

Biology A394 – Cell and Molecular Biology Laboratory
Course Evaluation, Fall 1999
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A = extremely effective
B = effective
C = not very effective
D = bad
F = terrible

Learning activities (did these activities help you learn methods in cell & molecular biology?)

	A	B	C	D	F
1. Studying or working in small groups	23%	47%	20%	7%	3%
2. Studying alone	35%	39%	24%	2%	0%
3. Class attendance and lectures	47%	38%	9%	4%	2%
4. Experiences with laboratory methods	33%	47%	16%	2%	2%
5. Lab quizzes	24%	47%	22%	7%	0%
6. Lab reports	33%	33%	20%	6%	8%
7. Class participation and questions	28%	42%	24%	2%	4%
8. Recitation section	5%	25%	45%	16%	9%
9. Recitation quizzes	10%	32%	43%	2%	13%
10. Separate lab/lecture courses	20%	28%	43%	7%	2%

Comments or suggestions to improve learning activities:

1. No comment (20 other responses identical to this)
2. I think that the recitation was not very useful. It never kept the attention of the students. A more effective way was to use recitation to discuss the labs done and the prior results. That case students already did the experiment.
3. Don't repeat same things in lab and recitation.
4. Make the recitation more of a lab writing help course.
5. The first lab reports should not be graded as harsh; so as to give students an idea of what is expected next time. Lab objectives need to be just a little clearer.
6. Collaboration of teacher's discussion pertaining to labs!
7. Lab reports were not explained properly. Why was recitation based on the reading?
8. The lab reports were way too long! They would have been just as effective without the material and methods section and would have been much shorter.
9. Need to make labs clear, lectures were not because we had lectures after quizzes for the first half of the semester.
10. Recitation should always be used to explain the labs for that week and any data questions. When this was done recitation was very helpful. But it wasn't always done.
11. Show more enthusiasm about the material and involve the students more with presentation of the material.
12. Change the recitation to something more useful. We get the same info in lab but in more detail so I don't understand the point of recitation.
13. More specific procedures for the lab.

14. I would have liked to have the material presented in recitation correspond more with lab activities. Also, I thought the activities were too MCDB centered, and being a genetics student I felt I missed the boat on a lot of topics as they did not apply to my 3 hour lecture course.
15. Recitation quizzes were too hard for just reading assignments, plus the quizzes should have been more on the lab that we were doing, not just the reading. Plus, I think the professor should have taught the lab before the quiz. Plus, the recitation never helped me in lab and dealt with MCDB not with genetics, which I was in. Plus never really explained how the lab reports needed to be done.
16. Larger lab groups!
17. I think that the recitation helped to explain background info before the labs, but the lab instructor ended up explaining quite a bit anyway.
18. The lab procedure should be more detailed as to exactly what and how to do the experiments. The lab handouts should be more detailed.
19. Please have recitation right before lab so that students can remember objectives for lab instead of one week ordeal.
20. Needs a little organization meaning either MCDB first of Genetics first.
21. Some of the methods in lab weren't clear, therefore 2 or 3 labs in a row a lot of time were lost and labs weren't finished. Some simple clarifications would have fixed this. Also, the instructor and TA instructions would conflict.
22. I think having the separate recitation is a bad idea. Time is wasted because often things are repeated in lab anyway or the info is already given in the handouts. It also makes things a bit disjointed. Some info one day from one teacher, a little more another day from someone else- too much overlapping.
23. Recitation is a good idea; however, it has to be more systematic. There were a few recitation sessions that had practically nothing to do with what we were doing in lab that week, especially in the beginning. If the lab material stuff were covered in recitation, more lab time could be devoted to the experiment part.
24. More discussion, less lecture. Socratic method not rote memorization. Involve the class more. It's pointless to be in lab/lecture/recitation to hear you read to us what we can read/figure out for ourselves. But don't delude yourselves into thinking we've read ahead of time. Ask questions, involve students. Dr. Green does a good job of putting in little jokes and quips, but that only grabs our attention for a few seconds. We need to be engaged the whole time. We're the MTV generation, and you must take that into consideration. We have no attention span.
25. Formal lab reports did not really help the learning process; the same educational effect could have been achieved by turning in data sheets and a short conclusion.
26. Lecture hour should be larger and contain more in-depth information. Seems that the class (recitation) contains only a general overview. Class should be 1 hour and 15 min.

Course evaluation (were these aspects of the course done well, fairly, intelligently, etc?):

	A	B	C	D	F
11. Student's confidence in the instructor's knowledge	66%	27%	7%	0%	0%
12. Course content	36%	51%	9%	0%	4%

13. Course organization	16%	33%	35%	7%	9%
14. Separate lab/lecture courses	29%	33%	29%	7%	2%
15. Instructor's enthusiasm	50%	33%	17%	0%	0%
16. Clarity of the course's objectives	13%	52%	24%	9%	2%
17. Use of class time	18%	42%	22%	16%	2%
18. Instructor's interest in students learning	62%	27%	7%	4%	0%
19. Availability of the instructor	47%	40%	13%	0%	0%
20. Instructor's contribution to the course	53%	38%	7%	2%	0%
21. Student evaluation (recitation quizzes)	17%	32%	37%	7%	7%
22. Student evaluation (lab quizzes)	28%	40%	28%	2%	2%
23. Student evaluation (lab reports)	30%	43%	16%	4%	7%
24. Usefulness for student's general knowledge	26%	62%	8%	2%	2%
25. Usefulness for student's professional knowledge	35%	47%	12%	2%	4%
26. Overall course grade in comparison to other bio courses	19%	43%	28%	8%	2%

