movement. One evening we heard a

loud knock and upon opening the door this huge African American who filled the entire door frame asked if I wanted to buy a copy of the Black Community News (the Black Panther newspaper) — I said yes, I would have bought his entire stock if he asked.

Berkeley campus at lunch time

As well as these challenges on the political front there was the 'cultural revolution' — the hippie lifestyle: free love, drugs, sex, music, a new way of thinking — the dawning of the Age of Aquarius. Although the lyrics of the opening song in the musical **Hair** (1967) were considered to be 'astrological gibberish' nonetheless the concept of the Aquarian age spread to young audiences around the world. The musical **Hair** defined the hippie culture.

Sproul Hall

The musical's profanity, its depiction of the use of illegal drugs, its treatment of sexuality, its ant-Vietnam war, its irreverence for the American way of life and its nude scenes set the stage for the hippie counterculture.

The UC Berkeley campus was beautiful and spacious and on the east side was Sproul Hall, the neoclassic administration building - the site many of the student protests.

The building in which I worked was called the Molecular Biology and Virus Laboratory Building. When it was built in 1952 in the gothic Soviet-Bloc Cold War style it was called the Biochemistry and Virus Laboratory Building. It was later renamed to Stanley Hall after Wendell Stanley, who won the Noble Prize in Chemistry (1946) for his work on TMV (tobacco mosaic virus). C Arthur Knight was one of his co-workers and it was in Knight's lab that I did my postdoc.

Molecular Biology & Virus Laboratory Building

The building was later demolished and a new Stanley Hall was opened in 2007. It became one of the newest buildings on campus and housed the Bioengineering Department, along with 40 research labs affiliated with the multi-campus California Institute for Quantitative Biosciences.

Lab space in C Arthur Knight's lab was at a premium and I shared a bench with another postdoc Leon Lewandowski. We struck up a great research partnership. He had just graduated from the University of Pennsylvania and knew of the recent

My lab space

discovery that reovirus particles (dsRNA) contained an RNA-dependent RNA polymerase. I was carrying out some work on an insect virus that was also double-stranded RNA. **The Question**: Did it contain a similar RNA polymerase? After a crash course in how to rear this virus in silkworms we were able to get enough data to publish two papers on the properties of this insect virus RNA polymerase of the- cytoplasmic polyhedrosis virus of silkworms.

Later Leon studied medicine and spent most of his career in Pharmaceutical Medicine/ Pharmacovigilance (Drug Safety). He ran Senior Health Services- a New York State pro-bono "Charity", providing home-care visitation services to fulfil the critical role of helping older folks oversee their pharmaceutical needs. As Leon tells me: this is the closest he will ever get to fulfilling his Mom's dream of her being able to say: 'her son, the Priest'.

State troopers on campus

Throughout the time spent at UC Berkeley there were a series of protests on campus. By and large we avoided the picket lines and the charges by storm-troopers since our Laboratory was located at the north end of the campus and we could 'sneak in to work' but there were major disruptions to classes and the normal student activities. The protests were similar to that of the guerrilla tactics used by the Vietcong— disrupt then melt into the surrounding student population. Activists would 'occupy a building' disrupting normal activities — the authorities would send in the storm troopers — the activists would blend in with the students — meanwhile another 'occupation' would occur at the other end of the campus.

Let's go to New Zealand

China Beach, Golden Gate Park

I remember that it was a glorious sunny day in spring (April). We were having a picnic at the beach in Golden Gate Park in San Francisco. The kids were playing in the sand, the surf was gently rolling in, the bridge was beaming in the sun and all was well with the world. We had decided to explore going to New Zealand since we heard from our neighbors at the housing estate of the beaches, the climate and the relaxed pace of life. It was reputed to be a great place to bring up kids. We were beginning to get weary of the racial tension and social unrest and worried about the effect this was having on us and the kids. I wanted a place to slow down and relax from the hectic pace of the last few years.

I decided to try for an academic position since I enjoyed working at a university, carrying out research, teaching students and being the conscience and social critic of society. I did what is probably unthinkable today — I wrote: a Do-you-have-any-jobs?-letter and enclosed my CV. I addressed it care of the HOD Department of Microbiology to each of the six Universities --- not really knowing if they had a Microbiology Department or not. I

did a similar thing for all the potential Biochemistry Departments since I could teach that as well, having taken as many biochemistry courses as microbiology.

About 3 weeks later a Teletext arrived from Professor John Miles, Department of Microbiology, University of Otago. It was a very cryptic message that said: we have an academic vacancy here teaching Microbiology to Science students – are you interested? I replied immediately and said: yes, I am interested, please send more details.

Then there was this long silence and I began to think: 'I have blown that option', then weeks later a Teletext arrived offering me the position at a lecture's scale at salary of NZ$3,000. I had no idea what this meant in terms of money or living costs or average salary.

We were living in a housing estate in the middle of a black ghetto in Richmond – which is just outside Berkeley. It was one of those Govt initiatives to upgrade the standard of housing in these types of areas and so there were people from all countries of the world living there since no white Americans would go there and blacks couldn't afford it. There was a New Zealand couple living there so we invited them over for dinner to get some information about living in NZ. The guy was studying city planning (which sounded promising) and his stunningly beautiful Polynesia wife was doing a sociology degree and ran the local kindergarten. His wife did most of the talking and the bloke just listened and drank beer. So towards the end of the evening I asked him: Is $3,000 enough to live on in NZ? His reply after pondering the question for awhile said: "Ah yeah mate, that's enough to keep you in beer money". His wife later translated that into – yes, you could live comfortably on that.

The next step was to get to New Zealand. I went to the NZ Consulate in downtown San Francisco and asked the Maori beauty at reception: "What do I need to do to get to New Zealand?" She smiled back with the look of wild flowers growing near mountain streams and surf rolling in on sandy beaches and said: "Buy an air ticket". Back in 1969 that was all that was required. I made some creative arrangements with a shipping company to pack all our household effects into the VW Combie van and ship it as a 'container with wheels'. I also included some scientific supplies not knowing what kind of place I was going to end up in.

We went back for a quick trip to the Canadian prairies to say our farewells and then boarded a plane in Vancouver bound for New Zealand. In those days travel by air was very luxurious (no cattle class) and you were treated like royalty with plenty of leg room, wide seats, a five course meal and the clinking of champagne glasses over the Pacific.

Mt Cook

During our approach to Christchurch, the pilot pointed out Mt Cook on the West Coast and reminded us to put our clocks forward by two hours and our years back by 20. That turned out to be quite a prophetic statement, but it didn't bother me since I enjoyed the calm and secure pace of life of my childhood. On the connecting flight from Christchurch to Dunedin, we were warmly greeted by a distinguished English gentleman dressed in a 3-piece suit and carrying a copy of the General Journal of Microbiology tucked under his arm as an identity tag — this was Professor John Miles, HOD of the Department.

Arrival In Dunedin

Owen's Motel, Dunedin -- 1969

It was customary for the University to arrange accommodation for arriving academics at Owen's Motel until their household effects arrived or other arrangements were made. It had the classic NZ 50's furnishings, but it was comfortable and allowed us to adjust ourselves to the place. It was only a five minute walk to the Medical School where the Microbiology Department was located.

