INTRODUCTION

My name is Helene Z. Hill. I am a Professor of Radiology at the NJ Medical School in Newark, NJ. I have held this position since September of 1981. I received a Ph.D. in Biology at Brandeis University in Waltham, MA in 1964. Since that time, I have held post-doctoral and faculty appointments at Brandeis University, the Harvard Medical School in Boston, MA, the University of Colorado Medical Center in Denver, CO, Washington University Medical School in St. Louis, MO and Marshall University Medical School in Huntington, WV. Virtually all of my scientific career has been spent doing laboratory research, most of it on Cancer. I have held a number of research grants from agencies such as the USPHS-National Institutes of Health, the American Cancer Society and the NJ Cancer Research Commission. I have published over 60 scientific papers in peer-reviewed journals and I have served on the governing boards (Councils) of two national scientific organizations, the Pan-American Society for Pigment Cell Research and the American Society for Photobiology. I am currently an Officer of the latter.

Scientific fraud is relatively rare in the areas of my expertise and I personally have only witnessed one such incident in my career until now. Since scientists are clever people, it is both difficult and distasteful to ascertain that fraud has been committed. I am presently in the uncomfortable position of having witnessed what I believe is scientific fraud.

As background information, I should say that in the summer of 1999, I decided that I would not submit any more grant applications as I felt my chances of success were small. My office and laboratory were located next to the facilities of my colleague, Roger Howell, Ph.D. I thought it would be most productive for Dr. Howell, for my department and for me to go back to the bench and work with Dr. Howell. I felt that his chances of securing funding were better than mine as he is young and dynamic. This did, in fact, turn out to be the case and he was awarded a 5 year grant from the NIH which started last July, 2000. At the time that I started working on Dr. Howell's projects, he had a post-doctoral fellow working with him, Dr. Anupam Bishayee. One of the first projects that I did with Dr. Howell was in conjunction with Dr. Bishayee. The events at that time are recorded in an accompanying document. After the experiment in question was completed, I had reason to believe that Dr. Bishayee had made up the results. I reported this to Dr. Howell, but he did not believe that the results had been fudged. Although I was pretty convinced of the truth of my findings, I did not report them to anyone else. The reasons for this are complex. In the first place, the evidence had been destroyed. In the second place, I was the new kid on the block, so to speak, and I was in the position of myself being suspected of being overly suspicious and probably wrong. Third, I was not absolutely certain that my observations were correct. They required the use of a microscope with which I was unfamiliar and had difficulty using. In any case, after that time, I determined that I would distance myself as much as possible from Dr. Bishayee and from the projects that he was working on. I went on to develop a related but different project that employed an entirely different cell line. Between then and now I did not have an opportunity to observe Dr. Bishayee closely again. In conversations with Dr. Howell, however, the incident came up a number of times and I reiterated my concerns. I remember one time when I grudgingly admitted the possibility that Dr. Bishayee might just be sloppy but not dishonest.

One thing that makes me feel very badly is that I allowed myself to be listed as a co-author on a paper with Dr. Bishayee as the senior author. I actually had very little to do with the experiments that were reported, but at that time, I did believe that they were true. I admit that I was worried that I had had nothing to publish for some time, so I relaxed my principles and let them use my name. I should also say that I have allowed Dr. Bishayee to live in an apartment that is rented by me in Ivy Hill. I rented this apartment for my son who was disabled by a stroke. He became very depressed and was admitted to the Essex County Hospital in Cedar Grove in the fall of 1999. He has been there ever since. The rent for the apartment is very low (about $350/month) and I did not want to let it go because my son has no resources other than his SSDI income and I wanted to be prepared for the possibility that my son might go back there to live. This now seems unlikely. Dr. Bishayee does not pay rent to me but I have asked him to pay the equivalent of the monthly rent to a trust fund set up for my son's daughter.

During the time between the fall of 1999 and now, I have tried to remain cordial to Dr. Bishayee. I felt that if I acted overly suspicious, this would be very disruptive to the functioning and harmony of the laboratory.

This became especially important as our numbers grew. On April 1, 2000, a new faculty member joined our Division, Dr. Edouard Azzam. This is a person of absolute honor and integrity and with a fine scientific background. He has his own office but we all share the laboratory space. He was joined in the summer by his wife, Dr. Sonia de Toledo. It was a great pleasure for me to have these two wonderful people working beside us. I have not mentioned to them any of my suspicions regarding Dr. Bishayee. At the end of August, 2000, we were joined by Dr. Marek Lenarczyk who holds the position of post-doctoral fellow on Dr. Howell's NIH grant. Once the grant had begun, Dr. Bishayee was promoted from part-time post-doctoral fellow to Research Associate.

My husband and I have a small bedroom and kitchenette in the basement of our house and Dr. Lenarczyk has been living there as our guest since his arrival. As a result, I have gotten to know him quite well. Within a month or two of his arrival, he voiced to me his suspicions about Dr. Bishayee and his mistrust of the work that Dr. Bishayee had been doing. I shared with him my concerns.

On Monday, March 26, 2001, Dr. Lenarczyk told me that he believed that Dr. Bishayee had initiated an experiment in which he used cultures that were contaminated with bacteria or yeast. The details of the events that followed and the documentation will be found in the attachments. We decided to observe what we could by examining the cultures that would be found in the various incubators. It was my hope that by careful documentation I would be able to present a convincing case to Dr. Howell regarding Dr. Bishayee's incompetence and that I could then persuade Dr. Howell to terminate his appointment. It is important to understand that no proper scientist would use contaminated cultures in an experiment. Such cultures should absolutely be discarded and new, uncontaminated cultures should be obtained. Nonetheless, we were able to establish that he initiated and carried out much of the experiment with these contaminated cultures. Initiating an experiment with such a culture is a sign of gross incompetence. Unfortunately, following the events of March 29, our observations now became evidence of scientific fraud. We now were able to show that at a critical point in the experiment, he substituted an uncontaminated culture for the contaminated samples in order to continue the experiment and to obtain the desired and observed results. This is verified by the fact that he carelessly left the contaminated evidence in an incubator long after he reported that it had been processed and analyzed.

In conclusion, I believe that Dr. Anupam Bishayee committed scientific fraud. I believe that he deliberately obfuscated and obscured the process of the experiment started on March 26, 2001 with the intention of making it appear that the experiment had produced valid results when, in fact, that would have been impossible, given that the cultures with which he began were heavily contaminated with bacteria or yeast.

4/7/01: Explanation of Events in the Radiation Research Laboratory During the Past 2 Weeks

In order to understand the fraud which I believe has been committed, it is necessary to understand in broad outline the protocol of the experiment that was performed. The experiment involves a cell line called V79 that is cultured in tissue culture. Usually, the V79 cells which have been stored in the deep freeze are thawed and cultured for several days in flasks known as T175 flasks in order to expand the population. The cells are harvested, counted and aliquoted into tubes. All the tubes are placed on rollers in a 37° incubator. A radioactive compound is added in increasing amounts to half the tubes. The cells in these tubes will also be labeled with a tracker dye for future separating in the Fluorescence Activated Cell Sorter (FACS). The other half of the tubes contain cells that have not been dyed and are not radioactive. The tubes are incubated overnight on the rollers. The next day, the tubes are removed from the incubator and centrifuged to separate the cells from the supernatant. The supernatant which contains radioactivity that was not incorporated into the cells is removed. The pellets are washed several times in order to free them of any unincorporated radioactivity. The radioactive-dyed cells from these pellets are now mixed in equal amount with similarly incubated but non-radioactive, non-dyed cells. This is called a 50:50 experiment. The mixture of cells is transferred to small tubes, Helena tubes, and centrifuged to form compact entities called clusters. These clusters are incubated in a 10.5° incubator. After 3 days, the clusters are removed from the 10.5° incubator, the cells are harvested from the clusters, taken to the FACS which separates dyed (radioactive) cells from non-dyed cells. Once separated, the cells are plated in appropriate numbers onto tissue culture dishes (p60's) so that the cells that have survived the exposure to radioactivity and the 3 day incubation can be allowed to produce progeny in the form of colonies. The radioactive-dyed cells provide colony-forming units for the (+) arm of the experiment. The non-radioactive, non-dyed cells, the so-called bystanders, provide colony-forming units for the (-) arm of the experiment.

The fraudulent actions of Anupam Bishayee are interpreted as follows:

1.) On Friday, March 23, 2001, he presumably removed V79 cells from the deep freeze, thawed them and placed them in two T175 flasks for expansion.
2.) By Monday, March 26, as observed by Marek, and later by me, both flasks were grossly contaminated with bacteria. Good tissue culture practice dictates that such cultures must be discarded. No useful information can be obtained using them. It is clear from the observations that followed that, nonetheless, Anupam used these cells to set up his experiment. His contaminated cells would have been placed in tubes, incubated with radioactivity (the total amount that he took is recorded on the Radioactivity Materials Inventory and Disposition Record) and with dye as dictated by the protocol.
3.) On Tuesday, the cells would have been harvested, transferred to Helena tubes and placed in the 10.5° incubator as required by the protocol.
4.) On Wednesday, March 28, we reasoned that the 7 Helena tubes that resulted from this experiment and were in the 10.5° incubator must be contaminated with bacteria so we withdrew a small amount of medium from two (tubes #1 and #7),

added it to sterile medium in fresh sterile dishes along with a control dish of medium alone. Samples #1 and #7 proved to be contaminated. Later, we assayed the remaining tubes and these also were found to be contaminated with bacteria. This supported our hypothesis that he had used contaminated cells to set up his experiment.

5.) On Thursday, March 29, he asked Marek to give him some V79 cells. Marek gave him a 50 ml conical tube containing uncontaminated cells. Marek has continued to culture cells from this same batch until now and they have remained uncontaminated.

6.) Friday, March 30, is the day that the clusters in the Helena tubes in the 10.5° incubator should be harvested. In this experiment, they would then be transported to the FACS laboratory to separate the radioactive-dyed cells from the non-radioactive-non-dyed cells. Had they been contaminated with bacteria, Mr. Denny who runs the Laboratory says this would show up in the FACS analysis. The results of this cell separation have been saved on the hard drive of the FACS so that this can be determined. I believe that the uncontaminated cells that Anupam received from Marek on Thursday were dyed sometime Friday in order to mimic in the FACS analysis the radioactive-dyed cells that should have come from the contaminated Helena tubes. I posit that the separation was done with uncontaminated cells. This hypothesis is supported by the fact that Anupam never removed 6 of the 7 Helena tubes in his experiment from the 10.5° incubator. They did, in fact, remain there until the following Thursday, April 5. This can be verified by photographs taken on several occasions after Friday, March 30, the day for removal of the Helena tubes from the incubator.

7.) Friday after returning from the FACS, Anupam removed tube # 7 from the 10.5° incubator. I believe that he used this tube to provide the radioactivity counts for all the samples rather than harvesting and washing the cells in all the tubes as called for in the protocol.

8.) On the weekend, we found tube #7 in the non-radioactive trash. There was still some fluid in it which we counted for radioactivity, along with samples from the other cluster tubes. These cluster tubes were easily identified because they are all marked in green. All 7 of the green-marked Helena tubes contained bacterial contamination. Four of the 7 were radioactive. #'s 1 and 2 were not radioactive, as expected: these would be the non-radioactive controls. #6 was not assayed for radioactivity.

9.) The outcome of the experiment culminates with the p60 dishes that were plated on Friday, March 30. By Thursday, April 5, all of the + dishes were contaminated and most had been visibly contaminated for some time. The – dishes were not. The fact that the – dishes were not contaminated supports the hypothesis that the cells that were used for the FACS separation were not contaminated to begin with. If contaminated cells had gone into the FACS, all the – dishes would have been contaminated, as well. This supports the hypothesis that Anupam substituted the clean V79 cells that he received from Marek for the contaminated cultures in this experiment. (Of course, we know that he never used the contaminated cultures anyway, because they remained in the 10.5° incubator for nearly a week thereafter.) In a conversation between Roger, Marek and Anupam, overheard by

myself, Anupam confirmed that the experiment done this week of March 26 was, indeed, an experiment that followed the protocol that I have described.

10.) The question remains as to why the + dishes were contaminated. This is probably because the FACS machine was not absolutely aseptic. The fact is, for this arm of the experiment, more cells must be collected in order to observe colonies, thus the probability of contamination is greater.

11.) The Helena tubes in question disappeared sometime Thursday evening. We searched for them in the radioactive waste and were unable to find them. Since we know that they were radioactive, they should have been disposed of properly.

I concluded that Anupam Bishayee committed fraud in that he rigged the experiment by dyeing and substituting non-contaminated samples for ones that were clearly contaminated and could not have produced the recorded results.

Explanation of the fraudulent events that occurred in October of 1999

The experiment performed here is somewhat different from the one described above. It involves irradiating V79 cells with graded doses of gamma rays, allowing them to form colonies to measure their survival and, in addition, replating about one million cells from each experimental point, allowing them to undergo 3 or so cell divisions, harvesting and replating in this manner until all the sets have undergone about 10 cell divisions. At this point, the cells from each dish are harvested, counted and each replated into 5 dishes of 200,000 cells each. The medium in these dishes contains 6 thioguanine which will kill all cells that do not have a mutation in a specific gene called HPRT. The number of mutants is expected to increase as the radiation dose is increased. Without any radiation, one can expect about 1 to 2 mutant colonies per dish and with the highest dose, that number will increase to 15 or 20. The salient points about this experiment are as follows: This part of the experiment employs dishes that are not generally used in this laboratory – 100 mm or p100 dishes. Since there are 10 different radiation doses and 5 p100's per dose, the experiment calls for 50 p100's at the time of mutant expression. I saw 50 p100's in the incubator on the day after Anupam said that he had fixed and stained them. I looked at these dishes under the inverted microscope and found that they were devoid of colonies and, in fact, devoid of the dead cells one usually finds in such an experiment. When I asked him what these dishes were, he said they were for another experiment. Roger later told me that there was no other experiment that would have called for these dishes. Furthermore, after I asked Anupam what these dishes were, they very quickly disappeared from the laboratory and were not even to be found in the trash from the lab. I conclude from this that he made up the mutation data for this experiment.