Additional comments on course evaluation:

27. What went well in this class?

1. Labs
2. If there were any problems the teacher was always there to help.
3. No comment (7 other responses identical to this)
4. Most labs went well
5. Lab techniques
6. Actual lab experiences went well.
7. Learning how to do the labs.
8. The experiments and it was fun.
9. Hands on stuff in lab.
10. I liked my instructor. He had a good knowledge of the subject.
11. Lab.
12. The chromatography lab was fun and effective.
13. The lab.
14. Some experiments and it was a fun class.
15. Learning instrumentation. General info is helpful. Working together helps. Group discussion helps.
16. The labs themselves were very interesting; however, better planning should be made so that the labs are not as confusing.
17. The easy quizzes.
18. Nothing that I can remember.
19. Learning how to write and organize a lab report.
20. The chloroplast lab went very well.
21. Everything went splendidly except for the recitation; I found it to be quite foolish.
22. Quizzes
23. Dr. Green is really patient and understanding. Lab with him went smoothly and the recitation periods during which I did not zone out were the ones he taught.
24. Some of the labs.
25. The lab instructor explained concepts very well and clearly.

26. I like recitation. It helped me to understand because sometimes I don't have time to thoroughly ask instructor or he/she doesn't have a schedule that works with mine.
 27. Labs were timed nicely. It's sort of rushed now that they end is near but lab was very ordered.
 28. Effective when lab and recitation paralleled each other.
 29. Labs were interesting and recitation was an easy grade.
 30. The explanation of experiments in recitation, the instructor's attitude and method, the overall lab experience.
 31. Recitation in order to provide understanding of lab.
 32. The lessons on the board.
 33. The short explanations in order to understand the lab for the following week. (Even though there could've been more explanation.)
 34. Learned fundamental lab techniques. Understanding of hemoglobin/chloroplasts.
 35. RBC lab was good, chromatin lab looking good. Useful knowledge of instrumentation.
 36. Double dosage of genetics and MCDB.
 37. I learned a lot and taught myself extreme self-discipline in order to keep up with readings.
 38. Quizzes and labs themselves were fairly educational. Hands on experiences are usually good.
 39. General knowledge of course objectives.
28. What did not go well in this class?
1. Lab reports
 2. The lab quizzes were very difficult in my opinion.
 3. The class did not go well because MCDB and Genetics labs were combined.
 4. Fly lab
 5. Repetition between recitation and lab.
 6. Unnecessary or unrelated to lab.
 7. Recitation time spent did not help me with writing lab reports.
 8. Clarity of experiments, but that's all.
 9. Lab reports
 10. The confusion of recitation and the lab reports were a mess.
 11. Recitation. Recitation should be all about what lab should be. Not on reading.
 12. The photoreduction experiment took too long to estimate the quantities of chloroplast and DCPIP.
 13. The recitation!
 14. Quizzes. We didn't know what our quizzes were going to be on half of the time.
 15. The labs were not clear, lab reports were expected to be long like a term paper, graphs for this lab...fruit flies were a waste of time.
 16. Having two sections in this course. Flies were confusing.
 17. Lab report due dates. Three due in the last two weeks of finals is very unfair.
 18. No lecture on quiz topics.
 19. The labs were not easily conducted without assistance from the instructor.
 20. Clear instructions of lab procedures and what to do.
 21. The explanation of measurements. I never had chemistry before so I was confused on how much to pipette into things.

22. The addition of the recitation course, because it seemed sort of pointless. What was discussed in recitation would easily be inferred in the procedure of a lab report.
23. At times it seemed as if we needed more time in recitation (the 50 min just wasn't enough after everyone finally got settled and the quiz was over.)
24. The labs always seemed to turn up incorrect results.
25. Flies...not enough class time for the damn flies. I'm taking 17 hrs and working a very demanding job. When it comes down to choosing whether to tend to the flies and say, studying organic chem. (or writing a religion paper), I will ultimately choose to do one of the latter during my out-of-class time because it is pretty clear that I must devote my personal time to either endeavor. It was not made clear as far as the flies went. Also, TA's. I want a prof's input not a TA's. I'm satisfied with the help and guidance Dr. Green provided. I am only annoyed with the interference and misinformation my lab partner and I received for the TA's.
26. Organization of lab, too many parts of the lab we never finished. The whole point of recitation.
27. The recitation was a tremendous headache. Students were constantly asking what will be on the quiz. There was a lot of confusion. Some students have not taken MCDB so many of us were in tremendous disadvantage. Experiment's procedure was not clear. Therefore it created chaos.
28. I think an earlier recitation should have been offered. Everything else went well.
29. Recitation. Nothing was covered in recitation that wasn't covered at the beginning of lab. Recitation was a wasted hour of the professor's time and ours.
30. Sometimes not enough info.
31. Recitation should have explained in greater detail what was going to be done in lab.
32. No comment
33. Some labs were not able to be completed in the time allotted. More detailed instruction needed as to methods.
34. Fly lab. Too long because people have other classes too.
35. The red blood cells experiment and the chloroplast experiment. Confusion.
36. No comment
37. Change from Genetics to MCDB to Genetics to MCDB and so forth.
38. I was not taking MCDB during this lab which I felt was a disadvantage.
39. Recitation in no way helped establish the objectives of the lab. Isn't this what this class is for?
40. Too much disorganization. Four 25-30 lab reports is a little much and does not contribute all that much learning. Maybe 2 full and 2 partial is better.
41. Chloroplast lab was too much trouble.
42. More MCDB than genetics.
43. Where to begin? MCDB lecture was a waste of time. Yet attendance is mandatory. All that goes on in lecture is that the professor reads from the book and draws bad chalk renditions of diagrams in the test. This means I need to put in muchas horas in out-of-class work to understand the material. The tests do not accurately reflect the material learned. When you tell us there are 20 amino acids and a T/F question on the test says there are 22 amino acids, the correct answer should be false. Instead it is true because the statement is "more or less true." Come on. Second, lab. Lab was good and educational. I feel I learned a lot. But the fly lab was a fiasco. I only sympathize for those who have