Princes Street, Dunedin -- 1969

Dunedin in 1969 was a mature city of 80,000 and many of the buildings were built as a result of the gold rush in the 1860's. By 1870 Dunedin was New Zealand's largest and richest city with some of the finest architecture in the country. This 'point of difference' continues until the present day and it is one of the world's greatest small cities. In 2014 Dunedin was designated as a UNESCO Creative City of Literature. — it "values and builds on its rich cultural heritage and supports the life of the mind and treasures its books and writers" (but I digress). It is a city of natural beauty surrounded by hills, a harbour and stunning beaches that are only a few minutes from the Octagon, the city's centre.

Medical School -- Hercus Building

The Microbiology Department was located in the Medical School on the 3rd floor of the Hercus and the Scott Buildings. At that time there were 8 academic staff members and 4 research staff as listed in the University Calendar

We received a very warm welcome from the staff of the Department and were made to feel at home. We bought a 3-bedroom house up North East valley which was surrounded on three sides by paddocks.

Stefanie, Mom,Ian, Lorene and James at Norwood Street house —1970

Beginning of my academic life

I had certain ideas about the teaching of science — the best way to teach science was to do science. I was fortunate to have a PhD supervisor who was a working scientist at the Agricultural Research Station at UBC and I was able to work along side of him and his technician. I was treated like an equal and was allowed to make my own mistakes and solve my own problems. We would have long conversations about viruses and the big questions in Science. As his apprentice I was able to learn the craft of carrying out scientific research. There are two fundamental ways to do science — take samples over a time series and analyse the results (a time course) or carry out a dose-response experiment, increase the dose of what ever you are studying and measure the response - then plot the results and analyse for the mode of action (linear, exponential, delayed, etc). (As an aside: during my time as a PhD student we published two scientific papers in refereed journals in which I was the senior author.)

The first laboratory practical I designed at Otago was in virology — a six-week course at 3rd year level The students had to isolate their own virus from the environment (plenty of bacteriophages about). They had to purify the virus and take an electron micrograph.They had to carry out a time-course and a dose-response experiments with the virus. Then they

wrote up the results as a scientific paper and submitted the paper for peer-review (their classmates). We were able in one case to submit the results of the isolation of an RNA phage from sewage to a proper peer-reviewed scientific journal and it was published.

It should be noted that this particular set laboratory practicals have been carried out for more than 40 years in the Department. Whether lessons continued to be learnt from the 'craft' of the experiments remains unknown.


Alan Musgrave

Also back in those days it was very fashionable, in the philosophy of science kind of way, to ASK THE RIGHT QUESTION. Without asking the right question you could not get the right answer — this was in the Karl Popper tradition of formulating a hypothesis as to what is happening and then testing the hypothesis with THAT critical experiment. Furthermore the experimental results had to be reproducible by other scientists in order to validate the result. This was very much the tradition of science by which I was taught and conducted during my time as a scientist. It was also the way in which scientific papers and results were written and presented. I used to send my graduate students to take the course in the History and Philosophy of Science in the Philosophy Department given by Alan Musgrave, a student of Karl Popper. **As an aside:** Alan and I were partners in a Chess Club team called "The Frenchman plus 3" and we played chess together for a number of years. The Frenchman was Ray Stone, Professor of French whose favourite comment about chess was: "chess is a game played by the idle to make themselves think they are doing something clever ".

Today much of science is carried out in a hypothesis-free environment — often referred to as going on a "fishing expedition". Collect as much data as you can and then use AI or machine-intelligence to find the patterns and determine what is going on. There isn't much 'craft' involved there. In the old days one could spent years isolating and purifying a single protein band on an acrylamide gel or an ion exchange column to study its structure and function. These days you would do a mass spectrometry on all the bands in the gel and get them all sequenced then look at potential function using Artificial Intelligence.

In my lectures I would often slip in the odd bit of philosophy of science and in the 1970's I was a fan of the Bootstrap Theory as proposed by Geoffrey Chew. He used the S-matrix approach to the study of time-space-matter. In this theory there were no elementary particles, no Laws of Nature, no point-like constituents as everything was part of matrix of interactions. The properties of any particular entity was dependent on all the interactions of it with everything else. This approach was sometimes called *nuclear democracy*, since it avoided singling out certain particles as being elementary or fundamental. One could not isolate anything out of this matrix and study it since doing so would make it meaningless. By comparison in biology it would be somewhat meaningless to study a virus or an elephant on its own, in isolation.

You could imagine that stunned vacant looks I would get from students at my lectures. However, it was interesting that years later I would meet some of them at overseas scientific meetings or some other gathering and they would often ask: "Tell me, do you still teach that philosophy stuff in your lectures? Actually it was the only part of your lectures that I remembered". I would silently smile and take that was a back-handed compliment and say something like: "whenever I can get away with it."

In those days lecturers were responsible for running the practical laboratory exercises that complimented their lectures. This meant face-to-face contact with the students in the lab classes and more often than not explaining why some experiments didn't work out as planned and what went wrong —- which often turned out to be a 'real' learning experience. Although this took you away from laboratory time that you could have spent on your research projects, it turned out to be very valuable time spent.

TMV Model -- Berkeley

I found that at Berkeley some of the eminent academics (Noble prize winners) would fight over who would be giving lectures to undergraduates — this seemed somewhat surprising. But they had a more long term view and wanted to inspire the hearts and minds of the potentially brightest and the best. So what these one-on-one encounters at the lab bench provided was an opportunity to assess the potential of good graduate students that might became interested in your research projects. More importantly it told you who to avoid at all costs — the academic record doesn't always provide the correct indication. My colleagues would often say that I was lucky to get good students and I would think to myself: "what does luck have to do with it".

Part of my philosophy in supervising PhD students was to stretch them as far as I possibly could. Most of them were stretchable but with some (the really good ones) I never came close. I applied the same approach to my teaching. I would teach to about the top third of the class, some would rise to the occasion but a large number would struggle. This didn't make for getting good student reviews or assessments but that wasn't what I was about. But having said that I would go that extra mile for anyone who was genuinely interested by offering extra tuition from my graduate students —which they gladly gave.

Coming back to my scientific career, I made an initial commitment to staying here at Otago for 3 years but I wasn't sure what my next step would be. So I needed to keep my research on a broad front and at the same time keep it at a world-class level. The research project on the use of viruses for the **microbial control of insect pests** which Professor John Miles had began at Otago was a good bet and had plenty of scope here for the control of the pasture pests — Porina and grass grub.

