EXHIBIT H

IN THE UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF INDIANA
INDIANPOLIS DIVISION

PLANNED PARENTHOOD OF INDIANA, INC., et al.,

Plaintiffs,

v.

COMMISSIONER OF THE INDIANA STATE DEPARTMENT OF HEALTH, in his official capacity, et al.,

Defendants.

Case No.: 1:11-cv-06300TWP-TAB

DECLARATION OF MAUREEN L. CONDIC, Ph.D.; EXHIBIT "A"

DECLARATION OF MAUREEN L. CONDIC, Ph.D.

Pursuant to 28 U.S.C. § 1746, I, Maureen L. Condic, duly affirm under penalties for perjury that I am over 18 years of age and am competent to testify in a court of law: I declare and state as follows:

1. I am over 18 years of age, have personal knowledge of the matters set forth herein, and am competent to make this declaration. I submit this declaration in support of the Defendants' Opposition to Plaintiff's Motion for Preliminary Injunction in the above-captioned proceeding. The opinions I render today are my own, and do not represent any group.

2. I have reviewed the language of Indiana House Enrolled Act 1210 (herein "Act 1210"), as well as the Declarations of Carla Cleary, C.N.M., Dr. Michael King, M.D., Letitia Clemons, Jackie Grubbs, David Orentlichter, M.D., J.D., Sadath Sayeed, J.D., M.D. and Lee M. Silver, Ph.D., submitted in support of Plaintiffs' motion.

3. I am aware that Act 1210 (Section 9) provides that an abortion may not be performed except with the voluntary and informed consent of the pregnant woman upon whom the abortion is to be performed, and that except in the case of a medical emergency, consent is deemed voluntary and informed only if certain conditions are met. These conditions include a requirement that at least eighteen hours before the abortion and in the presence

of the pregnant woman, the physician who is to perform the abortion, the referring physician or a physician assistant, advanced practice nurse or midwife to whom the responsibility has been delegated has informed the pregnant woman orally and in writing that "human physical life begins when a human ovum is fertilized by a human sperm."

6. For the reasons set forth below, it is my expert opinion that this statement is substantially based in scientific fact.

7. I am Associate Professor of Neurobiology and Anatomy at the University of Utah School of Medicine, with an adjunct appointment in the Department of Pediatrics. I received my undergraduate degree from the University of Chicago, and my doctorate from the University of California at Berkeley. Since my appointment at the University of Utah in 1997, my primary research focus has been the development and regeneration of the nervous system, focused on the role of neural stem cells. In 1999, I was awarded the Basil O'Connor Young Investigator Award for my studies of peripheral nervous system development. In 2002, I was named a McKnight Neuroscience of Brain Disorders Investigator in recognition of my research in the field of adult spinal cord regeneration. My current research involves the molecular genetics of human pluripotent stem cells.

8. In addition to my scientific research, I participate in both graduate and medical teaching. I am director of the University of Utah School of Medicine curriculum in Human Embryology. I have published and presented seminars nationally and internationally on issues concerning science policy and the ethics of biological research.

9. My current C.V. is attached as Exhibit "A".

10. The question of when a new human being comes into existence has been answered in many ways throughout history, based on the understanding of human development available at the time. Yet determining *precisely* when a new human organism comes into existence wasn't a matter of practical importance until the advent of in vitro fertilization and human embryo research. Consequently, scientists, philosophers, and bioethicists have not considered this question in great detail until recently, and appealing to 'experts' (embryologists and ethicists alike) yields a plethora of opinions, often with very little factual evidence to support them. Thus Dr. Silver (Para. 23) and Dr. Orentlichter (Para. 20) correctly assert that different religious traditions have answered this question in different ways, and assert their own opinion that the question cannot be objectively addressed. Yet religious views and personal opinions are irrelevant to the scientific facts of human embryology, so it is not clear why this point has been raised, except to artificially cast the question as "religious," and therefore "not susceptible to proof by the scientific method" (Orentlichter, Para. 22).

11. Dr. Silver correctly notes that life is a continuum (Para. 18), with living cells giving rise to new types of cells and, ultimately, to new individuals, and based on this, concludes that the question of "when life begins" is unanswerable. Yet if this view is correct, we are left with a serious ethical dilemma: while no one objects to the destruction of ordinary human cells for biomedical research, the use of *human beings* for such purposes is universally condemned. Clearly, some non-arbitrary criteria must be established to determine when living human cells give rise to a new individual human being.

12. In considering the scientific evidence relevant to the question of when the life of a new human being commences, we must first address the more fundamental question of when a new *cell*, distinct from sperm and egg, comes into existence.

13. How do scientists determine when a new cell type has been produced, either in the laboratory or as a consequence of a natural biologic process? The scientific basis for distinguishing one cell type from another rests on two criteria: differences in molecular composition and differences in behavior. Differences in molecular composition can arise due to an alteration in gene expression, or a change in the subcellular localization of existing molecules, or a chemical modification of existing molecules. Alternatively, when cells exhibit new behavior, for example, going from a quiescent to an actively dividing state, they can be identified as distinct cell types. These two criteria are universally agreed upon and employed throughout the scientific enterprise. They are not "religious" opinions or matters of "implicit societal definition or emotional reaction" (Silver, Para. 24). They are objective, verifiable scientific criteria that determine precisely when a new cell type is formed.

14. Based on these criteria, the fusion of sperm and egg clearly produces a new cell type. Following the binding of sperm and egg to each other, the membranes of these two cells fuse, creating a single hybrid cell: the zygote or one-cell embryo. Cell fusion is a well studied and very rapid event, occurring in less than a second. Because the zygote arises from the fusion of two different cells, it contains all the components of both sperm and egg, and therefore the zygote has a unique molecular composition that is distinct from either gamete. Subsequent to sperm-egg fusion, events rapidly occur in the zygote that do not normally occur in either sperm or egg. Within minutes, the zygote initiates changes in its ionic composition that will, over the next 30 minutes, result in chemical modifications that block sperm binding to the cell surface. Thus, the zygote acts immediately and specifically to antagonize the function of the gametes from which it is derived; while the "goal" of both sperm and egg is to find each other and to fuse, the first act of the zygote is to prevent any further binding of sperm to the cell surface. Clearly, the prior trajectories of sperm and egg have been abandoned, and a new developmental trajectory—that of the zygote—has taken their place.

15. Based on this factual description of the events following sperm-egg binding, we can confidently conclude that a new cell (the zygote), that is distinct from the gametes that gave rise to it both in terms of molecular composition and behavior, comes into existence at the scientifically well defined "moment" of sperm-egg fusion, an event that occurs in less than a second.

16. What is the nature of the new cell that comes into existence upon sperm-egg fusion? Most importantly, is the zygote merely another human cell (like a liver cell or a skin cell) or is it something else? Just as science distinguishes between different types of cells, it also makes clear distinctions between *cells* and *organisms*. Both cells and organisms are alive (i.e. they carry out complex metabolic processes to utilize energy and remove wastes), yet organisms exhibit unique behavior and molecular composition that can reliably distinguish them from mere cells.

17. An organism is defined as "(1) a complex structure of interdependent and subordinate elements whose relations and properties are largely determined by their function in the whole and (2) an individual constituted to carry on the activities of life by means of organs separate in function but mutually dependent: a living being." (Merriam-Webster) This definition stresses the interaction of parts in the context of a coordinated whole as the distinguishing feature of an organism. Again, this is not a religious definition or one based on personal preference, it is a *scientific* definition; i.e. one that can be confirmed or refuted by objective, factual observation.

18. Organisms are "living beings." Therefore, another name for a *human* organism is a "human being"; an entity that is a *complete* human, rather than a *part* of a human.

19. Human beings can be distinguished from human cells using the same kind of criteria scientists use to distinguish different cell types. A human being (i.e., a human organism) is composed of characteristic human parts (cells, proteins, RNA, DNA), yet it is different from a mere collection of cells because it has the characteristic molecular composition and behavior of an organism: it acts in an interdependent and coordinated manner to "carry on the activities of life."

