

**Jerom**

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Rachel I Weiss

## Prologue

This most recent version of Jerom's story is being updated in May 2001. The most significant changes to the 1997 draft include the omission of human names, and clarifications of language and description. -RIW

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I began keeping a journal on Jerom in December 1995, about half-way through his illness. It had two initial purposes: personal - an outlet for the intensity of what I was going through caring for Jerom every day; and professional - I was the first to care for a chimpanzee with AIDS, and I thought that tips for caretakers to come, as well as a case study would be of great value someday.

I was, as I am now, keenly aware that I did not ever have a prerogative to know all of the facts in Jerom's case. I always took care to record events as objectively as I possibly could, however, I was quite emotionally involved in his well-being, and after being a privileged member of the AIDS Project for almost two years, my disdain for the use of primates in biomedical research had reached its peak. I am obviously not a likely candidate for objectivity. Nonetheless, I have done my utmost to ensure that the telling of this tale remained as forthright and honest as I possibly could make it. I did not need to embellish to make this story poignant: the truth itself was nightmare enough.

Rachel Weiss  
July 1997

## In the Beginning

My name is Rachel Weiss, and this is not my story. This is the true story of the death of a chimpanzee named Jerom, which I'll tell you about after I explain why I am qualified to relate the events of 1995-6.

In 1993, as a junior at Indiana University, I had a job as the weekend caretaker at the Medical Sciences department's animal quarters. My duties entailed the feeding and watering of hundreds of birds, rats, and mice used in biomedical research. Many of the mice were used in cancer studies and had tumors on their legs twice the size of their heads. The tumors didn't seem to bother them, but it always looked to me like they were always trying to climb out of their tiny, overcrowded boxes. The birds were songbirds and were used in a painless study of their larynxes. I was asked to identify the more vocal birds, and their vocal chords were subsequently cut. Several months later I also began to work weekdays at the Psychology department's animal quarters. During the week I washed the cages of many hundreds of rats and rabbits, and on the weekends fed and watered the rats, rabbits, squirrel monkeys and marmosets. Some of the rats and rabbits had electrodes buried in their heads, cemented to their skulls. I worked and cared for these animals for over a year, until I graduated from college.

## Yerkes

After I graduated from college in 1994, I got a job as a Primate Care Technician at the Yerkes Regional Primate Research Center, at Emory University in Atlanta, Georgia. I was very proud to be going to such a prestigious institution, and

excited to make a contribution to science while studying and caring for nonhuman primates at the same time.

Yerkes' Main Center is located not more than a few miles from downtown Atlanta. The compound is fairly small, and well hidden from the rest of Emory's campus; it houses well over 2000 monkeys and apes. Yerkes looks secretive, and I eventually learned that secret things happen there.

I moved to Georgia in July of 1994. My first contact with macaques (I was to join the Small Primate Wing) was a brief orientation consisting of three boring, outdated videotapes. The only things I remember from these tapes are two tips on how not to treat the monkeys: don't kick cages with animals in them, and don't stare monkeys in the eye. Everything I knew about natural macaque behavior I had learned in college.

I was outfitted with a white uniform and brown rubber boots, and within a week I was trained to care for laboratory monkeys. The job was physically challenging, but to my great disappointment and eventually my disgust, required virtually no intellectual ability. The care-techs worked from 8:30 a.m. to 5:00 p.m., and worked shifts covering every day of the week. The monkeys' cages were cleaned from 8:30 a.m. to 10 or 11 a.m. Then the monkeys were fed a breakfast/lunch of monkey chow. Caretakers each had a different theory about how to accomplish these chores. Some cleaned all of the cages first (this entailed spraying the cage out with a hose, dumping the full urine pan, and spraying the resulting mess down the drain), and then fed the monkeys in clean cages. Others first fed and then cleaned, claiming that the monkeys preferred soggy chow (the biscuits were deposited into the cages via a small opening in the front of the cage, and laid on the floor of the cage if they weren't being eaten). The afternoons were reserved for cage washing, which generally took up every spare minute of the afternoon, and enrichment, which quite often was pushed aside. In the afternoons, the cage-washing schedule was enforced and monitored far more easily than environmental enrichment.

After two or three weeks on the job, I requested to be 'cleared' to work in the HIV/SIV-infected primate areas, which included two buildings full of monkeys (RA and Virology) and a building of 13 HIV infected chimpanzees (CID - Chimpanzee Infectious Disease). I felt that previous involvement with humans with AIDS made me empathetic to the plight of the rhesus and pigtailed macaques involved in the AIDS Project. I knew the characteristics of many of the opportunistic diseases humans and simians with AIDS are prone to, and I also knew about the importance and effects of psychological health on the physical health. To be 'cleared' for work in the infectious areas, a care-tech was required to have a sample of blood drawn (to serve as a 'baseline' in case anything questionable ever happened) and to meet with the head of the AIDS Project.

The principal investigator was a thin, quiet, chain-smoking man in his 60's. He wore his gray hair in a crew-cut. He had me read over and sign some documents absolving Yerkes of responsibility for any virus I may contract. I asked him some questions regarding recent HIV research. He never once asked me about my knowledge of the disease or its manifestations in nonhuman primates.

After I'd been trained in RA, with the infected monkeys, I was taken into CID, which at that time was a part of the Small Primate Wing. I'd never worked with any of the chimpanzees before: I was anxious to, but I planned to work with the monkeys until I felt ready and opportunity presented itself for me to work with the apes. I was

taken into CID on three separate occasions, with two different people and I remember that I loved every second of it, terrifying though it was.

### **The Great Ape Wing**

I finally joined the Great Ape Wing in August of 1995, after spending a year with the HIV infected monkeys. By that time the GAW had taken control of CID.

The actual Great Ape Wing was comprised of two long arms of cages (a row of indoor enclosures connected by sliding doors to a row of outdoor enclosures, with many adjacent cages connected by sliding doors). The GAW was separated into five sections, designated A-E, stretching along the back side of the main building. CID, the Great Ape Nursery, and the GAW kitchen were all within jurisdiction of the GAW.

The GAW staff, including myself, was comprised of twelve care-techs. Three of the twelve worked in the nursery, and three were supervisors. Everyone who worked with the chimps, the three bonobos, and seven orang-utans cared very deeply for them, but because of individual differences in (human) personality and temperament, everyone took care of the apes and handled them in different ways. I was taught very little about chimpanzee behavior by anyone at Yerkes. I learned to trust my instincts, keep my head, use common sense, and that to get angry was futile. I spent most of my time in three sections on the wing - A, B, and E - and also trained to be the alternate for CID. Two other care-techs had virtually ceased going into the CID building after having experienced separate incidents with loose chimps and with the close quarters in the chimpanzee room. My supervisor and another care-tech spent as much time as their schedules and psyches would allow with the chimps in CID.

### **Chimpanzee Infectious Disease**

During my first year on the AIDS Project, the rumor was that the chimps in CID were never going to get ill. It was well known that the study had been abandoned years before, and the chimps all but forgotten about. My very first impression of the CID building was of a big mysterious box. CID sat up on a hill, behind the buildings of the Small Wing and the general chimp colony of the GAW, near the woods surrounding the compound. The walls were huge, windowless cement slabs. At the right side of the rectangular box, barred double doors with a peephole in the right door lead into the chimpanzee room. Another door, in the front right corner of the building, led into the tiny anteroom. The anteroom was cramped, dirty, and packed from floor to ceiling with supplies. At the far end of the anteroom, another door led into the chimpanzee room. This door had a thin window in it, and directly across from this window, in the chimp room, was a cage housing three female chimpanzees. These three females had a clear view into the anteroom and alerted the rest of the building as to the nature of their guests.

The first time I came into the building I was with another care-tech, a man who had known the chimps of CID for quite awhile. We dressed in the anteroom ('dressing out' in CID included a full-face shield, a Tyvek jump-suit, several layers of rubber gloves, a thick face mask, and a bouffant hair-cover); I was quickly identified as a stranger, and a ruckus ensued. I reminded myself not to be scared, that the chimps would only use that against me. My friend took me into the chimp room, which looked to me like a dungeon. To my right was a chain-link gate, which guarded the double doors, and which was padlocked on the outside. Turning to face the far end of the building, I was surrounded by 11 cages, five on my left, six on the right. The cages were approximately 11x9x8.5 feet, and filled with screaming, hooting, barking,

spitting, jumping, feces-throwing fully grown chimpanzees. The most vivid and frightening memory I have of that first introduction was of Jonah, an enormous teenager who later became one of my greatest friends, spread-eagle and flying through the air toward me.

I remember that my hair covers became saturated with saliva, which then ran down my forehead despite the foam rubber sponge on my face shield; I left with my Tyvek covered in feces, and with my heart pounding. I went to CID two more times, and found the second time that the chimps stopped screaming, and then they stopped throwing feces and spitting. The atmosphere in the building was bleak and timeless. Unwashed stains from countless feces wars covered the ceiling; almost every one of the water devices in each cell either didn't run, or ran incessantly. The walls were gray concrete. Cells were formed by interwoven, steel bars creating 3-inch-squares forming the front and ceiling of each cage. The side and back walls were concrete; each eight-inch-thick side wall had a slide-door in it, connecting adjacent cells. Incandescent light fixtures hanging from the building's drop-ceiling were the only source of light. It was illegal to open the double doors at the end of the building.

The chimpanzees lived in five groups: Buster, Manuel, and Jerom lived in the first three cages on the left-hand side of the chimp room. Buster was a mild mannered guy, with a big smile showing his small, pointy canines. He was desperate to play, liked to play rough and loved to play chase with one of my fellow care-techs, who ran back and forth in front of Buster's cage.

Manuel was quite aloof: too aloof to play with Buster. His face was light colored, with freckles, and his bottom lip always seemed to be protruding, making him look like a pouty little boy. He furthered this image by often swaggering about on two legs, especially while displaying. Manuel would often sit and plaintively "hoo" at the walls.

It was difficult for me to get a handle on Jerom at first. He was sick when I met him, and he seemed to spend most of his time sitting on his bed-board (a Lucite and steel shelf jutting out from the wall 6 feet from the floor). I'd been told that he was a jerk, and liked starting trouble especially with Manuel and being generally unfriendly with caretakers. Jerom was dark in fur and face, and of lanky build; he and Buster were half-brothers.

In the two cages adjacent to Manuel, Buster, and Jerom were squashed three rather large females: Arctica, Joye, and Betsie. Arctica was in charge here. She was an aggressive, drill-sergeant type, with gray hair in what looked like a crew-cut, and a cold smile. Arctica's most fearsome attribute was that she could easily get either sharp-nailed hand (I honestly believe that she sharpened her finger nails to points) through the bars of her cage. Arctica seemed to be the most disturbed chimp in CID. She was dangerously aggressive toward humans and often sat for many minutes at a time banging her back against the cement wall of her cage with all of her might.

Arctica's right-hand woman was Joye. Joye was bigger than Arctica, and all black with a dark face. She was infamous for her impeccable aim with a softball sized handful of feces. She, too, was quite aggressive toward humans. I believe that this attitude was influenced by Arctica and cultivated by long years in isolation in CID.

Their cage-mate, Betsie, was taller and thinner than the other two, and I believe must have been a force to be reckoned with in her pre-pubescent days. Unfortunately, Betsie was endowed with the largest sexual swelling I'd ever seen, and

it seemed to make her pretty miserable. She had a sweet face, with a perpetually glowering look on it; she was constrained to the high bed board by the enormity of her swell and apparently at the insistence of bullies Arctica and Joye.

Across from the three females, still at the far end of the building, in two cells, lived the only male-female pair: the control subjects, Sara and Nathan. They acted like an old married couple. Sara was grossly overweight, and people described her as looking like a tick. A sweet individual with gray sideburns and a far-away look in her eye, Sara loved to drink water out of the hose. Nathan was an attention seeker. He had a huge grin and a great sense of humor, and no qualms about pushing Sara out of the way to get a game of tickle or chase.

In the middle two cells lived Jonah and Marc, who reminded me of two teenage boys. Jonah was huge - over 150 pounds (70 kg); he had a large head and an enormous mouth which he seemed to have open in a tremendous play-face most of the time. Jonah liked to run and swing and play and eat; Marc was his unlikely companion.

Mark was incredibly sweet ; he did not like to play rough, though he was prone to incessant displaying when agitated. Marc had an abnormal habit of 'regurgitation and reingestion.' He was the brains to Jonah's brawn, and both were sensitive to me and my moods.

