

**BIOTECHNOLOGY AND GENETIC ENGINEERING
INSTRUCTOR EVALUATION FORM FOR STUDENT PRESENTATIONS**

PRESENTATION FEEDBACK (i.e., comments on the organization and clarity of the talk, the quality of the visual aids, the oral delivery/general "flow" of the talk, the scientific accuracy of the information presented, and whether sufficient background information was presented):

The information that you presented on multiple sclerosis was very good, but it was general. Unfortunately, you did not focus on or describe in any depth any particular genetic or biotechnology primary research paper relating to your topic. Such a focus on a primary research paper was a major goal of this assignment. That said, the presentation itself was very good and well organized. Your PowerPoint and video presentations were well received by the class, although you did move rather fast at times. I know it can be difficult, but try to relax and slow down a bit. Overall, a very good job with the talk, but the presentation lacked sufficient scientific/experimental detail.

The presentation on hemophilia and gene therapy was very interesting and informative. The major suggestions relating to improving your presentation relate to your visual aids and making eye contact with the audience. Some of the overheads were small, difficult to read, and contained too much detail. I would suggest: 1. use the enlarge function on the copy machine to magnify the figure, 2. delete any figure legends (the audience will simply not have time to read all that text and it becomes a distraction), and 3. remove some of the detail from the text-rich or "busy" overheads and present some of the detail as supplemental information orally. With regard to your oral delivery, you need make eye contact with the audience and engage them in your presentation. Related to this issue, you should not simply read the overhead to your audience. The audience can do the reading; you need to state the points in the overhead a different way or provide the audience with supplemental information relating to the overhead. Scientifically, I enjoyed the talk as it contained accurate and up-to-date research and related to some of the material presented in class. Overall, you did a very good job with this topic, but you can improve your presentations in the future by considering some of the points that I (and some of your classmates) raise here.

You chose and presented a novel topic with great enthusiasm and some humor. You were well versed on DNA nanotechnology and presented some excellent examples and applications of this technology. The talk flowed well and the PowerPoint presentation worked nicely with your talk, allowing for the presentation of some great color graphics. The only suggestions that I have for you are to try not to 1. read so much from your notes and 2. talk to the projection screen while describing projected images. Otherwise, this was an excellent job all around.

Your talk was well organized and clearly presented. The visual aids (i.e., Posters) which were used were good, but it would have been useful to have additional visual aids, particularly to present information relevant to the gene therapies for cystic fibrosis. You maintained good eye contact with the audience throughout your talk and kept them engaged in your topic. I also felt that you had a very good grasp of the topic and were able to handle questions well. Overall, a very good job, but it would have been beneficial to the audience (as mentioned by many of your classmates in their evaluations of your presentation) to have a few more visual aids.

The information that you presented on the Flavr Savr tomato was good and accurate, but very general. Unfortunately, you did not focus on or describe in any depth any particular genetic or biotechnology primary research paper relating to your topic. Such a focus on a primary research paper was a major goal of this assignment. A quick survey of biological abstracts using polygalacturonase and antisense finds 43 papers. One of the key papers is the 1988 PNAS paper (I printed the citation and abstract out below). In addition to providing scientific detail/experimental data, you could have used visual aids to supplement your presentation. Moreover, your presentation only lasted about 6 minutes, so you would have had plenty of time to get into the scientific details of this topic and go far beyond what was presented in class. That said, your oral delivery was clear, you presented some new information relating to history of the topic and the food additive issue, and you handled questions well.

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REDUCTION OF POLYGALACTURONASE ACTIVITY IN TOMATO FRUIT BY ANTISENSE RNA

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Reduction of **polygalacturonase** activity in tomato fruit by **antisense** RNA. Polygalacturonase [PG; poly(1,4-.alpha.-D-galacturonide) glycanhydrolase; EC 3.2.1.15] is expressed in tomato only during the ripening stage of fruit development. PG becomes abundant during ripening and has a major role in cell wall degradation and fruit softening. Tomato plants were transformed to produce **antisense** RNA from a gene construct containing the cauliflower mosaic virus 35S promoter and a full-length PG cDNA in reverse orientation. The construct was integrated into the tomato genome by Agrobacterium-mediated transformation. The constitutive synthesis of PG **antisense** RNA in transgenic plants resulted in a substantial reduction in the levels of PG mRNA and enzymatic activity in ripening fruit. The steady-state levels of PG **antisense** RNA in green fruit of transgenic plants were lower than the levels of

PG mRNA normally attained during ripening. However, analysis of transcription in isolated nuclei demonstrated that the **antisense** RNA construct was transcribed at a higher rate than the tomato PG gene(s). Analysis of fruit from transgenic plants demonstrated a reduction in PG mRNA and enzymatic activity of 70-90%. The reduction of PG activity did not prevent the accumulation of the red pigment lycopene.