The following has occurred this week:

3/23 Friday Anupam thawed aliquots of V79 and plated them into 2 T175's.

3/26 Monday Marek observes that both 3/23 flasks are contaminated. A 3rd bottle containing 1522 cells was OK. Marek observed that Anupam was probably using one of the contaminated T175's to set up an experiment. He also believes that Anupam split the cells and put them back into the incubator in a flask marked 3/23. Anupam sets up an experiment on rollers in the top of the double 37° incubator as seen by Marek.

3/27 Tuesday Anupam collects the cells from the rollers and sets up 7 Helena tubes which are placed in the 10.5° incubator as observed by Marek.

3/28 Wednesday Marek and I both observed a T175 in the trash marked 3/23 that was clearly contaminated. Once Anupam was gone, we took samples from the 7 Helena tubes – marked in green, 1 through 7– in the 10.5° incubator that we presumed had been plated from the contaminated flask of 3/23. He sampled nos. 1 and 7 by withdrawing a small volume from each and placing in 10 ml each of growth medium in P100's. A 3rd P100 contained only medium (control).

3/29 Thursday We observed both P100's under inverted phase. With careful focusing it is possible to see rods in both of them.

In the top of the double incubator in which we found the contaminated V79 T175's, there is a tray containing P60's which would have come from experiments done last week – probably from the FACS. There are two rollers, both empty. I looked at all the dishes and observed the following:

P60's in the front of the orange tray – marked with green marker:

Label	contaminated/total
1.2S	1/3
3.2S	1/3
4.2S	1/3
6.3S	0/3
5.2S	0/3

P60's in the back of the orange tray – also marked with green marker

1.2	3/3
2.2	3/3
3.2	3/3
4.2	3/3
5.2	3/3
7.3	3/3
6.3	3/3

There are no colonies to be seen on any of the dishes in this set. Colonies can't be seen in the front set but they are probably from a more recent run than the second set.

There are 2 T175's in the incubator today. One is the same 1522 flask as seen the day before and is OK i.e. not contaminated, did not look at cells. The other is a contaminated flask of V79 marked with the date 3/28 probably indicating that it was thawed yesterday.

Around 4 PM Anupam seemed to be in a great rush and asked Marek to give him some V79 which he did. This was observed by Ed.

3/30/01 Friday ~ 8:30 AM (The day clusters from Helena tubes should be prepared for FACS, sorted and plated).

Small incubator: 1 T175 of V79 from Marek from yesterday – no date, 100% confluent, no contamination.
1T175 of AG1522: cells are floating, none attached. Flask is not dated. Probably plated yesterday.

Double Incubator:
Top:
2 empty rollers
1T175 of V79 – date is 3/28, cells are not attached, there are floaters but no growth – somewhat cloudy.
The P60's are all gone

Bottom: empty.

Trash:
P60's from the incubator – from yesterday – green marker
1 T175 with AG 1522: has some very sick looking cells

10.5° incubator:
range rack with 7 Helena tubes marked in green #s1-7

Incubator in F468: 3 P100's; Control: medium is clear, #1 and #7 are very contaminated.

12:54 PM 7 Helena tubes are still in the 10.5° incubator
1:34 same
1:39 Anupam is working in the laminar air flow hood and just told Marek that he is doing an experiment with clusters.
ca 3:00 PM all 7 Helena tubes are still there. Anupam goes to Denny's lab to do the FACS separation (but the cells for FACS are still in the 10.5° incubator in Helena tubes in clusters).

At the time that Roger leaves, Anupam returns from FACS, says that things went better than the last time. Roger says that this is a 50:50 ^{3}H cluster experiment. Marek asks if it had been incubated at 10.5°, Anupam says 'yes'.

5:00 PM 10.5° incubator now has only 6 Helena tubes, #s 1-6. #7 is gone (this is the same tube that we sampled yesterday and found to be contaminated).

Conclude: Flow was done with newly harvested V79 cells that Anupam received from Marek yesterday. These will be plated and should come out OK.

6:00 PM: 6 Helena tubes are still in the 10.5° incubator. A full set of P60's are incubating in the small incubator.

Took pictures with digital camera – no date-stamp – didn't know how – files are P1010004-P1010009.

6:40 PM: We depart. There are still 6 Helena's in the 10.5° incubator.

3/31/01 Saturday

10.5° incubator: orange rack with 6 Helena tubes marked 1-6 in green still there.

Small incubator: orange tray: Front: stacks of 3 P60's each marked with green marker 1-2,2-2,3-2,4-2,5-2,6-2,7-2 all also say (-)

Back: stacks of 3 P60's each marked with green marker 1-2,2-2,3-2,4-2,5-3,6-3,7-4 all also say (+)

Lower shelf: 2 T175's of V79 no dates, green marker, cells OK, no signs of contamination
1 T175 of AG1522 no date, floaters, very few cells attached, no signs of contamination

Double incubator:

Top: 2 empty rollers
Bottom: 1P60: PBS
1P60: M

Radioactive trash: 4 Helena tubes marked in purple 4,5,6,7 (no 1,2,3), no other Helenas. We hid the radioactive trash so that it can be examined later. If the experiment had been done properly, it should contain the 7 green-marked Helena tubes from the clusters that had been incubated for 3 days at 10.5°. It does not contain such tubes (as we know they are still in the 10.5° incubator at this time).

Large red lined trash can: much trash but: 1 Helena tube marked 7 in green – aspirated remaining fluid to count radioactivity. Assume this tube to be the missing #7 from the 10.5° incubator.

Took more pictures. Now they are date-stamped.

Marek took samples from the Helena tubes to count for radioactivity and to test for bacterial contamination. The latter are incubated in a cluster plate along with a medium control in the F468 incubator. The demonstrated radioactivity is not quantitative.

4/1/01 Sunday

As reported by Marek: 6 Helena tubes are still in the 10.5° incubator – photo taken with digital camera – date/stamped

4/2/01 Monday

6 Helena tubes are still in the 10.5° incubator, there are no attached cells in the T175 flask containing 1522 cells. Marek, Roger & Anupam had a conference. Roger asked Anupam if he had plenty of 1522 cells to which he replied 'yes' which was not true. See notes from 3/31. After this time, he obtained a fresh T75 of 1522's from Sonia.

The 5 samples in the cluster plate in the F468 incubator are contaminated with bacteria. The control is not.

Both Marek and Anupam set up new experiments this evening. Anupam used the 2 rollers in the upper incubator, Marek used the lower ones.

Digital camera now attached to the microscope. Not easy to use anymore.

4/3/01 Tuesday

[redacted] rolling rollers in upper incubator (Anupam) 2 in lower (Marek)

Helena tubes are still in the 10.5° incubator. Photo taken with my camera – date/stamped.

Both Marek and Anupam process their cells. When Marek put his in the 10.5° incubator, Anupam had not removed the old clusters. He now has two sets of clusters. Marek asks if he has two experiments running at the same time and he replies 'yes' which we know is a lie because the first set are the same that were there since last Tuesday. Photo taken of the three sets of clusters – date/stamped.

9:30 PM Marek reports that the + dishes that were plated on Friday are contaminated. So far, the – dishes are OK. Tom Denny told me that contamination is a big problem for the FACS so it may be that Anupam used the good cells that he got from Marek but they got contaminated anyway.

The p60 (see above) marked PBS is contaminated. The one marked M seems to be OK.

4/4/01 Wednesday

Small incubator: Bottom shelf: 1 T75 of AG1522 from Sonia, 1 T175 of same – cells all dead; 1 T175 of V79 of Anupam's from Marek

2nd shelf fr bottom: P60's in the back (marked +) are all contaminated. The P60's in front (marked -) are OK

[redacted]pper shelves: Marek's experiments

Double incubator: Upper: 2 empty rollers, Bottom: same

10.5° incubator: 2nd shelf fr top: 2 orange holders both with green numbers. The one in front is from last week with 6 Helena tubes, the one in front is the new one from yesterday with 7 Helena tubes.

3rd shelf fr top: 1 white rack with 10 Helena tubes with blue markings from Marek.

Incubator in F468: control for cluster plate is still clear, as is the P100 control.

4/5/01 Thursday

Morning: 10.5° incubator: 3 racks of Helena tubes: the 2 of Anupam, 1 of Marek

Small incubator: T175 w 1522, T75 w same (from Sonia), P60's as before, no V79's

Large trash can: 4 T175's – all contaminated, 3 are V79 and 1 is 1522.

Double incubator: 2 empty rollers on top, nothing in the bottom

[redacted]Marek observed in late afternoon that the Helena tubes from last week that were in the 10.5° incubator are now [redacted]one. I confirm at about 9PM. I look in the radioactive waste for the 6 tubes and do not find them. I also look in all the other trash baskets without finding them.

4/6/01 Friday 9:30 AM

10.5° incubator: 2 sets of clusters, one is Marek's, the other (7 tubes) is Anupam's.

Small incubator: P60's are all gone – the (–) ones were counted and discarded in the large red trash bag. Colonies look OK.
The (+) ones are by the sink – rinsed, no colonies, all were very contaminated.

Roger looks very angry.

Later that day, I see the notebook containing the protocol for the experiment. The date at the top of the first page is 3/26/01 which would be the day that the cells were first harvested to begin the experiment. The first page has the standard protocol that involves rolling the first night, harvesting, making 50:50 clusters the next day and incubating them at 10.5° for 3 days. I did not get a chance to see when the dye was to be added. The second page indicates that, on 3/31, the clusters are broken up and the cells are taken to the FACS machine for separation of dyed-radioactive cells from the bystander-non-radioactive cells. I also observe that there are colony counts on the second page and that Roger has signed this page. I observe the notebook containing this protocol on Anupam's desk after Roger has left for the day.

Anupam is still in the lab when Marek leaves.

4/7/01 Saturday

I want to verify the dates and the protocol for the experiment started 3/26, but the notebook is nowhere to be found.

Incubator inventory:

Double incubator: top – 2 empty rollers; bottom – nothing
Small incubator: top – 2 sets of p60's: 8x3 (-); 8x3 (+)
3rd, 4th & 5th shelves: p60's and p100's
6th shelf: 1 T175 of V79: OK
1T75 of 1522 fr Sonia – very contaminated; 1T175 of 1522: mold growing in the middle
10.5°: empty

3/29/01

Additional problems with Anupam Bishayee

Although this is long after the fact, I want to record this incident as additional evidence that Anupam does not tell the truth. This happened last year some time: Anupam was to give me some V79 cells so that I could do an experiment with them. On Friday he told me that he had set up 3 T175's and that he would have plenty of cells on Monday. When Monday came, I asked for the cells and he said that he didn't have any. Roger quizzed him as to why and he said he had had trouble with the Coulter counter and he had lost them all when trying to count them. This is a ridiculous answer because each T175 will yield over 10^7 cells and only a few thousand cells are needed for the counter. Roger tried to get him to admit that they were contaminated but he stuck with his story. After he had left the room, Roger said to me 'why does he lie to me like that?' So Roger is aware that he lies and he is willing to put up with it.

10/23/99

I write this because I suspect that Dr. Anupam Bishayee, a Post-Doc working for Dr. Roger Howell, is fudging data and I do not believe that Roger is taking what I have told him seriously.

Monday, October 11, 1999: Anupam had started an experiment involving mutagenesis which would end today. If there had been no contamination, there should be 50 P100's ready to stain. I ask him during the day if he will stain them today and he replies that he is busy with other things but that he will stain them later. When I leave around 6 o'clock, I stop in to see if they have been stained and he says that they have not but they he will work late and do them later.

Tuesday, October 12, 1999: When I come in this morning, Anupam has not arrived. I go into the lab to look for the plates. There is no sign of them around the lab or in the trash. I look in the incubator and there is a tray containing 10 stacks of 5 p100's each and marked consecutively from 1 to 10. This is the expected numbering that would result from the experiment. I look at several plates by I-ball and under the microscope. I do not see any colonies. I know from my experience that cells that are not going to form colonies will lyse on about day 4 after plating leaving nuclei – this should be day 7. There are very few nuclei. I worry that these are the plates from the experiment and that Anupam miscounted resulting in too low cell numbers to get colonies. I also figure that he decided not to fix and stain them the night before because it had gotten too late. An extra day would not make any difference. He may also have become aware that they didn't have many, if any, colonies on them When he comes in, I ask him how the experiment went and he says it went very well and he will give me the data later. I ask him what the plates are that are in the incubator and he replies that that is another experiment that he is working on. I know that the other experiments that he does do not utilize the p100's, they use the p60's. In fact, I have supplied the p100's for these experiments. He gives me the data later on and it is as predicted: the data for cells placed in aerobic conditions indicate more mutants than data for cells placed in hypoxic conditions. During the course of the experiment, cells must be plated and replated and the numbers must be carefully recorded in order to calculate the number of cell divisions the cells have undergone before they are challenged with the selection agent 6-TG. I ask Anupam for these data and he tells me he has them and will give them to me later.

Wednesday, October 13, 1999: Again I come in earlier than Anupam. I go to the incubator only to find the mysterious set of 50 p100's is no longer there. Again I search through the trash and around the lab and there is no sign of the plates. Anupam does not give me the missing data.