At the front of the chimp room, on the right side, were Roberta, Tika, and Hallie. Roberta seemed to be in charge here, although the hierarchy wasn't as obvious as with Arctica, Joye, and Betsie. Roberta was an average-sized female with a pretty face and clear, inquisitive eyes. She had a great sense of humor and was a great tease. She frequently initiated games of chase with me, and established clear rules: she ran into one cell, and if she touched the wall, I had to slap the wall as well. At times she tried to deceive me by almost-but-not-quite touching the wall. Other times she'd run toward the slide-door connecting her two cages but stop abruptly in the doorway while I ran on ahead. She always looked very pleased with herself when I was duped, as if she was tallying the score in her head.

Tika was the smallest adult chimp I knew. She was friendly to most everyone and loved to wash things in her water fountain including toys, paper, and her hands. She also enjoyed spitting on strangers and yelling into the telephone at whomever I happened to be talking to.

Hallie was the strangest chimp in CID, in my opinion. She was all black with spindly arms and legs. She loved to interact with humans but wasn't always sure how. Hallie didn't know her own strength and often appeared to be wearing a demonic smile.

The cages were sprayed out twice a day using the red, rubber fireman's hoses at either end of the building. The chimps threw feces and wet chow at each other across the room during the night, and at times threw feces at us during the day. It took about 45 minutes for two people to clean the building well, and one and a half hours for one person alone. During my first few weeks on the Great Ape Wing I accompanied others to CID to assist on a number of occasions. This was in addition to my other duties on the Wing. I spent no more time than it took to clean and feed in CID then, and had only cursory contact with the chimps.

The day that I really got to meet the chimps was an accident. Due to an earlier incident, the principle investigator had mandated that no one was to enter

CID alone, and so on a day designated to disinfect the cages, I joined my supervisor and a co-worker. 'Scrubbing' the building entailed requesting, enticing, or threatening the chimps to move through the slide doors into adjacent cells, where they were locked in, so that we could enter, chemically treat, and scrub with deck brushes the inside of the cells. On this particular morning, soon after my inception to the GAW, my colleagues showed me how to work the slide doors and foam the cages; after about an hour of work they both had to leave for a meeting. I offered to remain behind and feed the chimps, as I was not permitted to open the cages without another care-tech present, as per the PI's orders. We agreed to return to CID after lunch to resume scrubbing and the others adjourned to the anteroom to undress. I stayed in the chimpanzee area, putting up supplies; when I finished, I went to retrieve the chow barrel (plastic garbage can on wheels) from the anteroom, but the door would not open. The door locked from the anteroom side with a key for the handle and a sliding bolt with a padlock. I could see the padlock on the chow barrel and the handle of the door worked, so I knew that one of my partners had slid the bolt to, and that I was locked in. I picked up the phone next to the door, but it was completely dead; I decided that pushing the escape alarm (attached to a large siren on the top of the building ) would only cause chaos. I had nothing to feed the chimps, so I decided to kill time by scrubbing the remaining cells, despite orders to the contrary. I spent the next two hours scrubbing, and by the time I finished, my rescue was not yet at hand. I took this opportunity to finally meet my new companions. I began to understand the way these chimpanzees lived, imprisoned and isolated in this dungeon, always waiting for the door to open.

As a result of this incident my supervisor and I were able to persuade the PI to authorize several long-awaited repairs in CID. These included repairing the chimp room telephone, modernizing the water devices in each cell, and adding a 'shark cage' - a telephone-booth sized cage for protection from escaped chimps - to the far end of the building.

### HIV Research at Yerkes

The HIV (then HTLVIII/LAV) experiment on chimpanzees at Yerkes began on 5 March 1984.<sup>1</sup> The first two nonhuman primates to become successfully infected with the AIDS virus at Yerkes were Manuel and a second male, C477. Manuel was 4 years, 4 months old. C477 was only 3 years, 3 months.<sup>2</sup> Within the same year Marc (2yrs,11mo), Buster (4yrs,8mo), Roberta (4yrs,2mo) and Jerom (2yrs,8mo) were also infected intravenously; Jonah (2yrs,4mo) and another male, C469 (4yrs,5mo) were each housed with an infected individual, thereby exposing them to the virus.<sup>3</sup>

Roberta and Jerom were housed together. Jerom was the youngest to be infected, a baby at 2.5 years old. The virus these two received had been recovered from blood from both Manuel and Buster before being used to infect Roberta and Jerom. Jerom was given a significantly smaller dosage than Roberta to determine whether the amount of virus influenced how readily infection was established in chimps.<sup>4</sup> Jerom, at that time, did not become infected.

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<sup>1</sup> Donald Francis, Paul Feorino, J. Roger Broderon et al, *Infection of Chimpanzees With Lymphadenopathy-Associated Virus*, Lancet 1276-77, at 1276 (December 1984).

<sup>2</sup> Patricia Fultz, Harold McClure, Brent Swenson, et al., *Persistent Infection of Chimpanzees With Human T-Lymphotropic Virus Type III/Lymphadenopathy-Associated Virus: a Potential Model for Acquired Immunodeficiency Syndrome*, 58 Journal of Virology 116-24, at 117 (1986).

<sup>3</sup> *Id.*

<sup>4</sup> *Id.* at 118.

Hallie and Tika were experimental subjects between 1984 and 1986. The team attempted to establish infection via vaginal transmission. Only Hallie became persistently infected with HIV.<sup>5</sup>

Sometime after Hallie and Tika were infected, three more of Yerkes' chimpanzees were used in a vaccine study. Arctica, Betsie, and Joye were all infected with HIV; Arctica was the control of this study so she received no test vaccine. She was given the "...largest documented dose of HIV given to a chimpanzee."<sup>6</sup> The test vaccine did not work.<sup>7</sup>

In 1987 the team published a report on the non-infection of four chimps housed with HIV+ individuals. Jerom, Jonah, Tika, and the unidentified C469 had remained virus free.<sup>8</sup> Jerom and Roberta were the only heterosexual pair, both too immature to be engaging in sexual intercourse. The housing situation proved that HIV is not transmitted by casual contact.<sup>9</sup>

Later in 1987 the team published results of another study undertaken in 1985 and 1986. Both Roberta (+) and Jerom (-) were exposed, in April 1985, to an HIV strain then called ARV-2, later redesignated SF2.<sup>10</sup> Both individuals produced antibodies against the new invasion; it is unclear whether the SF2 actually established itself in Roberta. Jerom became persistently infected with SF2, and less than one year later, in July 1986, was superinfected with LAV-1, as was Manuel. The study showed that, even with HIV antibodies, the chimpanzee could become easily infected with a second virus strain.<sup>11</sup>

Although the AIDS Project could not produce full-blown infection in any of the chimpanzees studies, by 1991, Fultz et. al. were proclaiming that the chimpanzee was the "...first animal model to be established for AIDS."<sup>12</sup> The article claimed that no opportunistic infections were observed because of the effectiveness of the isolation facilities in which the chimps were housed.<sup>13</sup> The paper made reference to ten HIV+ individuals, which would have included C477. The paper also reported the infection of Jerom with yet another HIV strain, NDK, in January 1987. In 1988 he was part of a short-lived vaccine study. Within two years of infection with SF2 Jerom's immune system showed a decrease in HIV-specific antibody titers, a decrease in weight gain, a decrease in CD4 count, recurrent lymphopenia, and thrombocytopenia.<sup>14</sup> Several of the other HIV+ chimpanzees at Yerkes also showed a decreased platelet count. The

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<sup>5</sup> Patricia Fultz, Harold McClure, et al., *Vaginal Transmission of Human Immunodeficiency Virus (HIV) to a Chimpanzee*, 154 *Journal of Infectious Diseases* 896-900, at 898 (1986).

<sup>6</sup> Shiu-Lok Hu, Patricia Fultz, Harold McClure et al., *Effect of Immunization With a Vaccinia-HIV env Recombinant on HIV Infection of Chimpanzees*, 328 *Nature* 721-23, at 723 (1987).

<sup>7</sup> *Id.*

<sup>8</sup> Patricia Fultz, Cornelia Greene, et al., *Lack of Transmission of Human Immunodeficiency Virus from Infected to Uninfected Chimpanzees*, 16 *Journal of Medical Primatology* 341-47, at 343 (1987).

<sup>9</sup> *Id.* at 345.

<sup>10</sup> Patricia Fultz, A. Srinivasan, et al., *Superinfection of a Chimpanzee with a Second Strain of Human Immunodeficiency Virus*, 61 *Journal of Virology* 4026-29, at 4027 (1987).

<sup>11</sup> *Id.* at 4029.

<sup>12</sup> Patricia Fultz, Rebecca Siegel et al., *Prolonged CD4+ Lymphocytopenia and Thrombocytopenia in a Chimpanzee Persistently Infected with Human Immunodeficiency Virus Type 1*, 163 *Journal of Infectious Disease* 441-47, at 441 (1991).

<sup>13</sup> *Id.*

<sup>14</sup> *Id.* at 446.



cumulative results of this study made the team optimistic that these chimps would, someday, develop AIDS. The report also explained that the projected use for the chimpanzee as laboratory model was in vaccine testing, not AIDS. Rigid lab protocols required the use of as few chimps as possible, thereby creating an often statistically insignificant sample size. In addition, the course of the disease took an unreasonable amount of time to study.<sup>15</sup>

A researcher from the CDC was the principal investigator of the AIDS Project for years. By 1991 she had moved to the University of Alabama at Birmingham, leaving behind her test subjects. She heavily promoted the benefits of using valuable chimpanzees in vaccine studies, testing new therapies, and studying the progression of the disease.<sup>16</sup>

When the project ended no use had been made of Manuel, Buster, Marc, Jerom, Roberta, Hallie, Arctica, Betsie, Joye, or C477 for over five years. Jerom was the last to be mentioned in print, and wasn't mentioned again until 1995. In October, the US News and World Report reported that Jerom was exhibiting symptoms of AIDS. Two weeks later Science published a brief article describing the case. Fultz is quoted as saying that Jerom's illness would have little bearing on the course of vaccine development.<sup>17</sup>

Nathan (C455) and Sara (C548) joined the project in May of 1986. Jonah and C469 were, at last report, HIV-negative. C469 was last studied in 1985 [5]; C477 (HIV+) was last mentioned in a 1986 paper.<sup>18</sup> I have no idea who these chimps are.

Why did the project end so abruptly? Why was no effort made to continue research on these supposedly 'invaluable' creatures? The rumored explanation for the neglect of these 13 chimpanzees is that the CDC was doubtful that the chimps would actually develop AIDS, and became impatient waiting. They had Yerkes construct a building to the CDC's specifications and the chimps were moved from small cages in IDB (Infectious Disease Building) to relatively spacious quarters in CID. Yerkes was given a stipend to provide for the 13 indefinitely (more rumor). Jerom and Roberta were separated. C477 and C469 disappeared, and Manuel, Buster and Jerom were introduced. Roberta joined Hallie and Tika.

The chimpanzee arm of Yerkes' AIDS Project is still active. In 1997, Tika and Manuel were infected with virus isolated from Jerom's blood.<sup>19</sup> In addition, a vaccine study was funded by the NIH, and four unidentified chimpanzees are the study subjects.<sup>20</sup> Manuel was euthanized on 17 April, 2001.

## Jerom

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<sup>15</sup> *Id.*; Patricia Fultz, *Nonhuman Primate Models for AIDS*, 17 *Clinical Infectious Diseases* s230-35, at s231 (1993).

<sup>16</sup> Fultz, *supra* note 15.

<sup>17</sup> Jocelyn Kaiser ed, *Chimp Finally Shows AIDS Symptoms*, 270 *Science* 223 (1995).

<sup>18</sup> Fultz, *supra* note 2.

<sup>19</sup> Francis Novembre, Juliette Rosayro, Soumya Nidtha, et al., *Rapid CD4+ T-Cell Loss Induced by Human Immunodeficiency Virus Type 1<sub>NC</sub> in Uninfected and Previously Infected Chimpanzees*, 75 *Journal of Virology* 1533-39 (2001).

<sup>20</sup> CRISP (Computer Retrieval of Information on Scientific Projects) Abstract, National Institutes of Health (1998).

Jerom was born on 23 February, 1982, so he was 13 years old when I met him. When I began to work in CID in the middle of August, 1995, he had been enduring a bout of diarrhea for the previous six months. My supervisor and another care-tech had been the primary caretakers during that time, and they frequently reported the state of Jerom's stool. They were requested on many occasions to bring samples to the laboratory for analysis. The care-techs claimed that samples were often misplaced by the lab, the vets often neglected to write an order for sample analysis, and that most samples that had been analysed had no pathogens in them. The vets blamed a newly varied diet and then a recently implemented enrichment idea - straw on the cage floors - as causative agents for Jerom's problem. The elimination of these treats did nothing to alleviate the diarrhea. Because no pathogens were found in his stool, no course of treatment ensued.