The presentation was both interesting and informative and moved beyond what we covered already in class. Your oral delivery was good, but you need to slow down a bit. Try to relax; I know that you may be nervous, but remember that you know more about this topic than anyone else in the class. The overheads were used very effectively to illustrate your main points and experimental techniques. It would have been useful however to provide additional information on the nature of the probes that are used for this kind of analysis and to explain the reverse dot blotting procedure a little better (some of the general information dealing with PCR could have been omitted to allow time for this additional information). Otherwise the talk was clear, concise, and scientifically accurate.

The presentation was clear and well organized. The overheads were used effectively and illustrated the technical aspects (i.e., experimental design and data from primary research papers) of the topic. The major suggestions that I have for you (and which are echoed in your evaluations by your classmates) are to 1. slow down and 2. speak up. You clearly were very knowledgeable of the topic, but need to take your time and speak louder to get your information to the audience. Otherwise, I thought you did a great job.

This was an excellent topic and presentation. The talk was well organized and extremely clear, although you moved through portions of the talk rather quickly (a few of you classmates also made note of this in their evaluations). Try to slow down a bit, particularly when presenting more complex information/data. The PowerPoint presentation proved very effective and you showed and discussed technical/experimental data from primary research publications, which was one of the main goals of this assignment. I will also mention that your abstract was informative, but did not provide the year of the first cited reference and the volume numbers for the second and third cited references were omitted. In summary, you did a superb job on a very interesting topic.

Your presentation provided a good overview of using gene therapy to fight human brain tumors, but you did not focus on a particular primary research publication relating directly to this topic. A quick search of biological abstracts finds 50 publications related to human brain tumors and thymidine kinase (I printed out one of these 50 abstracts below) and yet the references cited in your abstract/presentation relate largely to obstetrics and gynecology rather than to neurology. While the PowerPoint presentation was well received, the oral presentation could have been markedly improved by implementing the following three suggestions. 1. Look at your audience; keep them engaged and interested in your talk, 2. Don't simply read your notes; this tends to put your audience off; instead use the notes simply to jog your memory in terms of what you want to cover and convey to your audience. 3. Slow down; I know you may be nervous, but you need to make a conscious effort to take your time and bring your audience along with you. I should also mention that these suggestions are not solely mine, they were suggested by the majority of your classmates who, like me, want you to improve the next time a presentation opportunity comes your way. Overall, you did a good job, but with room for improvement in the future.

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Treatment of progressive or recurrent pediatric malignant supratentorial **brain tumors** with herpes simplex virus **thymidine kinase** gene vector-producer cells followed by intravenous ganciclovir administration.

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Object: The outcome for children with recurrent malignant **brain tumors** is poor. The majority of patients die of progressive disease within months of relapse, and other therapeutic options are needed. The goal of this Phase I study was to evaluate the safety of in vivo suicide gene therapy in 12 children with recurrent, malignant, supratentorial **brain tumors**. Methods: After optimal repeated tumor resection, multiple injections of murine vector-producing cells shedding murine replication-defective retroviral vectors coding the herpes simplex virus **thymidine kinase** type 1 (HSV-Tk1) gene were made into the rim of the resection cavity. Fourteen days after the vector-producing cells were injected, ganciclovir was administered for 14 days. The retroviral vector that was used only integrated and expressed HSV-Tk1 in proliferating cells, which are killed after a series of metabolic events lead to cell death. The median age of the patients was 11 years (range 2-15 years). Treated **brain tumors** included seven malignant gliomas, two ependymomas, and three primitive neuroectodermal **tumors**. The patients were treated with one of three escalating dose concentrations of vector-producer cells. Four transient central nervous system adverse effects were considered possibly related to the vector-producing cells. In no child did permanent neurological worsening or ventricular irritation develop, and tests for replication-competent retroviruses yielded negative findings. Conclusions: This Phase I study demonstrates that in vivo gene therapy in which a replication-defective retroviral vector in murine vector-producing cells is delivered by **brain** injections can be performed with satisfactory safety in a select group of children with localized supratentorial **brain tumors**.

The presentation topic was extremely interesting and well organized. However, the portions of the talk, in particular the explanations of the technical/experimental data, were not entirely clear. In other words, a better job could have been done at outlining the experimental methodology and in explaining and interpreting the resulting data. Additional visual aids to aid in this endeavor to bring greater clarity would have been welcome. Several of your classmates in their evaluations also noted that your delivery was somewhat monotone and would have benefited by injecting some enthusiasm into your delivery. Overall, you did a good job with this topic and seemed to be in good command of the relevant literature.