20. Human embryos from the one-cell (zygote) stage forward have a unique molecular composition and, more importantly, they show uniquely integrated, organismal behavior that is unlike the behavior of mere human cells. The zygote immediately enters into a complex pattern of development that sequentially produces all of the molecular interactions, cell types, tissues, structures and organs required for the organism as a whole to live and mature. Importantly, the cells, tissues and organs produced during development do not somehow "generate" the embryo (as if there were some unseen, mysterious 'manufacturer' directing this process), they are produced *by the embryo* as a consequence of its unique molecular composition and epigenetic state. The embryo exists from the moment of sperm-egg fusion and (in an appropriately permissive environment) directs *its own* development to more mature stages of human life. This organized, coordinated behavior of the embryo is entirely unlike the behavior of human cells and is the defining characteristic of a human organism.

21. In contrast to the assertions of Dr. Silver (Para. 16) and Dr. Orentlichter (Para. 22), the unique behavior and molecular composition of embryos, from their initiation at sperm-egg fusion onward, can be readily observed and manipulated in the laboratory using the scientific method. Thus, the conclusion that a human zygote is a human being (i.e. a human organism) is not a matter of religious belief, societal convention or emotional reaction. It is a matter of observable, objective, scientific fact.

22. As Dr. Silver correctly notes (Para. 24), human cells are alive and that, under some circumstances, they can assemble into primitive tissues and structures based on local, cell-cell interactions and short-range molecular signaling. Yet under *no circumstances* do mere human cells exhibit coordinated interactions directed towards the production of a fully integrated human body. They doe not produce tissues in a coherent manner and do not organize them so as to sustain the life of the entity as a whole. They produce *parts* of the human body in a chaotic, disorganized manner. They behave like *cells*, not like *organisms*.

23. Based on a scientific description of fertilization, fusion of sperm and egg generates a new human cell, the zygote, with composition and behavior distinct from that of either gamete. Moreover, this cell is not merely a unique human cell, but a cell with all the properties of a fully complete (albeit immature) human organism; it is "an individual constituted to carry on the activities of life by means of organs separate in function but mutually dependent: a living being."

24. Dr. Silver raises the fact that human embryos can split to form identical twins (Para. 22) to argue that the life of both twins cannot begin at sperm-egg fusion. Yet the fact that embryos can split in no way affects the consideration of when human life begins. A planarian worm can be split into 256 pieces, all of which regenerate an entire worm, yet this does not mean that 256 individual worms somehow exist in the original animal—or that the original animal never existed in the first place. It simply means that the original animal is capable of asexual reproduction by splitting, just as human embryos are for a brief period in early development. In cases of twinning, the original human being comes into existence as a consequence of sperm-egg fusion and the twins come into existence at a later time, as a consequence of embryo splitting. Whether splitting results in the death of the original embryo and production of two new embryos, or whether the original embryo persists as one of the twins has not been conclusively resolved (although scientific observations on the epigenetic modifications that have occurred in both twins could potentially address the question). Yet regardless of how this relatively minor point is ultimately resolved, it would not alter the conclusion that the *original* human embryo arose at sperm-egg fusion.

25. The conclusion that human life begins at sperm-egg fusion is objective, based on the universally accepted scientific method of distinguishing different cell types from each other, and consistent with the factual evidence. It is entirely independent of any specific ethical, moral, political, or religious view of human life or of human embryos. Indeed, this definition does not directly address the central ethical questions surrounding the embryo: What value ought society place on human life at the earliest stages of development? Does the human embryo possess the same right to life as do human beings at later developmental stages? A neutral examination of the factual evidence merely establishes the onset of a new human life at a scientifically well defined "moment of conception," a conclusion that unequivocally indicates that human embryos from the zygote stage forward are indeed living individuals of the human species; i.e. human beings.

26. Thus, the scientific community has a clear set of criteria for distinguishing one cell type from another and human cells from human organisms. By these criteria, it is a matter of objective, scientific fact that a full and complete, albeit developmentally immature, human organism comes into existence at the fusion of sperm and egg, and that the resulting zygote is indeed a "human physical life."

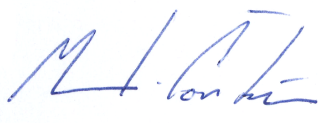
I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge.

Further, Declarant sayeth naught.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge.

Further, Declarant sayeth naught.

DATED: This 25 th day of May, 2011.



Maureen L. Condic, Ph.D

EXHIBIT A

Curriculum Vitae

Last Updated: 25 May 2011

PERSONAL DATA

Name: Maureen L. Condic
Birth Place: Chicago, Illinois
Citizenship: United States

EDUCATION

Years	Degree(s)	Institution (Area of Study)
1978-1982	B.A.	University of Chicago
1983-1989	Ph.D.	University of California, Berkeley (Neurobiology)
1989-1991	Postdoc	University of California, Berkeley
1991-1997	Postdoc	University of Minnesota, Minneapolis

BOARD CERTIFICATIONS:

CURRENT LICENSES/CERTIFICATIONS

ACADEMIC HISTORY

Neurobiology and Anatomy, University of Utah

7/1/1997-2/28/1999	Assistant Professor (Research)
3/1/1999-6/30/2004	Assistant Professor (Scientist Scholar)
7/1/2004-Present	Associate Professor, Tenured

Pediatrics, University of Utah

7/1/1997-6/30/2010	Adjunct Assistant Professor
7/1/2010-Present	Adjunct Associate Professor

PROFESSIONAL EXPERIENCE

Full Time Positions

1997-1999	Research Assistant Professor, Department of Neurobiology University of Utah, Salt Lake City, UT, USA
1999-2004	Assistant Professor, Department of Neurobiology University of Utah, Salt Lake City, UT, USA
2004-2011	Associate Professor, Tenured, Department of Neurobiology University of Utah, Salt Lake City, UT, USA
2011-Present	

Part Time Positions

2007-Present	Senior Fellow, Westchester Institute
2007-Present	National Catholic Bioethics Quarterly; Scientific Advisory Board
2008-Present	Bioethics Defense Fund; Director, Scientific Advisory Board

Temporary Positions

2010	Oxford University, Harris Manchester College, Theology Department Ph.D. External Examiner. *Stem Cell Research, A critical study of the thought of John Harris, Mary Warnock and H. Tristram Engelhardt in the light of Christian holistic anthropology*, by Angeliki Kerasidou.

2011 Visiting Professor, Notre Dame University.

Editorial Experience

2007-Present National Catholic Bioethics Quarterly; Editorial Board
2010-Present Stem Cell Reviews and Reports, Editorial Board
1997-Present Journal Referee: (12-20 manuscripts/year)

Cell Biology
Cell Stem Cell
Development
Developmental Biology
Developmental Dynamics
European Journal of Neuroscience
Experimental Cell Research
Experimental Neurology
Journal of Cell Biology
Journal of Comparative Neurology
Journal of Neuroscience
Molecular Biology of the Cell
Molecular and Cellular Neuroscience
National Catholic Bioethics Quarterly
Neural Development
Regenerative Medicine
Science
Stem Cells and Development
Stem Cell Reviews and Reports
Stem Cells

SCHOLASTIC HONORS

1999 Pew Scholarship nominee, University of Utah
1999-2001 Basil O'Conner Young Investigator, March of Dimes, USA
2002-2005 McKnight Neuroscience of Brain Disorders Investigator
2006 Invited Audience with His Holiness Pope Benedict XVI

ADMINISTRATIVE EXPERIENCE

Administrative Duties

2000-2003 Co-chair, Faculty Recruitment Committee, Neurobiology and Anatomy.
2001-2006 Director of Graduate Studies, Neurobiology and Anatomy Department.
2006-2009 Course Director, School of Medicine, Medical Embryology course.
2010-Present Embryology curriculum director, School of Medicine, Medical Embryology.