For six months Jerom lived like this; like humans with AIDS, Jerom's diarrhea was accompanied by moderate wasting. When I started working in the building in August, I had a little trouble remembering the names and faces of all of the new chimps I was meeting. I had little experience up close and personal with chimps and it took a little while for me to recognize the obvious individual characteristics of each chimpanzee face. But I knew that Jerom was getting sick; the first time I vividly remember identifying him in his social group he was sitting on his bed board, quite emaciated, with wild, sunken, staring eyes. Like the humans I've seen affected by wasting, I could see Jerom's skull under his skin.

### **September, 1995**

Jerom's CD4 cell count had been steadily declining for years. He was 'knocked down' (sedated for medical procedure) on the 10th of September 1995, and his CD4 count was at 160 (a normal chimpanzee (and human) has a count of ~1500); three days later his count was 10. He was isolated from his group on the 10th for the knockdown, and I was told casually, by one of the vets, that he would probably never rejoin them. The laboratory was finally able to isolate two bacterial parasites from his stool, and he began a course of antibiotics and electrolytes for his dehydration due to diarrhea. During this time I was regularly caring for CID, and Jerom began to recognize me as a caregiver. He was so severely weakened by the wasting that he had a difficult time holding his head up. He would sit with his knees drawn up and held his chin in his hand: he had to manually turn his head in the direction he wished to face. At times he would hang his head and sob quietly; other times he would climb down from his bed board and curl up in a fetal position on the floor in front of me. He never let me touch him then, but I desperately wanted to go in and hold him. My supervisor and I took turns sitting with him feeding him liter after liter after liter of electrolyte solution.

It was generally believed that Jerom was going to die during this spell, and it was decided that Nathan would receive a transfusion of Jerom's blood on 19 September. One method I'd found for absolving myself of the guilt I felt about the fate of these chimps was to remind myself that I had nothing to do with them being infected in the 1980s - I wasn't even in high school yet when the project began. On the morning of Nathan's knockdown, I told one of the two attending vets that, due to ethical reasons, I would not allow myself to be present in the building for the transfusion. The vet told me that there would be no problem with my leaving.

Medical procedures, referred to as 'knockdowns,' in CID were quite stressful to the chimps. A dart gun was used to anesthetize the individual. Many chimps in the general colony had been trained to hold up an arm or leg, to 'present' for an

injection. CID's chimps had experienced very little human contact throughout the years, and if any of them ever knew how to present, they effectively kept their knowledge secret. The chimps in CID always reacted violently to the veterinarians, who only seemed to come to the building for knockdowns, dart gun in hand. To dart a chimp, the vet stood patiently in front of the cage while the chimp, keeping a desperately watchful eye on the 1+1/2 foot long gun barrel aimed at him, screamed and tried in vain to evade the dart by swinging madly around the cage. The dart came out of the gun with enough pressure to shoot across the cage, penetrate the thick, leathery skin of the chimp's arm or thigh, and depress the plunger. I'd been told that the anesthetic burned badly as it entered the muscle.

After much screaming, Jerom was darted first and laid on the floor in the middle of the chimp room. Nathan was anesthetized and brought to lie next to Jerom. My role in all of this was to assist the vets in opening cages and carrying chimps. The rest of the procedure occurred so quickly that I found no opportunity to leave. The senior veterinarian drew two large vials of blood from Jerom and put them into Nathan's left arm. I was horrified and I tried to walk away from the scene, but I kept coming back to watch. I fantasized about tackling the vet as she worked over Nathan. I didn't.

I had known Nathan for over a month before he was infected with Jerom's virus. The first time I remember meeting Nathan I was hot, tired, and sweating, trying to bag a huge pile of filthy straw a co-worker and I had removed from the cages. I was in front of Nathan and Sara's cage toiling over my chore when I realized that Nathan was sitting on the floor of his cage, watching. He was giggling, in his own quirky manner, with a big grin and his tongue pressed between his teeth. I don't know what he found so funny, but from that day Nate and I became pals. He always laughed and grinned and always sweetly held my hand. When Nathan came up from the anesthetic after being given Jerom's blood, he never treated me the same. The first noticeable changes in his personality were an increased irritability, and a peculiar habit of sucking in his cheeks and biting on his lips nervously - he began to do this constantly. He also stopped holding my hand: instead he tried to crush my fingers.

In the weeks after the knockdown my supervisor and I revitalized Jerom. I believe that he began to realize that he would live alone from then on, and he started to come to me to groom him. To do this, I would sit down on the floor in front of his cage, and Jerom would sit with his back a few inches from the bars of his cage. The chimps at Yerkes make sounds with their mouths when they intently groom, made by smacking lips together or blowing air out of pursed lips. I thought I needed to imitate those sounds when I groomed Jerom, because that's how I first convinced him to let me groom. After a while my lips would get very tired, so I cut that out and he didn't seem to mind. I groomed him by slowly sorting through his hair with my gloved fingers, which I could easily move through the caging. He would move around and indicate what he wanted me to groom. Sometimes he'd hold up a leg or an arm; he'd always watch my face to make sure that I was paying attention to what I was doing. He never groomed me back (although sometimes he acted like he was considering it) but I didn't really blame him - Tyvek is pretty boring. I learned that Jerom was ticklish in his ribs, and that he was fairly shy. He smiled but it always looked as if he was trying to take it back, and when he laughed he bit down on one of his knuckles and turned away, so I couldn't see that I'd made him lose his cool.

**October, 1995**

Jerom's health improved dramatically, and I became his primary caretaker. By mid-October the enrichment coordinator and I arranged with the PI for Jerom to have supervised visits with Buster, his former cage mate. This would be accomplished by locking Manuel into cell #3 and opening the slide door between Jerom in the first cage and Buster in the second. The EC and I first reintroduced them on 16 October 1995. We stood and watched Buster and Jerom jump and scream, pound barrels, throw balls, each in their own cell, for many minutes. Eventually they calmed down, without more than a few slaps at one another; soon they held hands through the doorway, and even kissed and were soon rolling on the floor happily gnawing on one another. Buster tried hard to get Jerom to keep playing, but settled for a lot of grooming instead.

Over the next two weeks Buster and Jerom were allowed visitations as frequently as possible - from twice a day to once in three days. Each visit with Buster lasted anywhere from 1+1/2 to 4 hours. The reintroductions were always more successful when they were closely spaced. After the first few visits Buster and Jerom seemed to settle into the routine of being cage mates again; they did not appear to spend an enormous amount of time together, but Jerom seemed quite comforted by the fact that Buster was near and easily accessible.

During these two weeks, from 16 October to 1 November, Jerom's health dramatically declined. His platelet count fell to a significantly low level, and then he was diagnosed with pneumonia. The PI decided that the drop in Jerom's platelet count necessitated his immediate separation from Buster. The unpredictable nature of two male chimps could lead to an uncontrollable situation, and the research team was unwilling to lose Jerom that easily.

Jerom's pneumonia was diagnosed by Yerkes' head vet, a man who had worked for the Center for nearly 30 years. Not many questioned his concern and compassion for the chimpanzees in his care, but he was often demeaning or inflammatory toward other humans concerned with and concerning the care of the chimpanzees and monkeys. The vet explained to me that the only methods of identifying the causative agent of the pneumonia were a chest x-ray or a tracheal wash, which entailed growing the bacteria or virus from Jerom's lungs on a medium. The chest film does not ordinarily provide definite results and also would have been performed outside of CID, and infected subjects rarely, if ever, left their buildings. He told me that it was unnecessary to perform either of these diagnostic procedures, as he was quite comfortable with his diagnosis of "probable pneumosystis pneumonia." He claimed that the tests wouldn't tell us any more; the PI, present at the time of diagnosis, made no comment. Nothing more was mentioned about precisely identifying the cause of Jerom's pneumonia, and as his infection was low-grade, he was treated with a wide-spectrum antibiotic.

Two means of assessing the health status of a non-verbal nonhuman, since they won't always say exactly what hurts and where, are to monitor the individual's food consumption and to watch for changes in the texture, consistency, and color of the stool he/she produces. Jerom's diarrhea never subsided; it was at its worst at the beginning of September, all liquid, with dark green/black streaks and fist-sized globules of mucous in it. The antibiotic and electrolyte treatments seemed to take effect, and his stool appropriately changed to chow-color, but remained diarrhea. I was told at that time that the continuance of the diarrhea could have been due to HIV in the gastro-intestinal tract, or from the antibiotics themselves. Eventually Jerom, of his own accord, stopped taking the electrolytes from us. His wasting was also brought under control.

**November, 1995**

Jerom began solitary life (meaning no visits from Buster) on 1 November 1995. He occupied the first cell on the left hand side of the chimp room, beside the anteroom door. The slide door was padlocked; Buster claimed the second cell, and Manuel generally kept to the third. The sliding door was opaque, and it was possible to see shadows and outlines on the other side; the door also had a 1/2 inch diameter hole through one side, for insertion of a locking pin. Buster and Jerom spent a lot of time looking through the hole for each other, and Jerom also kept an eye on Manuel as he could see through the open sliding door into Manuel's cell. Jerom and Buster also spent quite a bit of energy trying to get the door open. During the previous weeks of visits with Buster, Jerom began to understand that a key opened the padlock that let the door open to let Buster in. Now he would get very excited if he saw me with a key, or he would tug at the padlock (he could reach it with his fingers) and turn it over and then attempt to slide the door open. It was very disheartening to watch him try to get to his friend.

I went to the PI and voiced my concern about Jerom's permanent isolation. He had authority over his chimps' housing conditions, as well as the direction of the project. He told me that he believed that auditory and visual contact with the other chimps in the building were all that Jerom really needed. I pointed out that the researcher himself would not be content to live in such a situation, that the calls of inaccessible friends bouncing off of cinder block and concrete walls would not be much of a comfort if he was sick. During our conversation, he admonished me to stop caring so much about these chimpanzees. I explained that the only way that I could care for them was to care about them: he told me that I needed to remember why we were at Yerkes. I also asked him on that day when he planned to euthanize Jerom. He told me that Jerom would be 'put down' when he had an undisputed opportunistic infection.

I'm sure that it seems ironic and hypocritical for me to have made such a query. In truth, my motivation was purely utilitarian. As Jerom's self-appointed advocate I felt that it was no longer in his best interest to continue living. It was a very difficult conclusion for me to arrive at, but Jerom's future was bleak. He could only look forward to more opportunistic infections, chronic isolation, more terror-invoking knockdowns, and no assistance from any HIV treatments, experimental or otherwise. There was no active experimental research being performed on Jerom. It seemed that his only duty was to wait while the disease progressed.

Obviously, for the researcher the issue of euthanasia was not nearly so simple. He was still reluctant to officially claim that Jerom had full-blown AIDS. He told me that Jerom would be euthanized when he had an undisputed opportunistic infection. I had been under the impression that Jerom's pneumonia fell under that category, but it seemed that without specific identification the pneumonia was not AIDS defining.

Jerom was knocked down again just before Thanksgiving so that the head vet could check on the progress of the pneumonia. The PI wanted to take Jerom to x-ray to identify the type of pneumonia, so he had me bring a gurney to CID. When he and the vet got to the anteroom to dress out, he still hadn't mentioned x-ray to the vet. When the subject was finally mentioned, the vet replied that there was no need, and the PI acquiesced without a word. I was horrified that the political tension between these men was compromising Jerom's welfare.

After the knockdown, I told the vet about some minor shifts in Jerom's behavior, and asked about the possibility of dementia. His manner of response was

condescending. He said that there was no way Jerom had dementia - his analyses always seemed to be starkly black or white - and that he would know what dementia looked like, because it would be blatantly obvious. I disagreed, and the subject was dropped.

At the end of November I went to visit my family for Thanksgiving. While I was gone I thought that surely the PI would have Jerom's pneumonia identified, allowing them to euthanize Jerom. When I returned after a week, Jerom was alive and appeared to have gained weight. He also seemed quite a bit more frustrated than when I had left him. He began to beat on the cage with the backs of his fists whenever I was nearby and either not paying attention or not coming over to him. If my back was to him and I wouldn't turn around, he'd also stamp on the floor with his feet while making a frustration face (this entailed him clenching his lips and twisting his face up, often with his thumbs in his ears). I tried to give him toys, but the only one that interested him was a yellow ring from a child's stacking game. Chimpanzees like to barter, and on many afternoons I would dip PVC tubes in peanut butter or honey and pass them out, and most everybody in CID would hand them back so I could give them more treats. Jerom was a master at bartering, and when he got extremely frustrated with me he would try to give me everything he had in his cage. He would motion toward the place where I kept his tube, and if I wouldn't give it to him he'd begin to push out pieces of chow, the uneaten end of a carrot, or the yellow ring which was too large to fit through the steel bars. He would desperately toss that ring at me, but often I had nothing to give him; other times I would go get some peanut butter or some other desirable snack, and he'd try to knock it out of my hands.

