

Exhibit 5

Time Line

1999

9/6/99 Anupam starts Gamma ray experiment to determine if V79 clusters are hypoxic (9/6 experiment). He performs survival arm of the experiment. [NB I never see his survival results]

9/10 9/6 experiment: Anupam gives me 10 p100's from the experiment to assay for mutations at the HPRT locus.

9/13 9/6 experiment: Day 3 for mutagenesis: I refilter the medium from him to insure sterility. I harvest cells from all dishes. Count on Coulter – big standard deviations. Replate 10^6 cells for each dish.

9/15 9/6 experiment: Samples 1 and 9 are contaminated – discarded.

9/16 9/6 experiment: Samples 5 and 6 are contaminated – discarded.

9/17 9/6 experiment: Day 7 for mutagenesis. Switch to purchased medium to ensure of sterility. Replate 10^6 cells for each dish. Count cells on Coulter – big standard deviations.

9/20 9/6 experiment: Day 10 for mutagenesis. Count cells using hemocytometer. Replate 2×10^5 cells for each p100 dish, 5 dishes per experimental point (50 in all). Each p100 dish contains 6-thio-guanine at $10 \mu\text{M}$ (only mutated cells will grow into colonies). Also dilute and plate 66 cells/p35 dish, 3 dishes per experimental point to assay colony forming ability at the time of challenge.

Anupam starts next (identical) experiment on his own (9/20 experiment).

9/27 9/6 experiment: Day 17 for mutagenesis. Fix and stain all dishes. Count colonies.

10/11 9/20 experiment: Anupam's record shows that he fixed and stained the dishes for colony forming ability and the p100 dishes for mutant expression. When I leave they are not counted, he says he will stay late to count them.

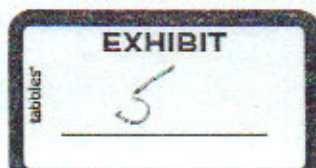
10/12 9/20 experiment: I observe 50 p100's in the 37° incubator before Anupam comes in. These plates appear to be devoid of colonies. He later tells me he had counted the dishes on 10/11 – as reflected in his record. I ask for the data. Don't get it until 10/19 or later. What are the dishes in the incubator? He says another experiment.

10/13 9/20 experiment: No sign of the mysterious dishes.

10/19 9/20 experiment: Roger asks Anupam for the missing data. Anupam says it is at home.

[Some time after 10/1, the survival data of the 9/20 experiment are available. Some time on or after 10/12, the mutagenesis data of the 9/20 experiment are available. Roger incorporates these data into his grant application. I question the wisdom of using dubious data in the grant application. He demurs. I ask Roger if he ever goes into the lab to look at the dishes after they are stained. He says he does not and that they are discarded immediately after they have been counted. I suggest that he start checking them. He scoffs at my suggestion. This experiment would be key to grant application approval: little hypoxia makes for better model for *in vivo* human nuclear medicine situation.]

10/21 Roger shrugs off the possibility that Anupam has fabricated the data in the 9/20 experiment. See Exhibit 6.



Roger signs face page of grant application.

Between October, 1999 and spring 2001, I express my doubts on several occasions about the honesty of Anupam. Roger scoffs at my concern. On 3/29/01, I recorded my recollection of an earlier event, as follows: On a particular Friday, Anupam is to set up cells for me to use. He tells me he is setting up 3 T175's and there will be plenty of cells. On Monday, he says in front of Roger that he has no cells, he has consumed them all fussing with the Coulter Counter. This is such an obvious lie because 3 T175's will yield 10's of millions of cells and the Coulter Counter only requires a few thousand. When he is gone, Roger says 'why does he lie to me like that?' On April 10, 2001, Roger denies any knowledge of this interaction between the 3 of us.

2000

Grant funding starts on July 1, 2000. Anupam is promoted from part-time Post-Doc (limited fringe benefits) to Research Associate (full fringe benefits). Salary probably about doubles.

4/00 Ed Azzam joins the Division as Assistant Professor. Is guest in my house for 3 months until family arrives and they move into home in Livingston.

8/00 Marek Lenarczyk arrives from Poland. Post-Doc appointment. Is guest in my house for 8 months. Frequently expresses concern about Anupam's work habits and honesty. Works with Anupam on V79 cells, works with me on mutagenesis using Chinese hamster ovary cells.