Tuesday, October 19,1999: Roger has been sick but is now back at work. I relate to him the above events and tell him of my suspicions. He agrees that things sound pretty fishy. He says that he will ask Anupam for the missing data referred to above. I hear him do this later and I hear Anupam reply that he cannot lay his hands on the data because they are at home. Roger scolds him for taking data home.

From now on, I check when I can as to what is going on in Anupam's incubator. There is a set of p60's marked appropriately for the sorts of survival experiments that Anupam does. I don't see anything on these plates but they may be newly plated.

Thursday, October 21, 1999: I discuss the situation with Roger and he poo poos me saying that I never really did like Anupam in the first place. This is not true. I don't dislike him and I don't have it in for him. I do not know if Roger ever got the missing data from Anupam. Roger is pleased with Anupam's work because he faithfully turns out data regularly. He also thinks that Anupam is not smart enough to make up data.

I decide that, as much as possible, I will distance myself from Anupam's work. Until there is a logical explanation for the mysterious set of 50 p100's that should not have been in the incubator, I believe that Anupam made up the data for the mutagenesis arm of the experiment and I do not want to be associated with him.

Friday, October 22, 1999: Roger is analyzing some old data and finds that the RBE for ^{3}H is at least three times greater than it should be. He will repeat these experiments himself to determine whether the data are real or not.

Saturday, October 23, 1999: I look in the incubator for the above mentioned p60's. They are gone. I check the trash. There are plates in the trash that still have pink medium in them which looks a bit cloudy and may be contaminated.

ARRIVED ON 2/15/01.

This shows that ^{3}HdThd was taken for an experiment on 3/26/01

Radioactive Materials Inventory and Disposition Record

LICENSEE	*ISOTOPE*	*FORM*	*ACTIVITY IN mCi*
R. HOWELL	H3	THYMIDINE, [METHYL-3H]	5.00000mC

DATE 2/15/01
CAL DATE
MANUFACTURER PERKINELME
CATALOG # NET027Z
LOT # 3106412

PHYSICAL FORM: liquid/solid
STORED AT: 4C/-20C/room temperature
STORED IN ROOM: 451A

Date Used	Activity Used (uCi)	Disposal Separate by isotope!!!	Balance (uCi)
02/15/01	640	80 %Liquid 20 %Solid %LSV	4360
02/19/01	90	80 %Liquid 20 %Solid %LSV	4250
03/6/01	400	90 %Liquid 10 %Solid %LSV	3850
03/8/01	640	80 %Liquid %Solid %LSV	3210
03/09/01	60	60 %Liquid 40 %Solid %LSV	3150
03/13/01	100	90 %Liquid 10 %Solid %LSV	3050
03/20/01	360	324 %Liquid 36 %Solid %LSV	2690
03/19/01	175	60 %Liquid 40 %Solid %LSV	
03/27/01	360	324 %Liquid 36 %Solid %LSV	
03/26/01	36	60 %Liquid 40 %Solid %LSV	
04/02/01	300	60 %Liquid 40 %Solid %LSV	
		%Liquid %Solid %LSV	
		%Liquid %Solid %LSV	
		%Liquid %Solid %LSV	
		%Liquid %Solid %LSV	
		%Liquid %Solid %LSV	
		%Liquid %Solid %LSV	
		%Liquid %Solid %LSV	
		%Liquid %Solid %LSV	
		%Liquid %Solid %LSV	
		%Liquid %Solid %LSV	
		%Liquid %Solid %LSV	
Example:			
1/1/98	150	50%Liquid 30%Solid 20%LSV	100

INSTRUCTIONS:

1. **Post Inventory and Disposition Form on or near storage area**
2. **Update Inventory form after EACH and EVERY USE, this is a requirement of NRC**
3. **Radionuclides with a half-life <120 days are Decayed-On-Site**
4. **Dispose of all Radioactive Wastes through the Office of Radiation Safety Services (ORSS)**
   Therefore: Deface all materials associated with these isotopes PRIOR to disposal into the LLRW
5. **Maintain this record for a minimum of three (3) years**

A-00351

Questions, or concerns please call 2-5305, 2-5306, or by pager 899-8438

1st set of counts

R: 6 ID:H3 HOWELL PRESET TIME: 1.00 SUN 01 APR 2001 11:16
AMPLE REPEAT: 1 CYCLE REPEAT: 1 SCR:N RS232:N
#: 1 AQC:N QCF:N RCM:N
HANNEL 1-LL: 0 UL: 400 2SIGMA: 2.00 BKG SUB: 0.00 BKG 2SIG: 0.00 LSR: 0
ATA CALC: CPM, UNKNOWN REPLICATES: 1 NORM FACTOR:@ 1.00000
ALF LIFE(DAYS):N

AM	POS	CH	CPM	2SIG%	TIME	EL TIME	AVG H#	ERR	
1	28- 1	1	8.00	70.71	1.00	1.42	74.0		– KONTR (Medium) Ekolume
2	28- 2	1	41.00	31.23	1.00	3.00	76.0		– S-1
3	28- 3	1	15.00	51.64	1.00	4.62	79.0		– S-2
4	28- 4	1	11128.42	1.95	0.95	6.18	82.0		– S-3
5	28- 5	1	8244.00	2.20	1.00	7.80	82.0		– S-4
6	28- 6	1	22222.00	1.90	0.50	8.86	78.0		– S-5
7	28- 7	1	555.00	8.49	1.00	10.48	82.0		– S-7
8	28- 8	1	30024.00	1.88	0.38	11.52	0.0		– Background Positive control H3 – DPM ~ 98200

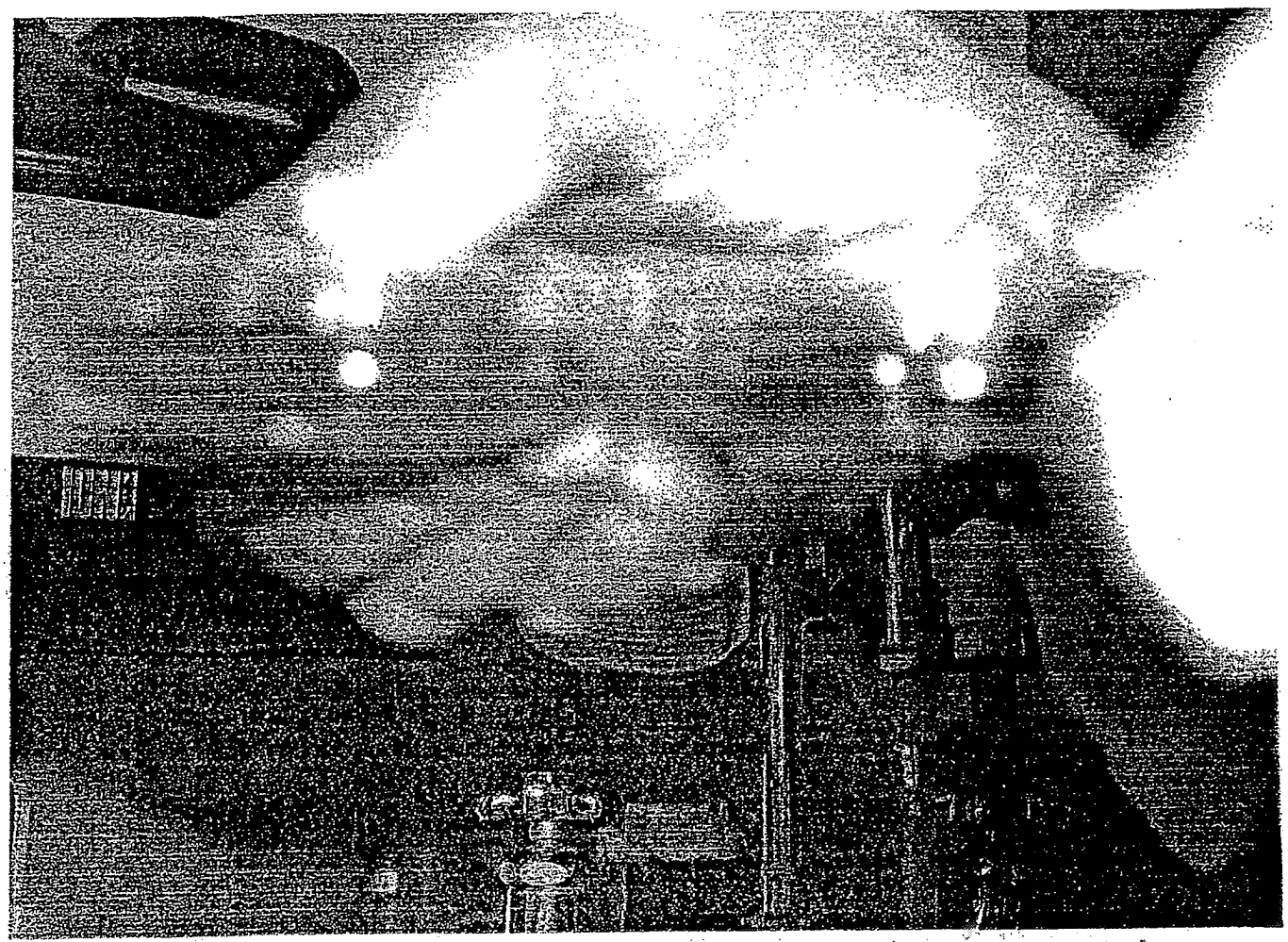
These are radioactivity counts of aliquots taken from the Helena tubes in the 10.5° incubator on Saturday, March 31, 2001.

2nd set of counts

ER: 6 ID:H3 HOWELL PRESET TIME: 1.00 SUN 01 APR 2001 16:03
MPLE REPEAT: 1 CYCLE REPEAT: 1 SCR:N RS232:N
#: 1 AQC:N QCF:N RCM:N
HANNEL 1-LL: 0 UL: 400 2SIGMA: 2.00 BKG SUB: 0.00 BKG 2SIG: 0.00 LSR: 0
ATA CALC: CPM, UNKNOWN REPLICATES: 1 NORM FACTOR:Q 1.00000
ALF LIFE(DAYS):N

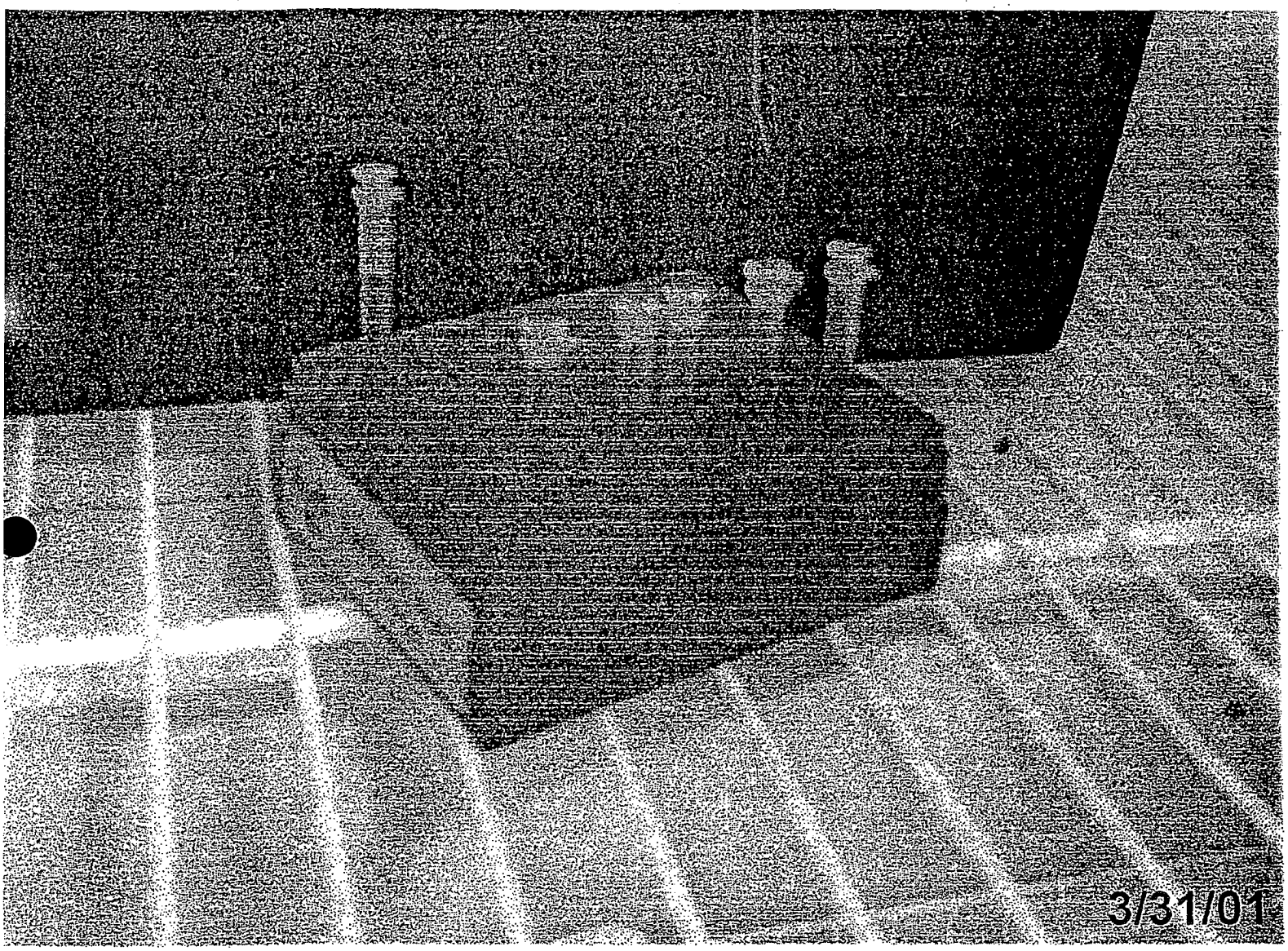
AM	POS	CH	CPM	2SIG%	TIME	EL TIME	AVG H#		ERR
1	29- 1	1	13.00	55.47	1.00	1.42	73.0	- conte	
2	29- 2	1	56.00	26.73	1.00	2.99	75.0	- 1	
3	29- 3	1	15.00	51.64	1.00	4.56	80.0	- 2	
4	29- 4	1	10846.32	1.97	0.95	6.08	82.0	- 3	
5	29- 5	1	8367.00	2.19	1.00	7.65	82.0	- 4	
6	29- 6	1	21684.00	1.92	0.50	8.72	77.0	- 5	
7	29- 7	1	518.00	8.79	1.00	10.34	81.0	- 7	
8	29- 8	1	29709.33	1.89	0.38	11.38	1.0	- H3 DPM=98200	