Just before Thanksgiving I discovered that Jerom had a strange fascination with boots. The boots that Yerkes' caretakers wear are tall, brown, and rubber, with rubber soles. It seemed that a lot of chimps had fun playing with the sole of a boot pressed up against the caging. One day I must have gotten tired of crouching on the floor, so I sat down and put the sole of my boot up against Jerom's cage. This elicited a reaction I'd never seen before in him or any other chimp: Jerom looked terrified, startled, and agitated all at the same time. He poked at my foot with one finger, and backed away whimpering. He finally climbed up to his bed board and would not have anything else to do with me. I showed him the sole of my boot on another occasion, and he dealt with it much better, although it still clearly bothered him. On one more occasion after this, I was sitting on the metal box containing the apparatus for the water fountain in Jerom's cage; I had the side of my leg pressed up against the cage front. Jerom came over to me enthralled, and pulled up the Tyvek suit covering the top portion of my boot. He put his fingers around my calf very gently and squeezed, poked and pulled the boot, laid on his back and spun around to get the proper vantage point. From that time, Jerom began to demand my boot at every opportunity. He eventually put a large hole in the side of it with his canine, and liked to put his fingers in it and feel around. The degree to which this fascinated and captivated him intrigued me. He would get so wrapped up in tugging and poking at the hole in my boot that he was able to ignore Buster knocking and banging at the slide door.

Jerom's health was as good as possible but his frustration became so incessant that it was difficult for my fellow care-techs to work in CID. My supervisor's duties were becoming more time-consuming, and the alternate CID caretaker simply could not face Jerom's constant demands. When he did come into CID, he would barely look at Jerom because to do so would inevitably lead to more pouting, pounding, and stomping.

I tried to make life as routine, but certainly not as boring, as I possibly could for all of the apes involved, including myself. Life seemed to move more smoothly when everyone knew what they could expect from me on a daily basis. I suited up and came in every morning with a paper cup of grape juice containing Jerom's morning medication. After he developed the obsession with my boot, he would refuse to drink without first making contact with it. I had to wait until he was ready, and he would let me pour the juice into his bottom lip while he poked and prodded my lower leg. I would let him play for a few minutes and then move on to say good morning to Buster, Manuel, and the rest despite Jerom's whines and protests. I realized that when I interacted with any chimp in CID, all of the others could watch our interaction, and so I attempted to treat everyone equally and fairly at all times. I gave Jerom more of my time relative to every other individual because of his isolation, and so that I could watch for minute changes in his behavior, but I tried to establish limits with him. For example, I began to only let him play with my boot first thing in the morning and last thing in the evening - I didn't want to encourage his obsession and tried to get him interested in other things. I also tried to give him everything I thought he needed without giving in to everything he demanded. Two research assistant friends of mine reminded me that Jerom had the capability for coping with his situation, and that I was there for support. The establishment of a stable, positive routine eventually seemed to make his, and my, frustration less intense.

## **December, 1995**

Jerom remained stressed about his isolation into December. In addition to the looks of frustration in his face, Jerom began to throw tantrums and display (a typical chimpanzee assertion of self) with greater frequency. He displayed either in response to another chimp's call or in response to something I could never identify. Jerom's tantrums became so intense that at times I was afraid that he would injure himself on the metal of his bed board or slide door. His displays entailed loud hooting and screaming, pounding on his barrel and running, two-footed kicks at the door to Buster's cell. Like a mother reluctant to encourage her pouting child's cries, I somehow managed to ignore many of Jerom's outbursts.

During this frustrating time, there were some enjoyable, calm moments. I brought two small hand mirrors into the building, and showed Jerom his reflection. It took him no time at all to recognize himself, and he seemed to be quite entertained making faces, sticking out his tongue, and looking at the bottoms of his feet which he'd hold up near his face. Before his complete isolation, Jerom had been in the regular habit of letting me groom and tickle him; in his agitated state he was very active, and could barely sit down long enough for me to touch him at all. His frustration continued, and he finally began to take out his aggressions on me. If I did something to displease him, he would kick the caging in my direction, bark angrily at me, and then pointedly ignore me.

Jerom's life continued in this fashion. At the end of the first week in December I noticed that his belly seemed bloated. I reported this to a vet, who told me that possible causes could be gas or fluid in the perineal cavity. I also noticed small, pinpoint red bruises (petechiae) on Jerom's pale chest. Since his low platelet count was discovered, I'd been on the lookout for hemorrhages anywhere on his body, which I'd begun to know like the back of my hand. It was amazing to most everyone that he developed no bruises whatsoever in this time. The petechiae I'd found on Friday disappeared by Monday. I had the head vet come in to look, but Jerom wouldn't come close enough for the man to see his chest. It was surprising to me that even after Jerom's diagnosis the vets still did not make regular rounds of CID (the vet staff

looked at every other nonhuman primate in the Center, every morning without fail). I have no idea how they could justify not coming regularly into CID. Their lack of attention to the 13 chimps, except during knockdowns, resulted in the chimps' aggressive and suspicious attitudes toward the vets during their occasional visits. As a result of that, the vets had to rely on the word of the care-techs to diagnose problems.

Frustration became Jerom's way of life. I began to try some basic training with all of the chimps in CID, and Jerom being sharp and bored attempted to comply with my little game. I was experimenting, as I'd never done any training before, with 'sit' (floor) and 'up' (on cage) by offering honey as the reward. Jerom became quickly annoyed that I had a wonderful treat, but would only offer it for a price; it did not take too long for him to understand what I wanted, but he didn't seem to have the patience for it. I would have his attention for a number of seconds, but he would soon be distracted and wander away, and he seemed startled when I called him back. Most of his physical movements began to have an air of tension and anxiety to them, an excited sort of restlessness. He paced about his cage most of the time I was in the building, which was about five to six hours a day, and would never sit still to let me groom him. Sometimes he would raise a leg and press his ankle to the caging, which was a signal to me, as it had been to Buster, that he wanted to play, but he'd never follow through.

Another interesting phenomenon that Jerom exhibited was what many behaviorists call regurgitation and reingestion ('r&r'). This is deemed an abnormal behavior whereby the chimpanzee ingests food and soon after regurgitates it onto the floor or his/her hand. This often occurs when the chimpanzee wants to enjoy a particularly delicious meal for a second time or simply when the individual finds no other way to entertain himself. Jerom began to do this routinely on his bed board, surreptitiously re-eating good treats and not-so-good treats. He soon began to regurgitate at strange times, on the floor in the middle of a training session, for example. It began to worry me when it appeared to be happening to him spontaneously: in r&r the chimps actively encourage the food to come up. Or Jerom was sicker than I thought, and was actually throwing up because of nausea. I reported to the veterinary staff when I saw him reingest vomit that was not fresh and yummy, but rank and chow-colored.

I began to realize that, as bad as this situation was, it was still very likely that it would get worse at some later date. The research staff's approach to Jerom was to 'wait and see.' Knowing a little of the nature of AIDS, I knew that we were dealing with a completely unpredictable time-frame, and anything at all could happen next. A mixed blessing was that Jerom seemed to have no concept that he was dying. The enrichment coordinator and I were hard pressed to determine what in Jerom's increasingly frustrated personality was due to the virus ravaging his immune system, and what was attributable to the isolation he'd never before encountered in his life.

The tension Jerom was experiencing got even worse, until he was 'painting' with feces on the wall of his cell, and pacing with an irregular, abnormal gait around his cage. He still maintained some sense of humor: when he played with the hole he'd created in my boot he'd often reach up to poke me in the arm or thigh - a chimpanzee tickle. I'd laugh even though a chimpanzee tickle usually hurts; he seemed to enjoy that.

It became exceedingly difficult for me to entertain Jerom by myself. During much of this time my co-worker would occasionally join me in CID to clean, but Jerom's



desperate requests were difficult for him to endure and often he would stay away from Jerom, and eventually he stopped coming to CID except for the days I was off. The enrichment coordinator and I made another request to the PI to reunite Jerom and Buster. The researcher conceded, and on the 11th of December, my supervisor and the enrichment coordinator opened the door. The first reintroduction went well: both chimpanzees displayed in their own cage but quickly came together and kissed. The following morning I opened the door (actually I'd gotten into the habit of letting Jerom open the door himself: I'd show him the padlock key and he'd stand up on his feet and go to the door excitedly. I'd show him that I'd unlocked and removed the padlock, and he'd slide the door open himself when he was ready) and Jerom and Buster each displayed for about 15 minutes until they were both calm, in the same cell, but they didn't have any physical contact. Eventually it was time for dinner, and Buster and Jerom separated, but moved into the other's cell. I threw sweet potatoes onto the tops of the cages; Jerom finished first and went back to his own cell, where he either tried to pull Buster down from the bed board or simply tried to take Buster's potato. The two naturally began to fight. A chimpanzee fight is an exciting and terrible thing to watch. Buster and Jerom do not look at all alike, yet once they began to grapple and roll around, it was impossible to distinguish one from the other. Once the chimps begin fighting no amount of yelling or jumping up and down (on the part of any human witnesses) will get them apart; this fight lasted for maybe 20 seconds, and ended spontaneously. Buster returned to his potato, and Jerom joined him on the bed board. Buster put his arm around Jerom. Jerom put his arms around Buster's neck in what I thought was a hug, but what actually turned out to be Jerom's attempt to move the sweet potato over and behind Buster's head closer, at which point Buster, non-confrontational gentleman that he was, gave up and came over to talk to me. I think they groomed a bit that morning. The visits were granted with the provision that they be supervised by a human, and so I separated the pair when I went to lunch. Jerom's behavior seemed no different from his status quo.

I realized that when Buster and Jerom were visiting, my presence seemed to alter their behavior. If I came near, often one of them would come to me to play or groom, and ignore the goings-on of the other. I was very worried about leaving them unattended because of the potential for injury, but I knew that they could not solve any dominance problems if I was nearby to distract them. The following day I fed them early to avoid any food-related tensions, I opened the door and began cleaning at the far end of the building (contrary to my normal routine). I peeked at them frequently, and I could see that Jerom was very busy displaying, while Buster waited patiently for him to stop. After about 15 minutes I saw them kiss, and eventually sit down to groom in the middle of the floor. Jerom still didn't have much patience and often got up to slam the barrel into the walls of the cell. I finally came to clean Buster's cell where Jerom was sitting on the bed board, and Buster began to display in Jerom's cell. Jerom seemed to have a problem with this, and, I believe, went in and instigated a fight. It was unusual for them to fight after being together for over an hour: I turned the hose on them, something I'd never done to Jerom, but they separated of their own accord. Buster sustained no injury, and Jerom came away with a long, but shallow scratch on his left shoulder.

We were required to report to the PI any incident that arose between the boys during their visits, and he subsequently disallowed any further reintroductions. Although my feelings were very mixed, I was relieved that he put his foot down, because I was very uncomfortable with two significant fights in two days. Jerom's life was in my hands while the meetings with Buster were taking place, and as their outcome was so completely unpredictable, I was almost glad to be absolved of responsibility. I had high hopes that Jerom would calm down and reconcile with

Buster, but I was also keenly aware that there was no leeway at all to experiment with. If Buster decided to retaliate or do more to defend himself against Jerom's outbursts, it would take only one strategically placed wound for Jerom to bleed to death. It seemed to me that Jerom had been irrevocably damaged after more than a month of isolation.

The EC, my supervisor, and I met the following day to discuss whether or not to press the PI about further reintroductions. The central issue we debated for quite awhile was: what is the best way for Jerom to die? My stance had been that, as the care-tech responsible for instigating and monitoring the introductions, I was unprepared to stand and watch Jerom bleed to death, and I was very hesitant to let the EC get herself into that position as well. My supervisor pointed out that dying is radically different from being killed; and she made me consider that maybe dying 'naturally' in a fight, painlessly from bleeding to death was much less inhumane than being tortured and killed with AIDS. We also discussed the unlikely possibility of pairing Jerom with a female: I suggested Roberta. We debated for hours but reached no consensus except to abort the reintroduction project. We all came away from the meeting dejected at our failure: Jerom was to remain in isolation.