2001

3/23-4/9/01 The experiment of 3/26/01. See Exhibits 19-26.

3/28 or 29 Talk with Tom Denny, Head of FACS lab. Warn him – in confidence -- that Anupam will be coming on Friday to separate cells that are contaminated. Will this mess up his equipment? 'No'. Can he detect contamination in the profile of the sort? 'Yes'.

4/5 Presume Denny tells Howell I am spying on Anupam. Rack with 6 Helena tubes disappears from the 10.5° incubator. Tubes are radioactive, should be disposed of in the radioactive waste. Not found in same.

4/10 Report misconduct to Howell, Baker, Raveché. Howell says he 'knew all about it' and so does Dr. Baker. Baker says it is all over the medical school including the Dean. How do they know? Must be Denny. Baker: I have made the department look bad. Howell in front of Raveché: he told Anupam I was spying on him. Appalled my back was unprotected for several days. Why not just ask me what was going on? Raveché impounds Roger's notebooks.

4/17 Meet with the cte – 14th floor of Bergen Bldg. Believe the proceedings were taped.

4/19-20 Meet w Marek and Roger: Howell: You did terrible things you had no business doing.

4/25 Farewell party for Victor Basile. George (husband) tells all to Stu Cook, University President. Stu does not want to hear about it and don't tell him who is involved.

4/27 Marek, Roger, Anupam grilled by the Cte.

5/22 Memo to Raveché analyzing data in 10/99 exp. Very unpleasant interaction w Raveché regarding this report. Does she dislike whistle-blowers? She hosted Tereza Imanishi-Kari, famous whistle-blower target, for a seminar several years ago

6/6 Meet w Azzam & Howell: Howell: you are ruining people's lives. Discuss letting Anupam go. Investigating Committee will not allow it. He will have to keep him until Committee finishes investigation. Difficult to get rid of a Research Associate.

6/22 Letter from Raveché re not enough evidence Exhibit 30

7/2 Letter from Saporito re not enough evidence Exhibit 31

7/2 memo to Dept fr Baker re invitation to Howell to be Division Chief

7/6 Meet w Howell. Bishayee and Lenarczyk will leave at end of month. Howell: 'Want nothing to do with you'. Not what was done but how it was done

7/11 Memo and letter from Baker sent by email to entire dept. Nothing like it before or since. Obviously meant to demean and chastise me Exhibit 32

7/26 Lenarczyk leaves for Poland

7/29 Call on weekend from Ed, very distraught, warning me I will be locked out of the lab. Anupam is gone, has no more access to the lab. Locks were all changed on Friday. I will only have access to my office and F468, the little lab.

7/30 Memo from Howell re locking me out of lab and this means that I cannot use shared equipment –must go to other Departments e.g. fluorescence microscope is off limits Exhibit 33

7/31 Howell hands me 2nd memo. Exhibit 34. Says we must protect ourselves from any retaliation by Bishayee

Call Henry Edinger re retaliation. Recommends 3 routes:

1. Go directly to Saporito (Putterman's boss)
2. Appeal to Faculty Affairs
3. Appeal to AAUP

We discuss questions of sexual harassment/discrimination. He says they probably assume I will not mount a strong defense.

Azzam says Anupam must return to India. Is using computer in Ed's house to find cheap ticket.

Talk w Joyce Orenstein (AAUP Staff)—says I have a B2 Grievance

Date? Call ORI. Speak w John Butler re retaliation. Institution is required to protect whistle blower. Recommends I call Allen Price re misconduct

Aug 1st week Discussions w Joyce Orenstein, Mark Schorr (AAUP) re grievance. Finally decide I should appeal directly to Putterman as grievance eventually winds up there anyway.

8/1 Meet with Bishayee

1. Sorry he hurt me
2. Howell handed him letter of resignation – told him to sign it

3. Afraid not to sign lest Howell not give him recommendation
4. Howell told him not to come on this campus – took away his keys and id
5. Howell told him not to apply for research positions on this campus or in Radiation Biology anywhere
6. Changing H-visa to Visitors' or Tourist Visa – good for 3 months, renewable 1X for 3 more months
7. Can he continue living in my son David's apt? Yes
8. Evaluations up to this time had all been good
9. How had the original bystander observations come about? Some experiments showed it, some did not. Did Roger pick and choose experiments? Yes
10. Were you pressured to produce data? No direct answer but Roger always pleased when data fit his mathematical model

I advise Anupam that rules say he cannot be fired since he was exonerated. I recommend he go to Legal Aid to get a Public Defender. He demurs. Is afraid of Roger.