These are a second set of radioactivity counts

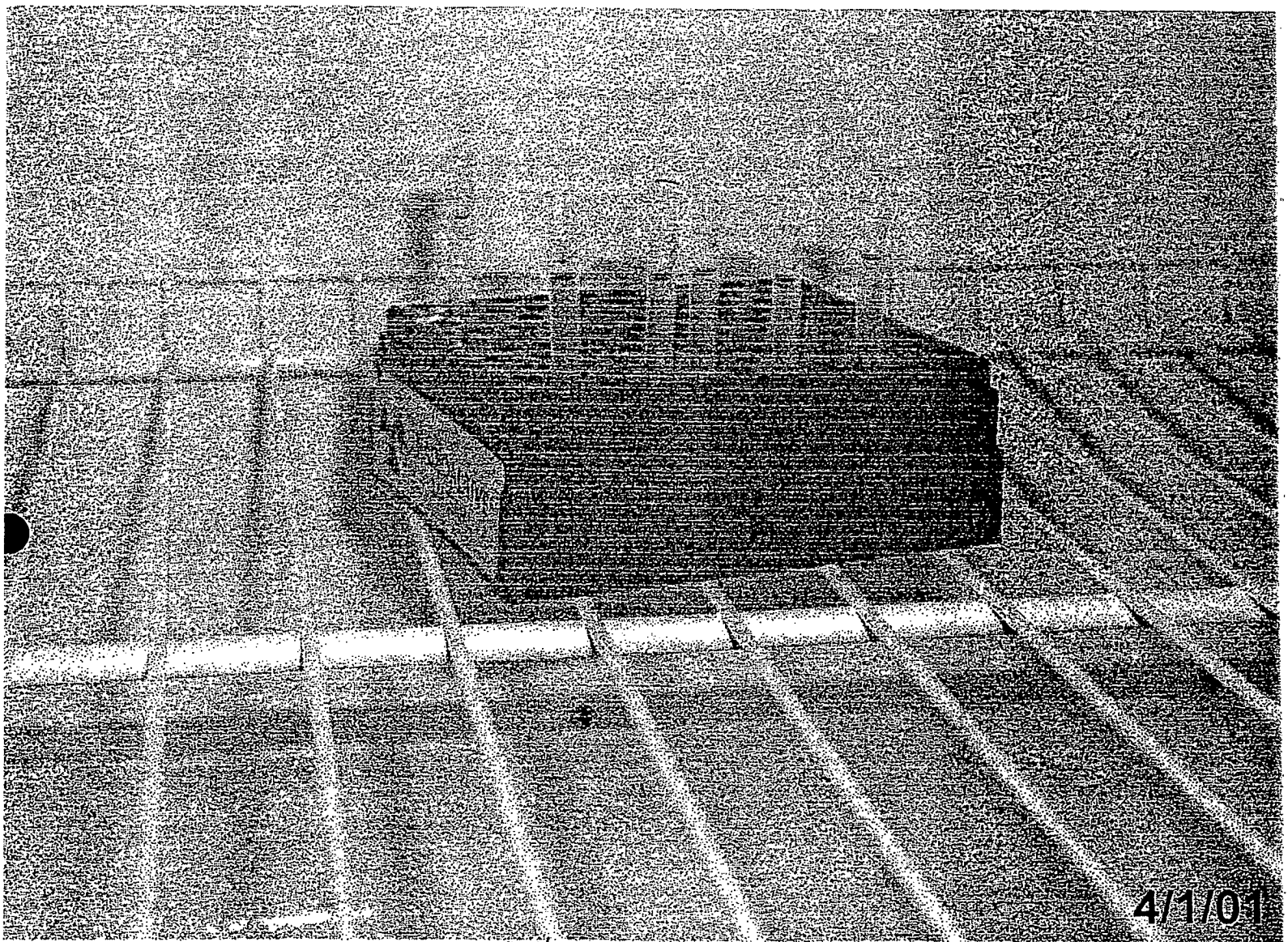


One contaminated plate taken from sample 1 of 7 on left
Control, uncontaminated medium on right.

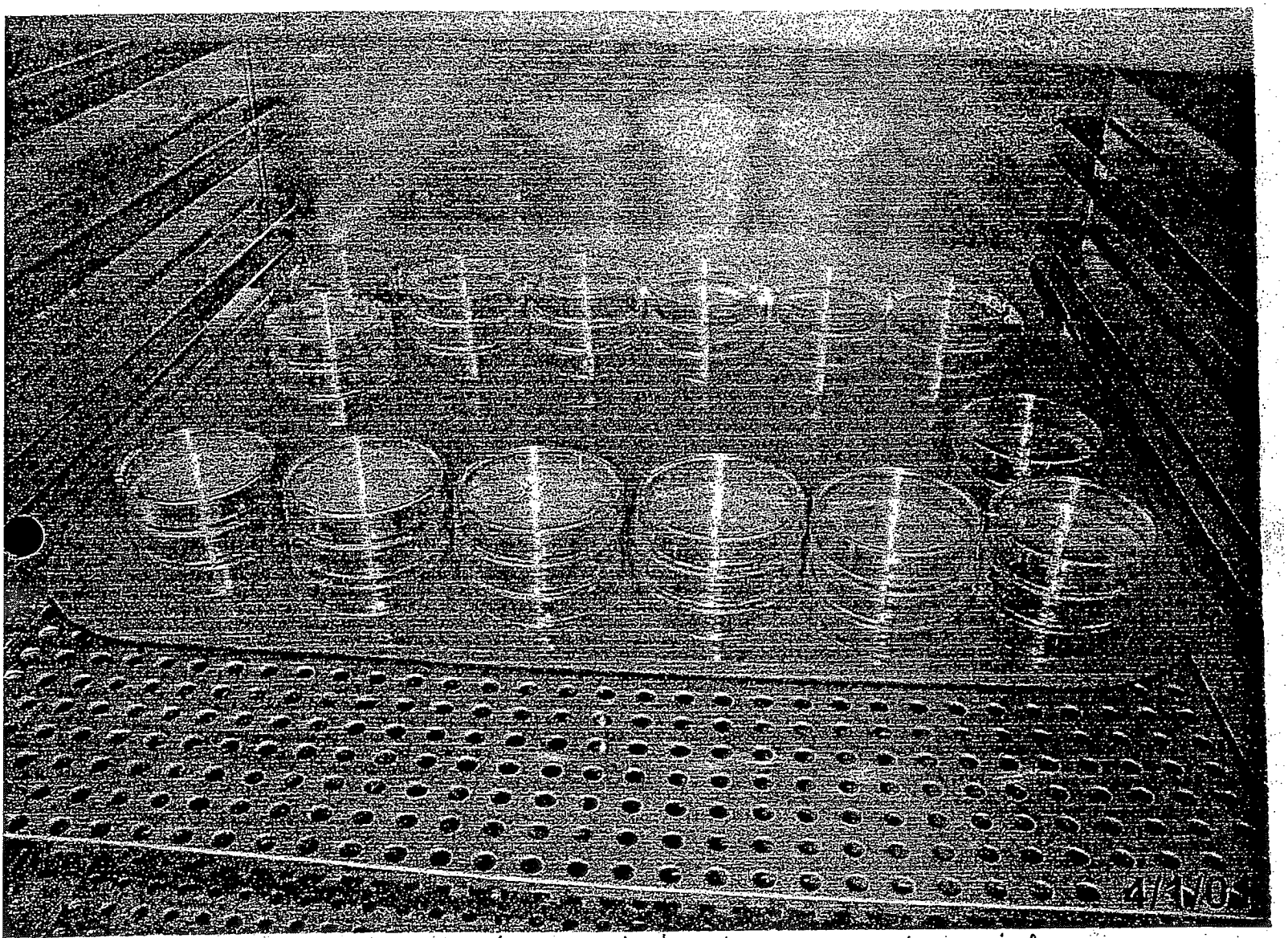
contaminated flask of V79 on left
Uncontaminated 1522 on right



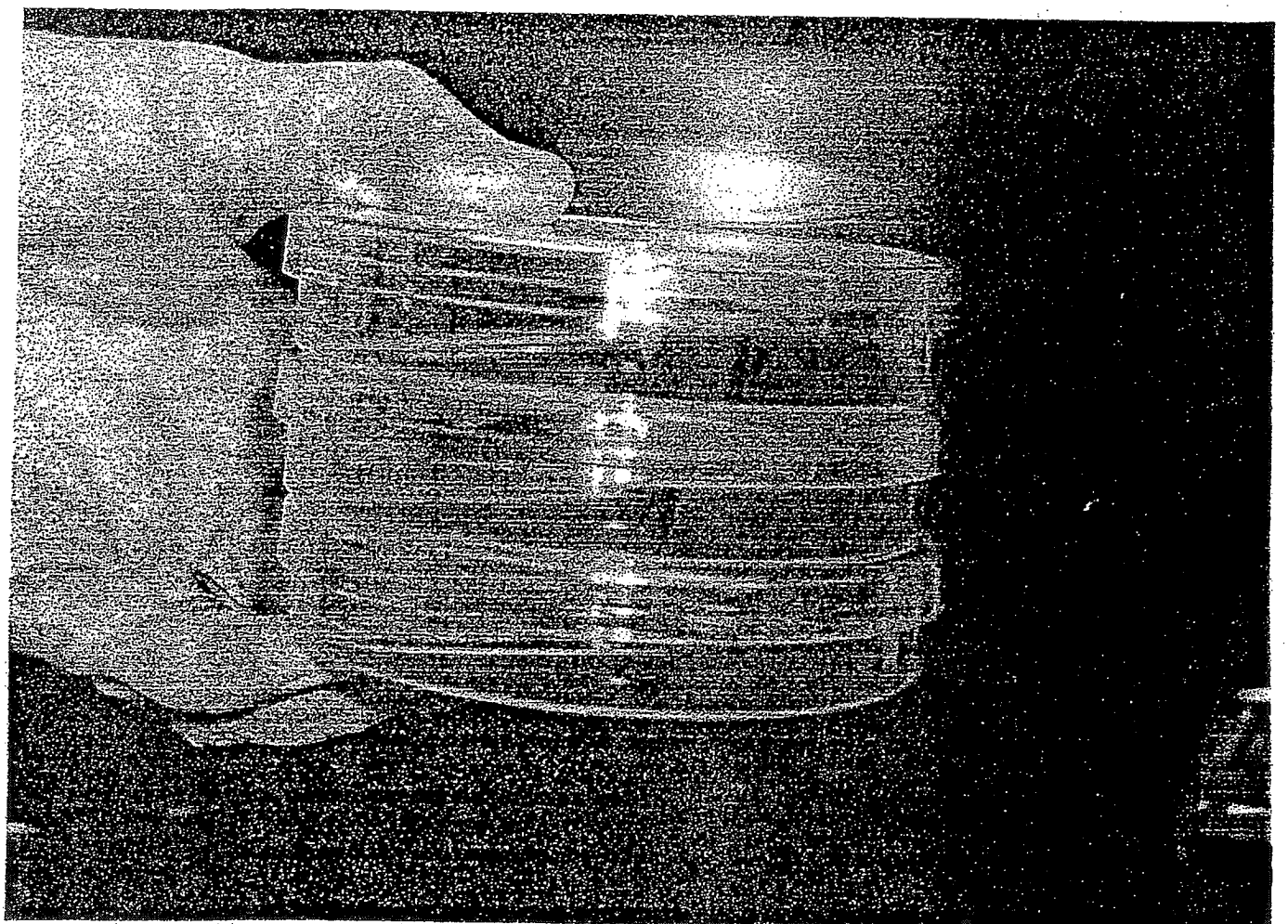
Helena tubes in 10.5° incubator.
#7 is gone