That afternoon I ran into two of the researchers on the AIDS Project. I quizzed them on who it was that made decisions regarding Jerom, and they could give me no clear answer. I also asked about Jerom's pneumonia, and why a diagnosis of the specific pathogen had not been made. I had been told by the PI that Jerom would not be euthanized until he had a solid diagnosis of an opportunistic infection, and that the decision-making body of the AIDS group was considering discontinuing the antibiotic prescribed for Jerom's pneumonia, thereby allowing the pathogen to proliferate and create a severe infection. I had been under the impression that the research and veterinary staffs were in regular communication, especially about a chimpanzee as 'valuable' as Jerom. After about two days, I still had received no notice to discontinue Jerom's treatment, and so I went to the head vet. He knew nothing about the PI's plan, but told me that the medication would be discontinued only if Jerom was to be euthanized immediately, and otherwise he would be treated. So I treated Jerom, and when I spoke with the researchers that day, they both informed me that the PI had been under the impression that Jerom's medication had been stopped days earlier.

Meanwhile, Jerom, in isolation, was becoming more unreasonable and difficult to understand. An example: one day Jerom requested my boot to play with. I put my leg up against the fence but didn't pull the Tyvek up over the hole in it. Jerom couldn't see the hole and began to whimper inconsolably, but continued to do so even after I pulled the suit up to expose the hole. The following morning he asked to play but began to whimper when I pulled my suit up so he could see the hole; he poked at the boot and backed off, quite distraught, and would not calm to sit or play. That afternoon I gave Jerom some peanut butter, which I let him scoop with his fingers from the container. I offered some to him a second time, but he seemed more interested in poking me than eating, so I sat down to play. But he didn't seem to know what to do with me, and began trying desperately to push his yellow doughnut through the bars of his cage. I did not know what it was that he wanted, so I tried to appease him any way I could: I turned my back to him and he pulled on my Tyvek suit and poked at me, but when he poked at the keys I kept in the back pocket of my uniform he began to whimper. He couldn't see the keys because they were under the Tyvek, but he kept poking and I suppose he poked through the paper-towel suit and felt the metal of the key ring because he was so startled that he immediately jumped backwards into the center of the cage and then onto the bed board. He sat up there

with a look of terror and panic on his face - huge eyes, taut lips, quiet whimpering, and would not give in to my attempts to pacify him.

Since Nathan's infection, both he and Jerom were scheduled to be knocked down once a month. On the day before the knockdown on the 19th of December, I spoke with the PI to confirm the continuation of Jerom's medication. He'd planned to stop the treatment if the pneumonia had improved. He admitted to me that he'd assumed that the treatment had been discontinued at the end of November, but that he hadn't bothered to check on it. I found it disconcerting that the PI could not and would not speak with the head vet about the condition of Jerom's health, and didn't seem to be at all concerned about this lack of communication. The tension between the two men was obvious when they were in proximity of one another, and substantiated rumors of historical problems between them.

Jerom's mental health, though no concern at all of the research or veterinary staffs, was an all-consuming issue for myself and the EC. Because at this point, unless I was out on my day off, I was the only care/well-being provider in CID, and I was desperate to try anything to alleviate Jerom's boredom, frustration, and increasing anger. Jerom's state concerned me not only in terms of how he was coping, but also in its effect on the chimpanzees around him. There were many mornings when I would come into the chimpanzee room and find Jerom and the chimps in closest proximity to him bristled up with excitement and anxiety. His attacks on the door separating him from Buster and Manuel became increasingly explosive, and at times caused Manuel to grimace and scream in fear two cages away.

On the afternoon before the knockdown on the 19th the EC procured a television and VCR, and we brought the miracle of technology into the cement dungeon. On the venue was, naturally, "People of the Forest," a documentary on the chimpanzees of Gombe Stream National Park, Dr. Jane Goodall's fieldsite in Tanzania. We brought the contraption (a two-tiered cart we'd temporarily covered in garbage bags) into the chimpanzee room into an all-consuming, deafening roar as the chimps reacted with fear and excitement. One of Jerom's most quirky characteristics was his tendency to put his thumbs in his ears when he was nervous or otherwise upset. He did this while screaming at the television, and continued to do so even after most everyone, including himself, had stopped calling. The television was meant strictly for Jerom at that point: the EC had begun to study the effects of increased caretaker involvement on the behavior of the chimps in CID, but was afraid that the results would be skewed if television became a part of their regular routine. On this first trial with the movie, the television monitor was positioned in the middle of the chimpanzee room in front of Jerom's and Hallie, Roberta, and Tika's cages, facing toward the back of the building. It was our intention to habituate the entire building to the device in order that it could be placed in front of Jerom without unnecessarily frightening the others. Jerom eventually calmed down and came to the front of the cage to look at the machine and the new chimpanzees he could see in it. Watching TV was no substitute for social interaction with another chimp or human, but we believed that anything that captured his attention and occupied his mind was better than kicking doors or watching others more than 10 feet away play and groom with one another.

The following day the head vet came to CID and darted Jerom and Nathan. Before the vet came in I cleaned the building and prepared for the procedure by setting up a portable scale on the floor of the chimpanzee room, and separating Nathan from Sara. The chimpanzees received no food before they were sedated, just like humans preparing to undergo invasive procedures. Jerom acted very jumpy and I

figured that he realized that something was about to happen because I withheld his morning medication. But I ruled out this hypothesis as I watched him that morning: I realized that the newest trend in his increasingly abnormal behavior was a heightened jumpiness. He appeared to have been shy and wary before he got sick, but now I realized that he was also beginning to easily startle and shy away from loud noises or rapid movements. As I mentioned earlier, I watched Jerom like a hawk. I had no idea which changes in his behavior were resulting from the disease and which were from the isolation. The only way I could attempt to alleviate problems as they occurred was to pinpoint their origins. As a result of my scrutiny, I knew Jerom quite well, and any changes were immediately apparent to me. Now he simply seemed nervous. He had a tangible air of edginess about him that I could easily read in his movements and the expression on his face. He still uneasily paced around his cage, but would often flinch if I made too sudden a movement while visiting. A more blatant example: before the procedure on that particular morning, I watched as he was down on the floor talking to me, with both hands on the caging of his cell. His right hand let go of the steel bars and brushed the metal of the door frame. Something about this startled Jerom so badly that he snatched his hand away, jumped up so that he was standing bipedally, turned, and walked into the barrel on the floor behind him. This in turn caused him to startle again and jump back in fear. It was a very striking scene to me, and impressed upon me just how fragile the chimpanzee psyche is: less than two months of physical isolation and terminal illness created this frustrated and nervous creature.

Jerom was darted quickly, and his procedure went smoothly. Nathan had been apparently studying evasive tactics, and was learning that the closer he was to the barrel of the dart gun and the faster he swung back and forth in front of it, the less likely it was that the vet could actually hit him. On one hand, I fully applauded his valiant efforts to evade the dart, but on the other hand I hoped that he'd give in and allow himself to be shot, because I liked to get these interruptions over with as quickly as possible.

The PI brought in a specialist to collect bone marrow from both chimps. The marrow was quickly extracted from the pelvises of Nate and Jerom. The vet listened to Jerom's lungs for the third time, and pronounced that they sounded better, but that his breathing was still quite shallow. I asked him and the PI, right there over Jerom's sleeping body, about the continuation of treatment for the pneumonia, and only the vet answered me. He said that we'd most likely continue at 1/2 dosage, and the PI said not one word in concurrence or protest.

The vet also did a biopsy of the lymph nodes in Nathan's groin, on the side opposite from the marrow extraction. Medical procedures in CID were crude. We had no examination table and no surgery lamps. To take the lymph node sample, the vet knelt on the floor next to Nathan's body and poked around for the tissue in the dim light from overhead fixtures. The glands seemed to be of a diminished size, an unusual finding for an individual with AIDS. We also found that Nate had lost a bit of weight. I waited in the building until Jerom and Nathan had recovered sufficiently from the anesthetic, and watch them both, especially Nate, hobble around, sore from their fresh wounds.

I always found it painful to watch the chimps (HIV infected or not) come up from anesthetic. When the procedure was completed, we laid the chimp on his side against a wall in his cage. Usually within a few minutes he'd begin to move - stretch out an arm or leg, roll onto his stomach. After several more minutes the individual would prop himself up onto his arms, not nearly conscious, with eyes closed and lower

lip drooping. Within the next few minutes he would usually try to stand up and walk, still with half-lidded eyes. Invariably this would never work, and the chimp would fall heavily to the floor, often landing face-first. He'd lay still for many seconds before gathering energy for a second attempt, and then a third and a fourth, until finally he was sufficiently cognizant enough to pull himself up onto a bed board. There he'd sit, slouched over, with a dull expression on his face, often for the remainder of the day, and sometimes into the next.

I spoke with the PI about the results of the blood work several days later. Jerom's CD4 count had dropped again, as had his CD8 (suppressor cells) count: a new development. I was told that a low CD8 count is expected during the late phase of the illness in humans. Jerom's platelet count rose to ~20,000, but was still not out of the critical zone (~30,000). Nathan's serology was even more bleak than Jerom's: his CD4s and CD8s were very low: his CD4 count read even lower than Jerom's.

Jerom had gained some weight in the three months since his near-death in September and had maintained a consistent weight since that time. He did not look emaciated; he was naturally of lanky build and occasionally looked mildly bloated. Jerom's state of mind, to me seemed to be affected by my level of interaction with him. I was his only social life: the only person, chimp or human, to touch him in a caring and calming manner, the only one to play with him and make him laugh, the only one he could get mad at, and the only one who would come back every day. I began to notice that Jerom seemed to harbor resentment toward me if I had to cut my time with him short or I spent too much time with another chimp in the building. It also seemed that he was beginning to slide into another bad spell.

Jerom was a rather aloof individual, even after we became friends. He seldom came to me if I called him over: if he was sitting on the bed board he'd glance down and then ignore me, if he was pacing the floor he'd do the same. But if I had enough of the silent treatment and got up to leave, he'd sit up and look at me intently or walk toward me with a questioning look on his face. He spent a lot of time on the floor of the cell. If he sat in the front right corner with his face pressed up against the bars, he could see the anteroom door and out the double doors which I often, illegally, opened. If he sat toward the front left side of his cage he could see all of the chimpanzees across from him. Often I would sit near him, and in the mornings, if he wanted company, he'd hold out the back of his hand in greeting. If he wanted me to groom he'd turn his shoulder and back toward the bars.

Jerom's moods fluctuated rapidly: one morning he wouldn't give me the time of day, and by that afternoon, after he'd seen me have fun with everyone else, he demand my attention.

A word about the double doors at the near end of the CID building. The building was a Biosafety level 2 isolation facility, and so it was equipped with an air filtering system that was rendered ineffective when the chimp room was opened to the outside. HIV is not an airborne virus, and consequently I saw no logical problem with opening the doors on every possible occasion. CID's tenants loved it. For the first half-hour after opening the doors, everybody would sit pressed against their cage-fronts watching the clouds and the trees. They could, at times, hear calls from the general colony down the hill, and would stop whatever they were doing to listen intently, with quizzical expressions on their faces. Surprisingly enough, neither the veterinarians nor the researchers ever said a word about the doors being opened, even though I was caught red-handed on a couple of occasions.

During Christmas weekend Jerom's stool began to look worse. I had become expert at describing the condition of a chimp's feces. For the three months since September his stool remained consistently loose, chow-colored and smooth, and every morning there was a tall puddle under the bed board. In the two weeks before Christmas Jerom's stool during the day had become the consistency of large-curd cottage cheese. For several mornings I found two smaller puddles that were quite watery and surrounded by liquid. On another morning I found a puddle that contained the husks of raisins he'd not been able to digest from the previous morning. Periodically I took stool samples to the laboratory for analysis, but they never found any pathogens.

I saw Jerom on Christmas morning and he was sitting on the floor shivering badly, with his arms wrapped around his body. I found out from the night shift caretaker that the temperature in CID had dropped below 50°F during the night. The weather improved from that point, and Jerom's shivering stopped after we turned the heat in the building up to full blast.

I brought the television to him that day: it had been quite awhile since I'd found the time to let him watch. The EC had cautioned me that, until he was familiar with the three tapes worth of Oprah, Power Rangers, ants, bats, and chimps, I could not leave him unattended. I positioned the monitor in front of the left-hand side of Jerom's cell. Because he was so averse to having things aimed at him (I assumed that the phone, boots, and TV were all reminders of the dart gun), I pointed the screen toward the anteroom door. He sat on his bed board, quite intrigued with what I was doing. He screamed only twice but kept his thumbs in his ears, and eventually came to the cage front but remained perched in the upper right corner of the cell. Jerom reached out his hand to me twice for reassurance.