it truly count. Just when we needed lab time to care for our flies and began to have questions, labs were devoted to RBCs and chloroplasts. That doesn't make sense. Way too much outside work is required for lab for only an hour of credit. Finally, Recitation. This was the most pointless class I've taken at Loyola. First, we were not able to learn anything truly in depth in either genetics or MCDB because the classes were combined into one recitation. Whatever we learned I either already knew or will learn in my first week of genetics. I applaud the idea of separating the lecture and experiment portions of lab to give us more credit. But it doesn't work because the lab instructor ends up repeating the recitation lecture in lab! Why? Because we won't know what we don't understand until we actually try the experiment. Recitation was a waste of my time and the instructor's. These are only the beginnings of my gripes. But time is short.

44. Formal lab reports were tedious and seemed like busy work. Recitation at times seemed like a waste of time.
45. Understanding the purpose of some experiments fully! Why we did what, when, with what...?

29. What did you learn in this course which will be of most value to you in the future?

1. Chloroplast
2. No comment (4 other responses identical to this)
3. Useful lab techniques
4. Histone lab
5. How to do lab work.
6. How to write labs professionally.
7. Using professional pipettes, blood structure and function and much more
8. Red blood cells, different cells and etc seen in lab.
9. How to get rid of fruit flies.
10. I really enjoyed the fly lab. Taking care of them and crossing them.
11. Lab methods.
12. Nothing
13. The lab reports were supposed to be precise...I would know how to write lab reports.
14. How to write a report.
15. Overall techniques and information covered in the labs. The labs ideas were awesome.
16. Everything, knowledge will get me anywhere.
17. Learning how to write and organize a lab report.
18. Writing lab reports, experimental techniques.
19. DNA recombinant technology.
20. Being able to learn how to use the calibrated droppers, phase microscopes, centrifuge, etc. Lab was great.
21. Lab techniques. Information on blood and DNA.
22. Microscopy skills, examining the components of blood.
23. I am not sure if I will use any of this lab information.
24. The experiment I like the most was red blood cells and the ability to use some of the instruments.
25. DNA stuff. Cell plasma things, chloroplast photosynthesis. Everything.
26. Lab procedures and write-ups. Dr. Green was excellent with writing lab reports.
27. I learned how cells interact with different chemicals and under certain conditions.

28. The linkage or non-linkage of genes and the properties of red blood cells and cell membranes.
 29. DNA/Chromatin lab.
 30. Info on red blood cells.
 31. General lab procedures.
 32. A lot of tiny details on important things like respiration, photosynthesis, flies, etc.
 33. Lab techniques/cell biology.
 34. How to utilize the three hours of time I have between my previous classes and the class.
 35. Understanding spectrophotometry.
 36. Chromatin lab, use of instrumentation.
 37. Liked RBC lab, useful info, good lab.
 38. Oxidative phosphorylation and how to write a lab report.
 39. Not to do professional scientific writing. The blood lab was somewhat useful for pre-med. and med. school.
 40. Knowledge of the basic structures and functions of organelles that contain and give life.
30. Would you recommend this course to a friend? What would you tell them about the course?
1. Yes. It is simple yet a good learning experience.
 2. No comment
 3. No and yes.
 4. Yes, if you have to take a lab, take this one.
 5. Yes, not too much work, interesting.
 6. Yes, I would tell them that they could learn a lot.
 7. Yes, tell them to concentrate more on the lab and not the recitation.
 8. Yes, it is very helpful.
 9. Yes, it is interesting to learn about genetics.
 10. Yes, very interesting.
 11. Yes. Lab was great!
 12. Yes, but I would warn them that the lab reports will take 15-20 hours of time a piece.
 13. I would recommend the lab if the recitation was not such a waste or if it was organized differently.
 14. No; no.
 15. No
 16. No. It is extremely time consuming for the number of credit hours.
 17. Yes, but always make sure you are clear of what is to be done.
 18. Yes; it's easy, but you have to read for your quizzes and it's disorganized.
 19. Not if they didn't have to take it. It was too much work for the amount of hours it gives credit.
 20. Yes, but the course is somewhat disorganized.
 21. Yes. That the course can be very slow at times and totally confusing at others.
 22. Sure, I would tell them that they would gain a strong understanding of genetics and general biochemistry.
 23. Yes
 24. No, it is very demanding but it is also interesting if you wonder why people look the way they do and what cells look like on their own and undergoing division and lysis.
 25. I would say, "Take Dr. Green!"