Talk w Mark Schorr, AAUP lawyer. Discuss suing. AAUP does not have enough \$\$ in treasury so I would be on my own. Retaliation against whistle-blowers is prohibited by law and University is supposed to protect me.

8/2 Memo sent to Schorr re Howell memos

8/9 Meet w Putterman re retaliation, lock out of lab. Acknowledges University's responsibility re whistle blower.

Speak w Price – tells me to send everything. My contact at ORI will be Kay Fields

I am now working with Azzam and de Toledo

8/13 Meet w Baker in presence of Mannie Goldman and Karel Campbell. Baker says Roger will be told to let me back in the lab. He will continue as my supervisor despite my request that he not be

8/16 Speak w Fields: University should show me a record of my testimony. She says Roger's publications with Anupam should be withdrawn

Later Azzam confirms 2, 4, 5 of 8/1 meeting. Says he persuaded Roger to get rid of Bishayee, told Bishayee to find employment in some other field. Says Anupam is coming to his house to use his computer to look for jobs. He also spends long hours in the computing center at NJMS.

Pranela Rameshwar says Anupam applied for a job in Medicine with Dr. Schwander. Asked Roger for a reference. Roger said 'Keep looking'

Aug – Nov Bishayee pays for apt by coming to my office with check first calling 'how is the weather?' Code for 'has Roger gone home?'

8/23 Send materials to Fields at ORI

8/27 Letter from Price confirming receipt

8/30 Call from Butler to be sure retaliation has been taken care of

Nov – Feb Bishayee says he is broke, cannot pay, asks to stay anyway: Yes. I do not deposit Nov check until Mar

9/4 Met w Baker re annual evaluation accompanied by Cynthia Stolman. Angered that in my letter to Putterman re grievance that I imply he was involved in the lock-out. He didn't know about it. Claimed email not aimed at me. His prerogative to appoint division chiefs. I should not be locked out of lab. He won't be involved in our disputes.

Notebooks are returned and Howell sequesters them in his office where I cannot get at them.

9/13 Teleconference on 'Conducting Research Responsibly' I am the only faculty member present that I recognize. Learn that it is misconduct once the falsified data is recorded in the notebook. Even the ORI doesn't seem to be aware of that.

Oct Dr Pain moves lab from UPenn to NJMS. Anupam works there as volunteer

11/29 Memo from Mulkern and Stephenson: all faculty required to take Web learning on misconduct

11/25 Letter to Fields inquiring re progress

12/ Email to Fields: did she receive my letter?

12/11 Telephone conversation with Kay Fields for ~ 1hr. What figures are false in the 2 bystander papers? Discusses necessity to review the data that went into the papers on which Anupam is co-author. Why doesn't Roger retract if data cannot be repeated? Not misconduct to have contamination but is misconduct to knowingly continue experiment that is contaminated. Says I would be surprised to learn what Roger said to the Cte. Says Roger said that contamination was in the dye – but that would still contaminate everything. Says Roger should discuss the falsifications with his program officer at NIH and should retract the papers. Recognizes that there is a serious problem with Roger's integrity. How can I withdraw from the paper on which I am a co-author? We should write a paper together saying that the results cannot be repeated. Suggests discussing with Baker. Says that it would have been a good idea for me to receive a copy of the draft report from the University committee although it is not required. Anupam is basically a bit player in this drama. NIH wants literature to be correct.

12/12 email to Fields clarifying questions raised in phone conversation Exhibit 40

12/13 Raveché and Howell receive 'Inventors' Awards' from the University

2002

Feb Bishayee goes to India to get married. Returns at month's end with bride. Introduces her around the Division. He and Roger are friends again.

Mar-Apr Resumes payments for apt. Moves out end of Apr Has paying job with Dr Pain in Pharm-Phys. Anupam tells me Pain does not believe in checking references.

