Appendix A

Comments by Professor Randy Wayne at Faculty Senate Meeting

December 9, 1998

The history of science shows that the vast majority of advances in science have come from individuals or small groups (Bush, 1963; Alberts, 1985). Indeed Einstein suggested that refugee scientists should seek jobs as lighthouse-keepers, so that they may find the isolation necessary for scientific work. In an article entitled: "In praise of smallness&endash;how can we return to small science?" Erwin Chargaff (1980) wrote, "We all know that what is cannot be otherwise. The existence of anything weighs the scales most unfairly against everything else that could have been in its place but is not."

If this be true, then the way the Division of Biology was set up, weighed the scales most unfairly against everything else that could have been in its place but was not, and thus, in spite of the fact that a majority of students and faculty spoke in favor of maintaining the division, you sought to change it. Likewise, the structure you have set up by presidential proclamation will weigh the scales most unfairly against everything else that could have been in its place but will not be.

I would like to comment on an aspect that I believe will be diminished in what you have called "the post-division era." That is, academic freedom and the spirit of the independent investigator. Again, according to Chargaff, "Science is the application of reason, and mainly of logic, to the study of the phenomena of nature. Therefore, the most important scientific tool is the human brain. Each brain sits on its own head. Hence, the all-important unit in research is the individual scientist."

If the most important unit in research is the individual scientist, what is the value of centralization? It has been argued equally strongly by Socialists and Capitalists that: (1) Science exists to serve the material wants of human beings; and (2) a central authority, knowing the material wants of the community, could efficiently and quickly switch researchers to the most immediate problems of the day. In this way, overlap would be avoided, and trivial investigations would no longer take up time and money. However, the thinking of economists does not typically take into consideration support for the creative and original investigators, who, in the main, have discovered the phenomena necessary for technological progress. According to John Baker (1945): "The proper function of a research team is to work out the consequences after an independent worker or two or three scientific friends have opened a new line of investigation. There will be plenty of people who want to follow the new line. Indeed, one notices a strong tendency for scientists to ask, "What is being done?" They might as well ask frankly, "What is the fashion?" The original investigator on the contrary asks himself, "What is *not* being done?" The people who want to *follow*
a new line often do excellently in teams and they can be fitted satisfactorily into planned research. They have neither the wish nor the ability to think originally, though they are often talented, well equipped technically, and possessed of a great love of knowledge. If science is to flourish, however, encouragement must be given to people of independent spirit who want no master. The desire to know is widespread among men: the desire to know specifically that which is not known is on the contrary very rare."

Your decision will have a negative effect on the current and future biology students and faculty for two reasons. Firstly you have sent a very clear and resounding message that the President of Cornell University has a better grasp of "what is biology?" than do the majority of the one hundred faculty members in the Division. This lack of respect is extremely demoralizing to the faculty, and I am sure you are aware that faculty morale has plummeted ever since the college and university administrations started to micro-manage biology. Given that each faculty member pursues his or her difficult, demanding, and underpaid profession to a large extent because we enjoy what we do (Gratzer, 1998); a lowered morale will have an adverse effect on our ability to teach, advise and do research.

Secondly, your decision will have a negative effect on academic freedom; and in destroying the environment where the brain can function creatively to discover new phenomena and laws.

I believe that the transference of power from the faculty in the Division to Day Hall sends a chilling message to all faculty members in the Division of Biology. That is, the first question that must be asked when pursuing biological research will no longer be, "How can we better understand the biological basis of life?", but "Will the proposed research bring in a *substantial*
amount of money to Cornell?" That is, Day Hall will support work on biological projects that have short term economic gains&endash;that is sell buyology spelled: S_E_L_L-B_U_Y-ology. This will send a message to faculty and by example to our students--not to be independent thinkers, but to work on projects whose results are certain enough to garner large monetary rewards. After all, according to Albert Szent-Györgyi (1972), "A discovery must be, by definition, at variance with existing knowledge." And who is going to throw large sums of money at something that is at variance with existing knowledge? To paraphrase Szent-Györgyi (1974), the current policy may do its greatest harm by making faculty and students avoid problems that do not have short-term monetary benefits. We will be, according to Chargaff (1978), a faculty of "lost souls teaching the young to lose theirs."

While you could assert that the newly erected structure makes it easier for scientists to ask for aid and support of new ventures, I believe that the current administration at Cornell has demonstrated beyond a reasonable doubt that it is far more concerned with the short term value biology has in making money for Cornell than the long term value biology has in discovering new and unexpected knowledge. I lament the shift from a relatively democratic form of government in biology to a more totalitarian form. I am reminded of the fact that when biological teaching and research have been made to conform to the philosophy of a totalitarian state, the outcome has been negative (Sax, 1944; Baker, 1945; Lysenko, 1946,1948,1954).

When asked "What is science?" Richard Feynman (1969) answered that "science is the belief in the ignorance of experts." We must encourage independent thinking. One of the real values of science to American Society is its method of encouraging independent thinkers. According to Feynman (1955), "It is our responsibility as scientists, knowing…the great progress that is the fruit of freedom of thought, to proclaim the value of this freedom, to teach how doubt is not to be feared but welcomed, and discussed, and to demand this freedom as our duty to all coming generations."

Science needs freedom….

In order to alleviate my anxiety that you are only looking at biology as a cash cow, and not as an intellectually satisfying and important enterprise, which incidentally provides the knowledge for technological advances, perhaps you can describe to me one or two areas of biological research that currently are not well funded because they are at variance with existing knowledge, yet in your opinion have potential significance for increasing our basic understanding of life, and long term potential for satisfying the material needs of human beings.

If there be no answer, follow up with this statement: When asked what ideal qualities should be sought in the new director of the Institute for Advanced Studies, Einstein answered, "Ah, that I can do easily. You should look for a very quiet man who will not disturb people who are trying to think" (Bourne, 1982).

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