

THE LIFE SCIENCES, BIOSECURITY AND DUAL-USE RESEARCH

A ROLE PLAY OF AN INTERACTIVE SEMINAR

Instructions for Role # 1: UNDERGRADUATE MICROBIOLOGY STUDENT

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Undergraduate Student in Microbiology “Science will continue to improve the world.”

You are an undergraduate student in microbiology. You first became interested in the field of microbiology because your uncle died of AIDS. You plan on doing research on retroviruses. You believe strongly in the ability of the health sciences to improve the quality of life. You believe governments have the responsibility to provide funding for research into the most common diseases and the lines of research that will most likely lead to saving and prolonging life. You have disdain for ambitious scientists who seem to care more about money and personal glory than benefiting humankind. You don't know how to evaluate the bioterrorist threat, but you certainly think scientists should refrain from conducting or publishing work that might be used by bioterrorists. You are a keen member of the University debating society and not shy about pointing out loose arguments.

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Instructions for Role # 2 GRADUATE STUDENT IN SYNTHETIC BIOLOGY

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Graduate Student in Synthetic Biology – “We need to do more and run faster to stay ahead of any threats – time is of the essence.”

You are working on a Ph.D. in synthetic biology after receiving highest honors in your first degree at Columbia University in New York City in 2002. You have been attracted to the field because you enjoy asking the important questions. You feel that intellectual discussions are most productive during serious debate where the participants do not shy away from taking on controversial topics or expressing their views forcefully. You learn the most when you confront the other people in your lab regardless of their position. You think your colleagues respect you for this. You think the anthrax letters sent in 2001 were but the harbinger of a major new threat of bioterrorism. You are a highly patriotic person. You believe that in order to counteract that threat responsible scientists must take the threat seriously and explore all lines of feasible defensive research.

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Instructions for Role # 3: 1ST YEAR POST DOC IN MOLECULAR BIOLOGY

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Role # 3: 1st Year Post Doc “Every minute out of the lab is a minute wasted.”

You are a post doc in molecular biology. Your Ph.D. dissertation broke new ground on protein-protein interactions. You entered the field of molecular biology because you think it is the most exciting field of science and the one in which the most important discoveries will be made in the next 3 decades as long as there is sufficient funding. You plan to be a part of those discoveries. You are very ambitious and work very hard. In your view there is a lot of ill-informed criticism of science from people who should know better. You do not mind putting such people straight about the facts. You are not particularly interested in the commercial applications of your field, it is thrill of discovery that motivates you. You have few interests outside the lab and look forward someday to being renowned in your field. You know that will require a steady stream of funding and are willing to undertake research that is personally less appealing to keep the money flowing.

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Instructions for Role # 4: FACULTY SCIENTIST IN CELL BIOLOGY

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Role # 4: Faculty scientist in cell biology “If I am not promoted I will be out of a job.”

You have been on the faculty of a major university for 4 years. You received a Ph.D. in cell biology and your work focuses on bacterial cellular metabolism. You have done very productive work with others in your lab. Nevertheless you feel under a great deal of pressure to maintain or increase your publications in order to be promoted out of your probationary period. You run a small lab that employs two postdocs and several graduate students. One of your biggest problems is the amount of paperwork that you have to do. You feel this is a real burden and that much of it is not really necessary. You seek funding that allows you to work on the projects most important to you, but also keep an eye on funding trends and understand the need to tailor grant applications to the latest funding priorities. You feel you must be supportive of the work of all the scientists in your department.

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Instructions for Role # 5 EMINENT PROFESSOR OF BIOLOGY

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Role # 5 Eminent Professor of Biology “It is the scientists’ job to do the science well, and society’s job to take care of its implications”

You have been a scientist at a leading biology department for 40 years and you have been a member of your national scientific academy for more than 20 years. Your research has made important discoveries on the structure and function of bacterial toxins. You have formally retired but are still active in some areas of research and supervision. You regret the gradual politicization of science that has taken place over the course of your career. You are a principled person who doesn’t suffer fools gladly, but you are an outgoing person who enjoys a good debate. While you recognize that science could be misused, you think the role of scientists is to do and publish good science and any attempt to interfere with the openness of science puts at risk all the benefits that science can bring. You think that any restrictions on research are likely to do much more harm than good.

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Instructions for Role # 6 GREENPEACE ENVIRONMENTAL SCIENTIST

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Role # 6 Greenpeace environmental scientist “Good science requires attention to what is good for society.”

You have a Ph.D. in environmental science and have worked for Greenpeace for 3 years. You have done work that investigates the environmental impact of genetically modified organisms. You have many friends working in the life sciences and you are sympathetic to their concerns, but you believe all scientists have a fundamental responsibility to understand and prevent to the greatest extent possible any negative consequences of their research. You think that applies even if it means foregoing publication, abandoning a productive line of research, or declining to pursue certain earmarked funding. Your style is to confront convention, asking probing questions, albeit in a more polite way than many of your activist colleagues. You are genuinely interested in why scientists feel the way they do and frequently ask them the reasons behind their views.