Professional & Scientific Committees

Grant Review Committee/Study Sections

1998-1999 Member, Spinal Cord Research Foundation
1999 Ad Hoc Member, NIH MCDN7 Study Section
2000 Ad Hoc Member, NIH NSDB Study Section
2002 Ad Hoc Member, NIH MCDN1 Study Section
2002 Member, Alzheimer's Association
2003 Member, Wellcome Trust
2004-2005 Ad Hoc Member, NIH NCF Study Section
2005 Ad Hoc Grant Reviewer,

	National Science Foundation, Developmental Systems
2007	Ad Hoc Grant Reviewer Medical Research Council, United Kingdom
2009	Ad Hoc Member, NIH NDPR Study Section
2010	Ad Hoc Member, NIH NSC2 Study Section

Symposium/Meeting Chair/Coordinator

PROFESSIONAL COMMUNITY ACTIVITIES

Scientific and Bioethics interviews (Radio and Print)

2001 Radio interview, WWJ (Detroit, MI); Current scientific research on spinal cord injury.

2001 Radio interview, WMUK (Kalamazoo, MI); Gene manipulation as a treatment for spinal cord injury.

2001 Newspaper interview, Salt Lake Tribune (Salt Lake City, UT) 29 July; Troy Goodman "Utah Leaders in debate over ethics, possibilities of stem cell research".

2002 Radio interview, KUER (Salt Lake City, UT); Research on spinal cord injury and therapeutic approaches to rehabilitation.

2002 Radio interview, KCPW, Talk of the City Science Friday (Salt Lake City, UT); Current brain research at the University of Utah.

2002 Newspaper interview; Our Sunday Visitor (National circulation); Woodeene Koenig-Bricker. Scientific issues surrounding stem cells.

2004 Interview, Science and Theology News, Templeton Foundation (National circulation); Chhari Sadhcev. Science Policy and Science funding.

2005 Interview, Health Sciences Report, University of Utah, Salt Lake City, UT; Phil Sahm. Current research on Neural Crest development.

2005 Interview, Wired Magazine (National circulation); Clive Thompson. Scientific and ethical issues surrounding altered nuclear transfer.

2006 Interview, The Weekly Standard (National Circulation) 3 July; Colleen Carroll Campbell. A clone by any other name; Missouri's deceptively worded ballot measure.

2006 Interview, National Review Online (National Circulation) 7 July; Fr. Thomas Berg. A Step Toward Clarity. Recent cloning headlines may herald the end of embryo name games.

2006 Radio Interview, KSL, The Doug Wright Show (Salt Lake City, UT); Potential of stem cell research.

2006 Interview, Catholic News Service (International Circulation) 18 September; Carol Glatz. Pope endorses adult stem-cell research.

2006 Interview, Brain Institute news; Julie Kiefer. Two research papers report “ethical” means to derive embryonic stem cells; The debate rages on.

2007 Interview, KVSS, The Spirit Morning Show (Omaha, Nebraska) 10 January; Kris McGregor, The science of stem cell research.

2007 Interview, Representative Rob Inglis (South Carolina), 10 January; Discussion with Rep. Inglis staff of human development, embryonic and adult stem cell research. Dr. Willy Lensch (Harvard Medical School), co-participant.

2007 Interview, Dr. David Stevens, CEO for the Christian Medical & Dental Associations (National membership) 12 February; Science of stem cell research.

2007 Invited educational lecture for spinal cord injured patient population, Spinal Cord forum, Salt Lake City, UT.

2007 Interview. Scientist hopeful about new stem cell studies. 6 June; Carrie Gress. Zenit, (International circulation). Rome Italy.

2007 Radio Interview. Induced Pluripotent Stem cells. Family news in focus (National syndication). 20 June. Steve Jordahl. Colorado Springs, CO.
2007 Radio Interview. Cloning legislation. Chip Maxwell. KKAR. Omaha, NE.
2007 Interview. Stem Cell Breakthrough Hailed. 20 November; Carrie Gress. ZENIT news agency, (International circulation). Rome Italy.
2007 Interview . Scientist hopeful about new stem cell studies. 6 June; Carrie Gress. ZENIT news agency, (International circulation). Rome Italy.
2008 Interview. Ethical concerns with the iPS approach. 22 January; Tom McFeely, Contributing Editor. National Catholic Register (National Circulation). North Haven, Connecticut.
2008 Interview. Science of direct reprogramming. 30 January; Jim Schwarz. KFUO radio St. Louis, MO.
2008 Interview. Primate cloning and induced pluripotent stem cells. 19 February; Ted Katauskas, Editor-at-Large, Portland Monthly. Portland, OR.
2008 Interview. Pluripotent stem cells and infertility treatments. Jane Bosveld, Contributing Editor, Discover Magazine. New York, NY.
2008 Interview. Trends in Embryonic stem cell research. Anna Persky, Contributing journalist, Washington Lawyer. Washington, DC.
2008 Interview. Westchester inaugural White Paper. Karna Swanson Lozoya, Editor. ZENIT news agency, (International circulation). Rome Italy.
2008 Interview. Westchester inaugural White paper. Alton J. Pelowski, Managing Editor. Columbia magazine (International circulation). New Haven, CT.
2008 Interview. Biological issues raised by Congregation for the Doctrine of the Faith *Dignitas Personae*. 10 December; Ann Rodgers, Pittsburgh Post-Gazette.
2008 Interview. Biological issues raised by Congregation for the Doctrine of the Faith Instruction *Dignitas Personae*. 10 December; Rob Stein, The Washington Post.
2009 Interview. Uso clínico de célula iPS será difícil, diz cientista. 29 January; Herton Escobar, O Estado de S. Paulo. São Paulo, Brazil.
2009 Interview. Scientific Community Differs About Stem Cells. 12 March; Michael P. Tremoglie. The Philadelphia Bulletin. Philadelphia, PA.
2009 Interview. When does life begin? 15 June; Sue Ellen Browder. The National Catholic Register (National Circulation). North Haven, CT.
2009 Interview. Chinese stem cell breakthrough. Joan Desmond. December 13-19, 2009. The National Catholic Register (National Circulation). North Haven, CT.
2009 Interview. Patient specific model of type-1 diabetes. Nima Reza. Family News and Focus (National Syndicate). Colorado Springs, CO.
2010 Interview. Newly approved stem cell lines. Audrey Bright. 12 December, 2010. Family News and Focus Radio (National Syndicate). Colorado Springs, CO.

UNIVERSITY COMMUNITY ACTIVITIES

1997-Present Member, Molecular Biology, Molecular Biology Graduate Training Program.
1997-Present Member, Neuroscience Program, Neuroscience Graduate Training Program.
1999-2000 Member and Co-Chair, Neurobiology and Anatomy Department, Faculty Recruitment Committee.
1999-2003 Member and Director, Neurobiology and Anatomy Department, Student Advising Committee.
1999-2003 Member, Neuroscience Program, Seminar Selection Committee.
1999-Present Member, Pediatrics Department, Child Health Research Career Development Award Advisory Committee.
2001-2003 Member, Molecular Biology, Molecular Biology Program Steering Committee.

2001	Member, Neurobiology and Anatomy Department, Departmental Advisory Committee (DAC).
2003	Member, School of Medicine, Research Subcommittee for Reaccredidation.
2005	Member, Neurobiology and Anatomy Department, Departmental Advisory Committee (DAC).
2007	Member, School of Medicine, University of Utah Academic Senate Nominating Committee
2007	Member, University of Utah Graduate Council, Department of Bioengineering, Internal departmental review committee
2009	Member, Neurobiology and Anatomy Department, Departmental Advisory Committee (DAC).
2010	Member, Neurobiology and Anatomy Department, Departmental Advisory Committee (DAC).
2010	Member, Neuroscience Program, Admissions Committee
2010-Present	Member, School of Medicine, Promotions Committee
2011-Present	Member, Department of Pediatrics Early Career Development Research Grant review committee.
2011-Present	Member, Department of Pediatrics Women and Child Institute Basic Science Design Group.
2011-Present	Member, Department of Pediatrics Women and Child Institute Faculty Career Development Design Group.