26. I would tell a friend about the course but I am not sure I would recommend it.
 27. Not unless there is a radical modification to recitation, and the procedures to conduct experiments clearly. Other than that I think there is tremendous room for improvement. Our class was more like Guinea pigs.
 28. Yes. It is interesting and the professors are helpful. It becomes easy because you can understand because it is explained very well.
 29. I would but only to a friend who is really willing to work. The lab was very time consuming with the flies and the long reports.
 30. Sure
 31. Yes. I would recommend the course. I would tell them to be prepared to stay late in lab and do a lot of work.
 32. No comment
 33. Yes I would tell them it is enjoyable, frustrating, and hard work, but it is worth the effort if my friend was a bio major.
 34. Yes. It's ok if you need it for the future.
 35. Not unless it was a requirement for them. Be prepared to stay up with the flies.
 36. Yes
 37. Yes, it's simple, straight to the point. Have to read.
 38. Yes, do your lab reports.
 39. No comment
 40. No. The lab seemed disorganized too often. Too much wasted time.
 41. Good for the DNA stuff.
 42. Yes, but MCDB lecture should also be taken at same time.
 43. No. I could say be prepared to both work hard but yet waste time in pointless lecture.
 44. I would tell them not to take it unless they liked writing long lab reports and receiving bad grades for a lot of effort.
 45. I would recommend class after a tear so that the "kinks" could be worked out. IT was good hands on experience.
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31. How does this laboratory compare with other similar laboratories (for example Zoology, Botany, Genetics or Chemistry Labs) that you have taken at Loyola?
 1. Similar difficulty, yet easy to understand.
 2. No comment
 3. Much more organized than Gen. Chem. Lab.
 4. Much better than Chemistry labs. Can't compare to Zoo and Botany.
 5. Much better and more interesting and useful.
 6. It was good or better except some lab assignments took too long.
 7. Much more challenging (good thing), and more interesting once you understand.
 8. This lab is very fun!
 9. No comment
 10. The best so far. Job well done.
 11. Lab this semester was more of hands on approach than other labs.
 12. This had a lot more activities then Botany, but practicals are much easier than lab reports.
 13. It seemed to cover a broader amount of topics.
 14. This lab makes no sense.
 15. Genetics.

16. Not as much variation in this lab. Monotonous.
 17. I thought this lab was the best as far as interest and learning goes.
 18. It's an extra credit, it's easier, you get more time for laboratory work.
 19. There was no formal manual and no field trips, thus making it difficult and boring.
 20. Zoology's lecture was included with the lab and seemed more cohesive and clear on what needed to be done.
 21. It was very good in terms of hands on compared to those labs.
 22. It is much more involved than most other Bio labs and much more interesting.
 23. It was a little easier but did more hands on work in lab and recitation helped us understand it even more.
 24. This is the only lab I've taken at Loyola.
 25. Not as structured as other bio labs. In chem. lab we were expected to do things on our own, but basic protocols were much clearer in chem. lab.
 26. Disorganized compared to other labs but it made me think more.
 27. Chemistry labs are highly organized and one can follow experiments from a handout step by step without problems.
 28. Botany and Zoology weren't as involved as this one. I am involved and interested in the lab, etc.
 29. Frankly, it was a little boring compared to other labs I've taken. The other labs could be applied to everyday life better.
 30. It's more hands on.
 31. I prefer the recipe lab. No guess work, just follow the paper.
 32. No comment
 33. More hands-on experience, less quizzes, more actual work, more student involvement.
 34. Very laid back yet interesting.
 35. Zoology was really fun, Botany was stupid, and Genetics was fun and laid back.
 36. This laboratory was more work in and out of class than previous labs.
 37. It's more to help, not to let you do all the work.
 38. My Botany and Zoology lab teachers (Fleury and Anzelmo) were both incredible. However, not much time was always left for the actual lab part. This is resolved in CMB with the recitation.
 39. No comment
 40. All labs here that I have taken so far have not been well organized.
 41. Better, more hands on, chem. labs were more systematic and related to course material.
 42. This lab involves many interesting concepts and information. Really get to experiment things that are "fun" and helpful in MCDB, but not in genetics.
 43. Too much and too long for 1 hour credit.
 44. I learn more in labs where there are weekly quizzes and not much lab write-up.
 45. More hands on!
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32. Would the lab and recitation sections have been more effective if taught by the same instructor?
 1. Not really
 2. No
 3. No
 4. No difference

5. No
6. Maybe so
7. It was.
8. Yes
9. No both instructors were good at teaching.
10. Didn't make that much of a difference. Multiple teachers' input is always helpful.
11. For me it was!
12. Yes
13. Not necessarily
14. No
15. Yes, they would be because the lab professor does not know what was taught in lecture and the classes coincide.
16. Yes
17. Not really
18. No, it was okay.
19. Not if they were done in the same manner.
20. Yes
21. Yes
22. Possibly, although I believe the recitation should be removed altogether.
23. No
24. No, with three instructors, one is always available for assistance and may be able to explain in a way that is easier for you to understand.
25. I would have enjoyed more consistency in the teaching of the recitation section. I think Dr. Green was the most effective. I give him props for explaining things well. A+
26. No
27. It's not the instructor. It is the organization that is the problem.
28. I had the same instructor.
29. No. This way we get a taste for all the teachers. Each has their own favorite parts so we learned different aspects.
30. Sometimes
31. I don't think so. All the instructors did a good job.
32. Maybe yes.
33. No I believe both instructors handle their respective classes well separately and the course worked well this way.
34. Yes and also if there are more recitation sections. For example, recitation before labs (3 labs; 3 recitations).
35. Yes, but I really don't see the point for recitation. It's pointless.
36. No
37. No
38. No
39. Yes
40. Yes
41. Yes
42. Yes, each instructor has different way of explaining and would help if not have to ask different instructors about different problems. It gets confusing! Everyone says different things.