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Instructions for Role # 7 GOVERNMENT MICROBIOLOGIST

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Role # 7 Government health scientist “If you knew what I know you’d take the threat much more seriously.”

You have a M.D and a Ph.D. in microbiology. You work for a government lab doing research on the development of radically new types of vaccines. Your lab is funded to both to minimize the possibility that rogue governments or a well organized terrorist group like al Qaeda could carry out a biological weapons attack in your country and to mitigate the consequences of an attack should one occur. You believe that secrecy in some security related research is very important in preventing terrorists from acquiring the necessary scientific expertise to mount a large scale attack. Although there are some restrictions on what you can say in public you always take care to explain your point of view as fully as possible.

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Instructions for Role # 8 SCIENTIFIC REPORTER

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Role # 8 Scientific reporter “The public has a right to know.”

You have two Masters degrees, one in endocrinology, the other in journalism. You write regular newspaper columns and longer magazine length articles on the impact of biological discoveries. You love biology and would like more people to understand the implications of new findings. You wrote several pieces about the anthrax attacks in the United States and are reasonably convinced that someone who worked in or had access to a US government lab was behind the attacks. You believe the perpetrator of those attacks might have been apprehended if there was less secrecy surrounding biodefense activities. You feel that secrecy is often a shield that government scientists hide behind to conduct what you consider very dangerous research. You think there should be better oversight of biological research and are interested in probing the thinking behind scientists on this issue. As a reporter you rarely state your own views, instead you like to ask probing questions of scientists, to get them to better understand the implications of their work, and to better communicate their concerns to your readers. You are especially interested in the reasons behind their views.

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Instructions for Role # 9 PUBLIC HEALTH OFFICIAL

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Role # 9 Public health official – “I got into research to prevent so many people a year dying from TB.”

You are a Ph.D. epidemiologist working for the state specializing in combating tuberculosis. You also have a Masters degree in Public Health and are dedicated to improving the health of citizens in your region. You are not convinced that there is a major threat of bioterrorism. In any case you think bioterrorism pales in significance when compared with pressing infectious disease threats like AIDS, malaria, TB. Your department has taken a reduction in staff due to lack of funds. You think the quality public health service in the country as a whole has deteriorated at an alarming rate and is in desperate need of new levels and sources of funding in order to address these and other public health needs such as child nutrition, diabetes etc.

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Instructions for Role # 10 NATIONAL POLICE OFFICIAL

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Role # 10 National police official – “I don’t understand all the science, but I am the one that has to implement the law and it is my responsibility to protect the public.”

After receiving a Master’s degree in Public Administration you entered the police service in 1999 on an accelerated promotion program. After the passage of new anti-terrorism legislation your responsibility has been to ensure its effective implementation specifically those portions of the law that address the security of pathogens and laboratories. You are alarmed at what you perceive to be the lack of concern in scientific circles about the modern reality that we are living in post 9/11. If any breach of the new law takes place in your area of responsibility you will be held accountable and feel responsible. You have a mission to convince scientists that bioterrorism is a serious threat and one that requires their cooperation in order to avert disaster. You are a confident outspoken person well able to put forward and defend your views in any company.

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Instructions for Role # 11 SENIOR SCIENTIST IN MOLECULAR BIOLOGY

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Role # 11 Senior scientist – “I see where you’re going with your argument, but it is complicated...on the one hand... and on the other hand....”

You are an outstanding molecular biologist and an excellent administrator. You run a lab that employs several other professors, post docs and graduate students. You are able to secure a substantial amount of funding for your work from government institutions. You also understand the role of prestige, reputation and relationships with funders to secure grants. You spend a significant portion of your time talking to government officials about the need to continue to support basic research in the life sciences. You know how to pitch arguments to get what you want. You have recently been successful in securing government funding for a BL 3 lab. You are pragmatic and have little time for people who see the world in black and white terms. You are proud of the success that you and your lab have achieved and are dedicated to continuing that success.

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Instructions for Role #12 UNIVERSITY PUBLIC RELATIONS OFFICER

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Role 12 University public relations officer “We have to get the good news out to keep the money flowing in.”

You are in charge of the Public Relations Department reporting to the head of the University. You trained originally as a scientist, but you then held a number of increasingly important public relations positions. You have a specific remit to concentrate on making sure that the University’s research work is properly recognized nationally in order to enhance the University’s reputation and increase its chances of obtaining the very large scale grants required to finance modern life science research. You keep a careful watch on successful research in the University and have excellent media contacts from your previous jobs that you use to ensure publicity for success.

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Instructions for Role #13 A REPRESENTATIVE FROM THE BIOTECHNOLOGY INDUSTRY

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Role 13 A Representative from the biotechnology industry “Nothing should inhibit our research for promising medicines and treatments for disease.”