ACTIVE MEMBERSHIPS IN PROFESSIONAL SOCIETIES

1997-Present	American Association for the Advancement of Science
1997-Present	Society for Developmental Biology
1997-Present	Society for Neuroscience

FUNDING

Active Grants

07/01/04 - 11/30/11

5R01NS048382-05 Specification and Development of Sensory Neurons
$1,040,625
NIH
Role: Principal Investigator

Pending Grants

Past Grants

1984-1987

National Science Foundation Predoctoral Research Fellowship

1989-1993

Cell shape changes during Drosophila morphogenesis
American Cancer Society Postdoctoral Fellowship

1996-1997

Mechanism of neuronal adaptation to inhibitory proteoglycans
Spinal Cord Research Foundation Postdoctoral Fellowship

1998-2003

5R01NS38138-04 Adaptation of neurons to inhibitory extracellular matrix
National Institutes of Health (NINDS)
Total Costs: $825,778.
Role: Principal Investigator

1998-2001	PID9808009 Regulation of integrin expression and neuron adhesion by Bcl-2 Total Costs: $50,000. Primary Children's Medical Foundation Role: Principal Investigator
1999-2001	5FY980726 Integrin Regulation controls neural crest migration Total Costs: $100,000 March of Dimes Research Foundation Basil O'Connor Young Investigator Award Role: Principal Investigator
1999	PID9908008 Control of Cell Fate and Axon Outgrowth in Sensory Neurons Total Costs: $33,800 University of Utah Funding Incentive Seed Program Role: Principal Investigator
1999	07928 Videomicroscopy apparatus University of Utah Research Instrumentation Fund Total Costs: $80,000 Role: Principal Investigator
2001-2004	1FY01-172 Integrin Regulation Controls Neural Crest Migration Total Costs: $243,936 March of Dimes Birth Defects Foundation (Renewal of MOD Basil O'Connor Young Investigator Award) Role: Principal Investigator
2002-2005	PID2109100 Integrin-mediated stimulation of adult neuronal regeneration McKnight Endowment Fund for Neuroscience McKnight Neuroscience of Brain Disorders Award Total Costs: $300,000 Role: Principal Investigator
2005-2007	PID2504037 Interaction between integrins and molecular inhibitors of regeneration Direct Costs: $153,472 Craig H. Neilsen Foundation Role: Principal Investigator

Grants to trainees

2001-2003	1 T32 HD 07491 "Integrin regulation in adult and embryonic regeneration." Dr. Michele Lemons, Postdoctoral Fellowship. Direct Costs: $72,392 National Institute of Health, Institute of Child Health and Human Development, Developmental Biology training grant. Role: Mentor

2003-2005 "Cell autonomous factors influence regeneration." Dr. Michele Lemons, Postdoctoral Fellowship.
Paralyzed Veterans of America, Spinal Cord Research Foundation.
Direct Costs: $100,450.
Role: Mentor

2003-2004 International Outstanding Young Investigators Award, Dr. Michele Lemons, Postdoctoral Award.
Paralyzed Veterans of America, Spinal Cord Research Foundation.
Role: Mentor

2002-2005 F31 NS43849-01 "Surface integrin regulation controls neural crest migration." Lauren Strachan, Graduate student.
National Institute of Health Predoctoral Fellowship.
Direct Costs: $74,238.
Role: Mentor

Active Contracts

Pending Contracts

Past Contracts

TEACHING RESPONSIBILITIES/ASSIGNMENTS

Course and Curriculum Development

2010 Phase I: Human embryology content director, University of Utah, Salt Lake City.
2010 Phase II: Metabolism and Reproduction, Human embryology content director, University of Utah, Salt Lake City.
2011 Phase II: Circulation, Respiration and Regulation, Human embryology content director, University of Utah, Salt Lake City.

Courses Directed

2001 Course Director, *"Research in Progress Seminar"*. (Anat 7720). Presentation of current research with formal review by Departmental faculty and course director, University of Utah, Salt Lake City.
2001 Co-Director (with Dr. C.-B. Chien), *"Axon guidance"*. (Mbiol 6100). Presentation of current literature with formal review by course directors, University of Utah, Salt Lake City.
2006 Co-Director (with Dr. A. Moon), "*Cell adhesion and motility".* (Mbiol 6100). Presentation of current literature, writing of a grant proposal, University of Utah, Salt Lake City.
2010 Course Director, "*Human embryology and craniofacial development*". Presentation of formal lectures for Dental students (independent component of (Orb 133) , University of Utah, Salt Lake City.

Course Lectures

1985-1986 Graduate Instructor, Laboratory Instructor, *"Developmental Biology"*. 30 students, 15 lectures, 15 labs, University of California, Berkeley.
1988 Graduate Instructor, Laboratory Instructor, *"Biology"*. 30 students, 15 lectures, 15 labs, University of California, Berkeley.

1989	Graduate Instructor, *"Integrated Systems Neurobiology"*. 8 students, 30 lectures, University of California, Berkeley.
1992-1996	Instructor, Discussion Leader, *"Developmental Neurobiology"*. 30 students, two lectures, University of Minnesota, Minneapolis.
1993-1995	Instructor, Discussion Leader, *"Molecular, Cellular Development"*. 30 students, two lectures, University of Minnesota, Minneapolis.
1998-Present	Instructor, Discussion Leader, *"Developmental Neurobiology,"*(Anat 7750). 8-12 students, 4-6 lectures, 1-2 discussions, University of Utah, Salt Lake City.
1998-Present	Instructor, *"Frontiers in Neuroscience,"* (Neusc 6010). 8-20 students, one lecture, University of Utah, Salt Lake City.
1998-Present	Instructor, *"Faculty Research in Progress,"* (Mbiol 6050). 20-30 students, one lecture.
1999	Instructor, *"Cell Biology,"* (Mbiol 6480). 20-30 students, two lectures, University of Utah, Salt Lake City.
1999-2006	Instructor, *"Human Embryology,"* (Anat 6060). 110-120 students, 4 lectures, University of Utah, Salt Lake City.
2001-2006	Course Director, "*Research in Progress Seminar,*" (Anat 7720). 20-30 students, University of Utah, Salt Lake City.
2001	Co-Director, *"Axon Guidance,"* (Mbiol 6100). Offered 2001, 2003. 8-10 students, University of Utah, Salt Lake City.
2006-2009	Course Director, *"Human Embryology,"* (Anat 6060). 110-120 students, 10 lectures, University of Utah, Salt Lake City.
2007	Instructor, "Genetics and Society (Honors 3215). 18 students, one lecture, University of Utah, Salt Lake City.
2010	Instructor, "Health Law" (LAW 7360). 30 students, on lecture, University of Utah, Salt Lake City.

Clinical Teaching

Laboratory Teaching

1985-1986	Graduate Instructor, Laboratory Instructor, *"Developmental Biology"*. 30 students, 15 lectures, 15 labs, University of California, Berkeley.
1988	Graduate Instructor, Laboratory Instructor, *"Biology"*. 30 students, 15 lectures, 15 labs, University of California, Berkeley.

Small Group Teaching

Trainees Supervised

1997	Undergraduate, Catherine Clark, University of Utah.
1998	Graduate Rotation, Wei Guan, Neuroscience Program.
1998	Graduate Rotation, Manojkumar Puthenveedu, Neuroscience Program.
1998	Graduate Rotation, Jeong-Soo Lee, Molecular Biology Program.
1999	Graduate, Wei Guan, Psychiatry resident, University of Louisiana Health Science Center, Shreveport, LA.
1999	Graduate Rotation, Viravuth Yin, Molecular Biology Program.
1999	Graduate Rotation, Andrea Pepler, Molecular Biology Program.
1999	Graduate Rotation, Jing Li Cai, Molecular Biology Program.
1999	Graduate Rotation, Anne Luebeke, Molecular Biology Program.
1999	Undergraduate, Jeremy Cox, University of Utah.
2000	Graduate, Lauren Strachan, NIH Predoctoral Fellowship.
2000	Undergraduate, Suman Barua, University of Utah.