43. Not necessarily. They would've been more effective if only either MCDB or Genetics would've had the lab. Make a lab for Genetics and one for MCDB. Make the Genetics lab one hour, once a week, and just do flies. Make the rest MCDB.
 44. Probably not. All the teachers had a pretty good grasp of what was going on in both sections.
 45. It's a good idea to have two different outlooks on subjects such as these. One may explain more clearly than the other.
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33. Would the lab and recitation sections be more effective if taken at the same time with a course in cell and molecular biology taught by the same instructor?
 1. Yes (11 other responses identical to this)
 2. No difference
 3. Probably not
 4. Yes, definitely, I took Genetics last semester I have never taken MCDB, so it was much more difficult than I think it was intended to be.
 5. No (6 other responses identical to this)
 6. Yes. It is not fair that both MCDB and Genetics Recitation Class was combined.
 7. I preferred not having my MCDB professor for recitation and lab.
 8. Possibly
 9. Maybe.
 10. No, it's ok.
 11. Doesn't matter.
 12. Yes, I believe so. We think that the instructor would be able to better assess what is being covered in other classes.
 13. No comment
 14. Possibly.
 15. I purposefully chose different lab and lecture prof's just in case I wasn't satisfied with one of their teaching styles, I could at least learn something from the other. I liked both of my profs' teaching styles, problem is that they were teaching two different things. There was hardly any cohesion between the material presented.
 16. More effective if I was in MCDB.
 17. It would not have any effect because the organization is the problem.
 18. I am taking MCDB and Genetics and I find it easier because I can get the "full picture." Although the MCDB class is hard to understand. I usually learn about MCDB material from my lab/recitation instructor in class because he explains better.
 19. I think it would have been easier if I would be in MCDB instead of Genetics right now. More of the same content was covered.
 20. That doesn't matter.
 21. Yes. Half of the time in recitation I had no idea what the prof's were talking about!
 22. No comment
 23. No, I believe they are effective for either MCDB or Genetics equally.
 24. I don't know. I'm not taking MCDB but I have found in the past that it's nice to have different teachers because you are taught in two different ways, one of which may contribute more to your understanding.
 25. No comment

26. Lab would be more effective if taken same time with MCDB; not necessarily with same instructor.
27. Probably not. If you prepared by studying for recitation quizzes, you had some grasp of what was going on.
28. Every bit helps!

Please comment on the effectiveness of the following specific aspects of the CMB lab course:

34. Liquid sample handling lab (we didn't do this year: would it have been helpful?)
 1. No comment (13 other responses identical to this)
 2. No (7 other responses identical to this)
 3. ?
 4. Helpful!
 5. Yes (3 other responses identical to this)
 6. Probably not.
 7. Yes! We had problems with our pipettors!
 8. Don't know.
 9. I suppose, I'm not sure, considering we did not have it.
 10. Huh?
 11. Not really
 12. Possibly
 13. Not sure what this involves.
 14. Don't think so.
 15. Maybe?
 16. What is this anyway?
 17. ?
 18. I couldn't tell you.
 19. Yes, need to show how to use pipetter and conversions.
 20. What is this?
 21. Probably wouldn't have been very helpful.
 22. Sure
35. Drosophila labs
 1. Very effective if done carefully.
 2. Bad
 3. Not very effective because some students are in MCDB. I think this is the most difficult class because the general principles were not taught in MCDB only Genetics. Only genetics students should do this lab. The other labs were more MCDB based and were not fair to those taken Genetics.
 4. Very, very ineffective
 5. Not too effective, too much work handling flies. Need to cut down amount of necessary work.
 6. Unorganized, confused on when things were to be done.
 7. Not sure

8. I really think this wasn't a cool project even though I understand it was a learning experiment. The flies are too tiny and mistakes are always made. We should not be graded on our turnout, but rather on how accurately and hard we tried.
9. Very interesting and fun.
10. Cool and fun. Very time consuming.
11. Enjoyed the lab.
12. Fun and effective, but time consuming.
13. Too time consuming! But educational.
14. They are helpful to see how genetic makeup is done.
15. Nope...it was a waste of time.
16. Very confusing at first. Had to speak to other students to make sense of it.
17. Very interesting! Pretty neat!
18. Ok
19. Waste of time.
20. Interesting; messy, but good hands on experience.
21. Terrible. Pointless.
22. Very effective for demonstrating genetic principles.
23. Cool experience even though many flies died.
24. Not very effective.
25. Pointless; useless; just let me fill out some punnett squares to prove my grasp of inheritance.
26. Informative but too much on our own time.
27. Really bad, not enough monitoring from teachers.
28. Fun. I liked playing with flies and feel it is essential. It is a fun part.
29. Too long and tedious and not too effective for learning.
30. More check ups during lab should be provided (updates on where you should be).
31. I did not like this lab. No one was there to help.
32. I think maybe have the students turn in weekly data sheets or "progress reports" to make sure everyone is on track. Also, have someone available to open the lab room after hours, on weekends, or during breaks.
33. Effective
34. Boring, waste of time, not enough time. Should be made as a bonus or in class experiment like the others.
35. Fun but nerve wrecking.
36. Good recap of concepts learned in Genetics.
37. Hand on work, on what was learned in class was excellent.
38. Most students were very lost for this. Maybe some sort of schedule as to where your experiments should be going.
39. No because little or no input was put in by the teachers.
40. Good, but if something beyond student's control goes wrong they should not be penalized.
41. Too much time was spent in beginning on explanation. When hard parts of lab started coming up, we were on our own and had no lab time then.
42. Grade is dependent on how responsible lab partner is. Need more lab time on fly lab.
43. Get rid of it. Make it a separate Genetics lab.
44. More time should have been spent in class going over it.