You are a research scientist for a small biotechnology firm. You would rather be in the lab than at this seminar that supposedly deals with dual-use research. People just don't understand the last thing the biotech industry would be involved in is any research related to weapons. You think the biotech business is in the business of producing life-saving and life-enhancing medicines and treatments. The scientists who work for government and academia don't seem to understand that scientists in the private sector invest many, years and enormous sums of money in developing these products. They seem to think all you care about money! But they don't seem to realize that the profit incentive also means that the private sector is not interested in weapons applications of its research. The biotech industry also values its reputation and if it were known that a biotech company was engaged in weapons related research it could definitely harm the good name of that company. The trade associations and organizations that represent private industry are in the best position to provide any oversight, but others must realize that we need to protect our proprietary confidential information. You intend to be very vocal in getting the other people present at this meeting to understand your point of view.

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Instructions for Role #14 JOHN Q. PUBLIC, A CONCERNED CITIZEN

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Role 14 John Q. Public, A Concerned Citizen “I don’t want too much scientific and technological information available to potential terrorists.”

You are a neighbor of the scientist who is conducting today’s seminar. She invited you to attend and told you to participate as much as you would like. She thinks the other participants will really benefit from hearing your point of view. Even though you work as an engineer at a software company you are interested in the biological sciences and keep up with popular scientific magazines. You were very worried during the anthrax attacks in the United States in 2001. They still don’t know who was responsible! Not only that, if the letters had not warned people to take antibiotics many more people would likely have died. You realize that many scientists do not like the idea of having someone in the government look over their shoulders, but you don’t know who else could be responsible to provide appropriate oversight. After all you don’t want to make the task of producing biological weapons any easier for terrorists. You think that some scientists are rather prima donnas about their work. We all have to cooperate with measures that lessen the terrorist threat. It may be an inconvenience, but it is better than being the victim of a terrorist attack.

In order to help generate the discussion you should try to respond to the presenter’s questions first from the point of view of the character you have been given. However, as the idea is to review a wide range of opinions you can also introduce views that your character does not hold. For example, your character might say ‘I think this, but I know others think that.’ If you wish you can also say ‘My character would say this, but personally I disagree.’

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Instructions for Role #15 JANE Q. PUBLIC, A CONCERNED CITIZEN

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Role 15 Jane Q. Public, A Concerned Citizen “This hysteria over bioterrorism has got to stop.”

You are a neighbor of the scientist who is conducting today’s seminar. She invited you to attend and told you to participate as much as you would like. She thinks the other participants will really benefit from hearing your point of view. Even though you work as an engineer at a software company you are interested in the biological sciences and keep up with popular scientific magazines. You followed the investigation of the anthrax attacks in the popular press and note that the source of the anthrax was probably a US government laboratory. You also think it is significant that there have not been any new bioterrorist attacks in the years since 2001, nor any copycats. You think that the US government has its priorities all wrong. It should be funding stem cell research to a much greater extent and worry less about biodefense. Research into naturally occurring diseases needs more funding. You think some politicians use terrorism as a scare tactic for political gain. More innocent people have died in this so-called “war on terrorism” than were killed by the terrorists on 9/11. The people behind those attacks should have been hunted down and tried like the criminals that they are. You resent that your patriotism has been called into question when you have criticized the government. You intend to make your views known in this seminar.

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Instructions for Role #16 STUDENT IN FORENSIC SCIENCE

You are about to take part in a role playing exercise. The exercise is designed to generate a lively and informative discussion of opinions about the potential malign use of biological research. The main objective of the exercise is for participants to gain a better understanding of different attitudes regarding publication, funding and oversight of biological research, particularly why the different views are held and the implications of the different positions.

You have been assigned a role in the exercise. The roles are based on composites of participants in seminars carried out recently around the world. When the role play begins the presenter will show a series of Powerpoint slides and ask questions about the potential misuse of biological research and how that might be minimized.

Role 16 Student in forensic science “Better intelligence is the way to defeat terrorism.”

You are studying forensic science and hope to have a career in you country’s elite intelligence service. You take the risk of terrorism, including bioterrorism seriously, but are also concerned about the use of terrorism as a political scare tactic. You want to use the skills you are learning to try to track down terrorists and other criminals. You would love to be able to be the person to gather the evidence that would put the 2001 anthrax attacker behind bars. You worry about possible leaks from government biological programs to terrorists. You also have greatly benefited by the openness of academic laboratories and worry that government oversight of academia would put too many restrictions on good scientists and would not stop the bad ones. Malevolent scientists are much more likely, from your point of view to be working on their own or under the guise of government programs. Governments should do a better job of overseeing their own research and development before they try to restrict legitimate academic research.

In order to help generate the discussion you should try to respond to the presenter’s questions first from the point of view of the character you have been given. However, as the idea is to review a wide range of opinions you can also introduce views that your character does not hold. For example, your character might say ‘I think this, but I know others think that.’ If you wish you can also say ‘My character would say this, but personally I disagree.’

Following the role play there will be a debriefing discussion where you can present your personal views as fully as you wish and also reflect on the other opinions you have heard.