The intensity of Jerom's desperation seemed to have been subsiding, but at the same time he was beginning to show more outward signs that his health was failing. In addition to the changes in his stool, Jerom began to look bad. His color was off: his face, although still dark, began to look ashen, and his chest was completely without color. His hair remained almost always on end, and the hair on his head, shoulders, and chest began to thin noticeably. I also noticed that the frequency and duration of Jerom's temper tantrums appeared to decrease. His food intake seemed to fluctuate daily.

The morning of December 29th was the first time Jerom was ever aggressive toward me. It was a particularly exciting and aggravating morning as Marc and Jonah displayed incessantly and enticed all of the other males in the building to follow suit. In fact, everyone, including many of the females seemed to have been annoyed for some reason, and decided to take out their aggressions on me. I walked past Jerom at one point and he attacked at me: he held onto the caging and stamped on it with both feet in the general direction of my head. I have an inordinate amount of respect for captive chimpanzees. Many people attribute to them the mentality of a three-year-old human child, which I find only partially true. The reality is that they may process some information as a three-year-old, but the information they process is influenced by, in Jerom's case, almost 14 years of experiences. Any way I rationalized Jerom's mental capabilities, the facts remained that he was a teenager with a fatal disease living in social deprivation.

I believed that it was important for Jerom that he had someone he could rely upon for anything. I tried to establish ground rules with him, because I do not like to be taken advantage of. I was very patient with him, but I would not tolerate being

barked at or aggressed toward; in response I would simply walk away. Often, if he was ignoring me, I continued on my circuit of the building to play with the others. I think that when he watched me have fun with them he would realize that he, too, could be having fun. When my rounds brought me back to Jerom he would often have abandoned the aloof air he'd previously maintained and initiate play or grooming. Jerom had a bouncy play walk, which he used on occasion. Many of the chimps like to play 'chase': they would walk or run back and forth with a 'play face' and, while making eye contact, would entice a person on the outside of the cage to run after them. Jerom liked to chase slowly, and would start by bouncing on four limbs and drawing in his cheeks in a suppressed smile; he'd slowly, while bouncing, begin to walk back and forth across the floor at the front of his cell. I would chase him and he'd incorporate climbing or swinging across the bars into the game. Eventually this would evolve into lots of mutual poking, tickling, and laughing. Sooner or later he'd get tired and sit down so I could groom him.

On other occasions Jerom would request water from the hose. Many of the others, especially Roberta and Jonah, liked to drink; the hoses were high-pressured, but with a crimp in them would produce a nice, drinkable stream. Because my time in CID was often limited, I tried to make use of any time at all I had with the chimps, and I tried to make drinking from the hose while I was cleaning a fun thing. I believe that Jerom was beginning to realize that the time he had to play with me should not be taken for granted, and he, too began requesting to drink, especially after watching me with one or more of the others.

I realize that I haven't mentioned Nathan very often. In humans newly infected with HIV, the virus sits inactive for months or years before it begins to proliferate into a full-blown infection. Nathan, however, presented an anomaly in the months following his transfusion. Humans often report flu-like symptoms in the first few weeks after infection: this corresponds to the invasion of the immune system with the virus, and the immune system responds by suppressing the onslaught. The bloodwork of these individuals reveals a depressed CD4 count and a subsequent recovery of the helper cells until the time, many months or years later, when the immune system can no longer suppress the virus, and the patient crashes. Nathan's CD4 count dropped substantially, as expected, soon after his infection. Unlike his human counterparts, Nathan's immune system did not recover, and maintained a consistently depressed CD4 count. I questioned the PI about the response of the original 11 chimpanzees to their infection in the mid-1980s: did they, too exhibit this unexpected result? The PI didn't know.

Nathan did have one medical problem, unrelated to his HIV infection (all of CID's previous care-techs reported that Nathan had this problem many years before I met him). On Nathan's chest, on the midline, would periodically emerge a strange, blistering, scabby patch. It arose quickly as small blisters and would quickly scab over and be gone within a couple weeks. I did not know how many times other care-techs had reported this to the veterinarians, but I reported it on occasion, and either it was gone by the time the vets could come to look or they simply could not come up with any explanation for its cause.

## **January, 1996**

Nathan worried me a little at the beginning of January. Every morning he had done what I called his rain dance. When I began to hose his cage in the morning, Nathan would begin to hoot and display in the next cell. Then he would let out one more excited hoot and explode into the cell I was cleaning and violently attack the

stream of water coming out of my hose. The first abnormal thing that caught my attention was that he let me play with Sara on the 2nd of January, for many minutes undisturbed. On the 3rd of January I found that he and Sara had not eaten their ration of monkey chow from the previous evening. I found this quite unusual as he and Sara were both crazy about food, as reflected in Sara's excessive weight. And then Nate stopped doing his rain dance for several days. This short slump quickly passed.

The head veterinarian extended Jerom's antibiotic indefinitely, instead of decreasing the dosage by half. I spoke with the PI and questioned him about the continuation of this medicine, but he knew nothing of the vet's decision. I asked him to clarify for me just how decisions regarding Jerom were made. The researcher told me that the vet staff's jurisdiction included clinical treatments, and that the researchers made decisions about experimental treatments. I had been confused from the beginning of my involvement in Jerom's care about who was actually in charge. The PI's comments did not clarify a thing. The nature of AIDS is one clinical problem after another, but Jerom had AIDS because of an experimental procedure.

Jerom's overall well-being fluctuated from day to day, as it does in a human with AIDS. One morning I came into CID to find that Buster and Manuel had had a terrible brawl during the night, resulting in a bad injury to Buster's toe and ankle. Although Jerom had eaten all of the food in his cage from the previous evening, he had only a minute amount of stool, and that was unusually solid. Jerom also looked a bit bloated, had an inordinate amount of gas, and wouldn't have anything to do with me. By the next morning Jerom's stool was back to its original, loose consistency (not the recent watery stuff). I moved Jerom over to scrub his cage, and checked out his stool. It was somewhere between the consistency of whipped butter and creamy peanut butter, and had undigested bits of carrot in it. I was amazed that Jerom was still not dropping any weight, and wondered how he was getting any nutrients.

Around the 20th of January I almost lost my job. I had thoughtlessly expressed my opinion (by this time I was no longer on the fence) to a member of the AIDS Project research team. I was requested to explain and managed somehow to retain my position as CID's caretaker.

I decided to make a concerted effort to teach Jerom to present his arm for injection. I'd tried working with him months earlier to sit and climb up on the fence on command, but I didn't know what I was doing then. In January I read a book on operant conditioning, and watched chimps in the general colony being trained to get into a transfer box (big metal transport box on wheels). The first time I worked with Jerom I attempted to establish a conditioned reinforcer (sound associated with reward), in the form of a duck-shaped clicking device. I reinforced the clicking sound with apple, banana, and grape slices. Jerom was immediately interested in what I was doing as I had set a small bucket with these treats in front of him. He came to me on the floor and I clicked whenever his shoulder was toward the fence, and then when touching the fence with his shoulder. He favored his right shoulder, and quickly deduced what I wanted him to do. He began to leave his arm pressed against the bars and demand rewards by pointedly staring or pounding with his left fist in the direction of the bucket. This was not a desired outcome: the subject, to be truly trained, must perform the requested act on command, not before. To combat this, after successfully complying to my request, I moved the bucket of treats to the opposite side of the cage. Jerom was an individual who, like a spoiled child, would get incredibly frustrated when he didn't get his own way. Sometimes he would present me with his back, sometimes he'd raise his forearm to the bars, and he would get mad



when I wouldn't reward him for his compliance. It also certainly didn't help that once I clicked accidentally and couple times I settled for a forearm. The session did not seem to have many good notes, although I believe that we did accomplish something significant. After a half hour Jerom finally had enough [note: many years of experience later, I now understand the many flaws inherent to my technique, and I'm sorry that Jerom had to put up with my ineptitude!], and quit by climbing quickly up to his bed board and pointedly ignoring me. I walked away for a minute and returned to talk him into coming down one last time (I'd been instructed to always end training sessions on a good note), which he did, to my surprise. He presented his arm to me within 1-2 minutes of my request, and I rewarded him generously.

I attempted another training session the following day. The actual 'session' lasted not more than five minutes. Jerom very reluctantly and with much frustration participated until he climbed onto the bed board and again turned his back to me. I cajoled and pleaded for a few minutes, and then waited silently for a few more but to no avail. I went to play with neighbors for many more minutes, and when I came back, Jerom would still have nothing to do with me. I realized that I had completely overdone it the day before, and abandoned almost all hopes of regaining his willingness to participate. In fact, Jerom was so mad at me that it took almost a week to get him to associate with me again.

Meanwhile, I had noticed that the sores on Nathan's chest had begun to travel down his midline. In the center of his chest was a dark, splotchy scar, and over the course of about a month I'd noticed first the sores and then a scar between his chest and naval, and then one above his groin. Finally around the 21st of January I found scabs that appeared to be on his left testicle. I called a vet in to look because I was afraid that they would disappear before Nate's next scheduled knockdown.

It was also on that day that I first saw Nathan play with Sara. She was sitting on the floor in front of me, and he was lying on his back on the barrel next to her. He grinned and laughed in a mischievous way and tugged Sara's hand into his mouth. She smiled and bobbed her head and gently pulled her hand away. Nate started poking her in her big, soft stomach and Sara thought that was great, and laughed and nodded even more emphatically as Nate clapped his feet together. It bothered me that Nate's behavior toward me had become so cruel it almost seemed at times that he would have enjoyed hurting me, but at other times he seemed to be completely oblivious to his excessive use of force. He always demanded my attention and wanted me to play, but I believed that there was truly something wrong with Nathan's mind. [note: It has been suggested to me that Nathan's attitude toward me was probably a result of my betrayal of his trust by participating in his first knockdown in September. Although I'm loath to admit it, that's probably the most logical explanation of his behavior.]

Jerom and Nathan were knocked down again on the 23rd of January 1996. Jerom seemed to be holding a grudge against me for the training sessions I'd made him endure. It was taking longer for the anesthetic to take effect once he'd been darted; I think the head vet had started giving him a second additional anesthetic. He found that Jerom's lymph nodes (in the armpit and groin) were much less swollen than the previous month, and that his breathing was acceptable but still somewhat diminished. For some reason, a chimpanzee looks completely different when you are on the same side of a cage. Selfishly, I almost enjoyed these knockdowns because it gave me the opportunity to really hold Jerom's hand, rub his head, and hug him. It also gave me the chance to see what I wasn't able to see on his body when he was moving around, like bruises or cuts. At this knockdown Jerom looked great. His color was good, he wasn't bloated, and his weight looked good - his face looked nothing like the skeleton

I'd met five months earlier. The vet and I commented on Jerom's stability and diminution of lymph swelling. He seemed to find it amusing to wonder if maybe Jerom's illness was waning, and that he would soon be free of AIDS.

Unfortunately, the perpetually damp atmosphere in CID had finally taken its toll on the inner workings of the portable digital scale I kept in the anteroom. Before it came to me, the scale had been discarded by the vet staff because of its unreliability. I had been under the impression that its life in CID was to be temporary, until it could be replaced. My supervisor and I had discussed its replacement with the PI months earlier, but nothing ever came of that conversation. I mention minor incidents like this to illustrate the unprofessional manner in which Jerom and other research chimps were often considered.

The vet looked at Nathan's sores. He found them on his left groin, not testicle, and also under his right arm. I was surprised to see them and didn't know how I missed them. The vet first said that it was a rash, and then changed his mind. We discussed whether they may have been self-inflicted, and I pointed out that Nate had not picked at the biopsy incision, which was still healing and bound with stitches. After some poking and prodding the vet decided that they were a "pusticular dermatitis" and prescribed an antibiotic.

Three days later I finally got Jerom to laugh and play with me. He watched "People of the Forest" twice. He was fairly well-accustomed to the television and VCR by then. I always faced it toward the anteroom door, and he sat on his bed board and looked around, and often craned his neck to see the screen. He also sat perched in front of the television and hung from the ceiling bars with his hands and braced himself with his feet on the caging in front. He always watched intently when I took the contraption away.