45. Very interesting.

36. Microscopy lab

1. Not effective at all
2. Extremely effective
3. No comment
4. Not effective
5. Fairly effective; liked only doing data sheet.
6. Extremely effective.
7. Good lab. Great to learn from
8. Fun!
9. Extremely effective
10. Boring!
11. Enjoyed the lab.
12. Okay, but too long to cover just the basics.
13. Necessary!
14. It was useless.
15. Yes
16. Not bad. Important to learn proper use of microscope.
17. Good way to become familiar with microscopes and lab data sheets!
18. Ok
19. O.K.
20. A good introduction.
21. Very good.
22. Very effective because microscopy is a basic skill in molecular biology.
23. Learned a lot especially with phase and immersion experiments.
24. Effective.
25. Interesting, but nothing correlated with what I was learning in Genetics.
26. Very confusing.
27. It was Ok.
28. I am not too fond of these types of things but it needs to be done to understand the microscope.
29. It will help me in the future. Liked this one.
30. Important
31. For the most part they were boring and the specimens were hard to see.
32. No comment
33. Repetitive, yet effective.
34. OK
35. Humongous Migraine Headache.
36. No comment
37. Microscopes let you see things you can't see everyday. It was interesting!
38. Very effective. I have a problem with all the glass and blood thrown away. Isn't this biohazard?
39. No comment
40. The actual info was Ok
41. Informative. Pretty good lab.

42. Fairly good lab.
43. Good.
44. Useless; if you're a sophomore or junior level bio student in college and you don't know how to use a microscope, you should be shot.
45. Helped to operate and understand uses of microscopes and their abilities.

37. Hemolysis/Membrane Permeability labs

1. Very effective
2. Extremely effective
3. No comment
4. Not helpful.
5. Very effective; should have 1 full protocol instead of 3.
6. Extremely effective
7. Easy, quick to understand, good lab.
8. Fun!
9. Effective interesting to see red blood cells.
10. Most effective because it had to do with something we could relate to.
11. No comment
12. Interesting.
13. This lab was a good addition and helpful in other Bio courses.
14. It was useless.
15. Yes
16. Interesting, but very long. Specify what is designed in a lab.
17. Interesting, clarification of methods performed could be worked on.
18. Ok
19. Good
20. A quick jump from the Microscopy lab. Somewhat intimidating to someone who hasn't had a strong science background.
21. Very slow. Lost interest early on.
22. Very effective because it surveys one of the most fundamental actions of life.
23. Cool, understood it because my mom is a medical technician.
24. Effective.
25. Learned a lot even though the lab was complex.
26. Understandable
27. Excellent
28. Excellent
29. It will help me in the future. Liked this one.
30. More explanation needed in recitation section needed.
31. This was effective. I learned a lot about what can go on inside my body.
32. No comment
33. Very effective
34. OK
35. Ok but confusing.
36. No comment
37. Blood lab was too long, not that interesting.
38. Well done, I feel I understand this very well.

39. It was interesting and would have been a good learning experience if elaborate, extensive and thorough lab reports were required. Only a summary or a 3-page outline and abstract would have been sufficient.
40. The actual info was Ok.
41. Interesting lab; enjoyed it; educational.
42. Good lab. Interesting things about RBC.
43. Good.
44. The most useful and pertinent lab to a health profession's career.
45. Interesting! Knowledge of the basic components is essential.

38. Chloroplast labs

1. Very effective
2. Extremely effective
3. No comment
4. Effective
5. Very effective and interesting; should have 1 full protocol instead of 2.
6. Extremely effective
7. Wasn't explained well, but once you understood it, it went well.
8. Fun!
9. Fairly okay.
10. O.K. kind of interesting.
11. Like the lab
12. The chromatography was fun.
13. The chloroplast was a good follow-up from Botany.
14. It was useless.
15. Yes it was effective.
16. Interesting, but again long. Objective is not always clear.
17. Interesting, clarification of methods performed could be worked on.
18. Ok
19. Good
20. Cohesive with the last lab.
21. Interesting, fast-paced.
22. Very effective because again it discusses a subject that provides the basis of life.
23. Cool
24. Extremely effective.
25. Fun!
26. Too long and some of the parts of the lab I didn't understand the point.
27. Extremely terrible. Organization was the problem not the instructors.
28. Excellent
29. Not very effective
30. OK
31. Better than microscopy labs. Easier to understand what was going on.
32. No comment
33. Confusing data not as effective as other experiments.
34. OK
35. Confusing but enjoyable.