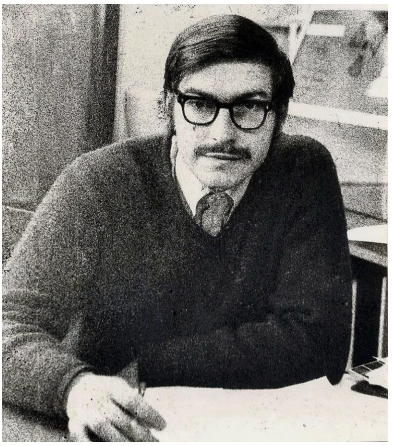
The other research interest was **interferon**. Back at the lab at Berkeley, Leon Lewandowski had come from The Wistar Institute where they had discovered that dsRNA was a potent inducer of interferon. Normally only a small amount of dsRNA is produced during a virus infection and it is difficult to isolate. On the other hand, Cypovirus, an insect virus of silkworms, produces large amounts of dsRNA. We had worked on the molecular biology of such a virus while at Berkeley and studied its RNA-dependent RNA polymerase. Serendipitous I discovered that there was a mulberry tree in the garden of the house we had bought in North-east Valley in Dunedin. So I immediately established a silkworm colony and starting producing buckets of this dsRNA virus form infected silkworm larvae. This launched the interferon research and a successful research grant proposal made to The Medical Research Council (it was successful due to in no small part to Professor Miles who was the Chairman of the committee) provided the necessary resources.

The third field of research was studying the **molecular biology of insect viruses** — work I had began for my PhD and continued while on postdoc at Berkeley. Before leaving the University of California I assembled a small cache of materials, reagents, chemicals and small items of equipment so as to be able to continue doing research for about 6 months. I said I could continue doing my research even on the surface of the moon if necessary. Coincidentally NASA did put Neil Armstrong and Buzz Aldrin on the moon that year.

During the 3-year tenure of my appointment, plans were drawn up for the construction an 8-store purpose-built building for microbiology on the science campus. This meant new laboratories, new equipment and new opportunities. As it turned out, I was put in charge of the tendering and purchasing of the equipment for the new building. Since the needs of the staff were modest — petri dishes and microscopes, I had a field day tendering for

equipment — ultracentrifuges, scintillation counters, chromatography columns and an electron microscope. I had many a free lunch from the sales reps.

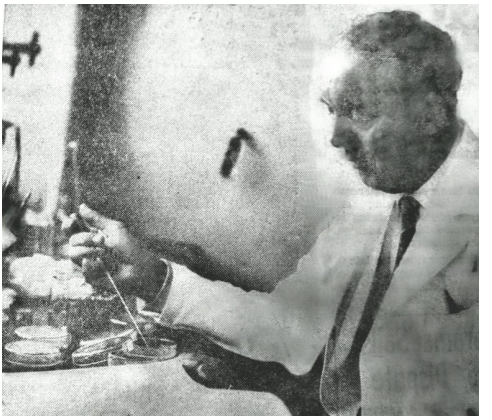
My Laboratory



My first office/lab was on the third floor of the Hercus Building in what was formally the TB isolation laboratory and my desk was next to the fume hood used for culturing the bacillus (seen behind me in the photo). I converted the fume hood to the storage area for radioactive materials.

I took over the virus control of the pasture pests (porina and grass grub) project which included a PhD student, Syd Moore, some technical support including Tim Dodgshun. Andy Thomson, a plant virologist had been leading the research at that time. It appeared that the field collected insects were dying from Metarhizium, a common saprophytic soil fungus. It produces a characteristic green sheen as the condidia form spores. Andy was busily culturing this fungus in the hopes of using it as a biocontrol agent. It turned out that the Metarhizium was a secondary infection on the insects that had already died from viral or bacterial infection. The fungal cultures were autoclaved and the lab had to be fumigated with formalin since fungal spores were found everywhere. Andy went back to his

secondment from DSIR (Department of Scientific and Industrial Research) at Lincoln and work in the lab concentrated on isolating viruses.



Jimmy Robertson from NERC - Oxford

We were assisted in virus isolation by the visit of Jimmy Robertson, from the University of Oxford, NERC Unit of Invertebrate Virology. He spent two months in New Zealand and was a keen fisherman. The story goes that he found an iridescent virus in a worm he dug up from a paddock near Nelson when looking for some fishing bait. The virus (Wiseana iridescent virus) was never again found in a field collected porina larvae after 40 years of collection.

We developed a virus diagnostic protocol based on the microscopic viewing of stained slides prepared from insect specimens. This provided for a rapid detection of viruses based on the different kinds of occlusions that insect viruses develop in infected Insects. The approach to biological control was to see what diseases were already present before considering introducing new control agents. To this end **Syd Moore** and a technician were equipped with sampling gear which consisted of the Departmental Land Rover and a trailer, sampling containers, some digging tools, garden hose and a map. The idea was to head-off into the pasture hinterland and collect insects from different locations across the country. Daily samples were sent back by post as they were collected by using a piece of garden hose

closed off at each end containing some soil and the collected insects. Back in the lab the insects were analysed for viruses and other diseases.

Syd Moore, PhD student

In retrospect this proved to be a very effective system for detecting viruses since we could provide feedback as to what habitats were yielding positive virus samples. A pattern soon emerged that viruses were more likely to be found in older pastures. After awhile almost every sample was positive. Syd was somewhat reluctant to tell us why this was the case but it turned out that he and his helper became tired of fronting up to each farmer to seek permission to dig in their paddock. Instead they bought a few beers and parked up on the side of the road and dug along the roadside fence-lines instead. This turned out to be a very important finding since not only were more viruses found in older pastures but the undisturbed soil along fence lines was where viruses were allowed to accumulate.

Years later another PhD student (**Allan Crawford**) was able to show that bird faeces collected from the tops of fence posts contained viruses which implied that bird droppings were a way that viruses could be spread from farm to farm. Birds were finding dead or dying infected larvae from the pasture surface, flying to the nearest fence post and having a good feed and a good crap. It was later shown that viable baculoviruses could be recovered from bird faeces.

Although Syd was a city boy, born in Wellington, he took on the mantle of what can be described as the Southern Man. At first this puzzled me but then I noticed other male students and even some academic staff, in particular Sandy Smith, behaving in this characteristic way: the rough and tough and ready to go male as depicted in the tales by Barry Crump (A Good Keen Man). Barry Crump appeared in a few iconic Speights beer-Toyota TV ads which had a lasting visual impact. There was also a lonely, poetic, grabbling with nature aspect to the image. Sam Neill, a New Zealand actor, pointed out that there was a certain darkness to books and movies produced by New Zealanders — about the land, the rainy dark forests — a sense of foreboding. BUT I digress.

Chris Payne from NERC - Oxford

Research on the insect viruses resulted in a certain buzz in the lab and attracted some postgraduate students. This was boosted by the arrival in early 1972 of **Chris Payne** from the Oxford, NERC Unit of Invertebrate Virology on a postdoc fellowship — the same place that Jimmy Robertson had come from earlier. Chis had worked on a dsRNA virus (cytoplasmic polyhedrosis virus - CPV) for his PhD research. So we were able to hit the ground running with silkworm larvae, CPV and P-32. We needed some P-32 labelled viral dsRNA and to do this we had to inject virus infected silkworm larvae with P-32. We used a fume-hood as a containment facility — we got all gloved up with masks and clean lab coats and then looked at each other and said: "Yep, this is a badges off experiment" — meaning taking off the radiation monitoring badges normally worn for detection of exposure to

P-32. We were able to label and isolate the viral dsRNA. Later we found that the experiment could be done more safely by painting P-32 on the mulberry leaves and ensuring that the larvae ate them before feeding them more leaves. Chris developed a method of separately ssRNA from dsRNA and we published several papers from the work we did during that time.