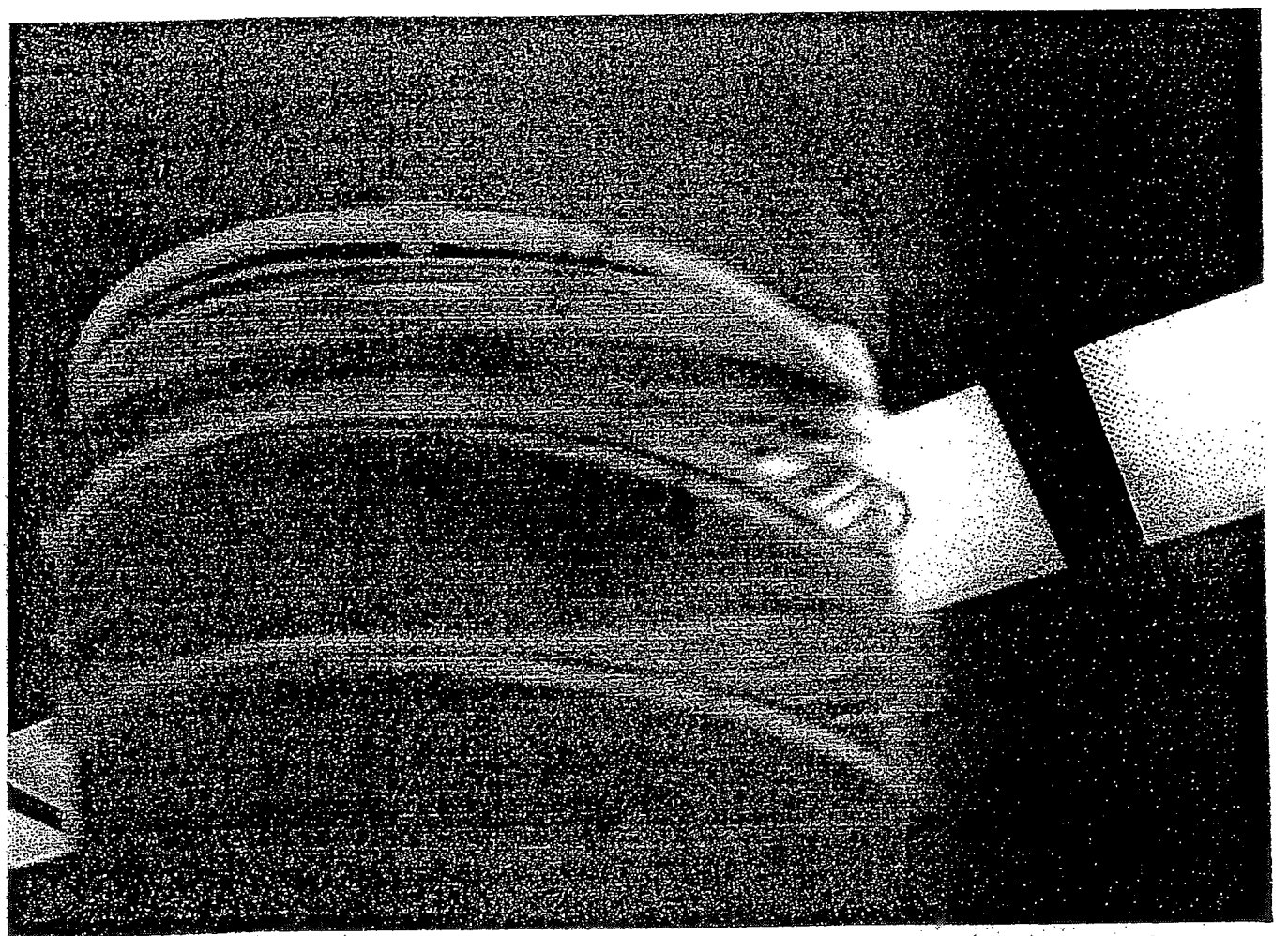
Chester tubes are still there.



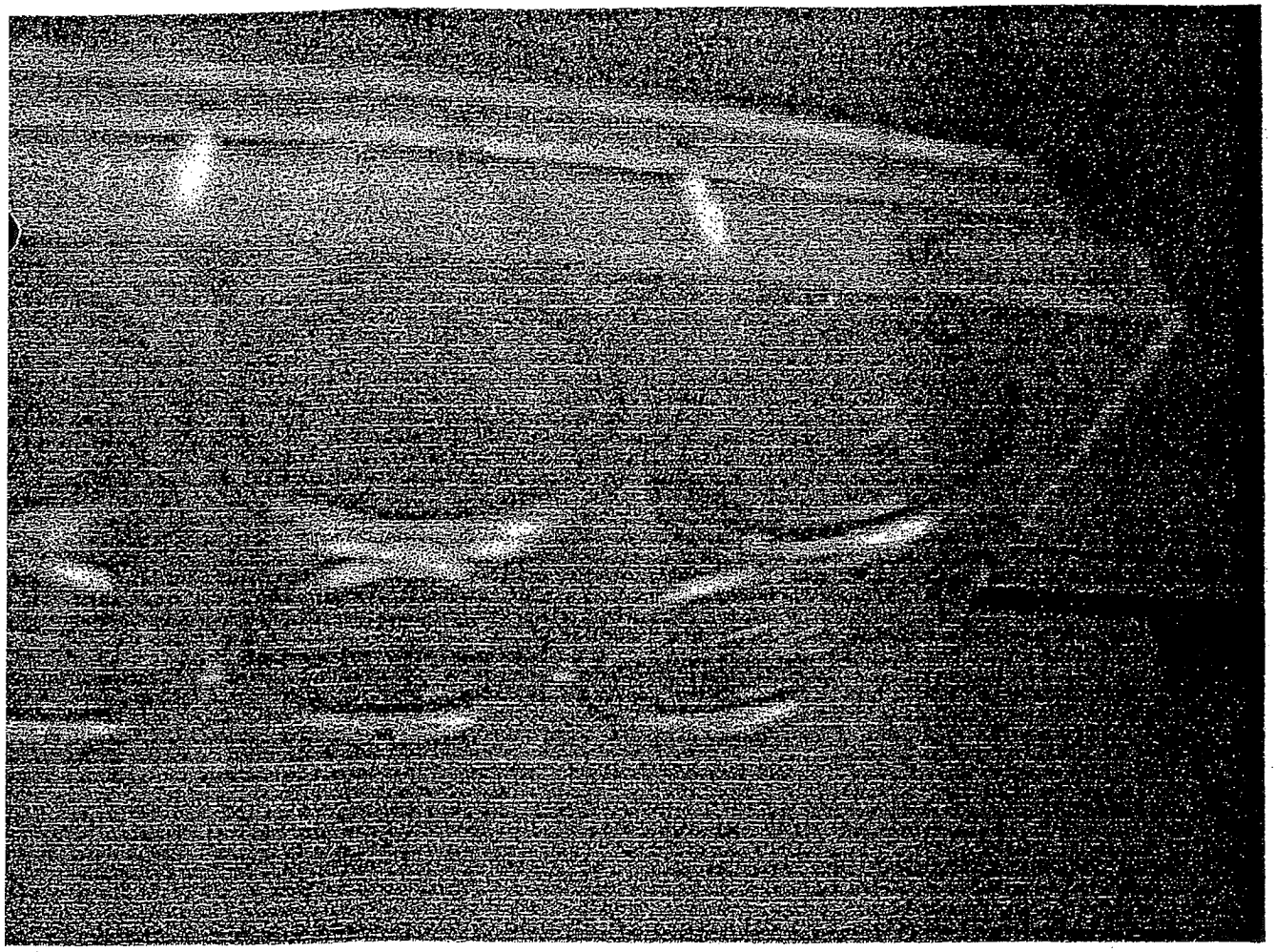
Small incubator with P60's. The set in frnt. are not contaminated. The ones in back are starting to show contamination



The 3 P100's from 3/28/01. K is the medium control and shows no contamination. 1 and 7 are firm aliquots taken from the corresponding Helena tubes on 3/28. Both show heavy contamination



4/7/01 K is control. After prolonged incubation, K remains uncontaminated



4/7/01 K = control. The cluster plate from 3/31 showing that samples 1-5 from Helena tubes are contaminated.

V79 COLONY FORMING ASSAY FOLLOWING FACS

Experiment Name: Cell separation by FACS and SF (^{3}HTdR cluster, 50% labeling, five ^{3}HTdR conc.)

Exp. # 3; **Investigator:** A. Bishayee **Date:** 03/26/01

1. Set the rocker-roller at 37°C incubator with 5% CO_2, set the Coulter Counter, wash cells (from two 80-90% confluent 175 cm^2 flasks, subcultured 4-5 days before) with PBS, trypsinize cells, each resuspend in 7 ml MEMB, pool, pass five times through 5 or 10 cc syringe with 21 gauge needle, perform cell count by transfering 100 ul in Coulter cup containing 20 ml isotone (Coulter balanced electrolyte solution)
2. Dilute to ~2,000,000 cells/ml in MEMB [Actual count : 5,200,000 cells/ml)
3. Transfer 1 ml of cell suspension into two sets of tubes (7 tubes per set; Falcon plastic test tube, 17x100 mm)
4. Keep the tubes in the roller for 3-4 h at 37°C, 5% CO_2 **Date/Time:** 03/26/01; 4-0 pm
5. Prepare MEMB containing radioactivity in hood

   36 µl ^{3}HTdR (Stock : 1 µCi/µl on 2/15/01) + 3 ml MEMB
6. After 3-4 h, remove first set of tubes from roller and add MEMB with or without radioactivity according to Table below.

Date/Time: 03/26/01; 7-1 pm

Tube #	^{3}HTdR uCi/ml	Cells in MEMB (ml)	MEMB (ml)	MEMB+ ^{3}HTdR 12uCi/ml (ml)	CFDA in PBS (1 uM) (ml)
1	0	1.0	1.0	0	2
2	0	1.0	1.0	0	2
3	1	1.0	0.835	0.165	2
4	2	1.0	0.665	0.335	2
5	3	1.0	0.5	0.5	2
6	4	1.0	0.335	0.665	2
7	6	1.0	0	1	2

7. Add 1 ml of MEMB tube and return test tubes to roller for 14 h. **Date/Time:** 03/26/01; 7-
8. Next day, while test tubes are in roller label tubes (13 X 100 mm VWR glass test tube) pm

9. After ~14 h incubation period, remove tubes and centrifuge at 2000 rpm at 4°C for 10 min (*precooled centrifuge*).

Date/Time: 03/27/01; 9-30 a.

10. Remove buckets from centrifuge and carefully remove 150 µl of supernatant and place in prelabeled tubes.
11. Decant supernatant, click tubes, vortex, resuspend in 10 ml wash MEMA
12. Centrifuge tubes for 10 min at 2000 rpm, 4°C
13. Decant supernatant, click tubes, vortex, resuspend in 10 ml wash MEMA
14. Centrifuge tubes for 10 min at 2000 rpm, 4°C
15. Decant supernatant, click tubes, vortex, resuspend in 10 ml wash MEMA
16. Centrifuge tubes for 10 min at 2000 rpm, 4°C
17. Decant supernatant, click tubes, vortex
18. Add 8 ml of PBS in each tube, vortex and transfer the content to 15-ml plastic centrifuge tube
19. Centrifuge tubes for 10 min at 2000 rpm, 4°C
20. Decant supernatant, click tubes,vortex
21. Add 2 ml of 1 uM CFDA in prewarmed PBS as per the Table and PBS in the remaining tubes.
22. Incubate all tubes at 37°C for ~~15~~ 30 min.
23. Centrifug tubes for 10 min at 2000 rpm, 4°C
24. Decant supernatant, click tubes, vortex, add 2 ml prewarmed MEMA
25. Incubate all tubes at 37°C for 30 min.
26. Centrifuge and decant the supernatant, suspend in 5 ml MEMA
27. Follow steps 11-24 for second set of tubes
28. Transfer the content of one tube from one set to the corresponding tube of another set
29. Centrifuge, decant the supernatant
30. Transfer the cell suspension in polypropylene microcentrifuge tubes with attached caps (Helena Plastics, 400 ul) using 200 ul pipet tips
31. Again add 200 ul MEMA, resuspend and transfer the cell suspensions in the same polypropylene microcentrifuge tubes (Total volume ~400 ul)
32. Centrifuge tubes for 5 min at 1000 rpm, 4°C
30. Transfer tubes at 10°C for 72 h. **Date/Time:** 03/27/01; 1-00 PM
33. After 72 h, carefully remove the supernatant from the top, resuspend pellet in 200 ul wash MEMA and transfer the content to eight 15 ml tubes containing 10 ml PBS by using pasteur pipet **Date/Time:** 03/30/01; 12-45 PM
34. Again add 200 ul PBS in microcentrifuge tubes, resuspend and transfer the cell suspensions in 15 ml tubes

35. Centrifuge the tubes for 10 min at 2000 rpm, 4°C ***(precooled centrifuge)***
36. Decant supernatant, click tubes, vortex, pooled cells from corresponding tubes, centrifuge, decant the supernatant, resuspend in 2 ml PBS with, syringe and transfer aliquots for cell count (100 ul) and radioactivity count (50 ul)
37. Centrifuge, decant, resuspend in 1 ml PBS for each tube and transfer ~1ml in Falcon 12x75 mm polystyrene 6 ml tube, wrap the tubes with aluminium foil, put in ice and transfer for FACS study.
38. During sorting, collect both dye-positive and dye-negative cells in VWR 12x75 mm glass tube (pre-cooled in ice) containing 1 ml PBS with 100 U penicillin and 100 µg streptomycin (add 20 µl Pen-Strep from the commercial stock in 1 ml PBS to get the desired concentrations).
39. Transfer cells in PBS in 15-ml plastic centrifuge tube, add 7 ml of PBS, and centrifuge
40. Decant, vortex, resuspend in 1 ml of PBS, and transfer 100 µl for cell count
41. Transfer 300 µl in Falcon 12x75 mm polystyrene 6 ml tube for FACS analysis to check the purity of the sorted cells.
42. Dilute remaining cells (three 10-fold dilution by transferring 0.5 ml cells to 4.5 ml MEMA)
43. Plate required number of cells (200, 2000 or 20,000) in Falcon 60 mm tissue culture dish (in 4 ml total volume of MEMA).
44. Count colonies following a week.