36. No comment
37. Too many small details, but good experiment.
38. Enjoyed, learned a lot, gave good understanding.
39. It was interesting and would have been a good learning experience if elaborate, extensive and thorough lab reports were required. Only a summary or a 3-page outline and abstract would have been sufficient.
40. The actual info was Ok.
41. Too much trouble trying to handle many samples at one time. No real suggestions in manual, only suggestions made by professor on day of; no time to sit down and think out procedure.
42. Bad lab. Methods were not clear; not too helpful if not in MCDB.
43. Yea!
44. I learned about this in botany lab.
45. Interesting to understand the abilities of nature!

39. Chromatin labs

1. Very effective
2. Extremely effective
3. No comment (6 other responses identical to this)
4. Effective
5. Effective
6. Extremely effective
7. Okay.
8. Confusing, but helpful.
9. ?
10. Boring. (Well, when I read it.)
11. ?
12. N/A
13. Interesting
14. It is interesting.
15. Yes
16. Instructions are confusing for last procedure. May want to rewrite them.
17. Interesting, clarification of methods performed could be worked on.
18. Ok
19. Good
20. Not done yet.
21. So far very slow, but interesting.
22. Very effective because it gives you general knowledge about DNA structure.
23. Liked working with DNA.
24. Effective.
25. Informative.
26. Haven't done it yet.
27. Very interesting. I like working with DNA.
28. OK
29. Did not like but they are interesting.
30. Effective

31. OK
32. Boring
33. Too short time.
34. It was interesting and would have been a good learning experience if elaborate, extensive and thorough lab reports were required. Only a summary or a 3-page outline and abstract would have been sufficient.
35. The actual info was Ok.
36. Cool so far.
37. Interesting
38. Ok.
39. Somewhat useful but by the time we are professionals, most of the procedures and info we used will be obsolete.

40. Lab reports

1. Very effective at summarizing material
2. Extremely effective
3. No comment
4. Effective
5. Good tool for future; graded fairly.
6. Extremely effective
7. Great learning tool.
8. A little much, but helpful.
9. Not at all.
10. Hate them! But you should keep them. They're helpful.
11. I would have done better if I had an example.
12. Too long! They were far too time consuming!
13. I feel it is a big pain but it helps reassure a student's knowledge on the material.
14. They are good, because they give us insight and knowledge on what we are doing.
15. Yes
16. Not bad.
17. Nice to do but should be spread out more.
18. Ok
19. Excellent
20. A good thing to know how to do but exact desired results should have been more clearly communicated.
21. Very effective.
22. Helps us prepare for the future, as well as organize our thoughts and data.
23. Long but okay.
24. Not very effective.
25. Dr. Green gave lot of constructive criticism. I appreciate that.
26. Helpful.
27. Not good.
28. Although they were very long, I enjoyed writing them in a way. I understood everything mostly.
29. Excellent learning tool! I feel more prepared as a biologist.
30. Examples should be provided or introduced.

31. Instructors need to be more specific about what's expected.
32. No comment
33. Effective
34. OK
35. Good for you bad for me!
36. I found this portion very helpful because I had never written a lab report for biology.
37. Too much effort for the credit you get for them.
38. Helped me learn how to write in science.
39. Useless.
40. Too many full length. Two full length is enough. Also need to get labs back much more quickly.
41. Way too long and graded far too critically.
42. Please show samples of lab reports just to see format and language and ways to present data.
43. Boo, but necessary.
44. Very bad. If it wasn't for these, most people probably would have enjoyed the course.
45. Hard to put together so much info on subjects that are not elaborated on.

41. Quizzes

1. Very effective at reviewing subject material
2. Not very effective
3. No comment
4. Not helpful
5. Tough, but good for learning.
6. Extremely effective
7. Not important to making lab reports.
8. Cool
9. Fairly effective
10. Effective to study for a test but some, well most of them were difficult. They were like test questions. Talk about delving beneath the surface.
11. Did bad in recitation
12. Effective – forced me to read.
13. These quizzes bothered me how we had to be quizzed on material before the instructor lectured or done stuff in lab with the info.
14. They help me prepare for my lab and understand what we would be doing.
15. No
16. Quite difficult and no study material, only lecture.
17. No student likes these, but I felt they were fair.
18. In recitation I wish we could have went over the material before the quiz for better understanding.
19. Not bad.
20. Kept us on track.
21. Not effective.
22. Fairly effective, only in the lecture.
23. Okay, we actually were learning and getting quizzed to help us even more not just to be taking one for a grade.

24. Extremely effective.
25. Bad
26. Recitation quizzes I found to be pointless, since we were having quizzes in lab.
27. Recitation quizzes were bad. Lab quizzes were good.
28. Good
29. Lab quizzes were effective and fair. Recitation quizzes I could live without.
30. OK
31. Fine. Helped to drill material.
32. No comment
33. Effective
34. OK
35. Good organization.
36. No comment
37. It helps to see if you understood it or not, they are a good evaluation.
38. Test well on material being learned.
39. No comment
40. Ok
41. Ok
42. Ok, helped in lab reports.
43. Pointless.
44. Fair and not too hard or easy. Fairly graded.
45. Helps with basic understanding.

42. Emphasis on experimental design

1. Some of the experimental design could have been clearer.
2. Extremely effective
3. No comment (6 other responses identical to this)
4. Not emphasized
5. Good for future.
6. Extremely effective
7. ?
8. Not very informative.
9. Help to see later on what you saw.
10. ?
11. Okay
12. This allows for a student to be creative and go about it their own way.
13. The experiment was helpful and it gave me insight.
14. Yes
15. Not enough if it is expected.
16. Very good! Learned a lot.
17. Ok
18. Not very good. Once again, somewhat intimidating to one who has not had a very strong science background.
19. Sometimes effective.
20. Effective because it teaches us to pay attention to details.
21. Extremely effective.