Progress on the interferon project lagged behind compared to the insect virus work, We developed a very sensitive assay for interferon using a plaque-reduction assay using Semliki Forest Virus, an arbovirus and chick embryo cell cultures. By using radioactive dsRNA we could show that the dsRNA got into cells and induce interferon activity. But the progress reports to the MRC were lack lustre and meanwhile the overseas interferon field moved ahead rapidly when it was discovered that synthetic dsRNA could be used. Our advantage of having large amounts of naturally occurring dsRNA was taken over by synthetic radioactive dsRNA (Poly rI rC). By this stage Bryan Williams who took on the interferon work for his PhD research was able to complete his PhD thesis and take up a postdoc position at the MRC lab at Mill Hill, London with Ian Kerr — the interferon king of the day. After that further work in my lab on interferon lapsed.

Move to the new Microbiology building

By the time 1974 rolled along we had moved into our new 8-stored building, I had a lab full with six PhD students, two technicians and a full teaching programme.

PhD students -- Alan P, Bryan, Graham, Allan C, Bill

The following were the PhD students with their research topics: **Graham Davey**, A study of the endotoxins of some phycomycetes; **Shanti Billimoria**, The replication of iridescent viruses in cell cultures; **Bryan Williams**, Some aspects of the induction of the antiviral state by interferon and poly rI:rC; **Alan Parkinson**, Development of radioimmunoassay methods for the detection of antiviral antibody; **Allan Crawford,** Ecology of Wiseana baculovirus host-virus interaction in the pasture habitat; and **Bill Maskill** The quantitation of antigen-antibody interaction by solid phase radio-immunoassy: A model.

This was a very productive time with someone in the lab getting exciting positive experimental results and passing on their enthusiasms to the others,.

Sabbatical leave at Oxford

By the end of 1975 I was ready for a sabbatical leave. I managed to obtain a Royal Society Commonwealth Bursary to spend a year at the University of Oxford, NERC Unit of Invertebrate Virology where Chris Payne and Jimmy Robertson worked. I found some 'digs' on Five Mile Drive in North Oxford, an evening stroll away from the Trout Inn on the Thames, one of Inspector Morse's favourite pubs. I bought a second-hand push-bike and on fine days would cycle into work on South Parks Road.

The Trout Inn - Wolvercote

Oxford University was everything that people think it is — a golden city of dreamy spires, a place of excellence, elitism, privilege and tradition. The university has the resources and the intellectual capital to push one to their academic limits. The architecture is awe-inspiring and the atmosphere monastic — a devotion to scholarship and contemplation. I had a year there free from any commitments or restraints — apart from writing a study leave report, which I completed prior to leaving NZ Chris and I carried out some studies on a protease activity associated with baculoviruses and some other exploratory work on

other viruses. I was able to obtain some new iridovirus isolates for my insect virus collection. We spent many a 'happy hour' with a ploughman's lunch at one of the many nearby pubs — solving the problems of the world. For something more uplifting there was the nearby Museum of Natural History with its famous displays, occasionally you had to avoid becoming part of the crowd scene in one of the Inspector Morse's TV series.

For more entertainment to be found, there was the 90 minute train trip to Paddington Station into the heart of London. These were usually weekend excursions for a play and a meal and an overnight stay at the West End. Further afield there was Paris and Barcelona and the rest of Europe.

Some 20 years later I spent a few months in Oxford. The former NERC Unit of Invertebrate Virology had became the Institute of Virology and Environmental Microbiology (IVEM) and later in 2000 it became part of the Centre for Ecology and Hydrology (CEH). Oxford University had changed due to the university free market economy in the country. There were now >115 universities in the UK These other universities (some of which were formerly polytechs) all competed for their share of students by making promises of quality and teaching excellence, offering incentives and new courses to attract students. The government funding for these universities was driven by the points ratings assessments which is based primarily on research and the amount of funding that this research attracted.

Hertford Bridge - (aka 'Bridge of Sighs')

Oxford University traded on its reputation and the people who came there were basically using Oxford as a stepping stone to somewhere else — using the "made in Oxford" or "stayed in Oxford" stamp on their CVs. The 'permanent' staff at the Institute faced fierce competition from granting bodies and worked on the grant getting treadmill. Gone were the days of the two hour pub lunches when ideas and views flowed freely (In fact the former Director of IVEM tried (unsuccessfully) to eliminate coffee breaks and reduce lunches to half an hour). This lack of informal scientific interaction along with the English social reserve of 'knowing your place' often resulted in a lonely and isolating Oxford experience. Fortunately I had several friends and colleagues from the previous sabbatical who made the Oxford experience a friendly and enjoyable one.

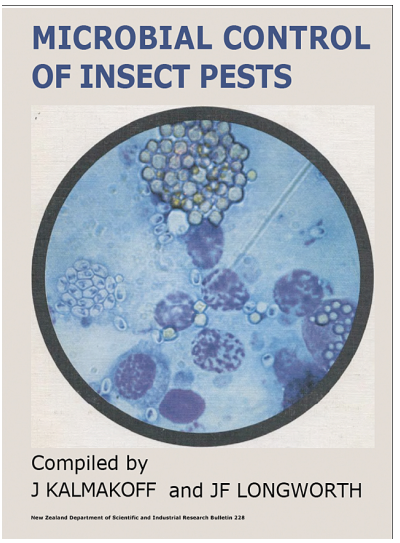
The other aspect that had changed was that Oxford had become a major tourist attraction. The city streets and markets were congested with buses and hordes of people on a one-day trip from London. Instead of the swish of the academic gown of an Oxford don striding along the cobbled streets of the monastic buildings you got the cacophony from a gaggle of gawking tourists with their cameras and guidebooks.

On the way back from the sabbatical at Oxford in 1976, I took the long way home. I left in mid-November via Budapest, Athens, Istanbul, Teheran, Delhi, Kathmandu, Bangkok, and Manila. I spent Christmas on Kuta Beach, Bali. When I got back to Dunedin it was the long summer break and I had plenty of time to readjust to being back.

Back at Otago

Later that year (1977) in August we ran a UNESCO/UNEP/ICRO Regional Training Course on Microbial Control of Insect Pests and later published a book on the lectures and practical classes presented at that course. There were 14 contributors from New Zealand, Australia and Canada. The main organisers were John Miles and Edouard Kurstak who had connections to the United Nations agencies. The main attendees were scientists and workers

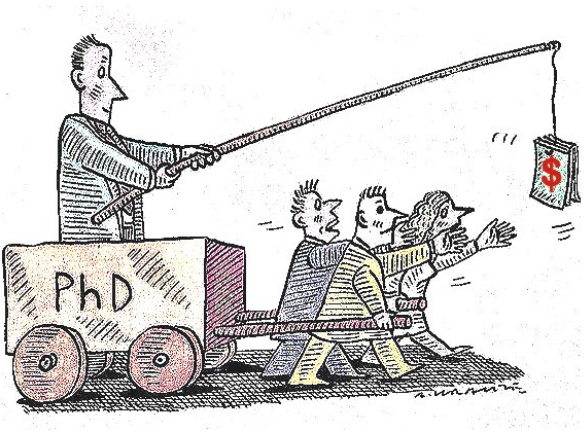
from the third world countries in the South-East Pacific region. Years later in 2015 a pdf copy of the book was posted on ResearchGate and it became a 'best seller'.