4/6/2001 7:00am initiate colony ~~staining~~ RMA staining and counting

* ALL Dye positive colonies contaminated.
ALL Dye negative colonies not contaminated

1.2 - 167, 178
2.2 - 193, 204, 190
3.2 - 166, 152, 169
4.2 - 150, 132, 148
5.2 - 129, 135, 136
6.2 - 100, 127, 119
7.2 - 81, 75, 100

30µl medium

R: 6 ID:H3 HOWELL PRESET TIME: 1.00 TUE 27 MAR 2001 10:04
PLE REPEAT: 1 CYCLE REPEAT: 1 SCR:N RS232:N
1 AQC:N QCF:N RCM:N
NNEL 1-LL: 0 UL: 400 2SIGMA: 2.00 BKG SUB: 0.00 BKG 2SIG: 0.00 LSR: 0
A CALC: CPM, UNKNOWN REPLICATES: 1 NORM FACTOR:Q 1.00000
F LIFE(DAYS):N

POS	CH	CPM	2SIG%	TIME	EL TIME	AVG H#	ERR
**- 1	1	59.00	26.04	1.00	1.45	76.0	
**- 2	1	9.00	66.67	1.00	3.02	75.0	
**- 3	1	12.00	57.74	1.00	4.59	77.0	
**- 4	1	4.00	100.0	1.00	6.17	76.0	
**- 5	1	8.00	70.71	1.00	7.73	76.0	
**- 6	1	9.00	66.67	1.00	9.37	79.0	
**- 7	1	30037.14	1.95	0.35	10.27	77.0	
**- 8	1	*12.00	57.74	1.00	11.90	73.0	
**- 9	1	**64890.00	1.76	0.20	12.65	85.0	
**-10	1	56870.00	1.88	0.20	13.46	78.0	
**-11	1	54540.00	1.91	0.20	14.27	77.0	
**-12	1	56435.00	1.88	0.20	15.02	78.0	
**-13	1	80786.66	1.82	0.15	15.72	76.0	
**-14	1	84560.00	1.78	0.15	16.43	78.0	
**-15	1	87933.33	1.74	0.15	17.13	77.0	
**-16	1	101253.33	1.62	0.15	17.83	77.0	
**-17	1	113006.66	1.54	0.15	18.53	76.0	
**-18	1	121893.33	1.48	0.15	19.23	78.0	
**- 1	1	172990.00	1.52	0.10	20.00	74.0	
**- 2	1	166430.00	1.55	0.10	20.71	74.0	
**- 3	1	166500.00	1.27	0.15	21.42	76.0	

* Sample was not added
** Sample was added twice

Experiment: H-3/50%/FACS3
Date: 3/26/2001

Tube #	Medium count (CPM) 1st	2nd	3rd	CPM Average	CPM corrected for control	DPM CPM/(y e)	At µCi/ml on counting	Ao µCi/ml at addition [At/e-0.693t/T]	Ao kBq/ml at addition
1	*59*	*9*	*12*	*17*	*0*	*0*	*0*	*0*	*0*
2	*4*	*8*	*9*		*0*	*0*	*0*	*0*	*0*
3	30037	32445	32445	31642	31626	48655	0.7305	0.7306	27.0329
4	56870	54540	56435	55948	55932	86048	1.2920	1.2921	47.8091
5	80786	84560	87933	84426	84410	129861	1.9499	1.9500	72.1516
6	101253	113006	121893	112051	112034	172360	2.5880	2.5882	95.7643
7	172990	166430	166500	168640	168623	259420	3.8952	3.8956	144.1358
8				*#DIV/0!*	*0*	*0*	*0*	*0*	*0*
9					*0*	*0*	*0*	*0*	*0*
10				#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
11				#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
12				#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
13				#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
14				#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Sonal Kelly

R: 6 ID:H3 HOWELL PRESET TIME: 1.00 MON 02 APR 2001 09:41
PLE REPEAT: 1 CYCLE REPEAT: 1 SCR:N RS232:N
1 AQC:N QCF:N RCM:N
NNEL 1-LL: 0 UL: 400 2SIGMA: 2.00 BKG SUB: 0.00 BKG 2SIG: 0.00 LSR: 0
CALC: CPM, UNKNOWN REPLICATES: 1 NORM FACTOR:0 1.00000
LIFE(DAYS):N

POS	CH		CPM	2SIG%	TIME	EL TIME	AVG H#	ERR
**- 1	1	1c	9.00	66.67	1.00	1.43	70.0	
**- 2	1		9.00	66.67	1.00	3.05	70.0	
**- 3	1		5.00	89.44	1.00	4.68	69.0	
**- 4	1	2c	12.00	57.74	1.00	6.30	71.0	
**- 5	1		10.00	63.25	1.00	7.93	71.0	
**- 6	1		10.00	63.25	1.00	9.49	69.0	
**- 7	1	3c	2255.00	4.21	1.00	11.12	73.0	
**- 8	1		2500.00	4.00	1.00	12.69	73.0	
**- 9	1		2502.00	4.00	1.00	14.26	72.0	
**-10	1	4c	4333.00	3.04	1.00	15.82	77.0	
**-11	1		4212.00	3.08	1.00	17.40	74.0	
**-12	1		3324.00	3.47	1.00	19.02	72.0	
**-13	1	5c	3934.00	3.19	1.00	20.65	72.0	
**-14	1		4703.00	2.92	1.00	22.22	77.0	
**-15	1		3881.00	3.21	1.00	23.79	73.0	
**-16	1	6c	6757.00	2.43	1.00	25.42	76.0	
**-17	1		8521.00	2.17	1.00	26.99	81.0	
**-18	1		6181.00	2.54	1.00	28.56	77.0	
**- 1	1	7c	8844.00	2.13	1.00	30.20	78.0	
**- 2	1		12981.25	1.96	0.80	31.62	84.0	
**- 3	1		11244.44	1.99	0.90	33.08	81.0	
*- 4	1		29762.86	1.96	0.35	34.03	-1.0 → Standard	

Experiment: H-3/50%/FACS3
Date: 03/26/01

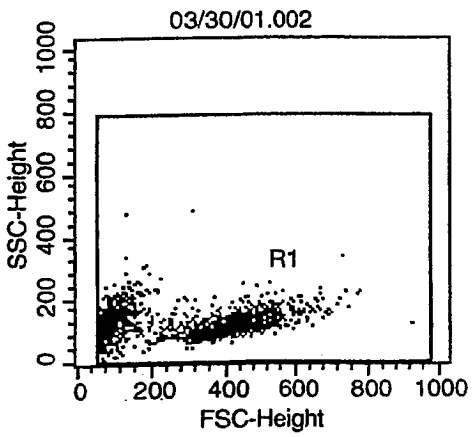
Tube #	Suspension count (CPM) 1st	2nd	3rd	CPM Average	CPM corrected for control	DPM CPM/(y e)	A_t µCi/ml on counting	A_o µCi/ml after uptake	A_o kBq/ml after uptake
1	*9*	*9*	*5*	*9*	*0*	*0*	*0.00000*	*0*	*0.0000*
2	*12*	*10*	*10*			*0*	*0.00000*	*0*	*0.0000*
3	2255	2500	2502	2419	2410	3707	0.03340	0.03340	1.2358
4	4333	4212	3324	3956	3947	6073	0.05471	0.05471	2.0242
5	3934	4703	3881	4173	4164	6405	0.05771	0.05771	2.1351
6	6757	8521	6181	7153	7144	10991	0.09901	0.09901	3.6635
7	8844	12981	11244	11023	11014	16944	0.15265	0.15265	5.6481
8				*#DIV/0!*	*0*	*0*	*0.00000*	*0*	*0.0000*
9						*0*	*0.00000*	*0*	*0.0000*
10				#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
11				#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
12				#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
13				#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
14				#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

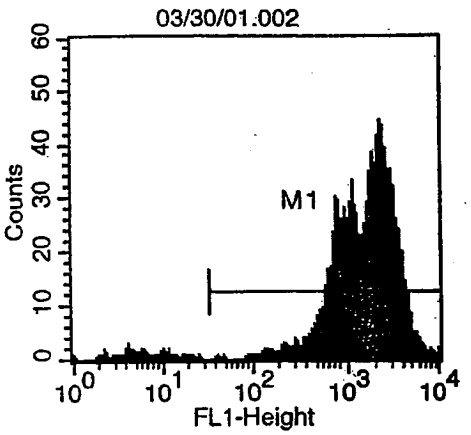
Experiment: H-3/50%/FACS3
Date/Time: 3/26/01

Tube #	Coulter count 1st	2nd	3rd	Average	Cells/ml	Hemocytometer Count in Grid 1st	2nd	3rd	4th
1	*612*	*632*	*643*	*629*	*2505333*				
2	*633*	*621*	*654*	*636*	*2533333*				
3	634	654	666	651	2594667				
4	635	619	644	633	2520000				
5	579	598	609	595	2370667				
6	599	641	642	627	2498667				
7	598	601	582	594	2364000				
8				*#DIV/0!*	*#DIV/0!*				
9				*#DIV/0!*	*#DIV/0!*				
10				#DIV/0!	#DIV/0!				
11				#DIV/0!	#DIV/0!				
12				#DIV/0!	#DIV/0!				
13				#DIV/0!	#DIV/0!				
14				#DIV/0!	#DIV/0!				

Tube #	Predicted # Cells Seeded	Actual # Cells Seeded	Colony count 1st	2nd	3rd	Average	PE (%)	SF Uncorrecte	SF Corrected
1	200	*251*				*#DIV/0!*	*#DIV/0!*	*#DIV/0!*	*#DIV/0!*
2	200	*253*							
3	200	259				#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
4	200	252				#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
5	200	237				#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
6	200	250				#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
7	200	236				#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
8		*#DIV/0!*				*#DIV/0!*	*#DIV/0!*	*#DIV/0!*	*#DIV/0!*
9		*#DIV/0!*							
10		#DIV/0!				#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
11		#DIV/0!				#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
12		#DIV/0!				#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
13		#DIV/0!				#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
14		#DIV/0!				#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

After sorting



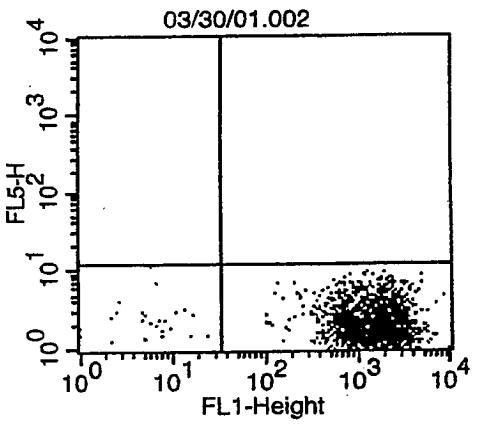


Histogram Statistics

File: 03/30/01.002
Sample ID: left +
Tube:
Acquisition Date: 30-Mar-01
Gated Events: 5067
X Parameter: FL1-H FL1-Height (Log)

Log Data Units: Linear Values
Patient ID:
Panel:
Gate: G1
Total Events: 5070

Marker	Left, Right	Events	% Gated	% Total	Mean	Geo Mean	CV	Median	Peak Ch
All	1, 9910	5067	100.00	99.94	1738.06	1341.26	61.30	1610.76	2035
M1	32, 9910	4988	98.44	98.38	1765.47	1461.06	59.54	1640.00	2035



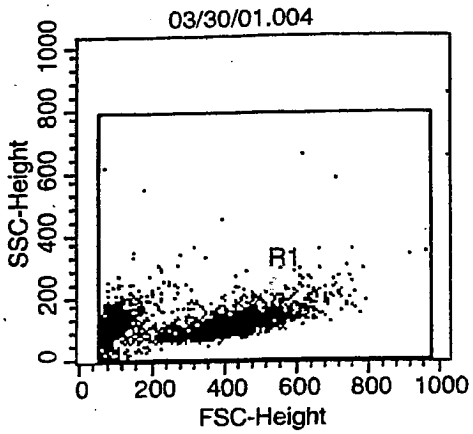
Quadrant Statistics

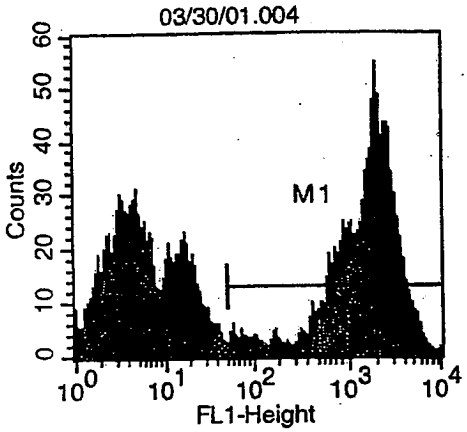
File: 03/30/01.002
Sample ID: left +
Tube:
Acquisition Date: 30-Mar-01
Gated Events: 5067
X Parameter: FL1-H FL1-Height (Log)
Quad Location: 33, 12

Log Data Units: Linear Values
Patient ID:
Panel:
Gate: G1
Total Events: 5070
Y Parameter: FL5-H (Log)

A-00370

Quad	Events	% Gated	% Total	X Mean	X Geo Mean	Y Mean	Y Geo Mean
UL	0	0.00	0.00	***	***	***	***
UR	1	0.02	0.02	1144.44	1144.44	12.30	12.30
LL	79	1.56	1.56	7.56	6.05	2.62	2.29
LR	4987	98.42	98.36	1765.59	1461.14	2.42	2.14