3/4 Funding begins for Azzam's 3 year R01 grant from the NIH. He also receives at some later time a grant from the Department of Energy.

4/17 Ed tells me I must move my stuff out of the Big Lab as Roger has a new Post-Doc coming

4/19 Passed Ed's office, said I could move my stuff with his help that AM, was busy in PM. He comes to my office: evil gleam in his eye 'I can read your mind – you are very angry'. Then 'When is it going to end?' I: 'Don't know'. He has apparently learned that I contacted ORI. He demands the data I have accumulated for him and Sonia, storms out. I call Fields. She confirms my suspicion that she, Fields, has talked with Putterman who, in turn talked with Howell and possibly Bishayee. Said I should talk with Putterman and with Azzam. Azzam's behavior is retaliation because he is interfering with my ability to do my job. Azzam returned. I ask him to listen to me. He keeps on talking. I am ruining lives. Roger is a sick man. Roger is a young man with a young family and I am destroying him and destroying his Post-Docs. He, Azzam, had offers from Iowa and Sherbrooke. I tell him he should go. He is very agitated. Slams hands up and down. Says 'I am an Arab, I am an Arab! I may be a Christian, but I am an Arab!' I take this as a threat. Did I copy Roger's notebook? Yes. That was despicable. I am responsible if Roger's children find out that Roger has done something bad. I am responsible if Roger's Post-Docs are out of a job. It is his, Ed's, responsibility to take care of Roger's Post-Docs. Leaves and returns later all contrite. Brings back the data. Says we can still work together. I realize he is a party to the cover-up and I can no longer work with him and Sonia. I will fund my own projects. I put all the data on Sonia's desk.

4/19 Re telephone conversation w Fields: she did talk with Putterman who had heard of no more retaliation. Retaliation after restoration of keys took the form of shunning. Did she, Putterman, know Anupam had been forced to resign? Ans 'No'. She would look into the matter. Fields asked Putterman did she know that Roger could not confirm the bystander experiment. Ans 'No'. Fields said original Cte was stacked. Only Raveché has a decent publication record. I say I think Raveché is a good friend of Imanishi-Kari. She responded that Raveché was inappropriate Chair for the Cte. Putterman wanted to know why it was taking so long. I wonder about that as well. Fields reiterated that ORI wants the Universities to do more, that ORI does not investigate, that they have much bigger fish to fry, case load is increasing and not enough staff or time. Fields said that the non-reproducibility of the results did not make it into the report (committee never followed up on this). She worried that grant was based on phenomena that were not reproducible. Why was Bishayee fired after Roger defended him so strongly before the committee? Points out that the whistle-blower can't withdraw charges, having once blown the whistle is no longer in control, basically has no rights to any additional information, no chance to rebut any statements made later. Investigators like Roger ordinarily don't wind up losing when a post-doc has cheated. NIH does not like to take back grants thus his program officer would do nothing other than tell him to map out a new plan. NIH doesn't want PI's to think that if fraud is discovered, that is the end, otherwise no one will come clean. On the other hand, the University needs to convince the whistle blower that the job has been done fairly. University should examine the data that went in to all of Anupam's papers. Furthermore, the members of the committee had no expertise in the areas of research that the complaint involved. Their publications were miniscule except for Raveché. Roger strongly defended Anupam during the investigation – then why fire him? Apparently both Anupam and Roger now say that Anupam left to 'learn molecular biology'.

4/20-4/24 Rad Research mtg in Reno: Ed pursues me. Wants to get together for coffee, go out to dinner, meet with Roger. I successfully elude him.

4/26 Anupam has found a new apt. Moving out of David's place at end of April (or May?).

April - July Ed very solicitous, tries to woo me back, offers to support my research (hush money?) I make arrangements with the Research Office and the Foundation to support my own research

May ? Research Day for Radiology Department – Roger presents the irreproducible results generated by Anupam.

7/1 Anupam stopped by to return apt key. I ask about new job (now in Office of Radiation Safety Services) what happened with Dr. Pain. Says Pain's job was temporary, Pain has trouble with funding (his NIH grant is good until Sept '04). ORSS job is funded by the University, i.e. hard money. I said you and Roger seem to have made up. He beats around the bush. Got the job through Lanka – head of ORSS.