You presented an interesting and exciting topic and drew your audience into your talk with your first slide. The general information that you conveyed to the audience on your topic was presented clearly and well received, although you need to watch your time limit and avoid reading directly from your notes in a few instances. It would have also been desirable to present more of the experimental detail, including an explanation of the probes used and the actual data obtained. Otherwise, the talk flowed well and the PowerPoint presentation served to nicely illustrate the main points of your talk. In summary, this was a good, solid presentation that clearly engaged the audience and would have benefited by presenting rather than just summarizing experimental data from primary research publications.

Your talk was very organized and clearly presented. You obviously did your homework on this subject and it came across in your presentation that you had command of the literature. I apologize for starting your talk at 11:50, but unfortunately you also ran long in your 23 minute talk. You could have omitted some of the material that we covered in class relating to your topic to reduce the time of your talk. The overheads complimented your talk well, but some of the overheads had too much information on them making them difficult to read; you need to emphasize just the major points on the overhead and present additional details orally as necessary. Again, I (as well as your classmates) were impressed with your command of the topic and your explanations of experimental methods and data from the primary literature (which was a major goal of this assignment). Obviously, it would have been useful to include the Mason review in your abstract, but it would have been useful to include some of the experimental detail in your abstract as well. In summary, this was one of the best presentations in the class; it was lucid, scientifically accurate, illustrated with experimental data, and engaging.

This was an informative and interesting presentation on the use bovine somatotropin in the dairy industry. While the presentation was good, it could have been improved in the following two ways. 1. Look at the audience more; engage them. 2. Take more time to explain the figures clearly and completely, particularly the more complicated ones such as the plasmid construction figure. Your audience and I enjoyed the video that supplemented your talk and certainly appreciated your practical, personal experience with dairy farming. The talk flowed well and was scientifically accurate. In summary, this was a very good presentation describing both the scientific and practical aspects of using injections of bovine somatotropin in dairy cows.

This was a novel and interesting presentation topic. The information that you presented on xenotransplantation was good, but it was general. Unfortunately, you did not focus on or describe in any depth any particular genetic or biotechnology primary research paper relating to your topic (i.e., you could have presented more scientific detail relating to the gene knockout and antisense work). The presentation itself flowed well and was well organized, but you need to make a conscious effort to look at your audience and not to read directly off of and to the projection screen. You also need to double check for misspellings on your overheads e.g., mintoring. Overall, a good job on a topic presented in our textbook, but not covered in class until now.

This presentation discussed MS and focused on the treatments available to individuals suffering from this disease. The talk was clear and well organized. Moreover, the PowerPoint presentation provided a professional touch to the talk. For the most part, you maintained good eye contact with the audience, but at times you lost the audience while reading details from your notes. It would have also been useful to present some of the scientific data (i.e., actual tables, figures, or graphs) found in the primary research papers which you cited, rather than just summarize the conclusions from these studies. The information that you did present appeared scientifically accurate, although without seeing actual data, one cannot be certain. Overall, this was a very good presentation that was well received by the class, but would have benefited by the inclusion of experimental data.

This was an informative, but broad based presentation on stem cells and the ethics involving their use. It would have been useful to focus on a particular primary research study in your talk, rather than surveying several studies in less detail. In that way you could have presented additional experimental detail and analysis. The PowerPoint presentation provided a professional touch and was well received. However, you need to speak up more and look at the audience during your talk, rather than reading off the projections screen. It is extremely important to keep your audience engaged in your talk. The talk flowed well and provided scientifically accurate information. Overall, this was a good job, but would have benefited by focusing on a particular study, speaking louder, and making/maintaining eye contact with your audience.

This was a well-organized and clear presentation on the use of magnetic cell separation technology. The PowerPoint presentation added a professional touch to the talk and illustrated the main points of the talk. While you did make eye contact and engage the audience for the most part, there were a few times where you read word for word off the projection screen and seemed to lose you audience. It would have also been useful to define CD34 cells and their importance at the beginning of your talk in order for your

audience to see where you are headed with this MACS technology. I base these two criticisms/suggestions not only on my own observations, but also on evaluations by your classmates. Otherwise, the talk flowed well and was scientifically accurate. Overall, this was an excellent presentation that allowed you to showcase your knowledge and personal experience in this interesting research area.

This was an extremely interesting and informative presentation that took us beyond what was covered in class and indeed focused on primary research papers. Overall, the talk was well organized and clear. The overheads nicely illustrated the main points of the talk, but a few of these overheads contained too much information and were consequently too small and "busy". It would have been useful to eliminate or orally summarize some of this data. Eliminating some of this data would have also allowed you to keep closer to the 15-minute timeframe, rather than 23 minutes. It would also be useful to look at your audience more during the talk; this will serve to further engage your audience and keep their interest in what you are saying. The time issue aside, the talk flowed well and was scientifically accurate. You are to be commended for really getting into, understanding, and presenting primary research data, which after all was a main goal of this assignment. Well done!