2000 Graduate Rotation, Xulei Lui, Neuroscience Program.
2000 Graduate Rotation, Debjani Bhar, Molecular Biology Program.
2001 Postdoctoral Fellow, Michele Lemons, NIH Postdoctoral Fellowship, Paralyzed Veterans of America Postdoctoral Fellowship, Paralyzed Veterans of America International Outstanding Young Investigators Award, Assistant Professor (tenure track) Assumption College, Worcester, MA.
2001 Graduate Rotation, Sandhiya Kalyanasundaram, Neuroscience Program.
2001 Graduate Rotation, Nirmalya Roychowdhury, Neuroscience Program.
2001 Graduate Rotation, Deepak Raj, Molecular Biology Program.
2002 Graduate Rotation, Hara Kang, Molecular Biology Program.
2002 Graduate Rotation, Linclon Hunt, Neuroscience Program.
2003 Undergraduate, Luke Marzec, University of Pennsylvania.
2003 Undergraduate, Kevin Woody, University of Utah.
2004 Undergraduate, Katheryn Cousins, University of Chicago.
2004 Graduate Rotation, Kathy Zukor. Neuroscience Program.
2004 Graduate Rotation, Jared Cassiano. Molecular Biology Program.
2005 Graduate, Kath Zukor.
2005 Undergraduate, Benjamin Saliwanchik, University of Chicago.
2005 Graduate Rotation, Michael Abanto. Neuroscience Program.
2007 Graduate Rotation, Gretchen Carr, Neuroscience Program.
2009 Graduate, Erin Cadwalader, Co-advisor with Dr. H.J. Yost.
2010 Postdoctoral Fellow, Colin McGuire.

Graduate Student Committees

1999-01 Laura Storjohann. Neurobiology and Anatomy.
1999-04 Wei Guan. Neurobiology and Anatomy.
2000-01 Roy Smeal. Bioengineering.
2000-05 Lauren Strachan. Neurobiology and Anatomy.
2001-04 Jeong-Soo Lee. Neurobiology and Anatomy.
2004-08 Suzanna Gribble. Neurobiology and Anatomy.
2004-10 Melissa Hardy. Neurobiology and Anatomy.
2005-09 Eon Joo Park. Human Genetics.
2006-10 Katherine Zukor. Neurobiology and Anatomy.
2010-Present Lisa Benko, Neurobiology and Anatomy.
2011-Present Tony Hsiao, Bioengineering.

Continuing Education Lectures/Presentations

9/2002 Conference speaker (National). *Scientific basis of pediatric practice*. University of Utah, Salt Lake City, UT.
4/2004 Symposium Speaker (International). *Integrative Master Class in Anatomy: The Gastrointestinal System*. Experimental Biology National Meeting. Washington, D.C.
11/2005 Keynote Speaker (International). *Suffering and Hope: The ideas behind the medical specialty of palliative care*. The University of Texas MD Anderson Cancer Center and the University of St. Thomas, Houston TX.
9/2006 Congress speaker (International). *Stem cells: What future for therapy? Scientific aspects and bioethical problems*. Azienda Ospedaliera Santa Maria della Misericordia, FIAMC (Fédération Internationale des Associations Médicales Catholiques) and the Pontifical Academy for Life. Rome, Italy.
10/2006 Colloquium speaker (National). *The beginning of life: Human embryology*. DeVos Medical Ethics Colloquy. Grand Valley State University, Spectrum Health Hospitals,

St. Mary's Hospital, Metropolitan Hospital, Calvin College, Aquinas College and the Van Andel Research Institute. Grand Rapids, Michigan.

4/2008 Keynote Speaker (National). *The nature of human embryos.* Alice D. and Frederick C. LaBrecque Lecture in Medical Ethics/Bioethics. Boston College. Boston, MA.

10/2008 Invited speaker (National). *Human embryology and science politics*. Moral Conviction vs. Political Pressure. Allegheny General Hospital and Franciscan University of Steubenville. Steubenville, OH.

7/2010 Invited Speaker (National). Who is human and what is not? "Beyond Therapy: Exploring Enhancement and Human Futures." The Center for Bioethics & Human Dignity, Deerfield, IL.

4/2011 Invited Research In Progress Seminar (Regional). Amniotic fluid stem cells and congenital heart defects. Department of Pediatrics. University of Utah, Salt Lake City, UT.

Other Educational Activities

1998-Present	Molecular Biology Program, Admissions Interview.
1998-Present	Neuroscience Program, Admissions Interview.
1998	Gregory Yochum. Oncological Sciences, Qualifying Examinations.
1998	Meredith Lee. Neurobiology and Anatomy, Qualifying Examinations.
1998	James Kemmerle. Human Genetics, Qualifying Examinations.
2000	Wei Guan. Neurobiology and Anatomy, Qualifying Examinations.
2001	Jeong-Soo Lee. Neurobiology and Anatomy, Qualifying Examinations.
2004	Melissa Hardy. Neurobiology and Anatomy, Qualifying Examinations.
2004	Suzanna Gribble. Neurobiology and Anatomy, Qualifying Examinations.
2005	Eon Joo Park. Human Genetics, Qualifying Examinations.
2006	Katherine Zukor. Neurobiology and Anatomy, Qualifying Examinations.

PEER-REVIEWED JOURNAL ARTICLES (Bold/underline faculty member's name)

1. Condic, M.L. and Bentley, D. (1989). Pioneer neuron pathfinding from normal and ectopic locations *in vivo* after removal of the basal lamina. **Neuron** *3,* 427-439.
2. Condic, M.L. and Bentley, D. (1989). Removal of the basal lamina *in vivo* reveals growth cone-basal lamina adhesive interactions and axonal tension in grasshopper embryos. **J. Neurosci.** *9,* 2678-2686.
3. Condic, M.L. and Bentley, D. (1989). Pioneer growth cone adhesion *in vivo* to boundary cells and neurons after enzymatic removal of basal lamina in grasshopper embryos. **J. Neurosci.** *9,* 2687-2696.
4. Condic, M.L., Lefcort, F. and Bentley, D. (1989). Selective recognition *in vitro* between embryonic afferent neurons of grasshopper appendages. **Dev. Biol.** *135,* 221-230.
5. Condic, M.L., Fristrom, D. and Fristrom, J.W. (1991). Apical cell shape changes during *Drosophila* imaginal leg disc elongation: A novel morphogenetic mechanism. **Development** *111,* 23-33.
6. *****Fessler, L.I., *****Condic, M.L., Nelson, R.C., Fessler, J.H., Fristrom, J.W. (1993). Site specific cleavage of basement membrane collagen IV during *Drosophila* metamorphosis. **Development** *117,* 1061-1069. (*****The first two authors contributed equally to this work.)
7. Condic, M.L. and Letourneau P.C. (1997). Ligand-induced changes in integrin expression regulate neuronal adhesion and neurite outgrowth. **Nature** *389*, 852-856.
8. Condic, M.L., Snow, D.M. and Letourneau, P.C. (1999). Embryonic neurons adapt to the inhibitory proteoglycan aggrecan by increasing integrin expression. **J. Neurosci.** *19,* 10036-43.