It all seemed to go downhill from there, as far as Jerom's health and well-being were concerned. I had noted on the 29th of January that Jerom was acting grouchy. He had started giving me trouble about taking his medication. Previously, when I gave him his juice, I'd tip the cup through the bars into his outstretched lip. Often Jerom would extend his index finger and tip the bottom of the cup even higher. He became so ornery at the end of January: instead of gently tipping the cup, he would reach out all four fingers and try to knock the cup out of my hand and crush my fingers. On the morning of the 30th I decided that I'd had enough of that treatment. He tried to hit the cup but I pulled my hand away. He tried several more times, but each time I'd draw back. He finally got so mad that he spit juice he'd kept in his mouth all over me. I walked away and went to visit with the other chimpanzees. When I walked by him to turn the radio on, he got my attention, so I went to him. He let me groom his back for a few seconds until he got up, turned around, barked at me loudly, stomped on the bars at me, and jumped up to his bed board. He hadn't eaten much chow during the night, and didn't eat much over lunch. When I gave him his evening medication he immediately spat it on me again, and when I tried to hand him an orange half he attempted to snatch my hand. I couldn't tell if he was still mad about the training, jealous because I spent a lot of time with Jonah (despite all of my efforts not to play favorites, Jonah became mine, and Jerom no doubt watched me chase, tickle, laugh with or be groomed by my friends Jonah and Marc across the hall), or really not feeling well. Later on that day I spoke with the head vet who told me that Jerom had become moderately anemic, but that his platelet count and CD4 count were holding steady.

Nathan's bloodwork showed that his immune system was holding steady with a CD4 count of 10. Another raw patch had come and gone on his chest since the vet's diagnosis, and recently I'd found two new bumps on his head. The head vet said that he suspected this dermatitis was related to Nate's HIV infection. I reminded him that the patch on his chest was reported by care-techs years in the past. He then suggested that maybe that patch and these new ones were perhaps not related to one another. He said that he was contemplating an anti-fungal medication for Nate, and that he was knocking Jerom down again in a week to check his red blood cells.

On the 31st of January, news of Jerom and Nathan hit the wires. The associated press and other news agencies had been present when Yerkes officially announced Jerom, its treasure, at a Retrovirus conference in Washington DC. The newspaper, radio, and television reports that morning and throughout the day were a surprise to most of us. We had not been warned that the research team was going to make the news public. It was exciting to read about my friends in papers across the country. The reports were mostly accurate. The Atlanta Journal-Constitution article on the front page at first glance implied that Yerkes had 100 chimps with HIV. The report from the AP said that both Jerom and Nathan had AIDS; the AJC said that Nathan had "symptoms." It was the television coverage in Atlanta that was the most distressing. One broadcast showed a caption with a picture of a young chimpanzee with the words "monkey" and "AIDS" under it. Several segments showed footage from the Great Ape Wing of juveniles, giving the impression that a) the HIV chimps were all kids, or b) that Yerkes planned to begin infecting infants and juveniles. There was immediate criticism on the Internet (on Primate-Talk), but Yerkes would respond to none of it. I stayed away because I anticipated that I would have wanted to respond myself, but with my ever-growing opposition to the research, I was afraid of what I might say.

Jerom responded to news of his fame by spitting his juice in my face. I think he was secretly pleased - he didn't spit all of it at me. Jerom was definitely getting testier, but also seemed to be losing energy. The frequency of his displays and tantrums had definitely decreased, although he was not lethargic (at least while I was around). I gave him a phone book to play with that day, and he immediately attempted to take a large bite out of the spine, failed, and threw the book into a far corner. I turned on the television, and waited to see that he was situated before I went to lunch; he was very accustomed to the machine, but still came to me a few times for reassurance (held out his hand to me). It was getting a bit disheartening that Jerom was so aggressive to me so often, but I knew that it was worth putting up with when he came to me for help. I knew that he knew that I cared about him and would be there when I could. When I returned from lunch there was phone book strewn across Jerom's cage. I was glad to see that, because he was pretty finicky about his enrichment. I noticed that he hadn't eaten more than a few pieces of chow since the previous day, and that his diarrhea looked pretty bad. After lunch Jerom let me groom him for a long time but didn't seem to want to play.

The head vet put Jerom on an additional antibiotic for the latest bout of diarrhea. He took Nathan off of his antibiotic, and said that he thought that Nate's skin condition was clearing up.

The next morning Jerom's stool was much worse, and I took a sample to the lab. The vet said he suspected that the agent was E. coli, as that was one of the two pathogens creating problems in September. He decided to take Jerom off of the first antibiotic in case of possible interference with the second. I scrubbed that morning, which meant that I had no time for Jerom. By the afternoon he was quite angry with

me. I went away the first time he stomped at me. The second time I sat down and waited, and Jerom sat about 1 meter away from me on the floor. I put my hand out to him in reconciliation and he tried to grab it. He then came over to me and yanked a fist full of Tyvek through the bars and yelled and kicked at me. I had to assume that the anemia and the diarrhea were really getting to him.

Jerom's diarrhea seemed to clear up a bit over the weekend, and he began to eat a little better. Atlanta experienced a crippling ice storm and the city shut down for two days. Several care-techs were forced to spend the weekend at Yerkes so that the nonhuman primates were cared for in the morning. The temperatures dropped and dropped until the heating units in most of the primate quarters were operating at their maximum capacity. Temperatures in animal rooms were legally required to be set at 72° F: many buildings in the Small Primate Wing couldn't keep up and required space heaters in the rooms. The temperature in CID dropped below 50° F; Jerom sat huddled on the floor shivering. I was told by the facility maintenance crew that the system was putting out as much heat as it could, but that it was just not equipped to handle this kind of cold. I wondered why, when CID was built six years earlier (under orders and funding from CDC), a heating/cooling system was installed that could not cope with a wider range of temperatures. I brought Jerom a space heater, which he was terrified of. I sat with him while he screamed at it. I could not convince him to go near it and he sat and shivered all afternoon; I did not have a blanket to offer. He yawned a lot and I could see that his gums had turned a very pale pink.

## **February, 1996**

6 February signified the beginning of the end. One of the vets came in to knock Jerom down to draw blood. Jerom was becoming quite weak and hardly put up any fuss about being darted. It used to be that, at the sight of a vet (especially a vet with a dart gun) Jerom would scream, drive his thumbs into his ears, and seek assistance from Buster on the other side of the door. On this morning, Jerom swayed and rocked on his bed board and let the vet dart him. He then came down to us and let the vet stick a needle in his arm with more anesthetic. The vet drew a few mls of Jerom's watery blood. I waited by Jerom's cage for over an hour for him to wake up, and even after an hour he wasn't very stable. At one point I went away and came back after a few minutes to find Jerom face-down on the floor. When he finally sat up again I saw that he'd bitten his tongue, and that blood was running out of his mouth onto the floor. I thought of how ironic it was that after all the concerns of Jerom being injured by Buster, the worst injury Jerom sustained in six months was self-inflicted and caused by a medical procedure. I was quite worried at the sight of blood and the deep wound on Jerom's tongue, but after a few minutes it spontaneously stopped bleeding.

When I returned to CID after I had a quick lunch, Jerom was sitting on the bed board with no expression on his face. It looked as if none of the muscles of facial expression were working properly. When I sprayed down the cages that afternoon he curled up on his bed board and stayed that way for a long time.

The vet got the lab results back that afternoon: Jerom's platelet count had dropped again, and in these two weeks his anemia had gone from moderate to severe. I asked the veterinary staff about treatment options. Transfusions were common in humans, but would be nearly impossible for a chimpanzee. Jerom was not trained to present for injections, and I think the vets felt it would have been too much work for them and too exhausting for Jerom to knock him down for frequent transfusions.

Steroids had been tried to combat anemia in SAIDS affected monkeys, but were not found to be effective. The head vet decided that it was time to campaign for euthanasia. There are several criteria that must be met before a member of a threatened species can be killed, and Emory's Institutional Animal Care and Use Committee, a regulatory body, had strict criteria of their own: organ failure is one of them, and the vet's argument was that blood is an organ and that Jerom's anemia was terminal. He also made the decision to stop all medications to emphasize Jerom's chronic diarrhea. The head vet talked with the PI, who agreed to assemble his team. This meant that the PI would call a meeting of all interested parties on the AIDS Project, and this meeting would set a date for Jerom's euthanasia (I will not use the biomedical term 'sacrifice' when discussing Jerom's death) when all interested parties could be present. Jerom would die within the next two weeks. I felt very conflicted about this news. Half of me wanted Jerom to die with some shred of dignity intact: quietly in his cage (death by anemia would not be unpleasant). The other part of me wanted to be assured that Jerom's life and death were for a reason - as useful to the research as possible (not because I supported the research, but because that's what Jerom's entire existence was about).

Those last two knockdowns took a lot out of Jerom. The morning of the 7th was the first time that he didn't come to the front of the cage when I stuck my head in the chimp room. For the previous five months, the first thing I did every morning was open the door - either the double doors or the anteroom door - and check to see if Jerom was still alive. This particular morning he was just sitting on his bed board, completely uninterested with no expression on his face. We did not have one positive interaction that day: they were all either neutral or negative. In contrast, Jerom's stool was 'normal', and he seemed to be ravenous. He slept or rested on his bed board most of the morning. In the afternoon he spent time on the fence or floor, or walking around the cage. He looked more himself, but tired. He made no noise: no displays, no excited vocalizations.

I spoke to the PI that afternoon to allay my fears that the final knockdown would be scheduled after Jerom began to badly suffer. He mentioned to me the possibility of treating Jerom with an experimental anti-viral drug (protease inhibitor). He didn't think it very likely. The drug was in California, it was quite expensive, and was to be administered subcutaneously once a day. The PI believed that Jerom was "too far gone" for the drug to be effective.

Jerom was up and about when I came in the next morning. He took his juice without incident; I'd decided to continue giving him juice to maintain some semblance of routine, even though medications had been discontinued. Jerom looked terrible. He had huge bags under his eyes, and looked as if he hadn't slept in a week. He let me rub his back for quite a while. I noticed that he'd eaten every single edible thing in his cage over night, and was very anxious to take food from me. When I had him move into the next cell so I could scrub his cage, he displayed briefly and had to sit down and spend several minutes recovering. I thought he had a little tantrum while I was at Sara and Nathan's cage, but mostly he spent a lot of time sitting on the floor, looking at everybody else with his frustration face. Jerom briefly let me groom him in the afternoon, after some initial fussing, but acted very cool toward me afterward.

The PI came to find me that afternoon. He told me that the group decided to euthanize Jerom on Tuesday the 13th of February, just 10 days before his 14th birthday. The knockdown would start around 9 a.m. The head vet and I would go in and the vet would dart Jerom and draw a small vial of blood. The PI would take the blood to the lab in the Center, and during that time the vet would keep Jerom

sedated. If the blood work came back the same or worse, Jerom would go to necropsy ("go to necropsy" was the PI's euphemism), where the assembled team would 'harvest' what they needed from his still live body. The vet would then give Jerom a lethal overdose of anesthetic, and everything would be over.

During those last few days it was hard for me to care for Jerom. He knew nothing of the plans to end his life. I knew that being upset around him would only make things worse for both of us. I had already begun to miss him, but at the same time I was relieved that the end was finally in sight.

On Friday the 9th, Jerom looked as bad as he had on the previous day, and his stool had become liquid. He was still ravenous although he'd eaten the massive quantity of chow and produce I'd given him the evening before. I didn't know if the absence of antibiotic made his stomach feel better, if he was eating because he was bored, if he thought that eating more would bring his energy back, or that eating made him warmer. Maybe it was just the diarrhea. After I gave him his juice, he decided to ignore me. When I moved on to visit with Buster, Jerom looked up and got very excited - standing bipedally at the cage front and pounding with his forearms - in an interested, attention-seeking sort of way.

I had the doors open and Jerom spent a lot of time looking outside. Like most everybody else in CID, Jerom paid little attention to me when he could see the sky and trees and hear the calls of chimpanzees from the general colony. I watched him react to Buster displaying: he was sitting on the bed board and began as he often did. He was facing the wall behind the bed board, holding onto the mesh above, with feet on the outer edge of the shelf, swinging from side to side. Unlike usual, he didn't hoot or make any vocalizations, and quickly stopped.

I spoke to the vet that afternoon. We discussed what would happen on Tuesday morning. His version included a dose of droperidol (to slow Jerom down), and a dose of Valium (to ease his anxiety) to be given early in the morning, and a trip to the necropsy room before results from the lab. I think he'd decided that enough was enough. We talked about how relieved we were that Jerom's end was near. I don't know what the vet's motivation was, but I mentioned my concern over Jerom's perpetual isolation. The vet, being a man who loved to push buttons, said that Jerom's solitude was ever a serious concern of his. He then quoted the vet staff's favorite mantra on the subject: Manuel, Buster, and Jerom never got along anyway, and so it was just as well that he was separated. To be fair, I must agree that Jerom's separation was probably - physically - safest for him. He also mentioned that there was enough traffic in the building to comprise Jerom's social life. As far as I knew, the only traffic CID ever saw was me, the enrichment coordinator on occasion, and a veterinarian once in a while.