As the years rolled by and the postgraduates came and went and the funding waxed and waned, the research areas could be grouped into the projects listed below. More details could be found by clicking the links to the papers posted on ResearchGate (click on 'Project log').

Microbial control of insect pests

Develop biological control agents to reduce the use of chemical insecticides and their ecological damage to the environment. This was the over-arching theme for the studies on the insect viruses. This also included the use of bacterial agents such as Bacillus thuringiensis for sandflies and Bacillus popilliae for grass grub.



The molecular biology of Iridoviridae

To understand the replication of these unique dsDNA viruses and their ecology in the field.

The molecular biology and ecology of baculovirus

An understanding of the biology and distribution of baculoviruses to help in their use as microbial control agents of insect pests.

The properties of the toxin from the fungus Mortierelia wolfii

This fungus is a common cause of mycotic abortion and pneumonia in cattle. The goal was to investigate the target organ for the toxin.

The molecular biology of dsRNA viruses

The two groups of viruses studied were the Cypovirus (cytoplasmic polyhedrosis virus) and rotavirus. These viruses have a segmented dsRNA genome and provided unique insights into viral replication.

The molecular biology of dsRNA

The presence of dsRNA in a cell activates antiviral pathways. This provides a means for studying the innate defence mechanisms of cells (eg interferon-induction, RNAi, and viral interference) and possible chronic disease conditions.

Molecular studies on a Tetraviridae

Thosea assign virus (TaV) is an RNA virus isolated from nettle caterpillars belonging to the Limacodidae family which cause damage to coconut and oil palms in Indonesia, the Philippines and Malaysia. The goal was to carry out Tier 1 safety testing in mice and to characterise the virus.

A project not listed above was the development of methods of detecting antiviral antibodies using a variety of techniques. The quantitation of the antigen-antibody interaction by solid phase radioimmunoassay (RIA) was the subject of PhD studies by Bill Maskill and Alan Parkinson. A theoretical mathematical model was proposed that predicted the affinities of the antigen-antibody reaction. Later we developed a quantitive assay using the ELISA method which did not require the use of radioisotopes.

The South Pole Station

The Department collaborated with University of Oklahoma Health Sciences Center, Oklahoma, USA on a study on the summer outbreaks of upper respiratory tract illnesses in scientific personnel at McMurdo Station, Antarctica and the South Pole Station. These diseases frequently coincide with the beginning of each summer and the arrival of relief personnel. The quantitative RIA was used to investigate the immune status of the individuals before and after these outbreaks. This involved staff members from the Department travelling to Antarctica to collect samples and to carry out further studies upon return to Dunedin.

When 1982 rolled around, I was offered a Visiting Professorship at the Oklahoma Health Sciences Center to carry out modelling and analysis of the serological results from these studies with the aim of determining if there were differences in individual antibody affinities to the parainfluenzaviruses that were isolated. This formed the focus of my second sabbatical study leave for mid-1982 to mid-1983.

The DFC Adventure

In the period 1985 to 1989 we (Mani Pillai and I) undertook a capital (ad)venture with Development Finance Corporation (DFC) NZ and Univord Services Limited (University of Otago). The research development contract was to investigate the in vitro sporulation of NZ isolates of *Bacillus papillae* — a grass grub pathogen. Bacteria belonging to the genus *Bacillus popilliae* cause the so-called "milky disease" in grass grubs. The spores of the type species *Bacillus popilliae* have been successfully used in North America for control of the Japanese beetle and other pasture pests. At present the only method for the production of spores is the *in vivo* use of grass grub larvae. This method is both labour intensive and expensive.

The main goal of our project was to obtain *in vitro* sporulation in a chemostat. The *in vitro* sporulation would greatly reduce the cost of commercial production. However, the end result after three years of work was -although we could induce the pre-sporulation phase of

the Bacillus in the chemostat - we could not obtain any viable spores (note: numerous others overseas had also tried and failed.)

The interesting thing about this project was seeing how the venture capital world worked and how easy it was to 'fake it'. We used a software program called PERT that could produce at the press of a switch wondrous flow-charts, critical paths, time-line analyses and milestone events in any number of ways and colours. After three years we had a visit from a DFC official and he acknowledged that our work was a research project and not the commercialisation of a discovery. As an aside: DFC was placed into statutory management in 1989 and liquidated in 1991, after ill-fated investments in property speculation. Univord Services Ltd became University of Otago Holdings Limited in April, 2001.

In 1989 David Jones was appointed as Professor and HOD of the Department. He had experience with sporulation of Clostridia and commercial acetone-butanol fermentation. He agreed that the key to progressing with the *Bacillus popillae* sporulation was to understand its genetics. **Ross MacDonald**, a PhD student, had started a year earlier on the topic: 'Studies on the genetics of *Bacillus popilliae*'. He finally submitted his PhD thesis 8 years later without much progress. The only one that benefited from the DFC project was Mike Surrey who got three years of salary as Research Officer.

Ross MacDonald

In the 1990's the focus of the postgraduate research was on the Iridoviridae. There wasn't any funding agency that would support this work so the challenge was how to carry out research that didn't cost much money.This included: **Sean Davison**: A Study of the Polypeptides and DNA maps of two New Zealand Iridescent Viruses; **Nigel McMillan**: A Study of the Molecular Biology of two New Zealand Iridescent Viruses; **Stephanie Watson**: In vitro Replication of an Iridovirus: **Richard Webby**: A Study of Iridovirus Phylogeny.

The Lab Bible

Vernon Ward

Over the years a specifically unique tradition emerged in the lab. In order to maintain the momentum in certain areas of expertise, it became the policy that before a PhD student left that they would pass on their expertise to an upcoming postgraduate. This lab mentoring scheme worked so that all the postgraduate students in the lab were familiar with the different methodologies used whether they were specially relevant to their research project or not. This evolved into a standard set of protocols for everyone in the lab -- a 'Lab Bible'. This was very useful when analysing experimental results since the methodology would be a 'known' and experienced by other students. **Vernon Ward** was instrumental in documenting the methodologies and left behind this legacy which was used in the lab and by other postgrads in other labs in the Department. It also meant that when it came to writing up time, the Materials and Methods section was already done.

The chess challenge

Also on top of a freezer in the lab was a chess board set up for a quick game or left with a game in progress. Often while waiting for some experiment to run or as a displacement activity, a game of chess was played. I laid down the challenge that if a student could win three consecutive games against me, I would write their PhD for them. Sean Davison was the only student who would come close -- after his second win I would play to 'force' a draw either by a quick game with a time-clock, a stalemate or the 3-fold repetition or the fifty no capture rule. On the wall next to the chess board was the 'wall of travel' where postcards from overseas travels were posted.