22. Ok
 23. Better organization needed.
 24. Not good.
 25. Excellent
 26. Should be stressed more.
 27. What emphasis?
 28. Needs to be more detailed and students need more direction.
 29. Should be clearly laid out as procedure.
 30. Good.
 31. Much better than "cookbook" labs.
 32. Good because you get to do it yourself.
 33. Sometimes caused mass confusion.
 34. Good but still need more organization in lab to prevent time being wasted.
 35. Thinking out experimental procedures is good thing, but sometimes by the time we were given any tips, we had to jump right in instead of having time to think about it.
 36. Was not explicit.
 37. The lab assistants told us what to do.
 38. Not so hot. I didn't really benefit by trying to figure out what to do. Would have learned more if procedure was written and I could concentrate on the concepts.
 39. Helpful
43. Emphasis on methodology as opposed to descriptive or content-based lab exercises
1. No comment (11 other responses identical to this)
 2. Extremely effective
 3. ?
 4. Very good, helps out in future.
 5. Extremely effective
 6. Great in teaching how to write a lab report.
 7. ?
 8. ?
 9. It is a good addition!
 10. That was good. I like methods.
 11. Yes
 12. Very good, like it.
 13. Very good!
 14. Ok
 15. Somewhat effective, but sometimes it was just too much.
 16. Very effective because we are totally new to all procedures.
 17. Not very effective
 18. Nothing presented really stuck...sorry.
 19. Terrible.
 20. I liked the way the lab went very much. Better than any other lab I have taken.
 21. Very effective.
 22. OK
 23. I rather the descriptive content-based labs.
 24. Very effective in experience.

25. Not effective
26. Nah
27. I thought it was the other way around.
28. Good practice.
29. Good but still need more organization in lab to prevent time being wasted.
30. Liked having procedures instead of just looking at stuff.
31. Was not too clear.
32. ?
33. Method does not teach concepts, method should be secondary to learning the concepts of lab.
34. Good!

44. Emphasis on student's independence and original contributions

1. No comment (9 other responses identical to this)
2. Extremely effective
3. Not really
4. Very good, allows one to experiment and learn on own like professionals.
5. Effective
6. Good
7. Helpful
8. Fairly effective
9. Fair.
10. N/A
11. I enjoyed the independence and there was help if you needed in lab. (Flies could have been explained better.)
12. It was good working with a partner but being independent was cool.
13. No
14. Can be taxing. Explain what the goal is.
15. Very good!
16. Ok; I learned more by working independently at times.
17. Lab partner distribution should be done more systematically so one can get the help and cooperation that their current level in science demands.
18. Effective.
19. Not very good because we were ushered through all procedures.
20. Not very effective.
21. Good. My flippancy was appreciated though it was irrelevant.
22. Good
23. Excellent, I liked how the professors were very available during the lab session and they thoroughly explained things.
24. Helpful, but give structure to work within.
25. Independence is good if you know what it is you're supposed to do.
26. Effective
27. OK
28. Independence in lab is not good. You need a partner to get a 2nd opinion and so the lab can go faster.
29. Excellent!

30. I think this is a good idea but the students need some guidance.
31. None
32. But instructor should always know exactly what will work even if we are trying to figure it out. He should not be figuring it out at the same time.
33. Good; made me feel somewhat important.
34. Not necessary.
35. Somewhat good. It's good to express your ideas but it is not good to have to take 30-40 pages to do it in a report.
36. Good!

45. General "hands on" approach to the labs

1. Very much so concerning this lab.
2. Extremely effective
3. No comment
4. Effective
5. Great; allows for a great deal of learning.
6. Extremely effective
7. Good with great help from TA's.
8. Great
9. Very effective
10. Ver effective.
11. Enjoyed.
12. Excellent – that made the labs really fun.
13. Not too bad. I liked "hands on." I learn better that way! Basically the lab was great but the recitation needs some reorganization!
14. I like hands on experiments. It helps me to understand better.
15. Yes
16. Helpful for the future.
17. Very good! Overall, I enjoyed the lab.
18. Great.
19. No comment
20. Good
21. I liked this a lot.
22. Very effective because we were able to handle all of our own experiments.
23. Great Dr. Green
24. Extremely effective.
25. Very fun. I felt like I was doing something.
26. No comment.
27. OK
28. Excellent
29. Very very effective.
30. Good.
31. I love hands on. It helps to understand procedures.
32. Emphasize accuracy in measurement, etc. I like the way the general chem. labs are organized: students turn in notebooks, and small lab reports (purpose, procedure, and sources of error). They didn't make us pretend to write scientific reference books.

33. Very effective and gives students a feeling of involvement.
34. So-so
35. Teamwork says it all!
36. No comment
37. Excellent!
38. I feel I got a good lab experience and learned a lot.
39. No comment
40. Still need more direction to prevent so much wasted time. But instructor should always know exactly what will work even if we are trying to figure it out. He should not be figuring it out at the same time.
41. Good hands on; active lab is more interesting.
42. Good
43. Ok.
44. Best part of the lab. This is where the learning takes place.
45. Great!