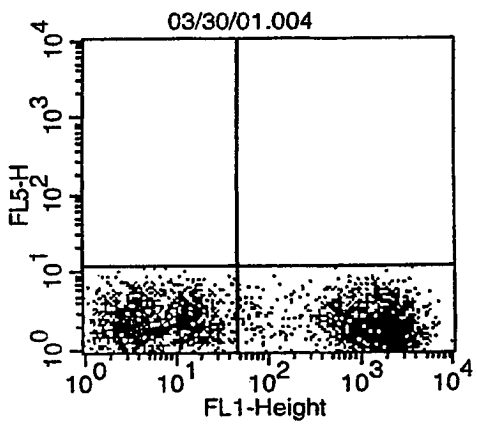


Histogram Statistics

File: 03/30/01.004
Sample ID: control 2
Tube:
Acquisition Date: 30-Mar-01
Gated Events: 9995
X Parameter: FL1-H FL1-Height (Log)

Log Data Units: Linear Values
Patient ID:
Panel:
Gate: G1
Total Events: 10000

Marker	Left, Right	Events	% Gated	% Total	Mean	Geo Mean	CV	Median	Peak Ch
All	1, 9910	9995	100.00	99.95	941.76	107.99	126.81	375.16	1762
M1	48, 9910	5344	53.47	53.44	1753.94	1353.65	63.73	1625.31	1762



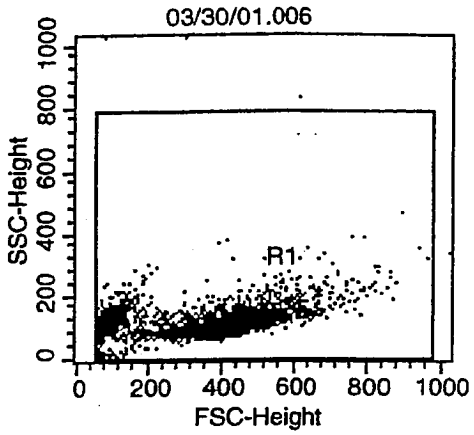
Quadrant Statistics

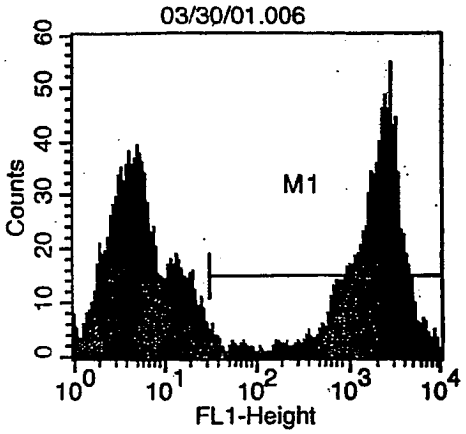
File: 03/30/01.004
Sample ID: control 2
Tube:
Acquisition Date: 30-Mar-01
Gated Events: 9995
X Parameter: FL1-H FL1-Height (Log)
Quad Location: 48, 12

Log Data Units: Linear Values
Patient ID:
Panel:
Gate: G1
Total Events: 10000
Y Parameter: FL5-H (Log)

Quad	Events	% Gated	% Total	X Mean	X Geo Mean	Y Mean	Y Geo Mean
UL	1	0.01	0.01	4.22	4.22	13.22	13.22
UR	0	0.00	0.00	***	***	***	***
LL	4650	46.52	46.50	8.55	5.91	2.84	2.49
LR	5344	53.47	53.44	1753.94	1353.65	2.49	2.19

A-00371



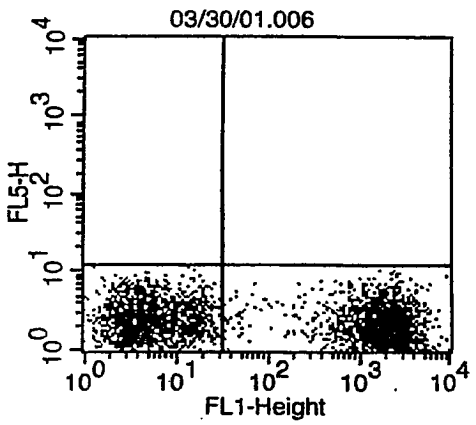


Histogram Statistics

File: 03/30/01.006
Sample ID: 3
Tube:
Acquisition Date: 30-Mar-01
Gated Events: 9988
X Parameter: FL1-H FL1-Height (Log)

Log Data Units: Linear Values
Patient ID:
Panel:
Gate: G1
Total Events: 10000

Marker	Left, Right	Events	% Gated	% Total	Mean	Geo Mean	CV	Median	Peak Ch
All	1, 9910	9988	100.00	99.88	998.49	83.98	133.77	22.98	2617
M1	30, 9910	4882	48.88	48.82	2035.89	1580.93	61.05	1919.57	2617



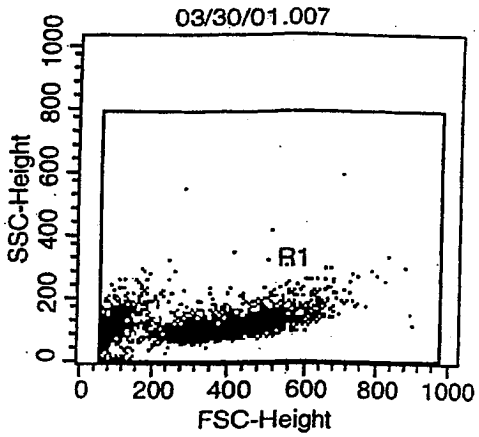
Quadrant Statistics

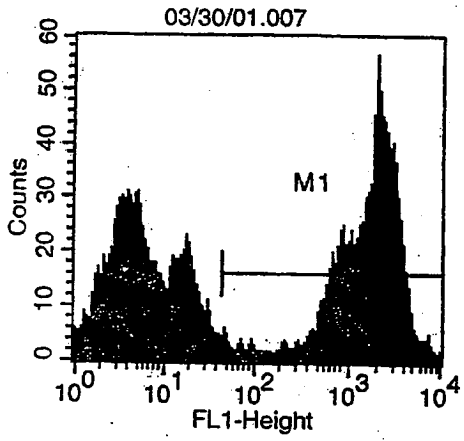
File: 03/30/01.006
Sample ID: 3
Tube:
Acquisition Date: 30-Mar-01
Gated Events: 9988
X Parameter: FL1-H FL1-Height (Log)
Quad Location: 31, 12

Log Data Units: Linear Values
Patient ID:
Panel:
Gate: G1
Total Events: 10000
Y Parameter: FL5-H (Log)

Quad	Events	% Gated	% Total	X Mean	X Geo Mean	Y Mean	Y Geo Mean
UL	0	0.00	0.00	***	***	***	***
UR	0	0.00	0.00	***	***	***	***
LL	5126	51.32	51.26	6.69	5.11	2.78	2.45
LR	4862	48.68	48.62	2044.14	1606.84	2.45	2.16

A-00372



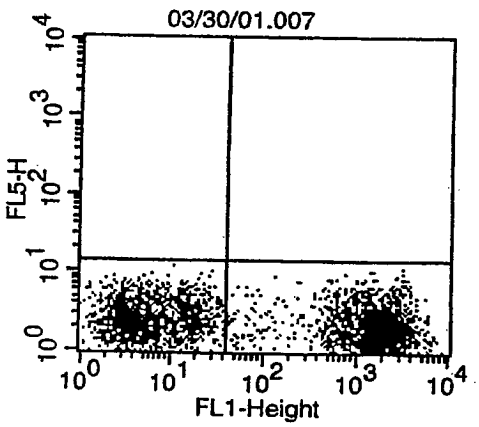


Histogram Statistics

File: 03/30/01.007
Sample ID: 4
Tube:
Acquisition Date: 30-Mar-01
Gated Events: 9993
X Parameter: FL1-H FL1-Height (Log)

Log Data Units: Linear Values
Patient ID:
Panel:
Gate: G1
Total Events: 10000

Marker	Left, Right	Events	% Gated	% Total	Mean	Geo Mean	CV	Median	Peak Ch
All	1, 9910	9993	100.00	99.93	963.26	100.42	128.89	199.89	1860
M1	42, 9910	5170	51.74	51.70	1854.25	1450.56	62.30	1762.36	1860



Quadrant Statistics

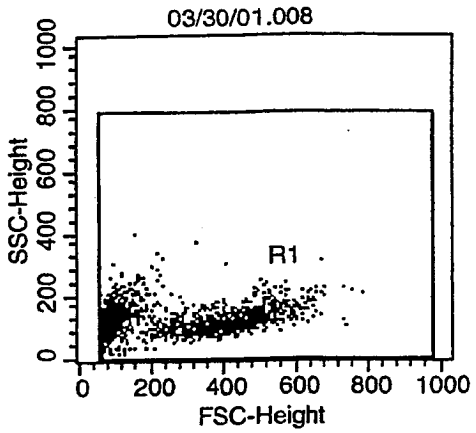
File: 03/30/01.007
Sample ID: 4
Tube:
Acquisition Date: 30-Mar-01
Gated Events: 9993
X Parameter: FL1-H FL1-Height (Log)
Quad Location: 41, 14

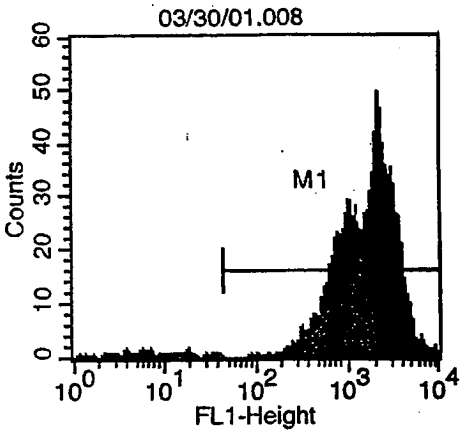
Log Data Units: Linear Values
Patient ID:
Panel:
Gate: G1
Total Events: 10000
Y Parameter: FL5-H (Log)

Quad	Events	% Gated	% Total	X Mean	X Geo Mean	Y Mean	Y Geo Mean
UL	0	0.00	0.00	***	***	***	***
UR	0	0.00	0.00	***	***	***	***
LL	4823	48.26	48.23	8.17	5.74	2.83	2.49
LR	5170	51.74	51.70	1854.25	1450.56	2.46	2.16

A-00373

After Therapy



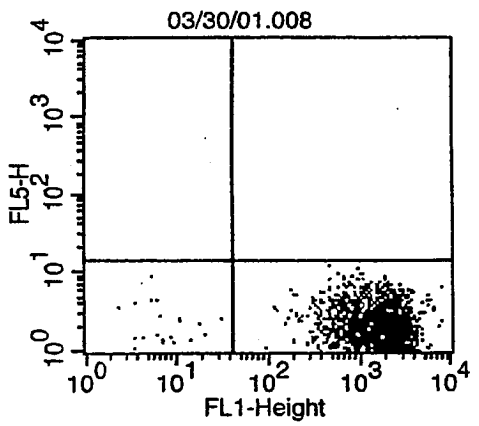


Histogram Statistics

File: 03/30/01.008
Sample ID: sort 4 +
Tube:
Acquisition Date: 30-Mar-01
Gated Events: 5190
X Parameter: FL1-H FL1-Height (Log)

Log Data Units: Linear Values
Patient ID:
Panel:
Gate: G1
Total Events: 5190

Marker	Left, Right	Events	% Gated	% Total	Mean	Geo Mean	CV	Median	Peak Ch
All	1, 9910	5190	100.00	100.00	1715.64	1348.71	60.05	1596.34	1928
M1	42, 9910	5126	98.77	98.77	1736.93	1438.54	58.66	1625.31	1928



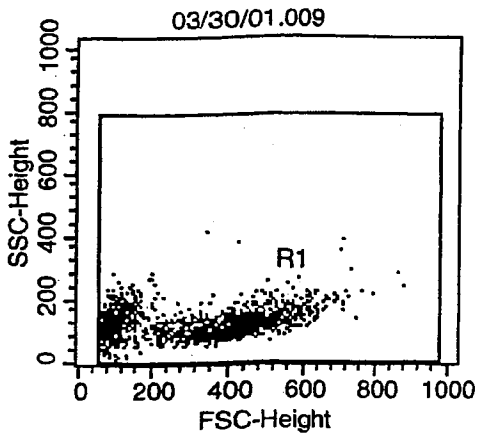
Quadrant Statistics

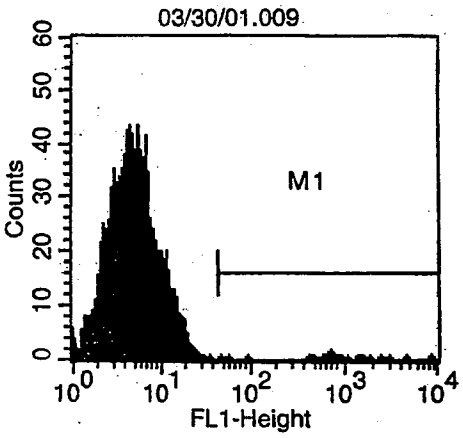
File: 03/30/01.008
Sample ID: sort 4 +
Tube:
Acquisition Date: 30-Mar-01
Gated Events: 5190
X Parameter: FL1-H FL1-Height (Log)
Quad Location: 41, 14

Log Data Units: Linear Values
Patient ID:
Panel:
Gate: G1
Total Events: 5190
Y Parameter: FL5-H (Log)

Quad	Events	% Gated	% Total	X Mean	X Geo Mean	Y Mean	Y Geo Mean
UL	0	0.00	0.00	***	***	***	***
UR	0	0.00	0.00	***	***	***	***
LL	64	1.23	1.23	10.31	7.71	2.66	2.37
LR	5126	98.77	98.77	1736.93	1438.54	2.48	2.18

