James Sherley is an associate Professor of Biological Engineering at MIT. At the time of this interview he is currently undertaking a hunger strike to protest the status of his tenure, which he disputes, is prejudiced by racism. This interview is taking place on the second day of his hunger strike on February 6th. I arrive in his office, which is populated by reporters waiting telephone calls from the BBC and requests for interviews on Democracy Now. Professor Sherley invites me to his office and I proceed to link Rivera's mural with his research in stem cell biology.

Interview with Professor of Biological Engineering, James Sherley, MIT Biological Engineering, February 6th, 2007

BMW: Can you tell me about your research here at MIT? Can you explain your work in adult stem cell biology towards advances in cell and tissue engineering, gene therapy, cancer diagnostics, cancer treatment, and toxicology?

Prof. Sherley: It turns out that our research touches on all of those, I think maybe 5 topics and I'll try to give a brief explanation for why that's true. Our work focuses on working on some major problems in stem cell biology. These are the cells that are responsible for generating adult tissues. They are rare, hard isolate, difficult to grow. So we are working on identifying them, developing methods to expand them in large numbers and by having them in large numbers we can study their properties and functions. Those properties are relevant to many things in tissue biology. Adult stem cells are thought to be the primary cell in human tissues that are transformed to become cancer cells. In toxicology, for instances, things like chemotherapy, stems cells are thought to be the primary cell in human tissues that become transformed to form human tumors. So they are relevant to cancer biology. There are cells that are often injured by chemotherapy agents that lead to the toxicities of chemotherapy and therefore they are important targets for toxicology that lead to diseases like cancer, because they are responsible for renewing the body there viability is relevant to processes like ageing. Another thing in terms or gene therapy. One of the important needs in gene therapy is the cell that you can deliver the genes to the person in, and you need genes cells to have a long life, and that give rise to other cells that can express the gene's and that's what adult stem cells do so that's what makes adult stem cells one of the main targets of cells that have been sought after for the purposes of gene therapy.

The first one is that this is basic biology. This understanding how cells work and stem cells are a pretty special type of cell in the body and understanding how stems cells work and how they function we learn something about ourselves. The ultimate stem cell if you think about it in the body are the stem cells that are responsible for producing new human beings, are the germ cells the gametes and again they a type of stem cell biology that by understanding them we can learn things about ourselves. Now one of the things that science hopes to do is to, especially science that goes onto engineering technology is to improve the quality of human life. One of the things that we al recognize is that we suffer from diseases and we suffer from both genetic diseases and also infectious diseases and we suffer from the changes that happen to the body over time which can lead to debilitating diseases. Since adult stem cells are responsible for the production and repair of tissues they might be useful for treating tissues that are diseased. So one of our goals is to be able to enable that type of cellular therapy by producing methods for expanding adult stem cells in large numbers. If you are going to use adult stem cells for treatments you are need to have them in large numbers for two reasons, one to study them to learn how to do new therapies, develop new therapies and you also need them for those therapies.

BMW: In his mural Rivera shows man in the possession of science and technology that will lead to a new and more ethical future. How do you see your work in stem cell research as a contribution to a more ethical future? How do you see your work as a contribution for future society?

Prof. Sherley: In terms of how this research can lead to a more ethical world. This is the first time I've thought about that question and I think because we are right now at a time where there is a divide between two types of stem cells, embryonic stem cells and adult stem cells. Embryonic stem cells require that human embryos be destroyed and human embryos they are living human beings and their destruction is unethical. Adult stem cell biology provides an alternative to that so even thought they are in a same general field of stem cell biology adult stem cells give us an opportunity to have those desires, cellular therapies without the ethical dilemma of what to do about embryos used for embryonic stem cell research. In terms of going forward I think as we delve more and more into research that involves human subjects we have to think more and more and be more creative about how to maintain ethically responsible research.

BMW: The prominent central segment of the mural shows greatly magnified germs, genetic modification, and the microbes of various diseases in vivid colors that suck energy from living organisms. How might this be an analogy for fear and confusion over stem cell research that is connected with human reproductive cloning?

Prof. Sherley: It would be interesting to think about if this mural were redone and the organisms were in fact embryos and we can see how there is a war going on around embryos now. It's not a physical war with guns but it is a war of ethics and one of the features of that war is human life. Embryonic stem cell debate is in fact derivative of the abortion debate. It's an unresolved conflict in our country and so, if you were going to replace that here, you could have two issues here. The people who are fighting about it, who tend to be well off, and the people who are being effected by it who tend to be poor and so the embryonic stem cell issue has this feature too, because one of the concerns is that you need to have egg donors, women, to have this type of research. One of the big concerns is that women who are poor will be exploited to learn things to develop new technologies that will be used primarily by people that can afford these technologies who have not given up their life, energy, for the development of those technologies. So there maybe some parallels there, in terms of what's displayed.

We shouldn't kill innocent human beings no matter what form they are in. At their earliest development right out of the egg and the sperm form or when they are fetuses or when they are newborns, or when they're adults. This is something that our society shouldn't do and the President has really stood firm on that.