

Statement of Academic Goals – Jason Scott Robert

I am a bioethicist and philosopher of biology. I earned my PhD in Philosophy in 2000 from McMaster University, and had taught for three years in the Philosophy Department at Dalhousie, before being appointed to ASU's School of Life Sciences (SoLS) in August 2004. In leaving Dalhousie where I had been assured of early tenure and strong research support, I was attracted to the rare opportunity to be based in a life sciences unit, rather than a philosophy department, in order to have the potential for a well-informed and real-time impact on the development of research in life science and biotechnology. I have been extremely happy with the result. My primary ASU affiliations are with the Human Dimensions of Biology faculty group in SoLS, and the Center for Biology and Society, where I teach in the *Bioethics, Policy, and Law* and *Biology and Society* programs. I am also affiliated with the Consortium for Science, Policy, and Outcomes and have benefited from the support of the Institute of Humanities Research.

My usual workload distribution is 40% research, 40% teaching, and 20% service. As of Fall 2006, 40% of my time has been bought out by the new University of Arizona College of Medicine – Phoenix in partnership with Arizona State University. The 40% appointment represents 30% teaching and 10% service, and my primary responsibility has been the development and delivery of an innovative, integrative course running throughout the four years of the medical school curriculum (described in my Statement of Teaching Activities).

In my research, teaching, and community outreach work, I begin with the assumption that knowledge of biology is integral to the ethical assessment of biology and biomedicine. But my focus is as much on biology as a process, as a powerful though not infallible way of knowing the world, as it is on biological facts. Accordingly, the history and philosophy of biology – the critical study of biology, its theories, concepts, methods, and meanings, over time – is an indispensable tool for any adequate bioethics. Indeed, I undertook to become a philosopher of biology in order to become a better bioethicist. The philosophy of biology, when undertaken properly, involves deep conceptual and epistemological engagement with biology and with biologists, and with the history of biology, as well. The philosophy of biology, thus construed, serves as a cornerstone of my approach to bioethics. Even though we don't derive prescriptions from the philosophy of science – any more than from science itself – sound philosophical engagement with science sharpens one's critical senses and affords exquisite opportunities to conceive, frame, and begin to address ethical issues in bioscience and biomedicine. Moreover, and more importantly, perhaps, from the perspective of impact, the philosophy of biology (properly undertaken) offers the prospect of meaningful discourse with biologists and clinicians: as sure a way as any to influence their practice.

Research

My research is multifaceted, spanning philosophy of science, bioethics, and science policy as these fields intersect with each other and with specific domains of biological research. Indeed, as noted, I became a philosopher of science in order to contribute to bioethics, by adding depth to bioethical debates about science. My research program focuses primarily on questions of justification: *How do scientists justify their research? How have they in the past? How should they in the future?* These questions are very important in general, but especially in cases where the research is perceived as controversial – perhaps because unorthodox, esoteric, morally worrisome, very expensive, or otherwise politically fraught.

Until I arrived at ASU, I applied these questions in the domains of genetics, genomics, and developmental biology; while I continue to work on these topics, I am now focusing more

narrowly on their intersection with brain science. In this domain, my research program addresses scientific, ethical, and policy aspects of neuroscience. I am interested in fundamental neuroscience as an enabler of appropriate clinical translation, and in converging technologies for brain repair, with a primary focus on stem cell research, genetics and genomics, and the development of implantable neural prosthetics. The conditions of special interest to me are spinal cord injury, Parkinson's Disease, schizophrenia, and autism. The development, clinical evaluation, and, where appropriate, clinical integration of emerging technologies for brain repair requires ethical and social evaluation and oversight. Whether these technologies will have the promised impact on health remains to be seen, but ethical stewardship based in collaboration between bioscientists, bioengineers, clinicians, and bioethicists may help to realize desirable social outcomes at minimal moral cost.