This was an interesting and informative presentation on roundup ready soybeans. In general, the talk was well organized and clear. It would have been useful to engage your audience more in your talk by establishing and maintaining eye contact with them as well as by speaking a little louder. I realize that you may be nervous, but remember that you are the expert on this topic and you should know more about it than anyone else in the room. The talk flowed well although it was a little long (i.e., 20 minutes) and included scientifically accurate data. The background information and Ti plasmid information was especially well done. I would suggest that you spell out (on the chalkboard or in an early overhead or in your abstract) the meaning of abbreviated terms used in your talk. Overall, this was a very good job and provided some interesting information about Monsanto and its current (questionable) business practices.

This was a novel and interesting presentation dealing with limb regeneration in vertebrates. The talk was well organized, but the clarity could have been improved by using overheads with larger type (i.e., use larger fonts or utilize the magnification function on the copy machine in making the overheads). Your presentation could have also been improved by looking at the audience and not reading directly off the projection screen. Indeed, it is important to initiate and maintain eye contact with your audience as this serves to engage your audience and keep them interested in what you are saying. Likewise, if you want to keep your audience interested, don't read from the screen; they should be able to read on their own, so either say your main points a different way or provide some additional detail or embellishments to the information projected on the screen. Otherwise, the talk flowed well and was scientifically accurate; although I would have suggested determining and listing (on an overhead or in your abstract) what each of the controlling genes (e.g., sonic hedgehog-incidentally I love that one) do with respect to limb development. In summary, you did a good job with a novel topic, but there was still room for improvement.

This presentation effectively covered the Human Genome Project and touched on the ethical issues surrounding it. The color overheads nicely supplemented the talk, but some of the typing was small and difficult to see clearly. Also, some of the overheads would have benefited from the inclusion of additional information (e.g., list the areas receiving funding in the pie chart). As you know, the FISH overhead was hardly worth showing, so either don't show it or use another overhead, perhaps one you draw yourself, to illustrate this method. Otherwise, the talk was well organized, clear, and scientifically accurate. Moreover, the talk flowed well and your knowledge of the topic was apparent. The video served as a well-received and relevant ending to the talk. Overall, this was a very good job on a broad topic.

This was an extremely interesting and novel topic. The talk was well organized but lacked a discussion of the scientific/experimental detail of this work; the presentation and discussion of this information would have made for a super talk. Moreover, you would have had time to add it to your talk, as your presentation was rather brief. You also need to speak up more, as it was hard for many in the audience to hear you. I realize part of this could relate to being nervous, but you have to remember you are the expert on this topic, at least with respect to those in your class, so be confident in your abilities to present this information. The PowerPoint presentation was effective and it was nice that you included some scientific detail in that one slide---but you never took time to describe or discuss anything on that slide, you simply flashed it on the screen. This relates to the issue I presented above concerning scientific/experimental detail. In summary, this was a good presentation on a novel topic, but it would have been improved greatly by getting into more of the experimental detail and by speaking louder.

This was a well-organized and clear talk about the benefits and concerns of using recombinant bovine somatotropin in dairy cows. Unfortunately, little scientific experimentation and data was presented from primary research publications; instead, this data was simply summarized. You also need to speak louder and look at the audience more. By maintaining eye contact with the audience, you will engage them in your talk and they will be more inclined to pay attention to what you are saying. The PowerPoint presentation was well received and professional, but you want to eliminate reading exactly the information listed on some of the slides. Instead, state the information in a different way or provide supplemental oral detail relating to the slide; the audience can read the slide for themselves. In summary, this was a good presentation that would have benefited by the inclusion of experiments and data from primary research papers and by speaking louder and engaging the audience more by maintaining eye contact.

This was an interesting and informative presentation that not only explained mammalian cloning methods, but also addressed the telomere issue related to this topic. The talk was well organized and clear, while the PowerPoint presentation provided a professional touch. I would suggest, however, that you look at (i.e., maintain eye contact with) your audience more and not read from your note cards. Addressing both of these issues will serve to engage your audience and keep them interested in what you are saying. These suggestions were also provided by many of your classmates in their evaluations of your talk. Otherwise, the talk flowed well and was scientifically accurate. While it was good to use the web for some of your references, it would have been useful to find, read, and cite additional key primary research articles to the exclusion of some of the web-base references. Overall, you did a very good job with the presentation and demonstrated a thorough knowledge of the subject matter.