9. Schroeder, K.E. Condic, M.L. Eisenberg, L.M. and Yost, H.J. (1999). Spatially regulated translation in embryos: Asymmetric expression of maternal Wnt-11 along the dorsal-ventral axis in *Xenopus*. **Dev. Biol.** *214*, 288-297.
10. Condic, M.L. (2001). Adult neuronal regeneration induced by transgenic integrin expression. **J. Neurosci.** *21(13),* 4782-4788.
11. Guan, W. Puthenveedu, M. and Condic, M.L. (2003). Sensory neuron subtypes have unique substratum preference and receptor gene expression prior to target innervation. **J. Neurosci.** *23,* 1781-1791.
12. Guan, W. and Condic, M.L. (2003). Characterization of Netrin-1, Neogenin and UNC-5 expression during chick dorsal root ganglion development. **Mech. Dev.** (Gene expression patterns) *3(3)*, 367-371.
13. Strachan, L. and Condic, M.L. (2003). Neural crest motility and integrin regulation are distinct in cranial and trunk populations. **Dev. Biol.** *259,* 288-302.
14. Strachan, L. R. and Condic, M.L. (2004). Mechanisms of substratum-dependent integrin regulation in neural crest. **J. Cell Biology***167(3)*:545-54.
    Commentary on manuscript:
    -LeBrasseur, N. (2004) Speed from recycling. **J. Cell Biology.** *167 (3):* 395.
    -**Faculty of 1000:** evaluations for Strachan LR & Condic ML J Cell Biol 2004 Nov 8 167 (3) :545-54 ttp://www.f1000biology.com/article/15520227/evaluation.
15. Lemons, M.L., Barua, S. Abanto, M.L., Halfter, W. and Condic, M.L. (2005). Adaptation of sensory neurons to hyalectin and decorin proteoglycans. **J. Neuroscience** *25*, 4964-73.
16. Lemons, M.L. and Condic, M.L. (2006). Combined integrin activation and intracellular cAMP cause Rho GTPase dependent growth cone collapse on laminin-1. **Exp. Neurol.** *202,* 324-335.
17. Strachan, L. R. and Condic, M.L. (2008). (*Epub Nov 1, 2007*). Neural crest motility on fibronectin is regulated by integrin activation. **Exp. Cell Res.** 314 (3); 441-452.
18. Condic, M.L. (2008). Alternative sources of pluripotent stem cells; altered nuclear transfer. **Cell Proliferation,** *41 (Suppl. 1*), 7-19.
19. Guan, W. Wang, G., Scott, S.A. and Condic, M.L. (2008). (*Epub Dec 4, 2007*). Shh regulates cell number and neuronal identity in dorsal root ganglia. **Dev. Biol.** 15;314(2):317-28.

EDITORIALLY-REVIEWED BIOETHICS AND SCIENCE POLICY ARTICLES

1. Condic, M.L. (2002). The basics about stem cells. **First Things.** *119,* 30-34. [Reprinted in: *The Human Life Review* (2002) XXVIII (1-2): 119-126].
2. Condic, M.L. (2002). Stem cells and false hopes. **First Things**. *125*, 21-22.
3. Condic, M.L. and Condic, S.B. (2003). The appropriate limits of science in the formation of public policy. **Notre Dame Journal of Law, Ethics and Public Policy** *25(1)*, 157-179.
4. Condic, M.L. (2003). Life: Defining the Beginning by the End. **First Things**. *133,* 50-54. [Reprinted in: *The Human Life Review* (2003) XXIX (2): 22-29].
5. Condic, M.L. and Condic, S. B. and Hurlbut, W.B. (2005). Producing non-embryonic organisms for stem cells. **National Cath. Bioethics Quart.** *5(1)*: 13-15
6. Condic, M.L. and Condic, S. B. (2005). Defining organisms by organization. **National Cath. Bioethics Quart.** *5(2)*: 331-53.
7. Condic, M.L. (2005). Stem cells and babies. **First Things**. *155*: 12-13.
8. Arkes H., Austriaco N.P., Berg T., Brugger E.C., Cameron N.M., Capizzi J., Condic M.L., Condic S.B., FitzGerald K.T., Flannery K., Furton E.J., George R.P., George T., Gomez-Lobo A., Grisez G., Grompe M., Haas J.M., Hamerton-Kelly R., Harvey J.C., Hoehner P.J., Hurlbut W.B., Kilner J.F., Lee P., May W.E., Miranda G., Mitchell C.B., Myers J.J., Oleson C., Pacholczyk T., Ryan P.F., Saunders W.L., Stevens D., Swetland S.W., Whelan M.E.,

Williams T. (2005). Production of pluripotent stem cells by oocyte-assisted reprogramming: joint statement with signatories. **Natl Cathol Bioeth Quart**. *5(3)*:579-83.

9. Burke WJ, Pullicino P, Richard EJ, and Condic M. L. (2005). Stemming the tide of cloning. **First Things**. *158*: 6-9.
10. Condic, M.L. (2007). What we know about embryonic stem cells. **First Things**. *169*: 25-29.
11. Cameron, N, Condic, M.L., Kelly, J. and Ruse, A. (2007). Missouri amendment. **Natl Cathol Bioeth Quart**. *7(1)*:9-11.
12. Condic, M.L. (2007). The beginning of life: a perspective from science. **DeVos Medical Ethics Colloquy**. Van Andel Press. Grand Rapids, MI.
13. Condic, M.L. and Furton, E..J. (2007). Harvesting Embryonic Stem Cells from Deceased Human Embryos. **Natl Cathol Bioeth Quart**. *7(3):*507-525.
14. Condic, M.L. (2008). Getting Stem Cells Right. **First Things**. *180*: 10-12.
15. Anderson, R.T. and Condic, M.L. (2008). Professor Lee Silver's Vast Scientific Conspiracy. **First Things**, on the square p. 946 (http://www.firstthings.com/onthesquare/?p=946).
16. Berg, T.V. and Condic, M.L. (2008). Emerging Biotechnologies, the Defense of Embryonic Human Life, and Altered Nuclear Transfer. **Linacre Quarterly**. *75(4)*: 269-291.
17. Condic, M.L. (2008). When does human life begin? A scientific perspective. **Westchester Institute White Paper**. *1(1)*: 1-18. Westchester Institute for Ethics & the Human Person, Thornwood, NY. (available at: http://www.westchesterinstitute.net/). [Reprinted in: **Natl Cathol Bioeth Quart.** *9(1)*:127-208.]
18. Condic, M.L., Lee, P. and George, R.P. (2009). Ontological and Ethical Implications of Direct Nuclear Reprogramming. **Kennedy Institute Ethics Journal**. *19(1)*: 33–40.
19. Condic, M.L., Lee, P. and George, R.P. (2009). The Grail Searchers, National Review (online), July 20, 2009. (Available at: http://article.nationalreview.com/?q=ZDFkM2ZiOGEwOWVkY2Y2ZTlhNDk2MjdkMWQ3NzZhNmY)
20. Condic, M.L. (2009). Stem cells: reviewing the science and the ethics. **Ethics and Medicine**. *34(8):1-3.*
21. Condic, M.L., Lee, P. and George, R.P. (2009). Rejoinder to Magill and Neaves on Stem Cells vs. Organisms. **Kennedy Institute Ethics Journal**. *19(1):*33-40.
22. Alvaré, H., Anderson, R.T., Bottum, J., Bradley, G.V., Cohen, E., Condic, M.L., Curlin, F.A., Elshtain, J.B., Franck, M.J., George, R.P., Glendon, M.A., Hurlbut, W.B., Landry, D.W., Lee, P., Levin, Y., Novak, M., Ponnuru, R., Snead, C., Stoner, J.R., Tollefsen, C., Watson, M.J. (2010). *Embryos in the Age of Obama.* The First Annual Neuhaus Colloquium calls for a permanent reversal of a misguided stem-cell policy. **First Things**. *206*: 57-62.

REVIEW ARTICLES

1. Letourneau, P.C., Condic, M.L., Snow, D.M. (1992). Extracellular matrix and neurite outgrowth. **Curr. Op. Genetics and Dev.** *4,* 625-634.
2. Letourneau, P.C., Condic, M.L., Snow, D.M. (1994). Interactions of neurons with the extracellular matrix. **J. Neurosci.** *14,* 915-928.
3. Condic, M.L., Lemons, M.L. (2002). Extracellular matrix in spinal cord regeneration: getting beyond attraction and inhibition. **NeuroReport**. *13(3),* A37-A48.
4. Condic, M.L. (2002). Neural Development: Axon regeneration derailed by dendrites. **Current Biology** *12 (13),* R455-R457.
5. Condic, M.L. (2004). The science of wishful thinking. Review: *Whose view of life?* by Jane Maienschein. **First Things**. *145:* 69-74.
6. Lemons, M. L. and Condic, M.L. (2008). (*Epub 14 Jun, 2007*). Integrin signaling is integral to regeneration. **Experimental Neurology**. *209(2)*:343-52.
7. Rao, M. and Condic M.L. (2008). Alternative sources of pluripotent stem cells: Scientific solutions to an ethical dilemma. **Stem Cells and Development**. *17(1)*: 1-10.