Publications

At present, my CV includes 30 (15) peer-reviewed journal articles, 7 (6) peer-reviewed book chapters, 3 (3) peer-reviewed encyclopedia entries, 12 (8) commentaries and editorials, 8 (5) book reviews, 1 (1) published book, and 1 (1) new book under contract. (*The numeral in parentheses indicates the number of publications since my appointment at ASU; I have thus published 39 contributions since my appointment at ASU, one of which is a major book and not including the book currently in process and under contract.*) The majority of these publications are sole-authored, although I am also engaged in significant collaborations. Additionally, I have given roughly 100 peer-reviewed and invited presentations over the past 10 years, with more than one-third of these since my appointment at ASU in 2004.

My first book, *Embryology, Epigenesis, and Evolution: Taking Development Seriously* (Cambridge University Press, 2004), was aimed primarily at an academic audience of philosophers and biologists. Originally published shortly after my recruitment to ASU in 2004, it was reissued in paperback due to solid sales of the hardcover. The book has been favourably reviewed in many places, including *Science*, *Trends in Ecology and Evolution*, *Development*, *Quarterly Review of Biology*, *Biology and Philosophy*, *Philosophy of Science*, *History and Philosophy of the Life Sciences*, and *Philosophy in Review*. I am now engaged in a new book project, aimed more at an educated lay audience; it is under contract with OneWorld Publishers (Oxford UK). Tentatively entitled *Chimeras, Cyborgs, and the Moral Limits of Science*, the book aims to make my bioethics and policy scholarship more widely available to an interested public audience.

Funding

In the four years before coming to ASU and re-directing my research toward neuroscience, I held approximately \$650,000 in grant funding from the Canadian Institutes of Health Research and the Canadian Stem Cell Network. One outcome was the establishment of collaborative research networks on genetics, genomics, and developmental biology that seeded my current efforts at ASU. I have now begun to establish a track record in applying for and attracting extramural research funding in the US. For instance:

- In February 2007, I received a one-year grant (\$48,005) from The James S. McDonnell Foundation on "Comparative neurobiology, model organisms, and understanding the human brain", focusing on conceptual, methodological, and ethical aspects of the choice of animal models in translational neurobiology.

- Also in February 2007, in collaboration with Gary Marchant (College of Law) and scientists at the Translational Genomics Research Institute (TGen), I submitted a collaborative grant on ethical, legal, and clinical aspects of autism genomics research to the National Institute of Human Genome Research (amount requested: \$263,233). The grant was not funded, but we will resubmit in February 2008 based on feedback from reviewers. Additionally, Gary Marchant and I are submitted a grant to NIH in October 2007 on ethical and legal issues in clinical trials for prevention of Alzheimer's Disease, with collaborators from Mayo Clinic Scottsdale, the Banner Alzheimer's Institute, and Boston University.
- I was a finalist in 2007 for the Greenwall Faculty Scholars Program, a career development award for junior scholars in bioethics.
- I am also senior personnel on the \$6-million National Science Foundation-funded Center for Nanotechnology and Society at ASU, where I lead the thematic research cluster on Human Identity, Enhancement, and Biology. Our focus is the development of nano-enabled neural technologies, including neural prosthetics and drug delivery vehicles.
- Moreover, I am senior personnel for our National Science Foundation-funded Embryo Project in the Center for Biology and Society, and an international collaborator on a neuro-ethics New Emerging Team funded by the Canadian Institutes of Health Research.

In the next two years, I expect to see ongoing collaborations with Steve Helms Tillery (Harrington Department of Bioengineering), Clark Miller (Department of Political Science; Consortium for Science, Policy, and Outcomes), Ira Bennett (Consortium for Science, Policy, and Outcomes) and others, develop into a suite of research programs to be potentially funded by the National Science Foundation, the National Institutes of Health, the James S. McDonnell Foundation, and/or the Greenwall Foundation. Through these and other efforts, I expect at least to maintain my current level of research productivity (articles, books, and presentations).