A-00374



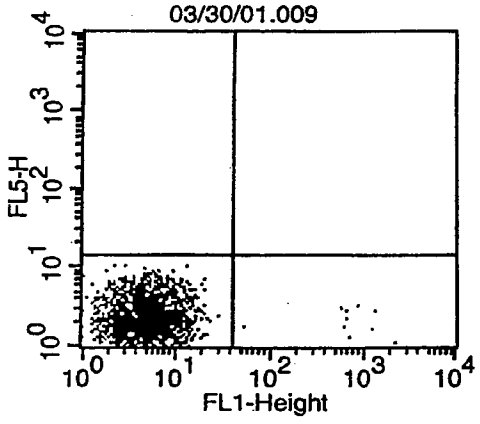


Histogram Statistics

File: 03/30/01.009
Sample ID: sort 4 -
Tube:
Acquisition Date: 30-Mar-01
Gated Events: 5277
X Parameter: FL1-H FL1-Height (Log)

Log Data Units: Linear Values
Patient ID:
Panel:
Gate: G1
Total Events: 5280

Marker	Left, Right	Events	% Gated	% Total	Mean	Geo Mean	CV	Median	Peak Ch
All	1, 9910	5277	100.00	99.94	12.64	4.75	1157.19	4.53	4
M1	42, 9910	30	0.57	0.57	1265.48	706.89	118.72	720.15	637



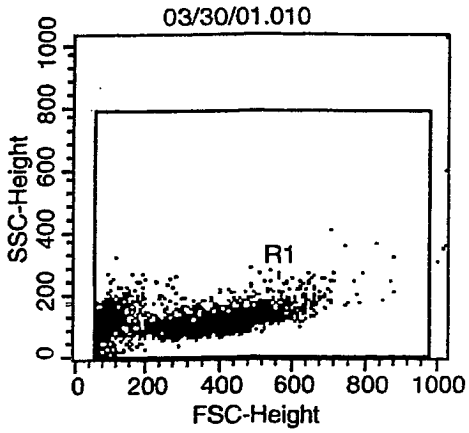
Quadrant Statistics

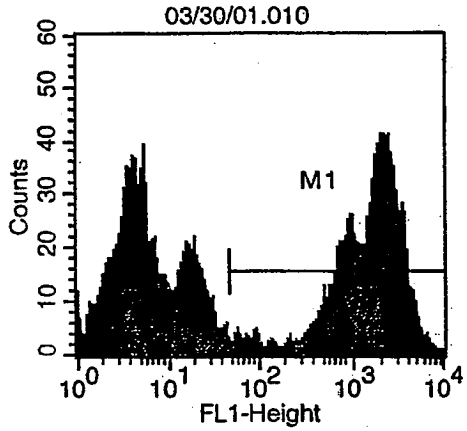
File: 03/30/01.009
Sample ID: sort 4 -
Tube:
Acquisition Date: 30-Mar-01
Gated Events: 5277
X Parameter: FL1-H FL1-Height (Log)
Quad Location: 41, 14

Log Data Units: Linear Values
Patient ID:
Panel:
Gate: G1
Total Events: 5280
Y Parameter: FL5-H (Log)

Quad	Events	% Gated	% Total	X Mean	X Geo Mean	Y Mean	Y Geo Mean
UL	0	0.00	0.00	***	***	***	***
UR	0	0.00	0.00	***	***	***	***
LL	5247	99.43	99.38	5.48	4.62	2.80	2.47
LR	30	0.57	0.57	1265.48	706.89	2.55	2.32

A-00375



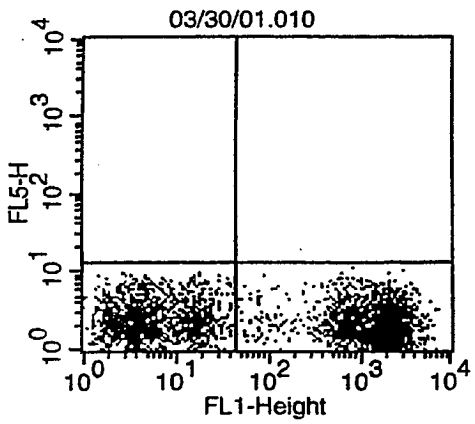


Histogram Statistics

File: 03/30/01.010
Sample ID: 5
Tube:
Acquisition Date: 30-Mar-01
Gated Events: 9990
X Parameter: FL1-H FL1-Height (Log)

Log Data Units: Linear Values
Patient ID:
Panel:
Gate: G1
Total Events: 10000

Marker	Left, Right	Events	% Gated	% Total	Mean	Geo Mean	CV	Median	Peak Ch
All	1, 9910	9990	100.00	99.90	871.01	92.55	131.47	88.57	1810
M1	45, 9910	5095	51.00	50.95	1699.82	1319.65	63.61	1582.04	1810



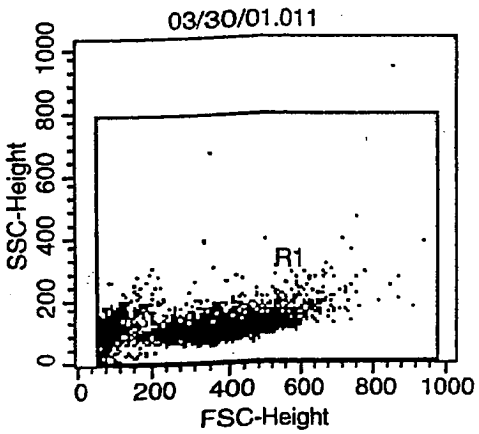
Quadrant Statistics

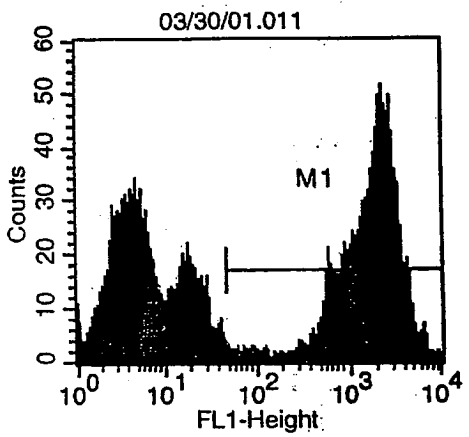
File: 03/30/01.010
Sample ID: 5
Tube:
Acquisition Date: 30-Mar-01
Gated Events: 9990
X Parameter: FL1-H FL1-Height (Log)
Quad Location: 45, 13

Log Data Units: Linear Values
Patient ID:
Panel:
Gate: G1
Total Events: 10000
Y Parameter: FL5-H (Log)

Quad	Events	% Gated	% Total	X Mean	X Geo Mean	Y Mean	Y Geo Mean
UL	0	0.00	0.00	***	***	***	***
UR	0	0.00	0.00	***	***	***	***
LL	4895	49.00	48.95	8.33	5.82	2.84	2.50
LR	5095	51.00	50.95	1699.82	1319.65	2.49	2.19

A-00376



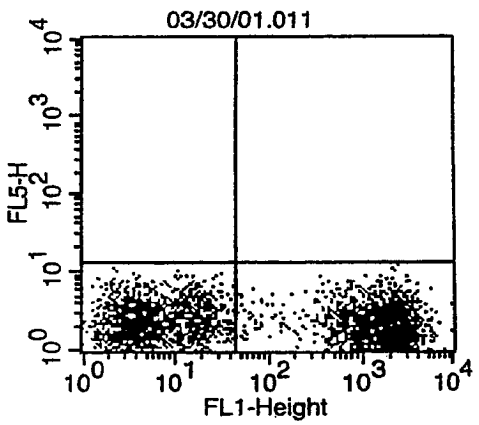


Histogram Statistics

File: 03/30/01.011
Sample ID: 6
Tube:
Acquisition Date: 30-Mar-01
Gated Events: 9995
X Parameter: FL1-H FL1-Height (Log)

Log Data Units: Linear Values
Patient ID:
Panel:
Gate: G1
Total Events: 10000

Marker	Left, Right	Events	% Gated	% Total	Mean	Geo Mean	CV	Median	Peak Ch
All	1, 9910	9995	100.00	99.95	991.07	109.18	123.99	441.09	2053
M1	45, 9910	5279	52.82	52.79	1868.94	1501.44	59.23	1778.28	2053



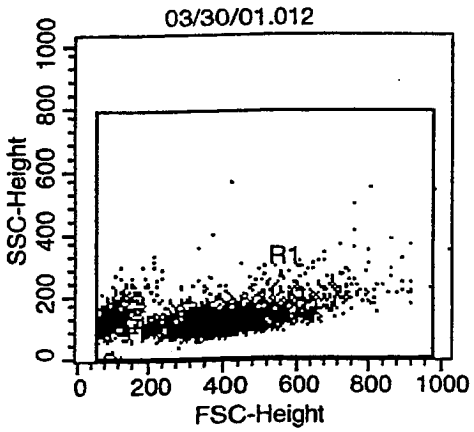
Quadrant Statistics

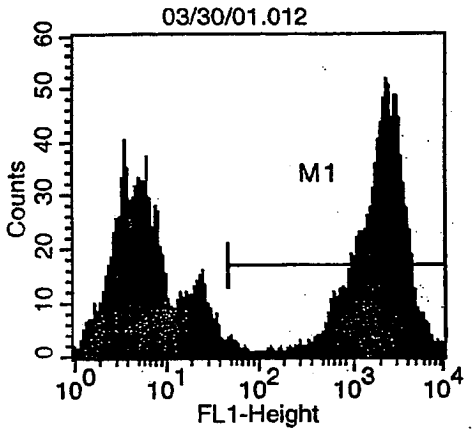
File: 03/30/01.011
Sample ID: 6
Tube:
Acquisition Date: 30-Mar-01
Gated Events: 9995
X Parameter: FL1-H FL1-Height (Log)
Quad Location: 45, 13

Log Data Units: Linear Values
Patient ID:
Panel:
Gate: G1
Total Events: 10000
Y Parameter: FL5-H (Log)

A-00377

Quad	Events	% Gated	% Total	X Mean	X Geo Mean	Y Mean	Y Geo Mean
UL	0	0.00	0.00	***	***	***	***
UR	0	0.00	0.00	***	***	***	***
LL	4716	47.18	47.16	8.39	5.81	2.80	2.46
LR	5279	52.82	52.79	1868.94	1501.44	2.45	2.16



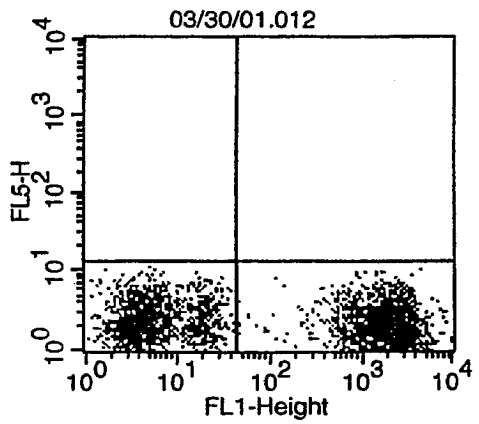


Histogram Statistics

File: 03/30/01.012
Sample ID: 7
Tube:
Acquisition Date: 30-Mar-01
Gated Events: 9992
X Parameter: FL1-H FL1-Height (Log)

Log Data Units: Linear Values
Patient ID:
Panel:
Gate: G1
Total Events: 10000

Marker	Left, Right	Events	% Gated	% Total	Mean	Geo Mean	CV	Median	Peak Ch
All	1, 9910	9992	100.00	99.92	1169.46	128.43	118.83	685.39	2090
M1	45, 9910	5417	54.21	54.17	2150.51	1793.80	56.18	2016.91	2090



Quadrant Statistics

File: 03/30/01.012
Sample ID: 7
Tube:
Acquisition Date: 30-Mar-01
Gated Events: 9992
X Parameter: FL1-H FL1-Height (Log)
Quad Location: 45, 13

Log Data Units: Linear Values
Patient ID:
Panel:
Gate: G1
Total Events: 10000
Y Parameter: FL5-H (Log)

A-00378

Quad	Events	% Gated	% Total	X Mean	X Geo Mean	Y Mean	Y Geo Mean
UL	0	0.00	0.00	***	***	***	***
UR	0	0.00	0.00	***	***	***	***
LL	4575	45.79	45.75	7.86	5.66	2.77	2.44
LR	5417	54.21	54.17	2150.51	1793.80	2.42	2.13

wipe test

ER: 6 ID:H3 HOWELL PRESET TIME: 1.00 TUE 03 APR 2001 14:14
MPLE REPEAT: 1 CYCLE REPEAT: 1 SCR:N RS232:N
: 1 AQC:N QCF:N RCM:N
ANNEL 1-LL: 0 UL: 400 2SIGMA: 2.00 BKG SUB: 0.00 BKG 2SIG: 0.00 LSR: 0
TA CALC: CPM, UNKNOWN REPLICATES: 1 NORM FACTOR:@ 1.00000
LF LIFE(DAYS):N

M	POS	CH	CPM	2SIG%	TIME	EL TIME	AVG H#	ERR
1	**- 1	1	9.00	66.67	1.00	1.47	73.0	
2	**- 2	1	14.00	53.45	1.00	3.11	79.0	
3	**- 3	1	13.00	55.47	1.00	4.73	73.0	
4	**- 4	1	12.00	57.74	1.00	6.36	73.0	
5	**- 5	1	6.00	81.65	1.00	7.92	74.0	
6	**- 6	1	8.00	70.71	1.00	9.58	80.0	
7	**- 7	1	14.00	53.45	1.00	11.21	75.0	
8	**- 8	1	9.00	66.67	1.00	12.83	77.0	
9	**- 9	1	7.00	75.59	1.00	14.46	76.0	
0	**-10	1	7.00	75.59	1.00	16.03	70.0	
1	**-11	1	11.00	60.30	1.00	17.61	71.0	Background