8/6 Call Fields for update. Report is written, will be presented on the 7th. 30 pages. ORI may recommend that the case be referred back to the University. Case load is heavy, there is a lack of attorneys at ORI. Tells me for the 1st time about Mosimann analysis. Refers to the experiments in 1999. Chance that Anupam's numbers are uniformly distributed is 1 in many billion but one of my sets is 1 in 40. Wants to know if Coulter counter could favor certain numbers. Later I call Coulter (800-523-3713), speak with David. SN of our Coulter counter is 030788, model is ZM. He says no chance that any particular number is favored. It is just my bad luck! Apparently Putterman asked Roger about non-reproducibility of the bystander experiments and he dissembled by saying that the bystander effect is very reproducible—which it is – and many have observed it. Catch is, he is the only one that has studied tritium, his observations are unique, have not been verified by anyone else. Fields asks me to do a literature search. I search on tritiated thymidine and bystander. Find 4 papers. One is by Howell and Rao, other 3 are not relevant. There are 119 related articles. None deal with ³H-dThd-incorporation. Some – mostly by Bishayee and Howell are on ¹²⁵I, many on gap junctions and alpha particles.

Another way that ORI has of detecting falsified data is to compare standard deviations to square roots of the means. For normally distributed data that are obtained independently, the standard deviations should be equal to or greater than the square roots of the means. Apparently the University sent along some other experiments that were done around the same time as the questioned experiments and the standard deviations were smaller than the square-root of means (in my analyses of Bishayee's numbers, the standard deviations are about ½ of the square roots of the means). Putterman told Roger that the numbers were too small but this seemed not to bother him, a Physicist.

Talked w Pain. He moved to NJMS in Oct, knew Anupam and that he was in process of losing his visa. Started working in Jan, went to India and got married. After 1 month in India he worked for about a month. Maybe there 4-5 months (no pay before Jan) Did not do much. Question of honesty? Couldn't say – treated him like a technician with constant supervision by Sr Post-Doc. Never did anything on his own. Lanka offered him the job in ORSS. Pain wanted him to stay another month but he left.

Send more data to Fields but it is too late.

8/7 The ORI has met and decided not to refer the case for further investigation. Fields said she was so incensed that she walked out of the meeting and has been taken off the case. It was argued that the Coulter counter data were not essential to the experiment which a.) is not true and b.) Mosimann says people are more likely to cheat when ancillary studies are involved. They

said that the University committee asked the right questions, the fact that the survival data that couldn't be repeated was not in the original allegation and there are many reasons why the experiments might not be repeatable. She says the ORI is not supposed to investigate. She is furious. ORI wants to put more of the burden on the Universities to do the investigating. NIH doesn't like ORI who they think are meddling around in real scientists' world. She says it is normal that I would not have a chance to rebut. She said that Anupam told the committee that Marek and I were jealous and had a conspiracy against him because of a conflict between me and Roger. There was no statistician present at the ORI conference. The University committee was deficient because there was no microbiologist. She recommends getting whatever we can through FOIA – gives me the number and the name of the person to talk to. She also tells me I have a strong case for *Qui Tam*. If I win, the University's penalty would be \$4,200,000. If the Justice Dept is interested, they could take it on. She tells me who the lawyers are that take *Qui Tam* cases, points me to the appropriate web sites and chat rooms, recommends that I go back to Putterman with a statistician in tow, that Putterman's job is to protect the University and she would not be siding with Roger. Recommends that I talk with Price who is now in charge.

8/12 Talk with Fields. There is no appeal. Gives me more info re *Qui tam*. Says that Anupam told Putterman he left to learn molecular biology—same thing that Roger told her. They are united in this lie. She can no longer talk with Putterman since she is no longer on the case. I have fewer rights. I might have to sign a confidentiality agreement somewhere along the line. Any protection I might have would be gone after confidentiality was broken. In any case, I would only be protected re my employment. The only right I seem to have is to see the transcript of my testimony and to correct any mistakes in it. Regarding Roger, I am asking for the world – that he retract the papers and talks with his grant administrator – besides, he is vigorously defending integrity of the research. I suggest that I go to the Faculty Affairs Committee. Fields says I should go to Putterman first. I should talk with Price and ask what is the decision? Saying that Fields referred me to you. Fields says they did not believe the photographs (!?). Case load at ORI is very heavy. They are triaging. Have 3 big time falsifiers. I guess this is just little stuff.