It was not written in stone that Jerom would be euthanized the following day: there was still a remote possibility that Jerom's CBC (complete blood count) would look better in the morning. For some reason, I was sure that the vet's scenario would prevail, and Jerom would be on his way to necropsy before any blood results were in hand.

The day before Jerom died I spent hours with him, and noted in my journal that I hadn't seen him laugh in weeks. It had been my goal, every day of the previous six months, to make him laugh. Many days I did not succeed, but I always tried. In the morning my supervisor sent me to CID with a Coke, a Butterfinger candy-bar, and

some powdered donuts. After I'd suited up and said good morning, I put some Coke in a paper cup and held it up to the bars for Jerom to drink. He was quite wary of the liquid, and looked at it fizzing for a long time before putting his finger in it. He wouldn't drink any, so I gave him the candy-bar, which he seemed to enjoy. I visited the other 12 CID residents with the can of Coke and, without exception, everyone loved it and begged for more. After I cleaned I came back to sit with Jerom. He did not seem to be in any physical pain. He was surprisingly active, but somewhat slower than usual. He let me groom him for several hours. At one point the phone rang, and I got up to answer it. The phone in the chimpanzee room was on the short wall between the anteroom door and Jerom's cell. The cord stretched far enough so that I could talk while sitting in front of the cage. I had often done this, over the months, and Jerom never seemed to like me being distracted from the more important task of paying attention to him. When I answered the phone, Jerom got up and walked around the cage, picking up chow and shoving it into his mouth. After a few minutes, I guess he thought I'd ignored him long enough, he walked over to me and poked me many times in the shoulder with his bony index finger.

My supervisor and co-worker went up to CID after I came down for a break. Neither of them had seen Jerom in a while, and commented on how bloated he looked. I too, had noticed that his belly seemed quite distended. I had watched him sit on his bed board, with his legs out in front of him. He, for some reason, was trying to look at the bottom of one of his feet, but to do so had to hold his belly down with one hand. I had also noticed that his scrotum appeared distended as well. The medications had been discontinued days earlier, and as a result his stool was consistently liquid, and seemed to erupt spontaneously.

As I said, I spent virtually my entire day with Jerom. I wanted to be assured that I had done everything I possibly could for him. I saved the powdered donuts for his evening meal. I opened the package and handed them to him one by one. He seemed to know what they were, and after eating one (and getting powdered sugar all over his face) put the others carefully on his bed board. That was Jerom's last day.

## **The End**

I came to work very early the next morning. Everyone in CID was quite calm when I came in to say good morning and give them all a banana. The vet had told me that the droperidol I would give Jerom would upset his empty stomach, so he too got a banana, despite the mandatory fast. I decided to let him and Buster see each other one last time. I had a large square mirror which I held in my lap as I sat several feet in front of the cement wall between the boys' cells. Both Buster and Jerom came to look at themselves, and stared at each other for a long time. Jerom stood and watched as Buster experimented - he'd walk back and forth, crouch low or stand erect checking out different angles. At one point he went to his water box and got a great mouthful of water, and spit it at Jerom's reflection in the mirror. He then lay down on his back and clapped with his feet and hands, while making a play-face at Jerom in the mirror. Jerom immediately responded with an unmistakable look of frustration, so I removed the mirror and brought it directly to Jerom, who seemed to forget all about Buster. He began to check himself out, and quickly noticed his now completely gray tongue. He spent a couple minutes sticking it out and inspecting his colorless mouth. I groomed him for a short while, and gave him his dope at 8 a.m. He hung out while I cleaned and took drinks from the hose. I watched for signs that the drugs were taking effect, but saw none. When the head vet and the PI came into the anteroom around 9 a.m., Jerom had his thumbs in his ears, so I figured that the Valium had done little to ease his anxiety. The vet came in and darted Jerom fairly quickly: Jerom was

scared but didn't have enough energy to evade the vet. [note: Jerom's stool pattern was the opposite of most chimpanzees - he'd have solidly-formed stool when terrified, and diarrhea normally.] It took a long time - maybe 15-20 minutes - for the anesthetic to take effect. The vet and I crouched in front of Jerom's cell and discussed how bloated he appeared, and what the cause of it could be. He seemed worried about the bloating, and he said that he'd decided to wait on the results from the lab. I asked if he'd decided not to argue with the PI about that, and he said it wasn't worth it. Jerom finally became anesthetized enough for the vet to draw a vial of his blood. He took the blood to the researcher in the anteroom. When he returned we crouched over Jerom and talked about the future of chimpanzees in AIDS research.

The vet continued his examination of Jerom while we waited for the word from the lab. It was apparent that Jerom was very badly bloated, from his body cavity to his scrotum. The tissues in Jerom's mouth were cold and gray - significantly worse than the previous knockdown. Jerom's reaction time, not noticeably impaired by the droperidol or Valium (no dullness, droop-lip, stumbling) was quite slow.

The vet decided not to wait for the PI's okay, after all. He went to get the gurney. I said good-bye to Jerom. The vet returned with a gurney covered in white sheets - unusual, royal treatment (usually the chimps were slung, unceremoniously, onto the cold steel gurney). I bent down to pick up Jerom's feet, and the vet told me not to: my supervisor came into the chimp room, into Jerom's cell, picked up his feet while the vet picked up his arms. They put him on the sheets and covered him in more sheets. He looked like he was sleeping; everyone else in the building yelled and screamed and jumped up and down. No one had ever left CID before. I kissed Jerom goodbye as they took him away. He died on the table in the necropsy room two hours later.

## **After the End**

Two days later the Center's director held a meeting for the people involved in Jerom's care: three of us attended (my alternate was out of town). The director was an approachable man, the epitome of cool, calm, and collected. We discussed plans for the future of CID, as well as that of the chimpanzees in the breeding colony. The director expressed his desire to get rid of Yerkes' 'excess' chimps, to give them to anyone who would take them. Yerkes' colony of over 200 individuals was comprised mostly of young males, an overabundance of young juveniles, and a handful of old females. Yerkes was forbidden, during the renewal of its last base grant, to generate any new chimpanzees. The few kids remaining in the Great Ape Nursery would be the last. The new agenda for the Great Ape Wing was to 'farm' as many out to zoos and sanctuaries around the world as possible, and maintain the few chimpanzees remaining at the Center. This would entail redesigning the chimpanzee enclosures, moving the chimps into corrals or out-door spaces, creating large social groups. We discussed the fact that HIV was more difficult to contract than hepatitis, but that there were many chimpanzees carrying hep C in the general population on the Wing. He believed that the HIV infected individuals could eventually be housed if not among, then in close proximity to the general population. But CID's reality was that they were 12 relatively healthy individuals (2 of whom are still HIV- today) confined to a windowless building [note: CID was given windows shortly after I left Yerkes]. We talked about adding veterinary rounds to the daily routine of CID. We discussed a plan to add windows to each cell. We eagerly talked about someday giving the chimps access to an outdoor run. We envisioned opening up each side of the building, creating two large social groups, with a tunnel leading up from each side of the building, over the roof, and into the woods behind. We left the meeting with a sense



of hope, and wasted no time going up to the hill to imagine the wonderful ways in which we would improve our friends' lives. I was reminded of a dream I once had about Jerom. In it I was approaching CID and found that the cement slab walls of the building had been replaced with thick glass. Jerom sat on the floor of his cell as I walked up. He looked out across the green grass that grew right up to the walls of his cage, with his thumbs in his ears and a look of frustration on his face. I didn't know what we could do for the 12 remaining chimpanzees, but I knew that it wouldn't be enough.

That night I realized that the best thing I could do in Jerom's memory was to ensure that Nathan's treatment would not follow the same path. The following day I went to the PI and asked him about plans to treat Nathan. He said that there were none. Dissatisfied with his answer, I scheduled an appointment with the director, whom I found to be much more communicative.

He also told me that there were no plans to treat Nathan. I was shocked; he explained to me that it was important to collect HIV infected tissues from Nate, which would be hampered by any virus-inhibiting treatments. He reminded me that Nathan was a laboratory animal, born and bred. He reminded me that Nathan's comfort and well-being were not of primary concern to the research. He admitted that infecting Nathan may have been premature. He predicted that the remaining HIV+ individuals in CID will not develop AIDS. I learned that Jerom's life and death served to prove conclusively that HIV causes AIDS. I left the meeting confused, dismayed, and disgusted.

Meanwhile, I found CID to be lonely and empty without Jerom. It wasn't until the day after his death that I was able to clean and disinfect his cage. I had put this activity off as long as I reasonably could: I knew that as soon as I finished, other chimps would take his space, and there would be nothing left of Jerom's life except some memories, a lot of cold, impersonal data, and a chimpanzee-killing virus. I took his favorite yellow ring, his only real possession, and disinfected it for another inmate, and stored it in CID's 'toy box.' I scrubbed the walls and the floor. I locked the door after me when I finished, opened the slide door, and moved Buster and Manuel into their new cage. I gave them the first two cages, scrubbed the third, and gave that one to Arctica, Betsie, and Joye so that they could spread out. This was the only good thing I saw that came from Jerom's death (aside from the end of his suffering). The results, however, were not quite as I had anticipated. The three girls seemed pleased at their new-found 'freedom.' Manuel, however, reacted in a way I hadn't expected. He was very excited when I opened the door between the first and second cells. Although Manuel had been physically separated from Jerom for over six months, they had maintained a continuous battle for dominance through the door. I pulled the door and Manuel rushed in, displaying. Within seconds he realized that he'd finally 'won.' He was now the most dominant male in closest proximity to the most females in the building. His entire demeanor changed (for the worse, I thought), and he continued to display and boast arrogantly for the next several days. He was almost always in Jerom's cell, where he was directly across from Roberta, Tika, and Hallie (who, it seemed, took turns cycling). He seemed to derive fiendish pleasure in being mean to me - showing off for his new conquests. I don't know if they were impressed or not. As ridiculous as it sounds, I began to resent Manuel, and found it more and more difficult to go into CID.

The following Monday I began what was to be a week-long vacation, but by the end of the week I had realized that I couldn't support the work being done at Yerkes, and that I wouldn't return. I resigned my position on the 23rd of February, 1996. I

was amused to find that the management seemed quite upset at news of my resignation. I received phone calls from the personnel director, who'd called the Center's director at home, at night and over the weekend, excitedly wanting an explanation for my sudden decision. I decided to request an exit interview, time alone with the personnel director to vent, and I began preparing my statement. I was told that the director had requested to sit in on the meeting.

Two weeks later I went to Yerkes for the last time. The two men and I sat in the personnel director's office and I read my statement to them. I recounted to them the numerous inadequacies I'd encountered in my 1+1/2 years at the Center, none of which I've touched upon in this text, as well as my displeasure over the treatment of Jerom, Nathan, and myself over the previous six months. When I finished reading I was bombarded with questions. To my criticism of lack of plans for Nathan, the director responded in his cool manner that "Nathan does not have AIDS," a statement which conflicted with newspaper accounts of the research team's Retrovirus presentation, and so "what do you expect him to be treated for?" I reminded him of Jerom's suffering back in September. The director responded that Jerom did not suffer for very long, and that we were able to immediately treat and alleviate his physical pain. I made clear my understanding that this project was badly managed as well as inhumane. To this, the men replied by throwing the responsibility back at me: "You knew what you were getting into when you came to Yerkes." I tried to remind them that nobody was or could have been prepared for what happened.

The director's presence at my exit interview was an unprecedented event, and this man listened to me, a lowly care-tech, for over an hour. He had to leave before the meeting's conclusion. He stood up, walked across the small office and, towering over me, shook my hand, looking me square in the eye. I met his challenging stare and thought that he looked a bit frightened. I didn't know whether that look meant that I had scared him because of what I might do with the information I'd learned, or because somewhere inside him he knew I was right. Whatever its source, it was that look that gave me the inspiration to write Jerom's story.

## Epilogue

I want to impress upon you that Jerom was one of about 200 chimpanzees currently enlisted in AIDS projects in biomedical research labs around the United States. These chimpanzees are used in vaccine and transmission studies, even though researchers admit that they are still clueless about the mechanism of HIV in chimpanzees.

Chimpanzees are distinct individuals with unique personalities. As fellow Great Apes, they have innate rights upon which we are trespassing when we take possession of their bodies and use them for experiments like the one you've just read about. I want you to know that Jerom's infection, isolation and agony really did happen. To my great horror and dismay, I've learned that Yerkes RPRC is continuing experiments on chimpanzees with virus isolated from Jerom's and Nathan's blood (HIV-1jc and -1nc), as is the study's original principal investigator. Their future is no brighter than his was. I am deeply saddened to think that a species as noble as ours can believe that what happened to him can in any way be justified.