In 1994 David Jones went on study leave and I was appointed Acting HOD. This role was not onerous since David had left the Department in a good financial position so requests for spending money were not denied. There were staff issues with two academics and performance issues with the departmental secretary which had to be delicately handled. I was able to put off making any substantive decisions by saying: "Wait till David gets back". Part of the period of my reign as HOD is covered by the weekly newsletters of John Tagg (see chapter — The Departmental Newsletters)

In 1996 I took study leave in England with the objectives of: (i) completing a phylogenetic classification of iridoviruses, (ii) furthering the development of the computer simulation model of the Tb-possum and (iii) obtaining an updated on developments in using computers for the teaching of molecular biology and virology. I had by this time moved to using computers for my research and teaching. While on leave I was appointed the Director of the Centre for Gene Research — mainly due to the efforts of Clive Ronson who wanted to wrench the Centre from the clutches of the Biochemistry Department.

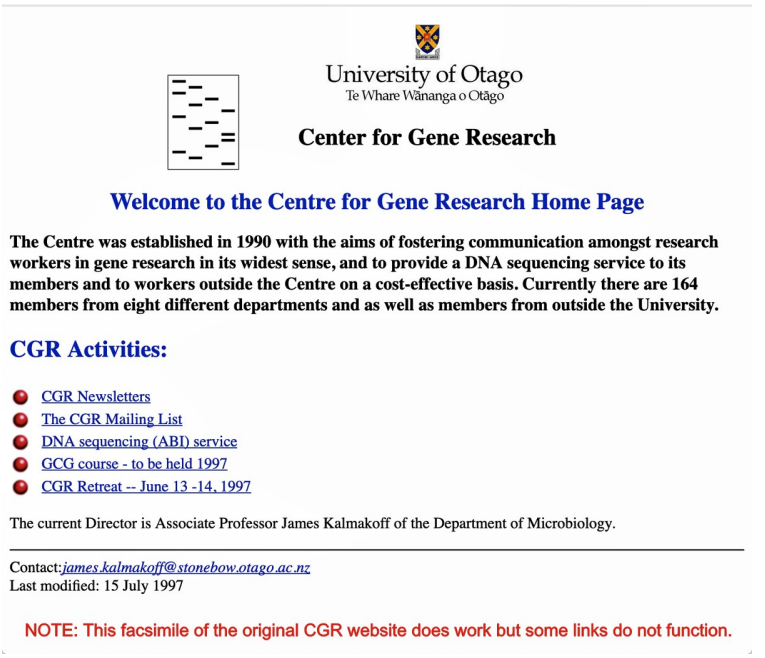
The Centre for Gene Research (CGR)

The detailed history of the CGR is presented in the previous chapter "The CGR Newsletters". In brief, the CGR was established in 1990 by a group of molecular biologists primarily from Biochemistry and Microbiology with the aims of purchasing and communally operating a DNA sequencer and in providing a Centre where people working with molecular genetics could meet and share reagents, techniques and expertise. The intention was to keep things simple and informal and avoid Administrative entanglements with the Clocktower. Essentially it was a bottom-up organisation of active research scientists with a Committee of 'wisemen (and women)' representing the different groups and departments. In its heyday it had about 320 members, some from outside the University as associate members.

Tracee Masson, James, and Janet Dewdney - CGR DNA sequencer

The first Director was **Tony Robinson** from the Virus Research Unit and was later followed in 1993 by **Murray Grigor** from Biochemistry and then by me in 1996. In terms of DNA sequencers, we moved from the ABI Model 373 in the Biochemistry Department to the ABI Model 377 which was installed in a purpose-built laboratory on the 8th floor of Microbiology in 1998. We were able to provide DNA sequencing at a modest cost which included the cost of consumables and a small surcharge for running the infrastructure of the CGR. We were able to run workshops, retreats, poster sessions and major conferences like the Queenstown Molecular Biology (QMB) meetings in Queenstown.

In its heyday, it used to take us longer in time and resources to process the paper work for a DNA sample than the sequencing itself. We were able to implement time savings by using an online CGR membership system developed by Jason Tagg with FileMaker-Web FM software. With the online system all the sample details were entered (along with account numbers) and the sequencing results were sent electronically. This membership website was also used for exchanging information between members and the CGR in general.



University of Otago
Te Whare Wānanga o Otāgo

Center for Gene Research

Welcome to the Centre for Gene Research Home Page

The Centre was established in 1990 with the aims of fostering communication amongst research workers in gene research in its widest sense, and to provide a DNA sequencing service to its members and to workers outside the Centre on a cost-effective basis. Currently there are 164 members from eight different departments and as well as members from outside the University.

CGR Activities:

- CGR Newsletters
- The CGR Mailing List
- DNA sequencing (ABI) service
- GCG course - to be held 1997
- CGR Retreat -- June 13 -14, 1997

The current Director is Associate Professor James Kalmakoff of the Department of Microbiology.

Contact:*james.kalmakoff@stonebow.otago.ac.nz*
Last modified: 15 July 1997

NOTE: This facsimile of the original CGR website does work but some links do not function.

By the 2000s capillary ABI DNA sequencers were being developed and installed at other universities and in particular at Massey University's Allan Wilson Centre. This technology provided for a high throughput sequencing service at less cost. The CGR was not able to convince the University Research Committee to purchase such equipment and had to settle for a second choice Beckman CEQ200XL capillary sequencer. The Beckman sequencer did work out and we were left without the latest technology. By negotiating an "honorary membership" for the CGR we were able to use the Allan Wilson sequencing service. Samples were picked up by courier on a daily basis from Microbiology and the results were available online and able to be processed as if they had come from the CGR.

At this point it is relevant to make some comments about research funding policies and the CGR. The CGR was set up as a grass roots organisation and had no official status within the University structure besides having a home in the Medical School. This worked fine until the University began its managerial policies as championed by the VC of the day, Graeme Fogelberg. He was uncompromising and not everybody approved of his approach. It became the new competitive era of user pays and funding measured by 'bums on seats', He closed some of the smaller departments and introduced full cost recovery for research activities. His henchman, Ian Smith, Deputy Vice-Chancellor, Research and Enterprise sent up the research Theme structure for the University.

The aims of the Themes were admirable: to increase national and international leadership and recognition for excellence; to increase interdisciplinary and collaborative contributions in a particular research field; and to potentially attract external research funding. It was a top-down structure and the CGR was given the Theme of 'Gene Function and Structure'. Other Themes were created by trying to 'pick winners' (a notoriously unsuccessful method). Although there was up to $25,000 awarded per Theme, there was endless reports and administrative compliances required. Themes came and went and the CGR Gene Structure and Function became split into several entities: Genetics Otago, Centre for Reproduction and Genomics, Otago Genomics Facility High Throughput DNA Sequencing Unit, NZ Genomics Limited, Functional Genomics, Gene Expression and Proteomics Theme, Virology Theme, Microbiome Otago, Allan Wilson@Otago and the Centre for Translational Cancer Research.

The problem at Otago was that there were several research 'prima donnas' (no names mentioned!) at the University and they all had their own agendas and failed to come together in a collaborative manner to form a Centre of Research Excellence (CoRE). This was self-evident when the Government called for CoREs to be set up in the country to: "encourage the development of excellent tertiary education-based research that is collaborative, strategically focused and creates significant knowledge transfer activities" These CoREs would get the bulk of the country's research funding with a $5 million set up grant each.

