Feline leukaemia was shown to be transmissible experimentally in cats using cell-free extracts of lymphosarcoma tissue from a spontaneous field case. Type C virus particles were demonstrated in the experimentally induced tumour and in cells cultured from it. This was the first transmission of a spontaneous mammalian leukaemia. [The SC7® indicates that these papers have been cited in over 230 and 210 publications, respectively.]

Retroviral Leukemogenesis and Acquired Immunodeficiency Syndrome

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From the start of this century, it had been known that fowl leukaemia was transmissible and caused by a virus. Somehow this finding was not thought to be germane to mammals by those in veterinary or human medicine. In the 1950s Ludwig Gross had shown that a particular mouse leukaemia in inbred laboratory mice was associated with a virus but that the transmission of this agent was vertical, in the germ line. This gave rise to several theories of leukaemogenesis, but unfortunately none of them met the facts of leukaemia as found in free-living and outbred species.

I had worked for some years in human pathology and had become particularly interested in haemopoietic tumours. When I returned to veterinary hospital work, I was surprised to find so many neoplasms of this type, and I was prompted to carry out a survey in Glasgow. Surprisingly, this showed that leukaemia appeared to be about five times more common in cats than in humans. I therefore cooperated closely with a local veterinarian, Harry Pfaff, and outlined to him the range of syndromes I was finding. We then started to find as many of these as possible in order to get fresh material for passage, electron microscopy, and culture. Here we had a stroke of luck. One of his clients was a dear, but slightly crazy, old lady who lived alone in a large house with 100 cats. She had taken these in, off the streets, as strays. Her feline philanthropy ran to bed and board, but not to sex. So she had my friend castrate them all, toms and tabbies alike. This was tough for the cats but excellent for us as it meant that all of these animals were outbred and unrelated.

In the course of a year or so, he submitted to me eight cases of different kinds of leukaemia from this household. This was very striking evidence for horizontal transmission of an infection, and so I decided to set up a transmission experiment from this source material. I chose two cats with different tumours. The first was a thymic lymphosarcoma with leukaemia and the other was an alimentary lymphosarcoma. I now needed an isolation facility. What we used was extremely crude compared to our splendid experiment facilities of today. We had no grant and no other money. Mary F. Stewart, a veterinary surgeon from Cornell University, had recently settled in Scotland (because of a man and mountaineering) and had an isolated
The other finding that arose was that leukaemia induction in a large series of cats infected at one time occurred in a linear fashion over a long period of time with a median latent period of around four years, indicating a stochastic "strike event" much later shown to be due to promoter insertional mutagenesis and other related phenomena.\(^5\)\(^6\) The field study that we immediately carried out showed for the first time that feline leukaemia-virus infection was widespread in a large city and low on country farms and that the lower the socioeconomic group the cats were in, the higher the incidence. But that is another story....