8. Condic, M.L. and Rao, M. (2008). (*Epub Jul 31, 2008)* Regulatory issues for personalized pluripotent cells. **Stem Cells.** *26:* 2753 – 2758.
9. Rao, M. and Condic M.L. (2009). Is there hope for ethical and safe stem cell therapeutics? **Genome Medicine.** *Jul 14;1(7):70.*
10. Condic, M.L. and Rao, M. (2010). Alternative sources of pluripotent stem cells: Scientific solutions revisited. **Stem Cells and Development**. *Aug*;19(8):1121-9.

BOOKS

1. Condic, M.L. *The making of man; what modern embryology tells us about the nature of human individuality. (in preparation)*

BOOK CHAPTERS

1. Condic, M.L. (2003). Chapter 24: The basics about stem cells*. The Stem Cell Controversy: Debating the Issues*. Prometheus Books, Amherst, NY, USA.
2. Condic, M.L. (2005). Chapter 12: Regeneration and repair. *Developmental Neurobiology, 4th Edition*. Plenum Press, New York, NY.
3. Condic, M.L. (2011, in press). *Is this cell a human being?: Exploring the status of embryos, stem cells and human-animal hybrids.* Chapter 2: Pre-implantation stages of human development: the biological and moral status of early embryos. *Eds.* Antoine Suarez, Joachim Huarte *Social Trends Institute Monograph Series.* Barcelona, Spain. Springer, New York, NY.
4. Condic, M.L. (in press, anticipated publication date 6/2011). *A Critical Analysis of Pro-Choice Arguments: Persons, Moral Worth, and Embryos.* Chapter 10: A biological definition of the human embryo. *Ed.* Stephen Napier. *Philosophy and Medicine Series*, Springer, New York, NY.

CONFERENCE PROCEEDINGS

OTHER (Commentary/Letters/Editorials/Case Reports/Video/Film)

Legal Briefs (Science Policy)

1. George, R. and Condic, M.L. (2008). "Cures Without Cloning" Brief *AMICI CURIAE*. **Missouri Court of Appeals Western District**. Case. No. WD 69376.
2. Condic, M.L. (2010). “Feminists choosing life of New York v. Empire state stem cell board,” Brief *AMICUS CURIAE.* **State of New York Supreme Court: County of Albany**. Index No. 8594/2009.
3. Condic, M.L. (2010). “James L. Sherley, et al., v. Kathleen Sebelius,” Brief *AMICUS CURIAE*. **United States Court of Appeals for the District of Columbia Circuit.** No. 10-5287.

Commentary

1. Condic, M.L. (2001). Stem cell facts. **Salt Lake Tribune**. 15 August, 2001.
2. Condic, M.L. (2006). Sliding Down the Slope: Where Kinsley’s stem-cell illogic will take us. **National Review Online.** 20 July, 2006 (http://article.nationalreview.com/). [Reprinted.in: *The Human Life Review* (2006) XXXII (3-4): 145-146]
3. Condic, M.L. and Grompe, M. (2007). Stem-cell breakthrough. November 23, 2007, pg. A13. **The Wall Street Journal.** (available online at: http://online.wsj.com/article/SB119577446016301525.html)
4. Condic, M.L. (2007). Brave New Future; working together with stem cells. *Invited contribution*: **National Review Online symposium.** 21 November, 2007 (http://article.nationalreview.com/?q=OTk3Y2E1NmNlNmRkOTY1NDg3OGMwMGU4ZjAwYTYzNzU=).
5. Condic, M. L. (2007). Unlikely stem cell therapies. **Nature Neurosci.** *10(7)*: 803

6. Condic, M.L. (2007). Ethical Research. December 17, 2007. **Omaha World-Herald.**
7. Scolding, N., Chopp, M., Franz, W.M., Alan Mackay-Sim, A., Martin, T. J., Rietze, R., McGonagle, D., Eckehard Strauer, B., Gianni Angelini, G., Barker, R., Condic, M.L., Ursula Just, U., Karussis, D., Mazzini, L., Peduzzi-Nelson, J., Lima, C., (2008). Stem-cell therapy is no miracle cure. **Times**, **London**. 16 May, 2008.
8. Condic, M.L. (2009). Does Research Really Need Human Embryos and Cloning? **The Daily Beast**. (http://www.thedailybeast.com/blogs-and-stories/2009-04-16/does-research-really-need-human-embryos-and-cloning/)

PENDING PUBLICATIONS

Journal Articles

1. Erin L. Cadwalader, Maureen L. Condic and H. Joseph Yost (2011). 2-O-Sulfotransferase Controls Wnt Signaling to Regulate Cell Cycle and Adhesion in Zebrafish Epiboly *(submitted)*
2. Erin L. Cadwalader, Maureen L. Condic and H. Joseph Yost (2011). 2-O-Sulfotransferase regulates FGF signaling and cytoskeleton organization during epiboly in zebrafish. *(in preparation).*
3. Lemons, M.L., Abanto, M.L. and Condic, M.L. (2011). Netrin-1 increases intracellular cAMP levels in a substratum and receptor dependent manner. (*in preparation*).
4. Lemons, M.L., Abanto, M.L. and Condic, M.L. (2010). Integrin receptors mediate netrin mediated growth cone collapse. (*in preparation*).
5. Condic, M.L. and Abanto, M. L. (2011). Semaphorin binds integrin receptors and induces growth cone collapse. (*in preparation*),
6. Condic, S.B. and Condic M.L. (2011). Divining Substance in Development. (*in preparation*)

Abstracts

1. Lefcort, F., Condic, M.L. and Bentley, D. (1986). Recognition between grasshopper embryonic afferent neurons *in vitro*. **Soc. Neurosci.** *12,* 196.
2. Condic, M.L. and Bentley, D. (1986). Effects of proteolytic, glycolytic and basal lamina directed enzymes on pathfinding by grasshopper pioneer neurons. **Soc. Neurosci.** *12,* 195.
3. Condic, M.L. and Bentley, D. (1988). Effects of enzymatic removal of the basal lamina on pioneer neurons in grasshopper embryos. **Soc. Neurosci.** *14,* 451.
4. Condic, M.L. (1989). Selective aggregation of dissociated afferent grasshopper neurons. **Soc. Neurosci.** *15,* 649.
5. Condic, M.L., Fristrom, D. and Fristrom, J.W. (1990). A novel mechanism of epithelial morphogenesis in *Drosophila*. **Society for Developmental Biology.** *49,* 44.
6. Duerr, J.S. and Condic, M.L. (1990). Pioneer neuron guidance cues in grasshopper limb buds. **Soc. Neurosci.** *16,* 810.
7. Fessler, L. I., Garrison, K., Nelson, R. E., Yuhasz, M. P., Gullberb, D., Takagi, Y., Condic, M.L., Fristrom, J.W., Fessler, J.H. (1992). Building and remodeling the Drosophila extracellular matrix. **Keystone Symposium:** Extracellular Matrix in Development.
8. Condic, M.L., Snow, D., Letourneau, P.C. (1993). Regulation of laminin receptors by sensory neurons in response to chondroitin sulfate proteoglycan. **Soc. Neurosci.** *19,* 436.
9. Condic, M.L. and Letourneau, P.C. (1995). Posttranscriptional regulation of laminin receptors in sensory neurons is determined by ligand concentration. **Soc. Neurosci.** *21,* 1021.
10. Condic, M.L. and Snow, D.M. (1997). Increased laminin receptor expression in response to chondroitin sulfate proteoglycan affects neuronal cell adhesion and axon outgrowth. **Soc. Neurosci.** *23,* 31.