Of the seven original CoREs: Auckland University was awarded 3, Massey 2, Wellington 1, Lincoln 1, and Otago 0. Given that Otago punched above its weight in being awarded more Medical Research and Marsden grants than other universities; this came as a shock. The Massey University's Allan Wilson Centre was happy to partner with the members of the CGR and provide the DNA sequencing services.

With the loss of the DNA sequencing affordability and its devolution into other entities, the CGR lost most of its 'mojo' and became something of a historical footnote by 2005. I wasn't sorry to see this happen since by that time I had become fully committed to my role as Associate Dean, Website & Communications.

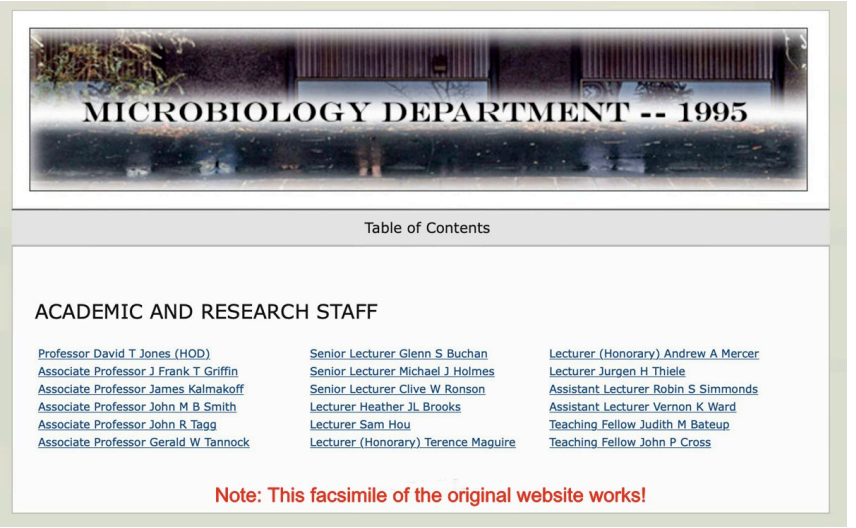
Associate Dean, Website & Communications

As a background, my interests in using computers dates back to the 70's when using a Monroe 1860 programmable calculator we modelled the antigen-antibody reaction using quantitative radioimmunoassays. Later when the Apple computers became available we developed some prey-predator models for using viruses for biological control of insect pests. We used STELLA, an object-oriented programming language which had graphical outputs which made it easy to model different scenarios. We also tackled the TB problem in possums, the spreading of TB to deer and cattle from possums.

If I had to do it over again, I might have become a computer geek since I enjoyed the coding aspects of the model building. It was a narcissistic self-satisfying activity and it has

been described as a kind of digital masturbation. However, I would became distracted by the rich tapestry of Life around me and lured away from becoming a computer geek.

The first webpage went live in August 1991 posted by the legendary Tim Berners-Lee on a NeXT computer. Initially webpages were considered something of a novelty and it took another decade before their potential was taken seriously. In 1995 I developed a website for the Microbiology Department. This was followed by a website for the CGR in 1996 that used a membership database to handle the online submissions for DNA sequencing. In those early days much of the HTML coding was done using DreamWeaver. Later CMS (Content Management System) software and PHP databases became the standard.



In 1996 Professor David Jones became the first Dean of the newly formed Otago School of Medical Sciences (OSMS) which consisted of the five preclinical departments of the Otago Medical School. The objective of the School was to promote the interests of their departments and make course changes to allow students that did not gain entrance to the professional programmes to continue studies in their departments. This course became known as the Health Sciences First Year (HSFY). This soon became a very attractive option

for students coming to Otago and became the focus of the University's promotional material. (see Figure)

In 1997 the OSMS Publicity Group was formed with myself and Michelle Coleman as Chairpersons and representatives from the five departments. Our aim was to promote the interests of the School and develop promotional materials for intending students - a website soon followed.

Professor Linda Holloway, the AVC of the Health Sciences Division participated in the OSMS activities and was supportive of our approach to promoting the School's outreach to High School students and the success of our recruitment of first students. She was an advocate of our use of the website and social media. On one of these occasions in 2000, I

jokingly said" Don't thank me — pay me". Her retort was: " Give me a business plan." Several days later I took up her challenge and gave her a two page budget and justification. Much to my surprise she created the position of "Associate Dean, Website & Communications" for the Health Sciences Division (This was a 0.5 position with 0.5 still being Microbiology). One of the fish hooks of the position was that I had to chair the Web Advisory Committee of the University's corporate website. I felt like I was being thrown into the deep administrative end with the sharks and having the nightmare of managing website development for not only the Health Science Division but for the whole University.

The terms of reference for the Associate Dean, Website & Communications were:

- To act as the Marketing Coordinator for the Division of Health Sciences
- To oversee the development of websites within the Departments and Schools of the Division.
- To audit and ensure that "best practice" in website design is being adhered to within the Division.
- To audit and ensure that promotional print material produced within the Division conforms to the style guidelines and University branding policies.
- To foster the development of the internal use of the Divisional website -- maintaining staff and publications databases, on-line documents, bulletin boards, email chat-lists, admissions, etc.
- To co-ordinate the development of the website for teaching resources -- such as BlackBoard and distance teaching.
- To participate in the development of the University's website and to represent the Division on matters of policy and practice

Divisional Web & Publicity Meetings were held on a monthly basis and/or as required. They were attended by representatives from the Wellington and Christchurch Schools of Medicine, the University's Marketing & Communications, the Schools of Pharmacy, Dentistry, Medicine, Physiotherapy and Medical Sciences along with staff from the Divisional Office.

(For a snapshot, see the graphic for November 20th, 2002 meeting.)

Meetings were usually well attended and were held at noon followed by a catered lunch. This provided an atmosphere for informal discussions and socialising. Linda Holloway often attended these lunches and was very supportive of our activities. In the early days the main topic of concern was the establishment of websites within the Schools and settings of some web branding standards. Warren Fraser and Manson Wright provided technical assistance in website developments and Michele Coleman in database management of research profiles.

Linda Holloway completed her term as AVC in 2004 and Don Roberton became the new AVC in 2006. Whereas Linda was a strategic thinker, Don was more of a process-driven administrator and did not consider the role of Associate Dean, Website & Communications as vital. This view was shared by Philip Noye, the Divisional Finance Manager who from the beginning felt the role of the Dean as an unnecessary expense. Needless to say, the position of Associate Dean, Website & Communications was disestablished in 2008. In the later years the emphasis was more on the use of web resources for teaching and the 'best practice' for individual departmental websites. By this time the beachhead for the academic use of the web had been established and others had stepped into that role. It was a good time to depart the scene.

The Web Advisory Committee

The Web Advisory Committee (WAC) of the University was established in 2000 and comprised of representatives from the other three academic Divisions, the Head of Marketing & Communications, the Director of the ITS Centre and the webmaster. It was run from the Office of Academic Services, headed by John Price. From the beginning there was a tension as to who should 'own' the web — Marketing & Communications felt it was theirs as of right since it was about promoting the University — ITS claimed it since it was mainly about providing computer services. Academics felt the Web was far too important to be captured by these vested interests and that it was vital for forming academic networks and research developments and for online teaching resources.