8/14 Call Price. He gives me the cold shoulder. Says ORI Director makes the decision – there is no decision yet, may be months, years. Will become a closed case, then it will not be available. He says I was not the originator of the case, will not tell me who was. What kind of nonsense was that? He says that I should send additional information regarding the numerical analysis that I have. I say I was the originator, I had to be. He fudges. When I first talked with him last year he was all sweetness and honey, now he is an ice cube.

8/14 Kay Fields ~ 8PM. There was no other complainant. Difficult for an outsider to get information. I should do it through NJ FOIA. Can't get it if the case is still open. What is with Price? He is basically OK – has to deal with nuts. Has heavy administrative responsibility. Recommends I go to Putterman – especially if my data will not be sent to the University. If things blow up, Putterman will roast. I should take a statistician with me. They are not denying misconduct. My University should get a statistician to look at the data that went into the published material. Howell claims he did not demand resignation, Anupam agrees. University should have information regarding visa. Marek should give statement regarding the repetitions of the key data. Fact that Raveché told Roger to repeat the key experiments was not in the report. Published Figures are the key. Doesn't know that Price will change his mind. Don't assume that Putterman is crooked. NIH never takes grants away. Tell Putterman Azzam told me

he persuaded Roger to get rid of Anupam. Why was Raveché so hostile? Price is in difficult position of having to decide how to spend the time. He may be right that I can't get the report. There may be state FOIA laws that allow me access to reports.

8/22 Letter to Price with copy to Chris Pascal, the Chief at ORI, applying the Mosimann analysis to my data and to data that I have of Anupam. Reiterate information regarding visas.

9/5 Letter from Pascal: 'ORI concurred w institution that there is insufficient evidence to warrant an investigation'

Letter from Price 'Kay Fields told me that she encouraged you when you called last month, to submit any new allegations or evidence directly to the UMDNJ... I assume you have done so.'

9/6 Email from Marek w 8 Excel files attached: the 8 V79 bystander experiments that show lack of reproducibility

9/23 James Mosimann: Cases in his paper: original digits are locked in on hardcopy – Our Coulter data are hand written off a digital display. My data are not nec disturbing – means control data were not uniform or bad break for me. Bad that Anupam's numbers have only 3 digits, Marek's and mine have 4. Look at other methods eg the standard deviations. Best control for Coulter would be hard copy of some kind eg photograph the screen or transmit the data to a printer. Expect that there will be statistical differences between Anupam's valid data and his fudged data.

10/2 Email from Marek with 16 Excel files attached: experiments with A_1

Date?? Receive by post zip disk from Marek with some additional files plus those already sent.

I prepare a statement for Putterman.

10/24 Meet w Putterman. Refuses to allow me to read my piece. I say I will consult a lawyer. Finally I leave it. She: no one else will see it, no copies will be made, she will only take notes if she has questions. Gives me her word, places in a confidential envelope and I leave. She will call me Monday (but she doesn't).

11/4 Meet again with Putterman. She has read my piece. Do I think that Anupam would confess? I: the 4 in Mosimann's paper did once confronted with the numbers. Says original complaint had to do with an experiment that never went beyond the notebook – but cf Teleconference on misconduct: once data are recorded in the notebook, misconduct is done. Recommends that I return to the campus committee and make new allegations giving them the new information re digit analysis, non-repeatability of key experiments, visa situation with Anupam. Committee can call in outside experts, her role is to see that the process is followed correctly – no interest in the outcome. No mention of the continuing retaliation which my piece also recounts.

11/11 Meet with Anthony Forrester, chairman of the committee. Leave with him the Mosimann reprints, the graph demonstrating lack of reproducibility of bystander effect and the chi square analysis of the numbers. He doesn't want any details, just the bare bones. He wrote up what I said about the Mosimann analysis and the graph. Is checking with the University lawyer to see if I can have a copy (I can't). Told him about the Aug 1, 2001 meeting with Anupam. He does not want to include it. He will present the 2 allegations to the committee and they will decide whether to pursue the case or not. This is his first case of substance. He thinks we should stick