Teaching

Since my appointment 3 years ago (Fall 2004), I have taught or co-taught 14 courses (mostly undergraduate), helped to team-teach 2 courses (BIO 311, BIO 351), and guest lectured many times on bioethics and society. In 2006-2007, I developed a Qualitative Research Methods course for Biology and Society students, to help improve the rigor of student theses and senior projects. The previous year, with the assistance of the Center for Biology and Society coordinator Felicity Snyder, I developed a popular Bioethics in Film course that I taught four times, and have now turned over to colleagues. And also in 2005, through a competitive process, I was selected to develop and lead the first ever College of Liberal Arts and Sciences (CLAS) Learning Community for sophomore and advanced students, which was offered in Fall 2005 and Fall 2006. (See supplemental teaching materials for further information.)

Since my appointment at ASU, I have been nominated for two teaching awards (the Centennial Professorship of the Associated Students of ASU, and the CLAS Dean's Distinguished Teaching Award) and have received the highest possible annual evaluation each year for teaching.

Additionally, I am heavily involved in supervising and mentoring, and am currently supervising 6 undergraduates, 4 Masters, and 3 PhD students.

For the foreseeable future, I am primarily tasked with further developing the content of the integrative, longitudinal Learning Community for the medical school. This is an interdisciplinary course that will run for the full four years of the medical students' education. The class will meet frequently in Years MS1 and MS2, and then monthly in MS3 and MS4. It

will serve as a substrate for the students' scholarly research projects (including grounding in research methods, responsible conduct of research, health systems, health ethics and policy, and medical humanities), but also as a site of integration across the medical school curriculum. This course represents a significant component of the novel curriculum we are developing at the medical school, both in terms of time allotted and importance to our overall learning goals.

Additionally, I will look forward to reviewing and revising (or helping to revise) the foundational courses of the *Bioethics, Policy, and Law* and *Bioethics and Society* programs in the Center for Biology and Society in SoLS, and to helping build a new PhD program in Human and Social Dimensions of Science and Technology, in order to continue to recruit excellent students.

Outreach and service

Community outreach: My research, teaching, and community outreach work are of a piece. It is important to me to try out new ideas with audiences of diverse background, and to participate in education and engagement activities in person and through media interviews and activities. I have had the opportunity to grant many interviews for local, national, and international news media (print, radio, and television, such as the CBS Evening News and the Australian Broadcasting Corporation), and also to give talks at community colleges and to community groups in both the US and Canada. I am a regular feature in Phoenix's community-based *Spirit of the Senses* salon series (5 presentations over 1.5 years, focused on a 'tour of the future'), and will look forward to many more community activities in the future.

University service: I am a member of the Advisory Council of the ASU Institute for Humanities Research, and of the Executive Committee of Human and Social Dimensions of Science and Technology PhD Program currently under development. I have served on the SoLS Research and Training Initiatives Committee (2004-2006), the neuroscience search committee (2005-2006), and the visiting speakers committee in the Human Dimensions of Biology faculty group and Center for Biology and Society (2004-2006). I am now also chair for the Arizona Consortium for Medicine, Society, and Values (in collaboration with the Mayo Clinic, Translational Genomics Research Institute, University of Arizona, and the Flinn Foundation), and look forward to continuing our public activities. Additionally, as the medical school grows, I hope to help establish an Office of Health and Society jointly between UA and ASU, which would be the home for the Learning Community and other core elements of the medical school curriculum – especially health policy, health systems, health psychology, and medical humanities and ethics.

Professional service: In addition to being a manuscript reviewer for a half-dozen scholarly presses and more than a dozen scholarly journals, I serve as an Editorial Advisory Board Member for *Biological Theory*, and as a co-editor for Philosophy of Biology of the *Stanford Encyclopedia of Philosophy*. I am also Junior Program Co-chair for the *American Society for Bioethics and Humanities* (I will co-chair the 2008 meeting). Internationally, I continue to serve in a variety of capacities for the Canadian Institutes of Health Research (CIHR), including as a member of the CIHR Institute of Genetics' New Principal Investigators Priority and Planning Committee (2003-), a member of the Canadian Lifelong Health Initiative Ethical, Legal, and Social Issues Advisory Committee (2003-), and as Institute Advisory Board Member and Ethics Designate for the CIHR Institute of Population and Public Health (2003-).