To kick off the University website, an outside company, SHIFT, was commissioned to develop the 'look and feel' of the Corporate website — otherwise we would have spent months arguing as to what colours and font to use. They also provided a set of web guidelines and standards. By this time there were several feral departmental websites and our first task was to bring them up to standard and assist them in developing a coherent University web presence. In those days DreamWeaver software was the gold standard and courses were taught to potential departmental webmasters on its use and this helped to bring some consistency to web design.

(See the pdf for the May 8th, 2002 meeting.)

Despite the creative tensions within the Web Advisory Committee, its monthly meetings acted as a clearing house for developments and issues as they arose. With a staff of three web designers, it was not able to design everyone's website. After some university restructuring in 2005s, Marketing & Communications with its much larger budget and staff took over most of the responsibility for the Corporate website and the WAC quietly faded away.

Web 2.0 Teaching

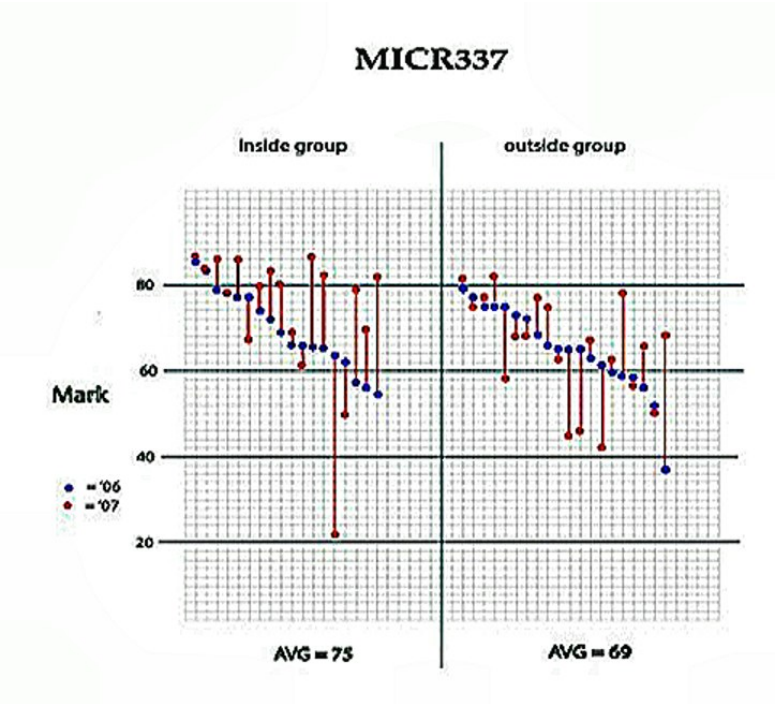
One of my enduring interests was how to use the potential of web-based learning in teaching and in particular the 3rd year virology course. One of the big problems in education is that students are mainly in a passive, compliant mode. However, they use Twitter, Instagram and Facebook, etc and so the challenge is: can we get a similar engagement in an educational context? The University had invested in BlackBoard, a web-based server software which features course management; was customisable and scalable in design and allowed for integration with university information systems but it was an inflexible monster to use. BlackBoard was primarily used as a depository for lecture notes, pdf's and ppt's — an academic dumping ground. Although it is possible to form discussion groups in BlackBoard, it was rarely used. My objective was to build collaborative and shared networks which happened by 'viral growth'.

The software used for this social networking was Neighbors, an implementation of Webcrossing -- a well established discussion board software package. The key point about this social networking was that the individual student was the centre of everything and could control the subsequent interactions and relationships and have private space that belongs exclusively to them. It had the Facebook look and feel but with total control and customisation by the participants and the webmaster (me!). It became know as the 'Virology Intranet'.

The Virology Intranet contained all the teaching resources and course content and also the discussions boards that the students had created. Each lecture had its own 'Discussions' folder. The course had some internal assessments and a final written exam (65%).

The final written exam (2 hr) for the course consisted of three questions from a list of nine given at the beginning of the course. The lectures were presented in the traditional

manner and dealt with each virus group regarding their replication, gene expression and associated diseases with the individual viruses (RNA and DNA) in a 'vertical' manner. The exam questions were designed to run across the different viruses in a horizontal manner. The questions were broad and could be answered in a number of different ways -- there was no 'one correct answer'. Given the broad range of the questions -- preparation of an answer would be required to obtain a good mark. This teaching approach had other features, one of which is that the lecturer was never asked: "Do I have to know this for the exam?" The students were encouraged to form groups to prepare their answers to these questions. To help in the evaluation of this teaching method, Russell Butson from the HEDC (Higher Education Development Centre) was seconded as an observer for the course and in the final assessment of the project.



After the course was completed and the exam results were known, a comparison of the results were made of the students who studied within a group with students who did not participate in the study group. The average mark from the previous years' results (year 2006 - blue dots) indicated that there was no significant academic difference: 68.7 and 68.0

between the groups. A comparison was made of the individual students' 2006 average (blue dot) with the mark received in the virology course in 2007 (red dot). (Each vertical bar represents a student.) 72% of the students within the group improved their grades from last year compared to 50% improvement outside the group. The average for the virology course for inside group study was 75 compared to 69 for the outside group. This was an objective result of the student experience; there were many positive comments that Russell reported in his evaluation. (See pdf for the complete report of the project.)

Overall I considered the Virology Intranet a great success, there was much more participation of the class in the course and it had something of a buzz around it. However, it did take a huge amount of time and resources to set up and run and normally an academic would not have that luxury of those resourses. It was only as my role as Associate Dean that I was able to do it. The Virology Intranet was taken over by Vernon Ward who became convenor for the virology course and it ran for a number of years but without fresh input and development it lapsed.

Final Remarks

With retirement looming on the horizon (2009), I began compiling archival records, photos and documents relating to the social activities and history of the Department. The concept seemed simple — assemble the archival material and events into a time-frame, put them up on the web and this would tell the story of the Department. While former staff members or students would be able to find their way around the archive, those unfamiliar with the Department would not know where to look or what path to follow. To address this issue, a limited number of guidebooks entitled: *"A History of the Microbiology Department 1959 - 2010"* was printed to supplement the online archive. A book launch was held in the Departmental Tea Room on December 16th, 2010 to an invited group of Microbiology "luminaries" as part of the Christmas festivities.

The online departmental archives were maintained until November, 19th, 2012 after which time they were discontinued due to a lack of support from the Department.

A seminar given in 2006 as Associate Dean, Website & Communications -- on developing a departmental intranet.

The occasion was the 150th anniversary of Darwin's Theory of Evolution (2009) -- some of the key concepts are still relevant today.

So that is **my story**, viewed from a distance of years and as a memoir. The growth, blossoming and fading of particular projects and events are seen as the natural order of things as they morphed into other entities and projects. I highly recommend that everyone should write their memoirs. It gives one an opportunity to get closure on issues in one's life and to forgive those who you think have wronged you.

JK Lab Gallery