11. Condic, M.L. (1998). Adult neurons lose the ability to adapt to low laminin substrata. **Soc. Neurosci.** *24,* 1767.
12. Guan, W. and Condic, M.L. (1999). Axon outgrowth from early chick dorsal root ganglia (DRG) is independent of neurotrophin-3 (NT3). **Soc. Neurosci.** *25,* 1271.
13. Strachan, L. and Condic, M.L. (2000). Differences in integrin expression contribute to distinct patterns of migration in cranial and trunk neural crest. **Soc. Neurosci.** *26,* 58*.*
14. Strachan, L. and Condic, M.L. (2001). Surface integrin regulation contributes to neural crest migration. **Keystone Symposium**: Cell Migration and Invasion D3. *Abst. 346*, p. 84.
15. Lemons, M.L. and Condic, M.L. (2001). Cytoplasmic cAMP levels influence neurite outgrowth on growth-influential CNS proteins. **Soc. Neurosci.** *27*, 794.12.
16. Guan, W. Puthenveedu, M. and Condic, M.L. (2001). Sensory neuron subtypes have unique substratum preference and receptor gene expression prior to target innervation. **Soc. Neurosci.** *27*,136.18.
17. Strachan, L. and Condic, M.L. (2002). The role of integrin recycling in neural crest cell motility. **Keystone Symposium**: Development of the Spinal Cord and Neural Crest X4*. Abst. 411,* p.177.
18. Guan, W. and Condic, M.L. (2002). The differential expression of netrin 1-neogenin/unc5 signals affects axon fasciculation of different subtypes of DRG neurons. **Soc. Neurosci.** *28,* 528.3.
19. Lemons, M.L. and Condic, M.L. (2002). Effects of Cyclic AMP upon Neurite Outgrowth and Integrins. **Soc. Neurosci.** *28,*729.13*.*
20. Strachan, L. and Condic, M.L. (2003) Mechanisms of regulating motility and adhesion in neural crest. **Keystone Symposium**: Cell migration and invasion B2. p. 338.
21. Strachan, L.R. and Condic, M.L. (2003). Cranial neural crest motility is promoted by substratum-dependent integrin recycling. **Am. Soc. Cell Biol.** 1824: B293.
22. Lemons, M.L. and Condic, M.L. (2003) Intracellular cAMP and integrin activation determine growth cone response to laminin-1. **Soc. Devel. Biol.** 17: 24.
23. Strachan, L.R. and Condic, M.L. (2003) Integrin recycling is required for proper cranial neural crest migration. **Soc. Devel. Biol.**15: 22*.*
24. Guan, W. and Condic, M.L. (2003) Shh induce the patterning of ventral cell fates in chick dorsal root ganglia. **Soc. Devel. Biol.**1: 35*.*
25. Strachan, L.R. and Condic, M.L. (2003) Cranial Neural Crest Motility is Promoted by Substratum-dependent Integrin Recycling. **Am. Soc. Cell Biol.** 1824: B293.
26. Lemons, M.L. and Condic, M.L. (2004). Growth cone response to laminin is reversed by a combination of integrin activation and cAMP. **Soc. Neurosci.** *30*, 23.14
27. Lemons, M.L. and Condic, M.L. (2005). Integrins, cAMP and netrin-1 interact and influence growth cone behavior. **Soc. Neurosci.** *31.*
28. Lemons, M.L., Abanto, M., Dambrauskas, N., Duke, V., Clements, C., Condic, M.L. (2008). Netrin-1 induced growth cone collapse is mediated by integrin receptors. **Soc. Neurosci.** *33.*
29. Lemons, M.L., Dambraskas, N., Abanto,M., Clements, C., Condic, M.L., (2010). An interaction between netrin-1 and integrin receptors in growth cones. **Cold Spring Harbor.** 138.

RECENTLY PUBLISHED ABSTRACTS FOR ORAL OR POSTER PRESENTATION (Last 3 years)

1. Lemons, M.L., Abanto, M., Dambrauskas, N., Duke, V., Clements, C., Condic, M.L. (2008). Netrin-1 induced growth cone collapse is mediated by integrin receptors. **Soc. Neurosci.** *33.*
2. Lemons, M.L., Dambraskas, N., Abanto,M., Clements, C., Condic, M.L., (2010). An interaction between netrin-1 and integrin receptors in growth cones. **Cold Spring Harbor.** 138.

UNPUBLISHED POSTER PRESENTATIONS

ORAL PRESENTATIONS

Keynote/Plenary Lectures

International

11/2005 *Suffering and Hope: The ideas behind the medical specialty of palliative care*. The University of Texas MD Anderson Cancer Center and the University of St. Thomas, Houston TX. (CME)

National

8/2005 *Stem cells: the state of the science.* United States Conference of Catholic Bishops, National Conference of diocesan pro-life coordinators annual meeting. Phoenix, AZ.

3/2007 *Embryonic and non-embryonic stem cell research; the state of the science.* Scientific address to members of the Florida State Legislature. Tallahassee, FL.

10/2007 *Stem cells; opportunities and challenges.* Scientific address to members of the Ohio State Legislature. Columbus, OH.

11/2007 *Stem cells and human cloning; state of the science.* Scientific address to members of the Nebraska State Legislature. Lincoln, NE

4/2008 Alice D. and Frederick C. LaBrecque Lecture in Medical Ethics/Bioethics. *The nature of human embryos.* Boston College. Boston, MA. (CME).

7/2010 Plenary Speaker. *Who is human and what is not?* "Beyond Therapy: Exploring Enhancement and Human Futures." The Center for Bioethics & Human Dignity, Deerfield, IL.

Meeting Presentations

International

3/2003 Colloquium speaker. *Bioethics*. Notre Dame Law School, Thomas J. White Center on Law and Government. South Bend, IN.

4/2004 Symposium Speaker. *Integrative Master Class in Anatomy: The Gastrointestinal System*. Experimental Biology National Meeting. Washington, D.C. (CME)

10/2004 Panelist, Comparative Law Colloquium: *The Legal Regulation of Stem Cell Research in the United States and the Federal Republic of Germany*. Catholic University of America. Washington, D.C.

3/2005 Symposium Speaker: *Global state of stem cells and cloning in science, ethics and law*. Regina Apostolorum Pontifical University, Rome, Italy.

3/2006 Symposium speaker. *Axonal Growth in the Complex Environment Surrounding Spinal Cord Injury*. American Society for Neurochemistry National Meeting. Portland, OR.

9/2006 Congress speaker. *Stem cells: What future for therapy? Scientific aspects and bioethical problems*. Azienda Ospedaliera Santa Maria della Misericordia, FIAMC (Fédération Internationale des Associations Médicales Catholiques) and the Pontifical Academy for Life. Rome, Italy. (CME)

1/2009 Symposium Speaker, *Focus on The Embryo.* Social Trends Institute. Barcelona, Spain.

2/2011 Symposium Speaker, *Embryonic stem cell research.* NCBC bi-annual workshop on Bioethics. Dallas, Texas.

National

7/2002 Invited conference participant. McKnight Conference on Neuroscience. Aspen Institute, Aspen Meadows, CO.

9/2002 Conference speaker. *Scientific basis of pediatric practice*. University of Utah, Salt Lake City, UT. (CME)
6/2004 Symposium speaker. *Integrins and cAMP in neuronal regeneration.* McKnight Conference on Neuroscience. Aspen Institute, Aspen Meadows, CO.
4/2005 Conference speaker. *Altered nuclear transfer*. Westchester Institute Scholars Forum. Washington, DC.
6/2005 Invited conference participant. McKnight Conference on Neuroscience. Aspen Institute, Aspen Meadows, CO.
6/2005 Conference speaker. *Human embryonic stem cell research.* Center for Ethics in Science and Technology, University of San Diego. San Diego, CA.
9/2005 Symposium speaker. *Science of stem cells and embryology.* United States Conference of Catholic Bishops, Committee on Science and Human Values. Washington, D.C.
3/2006 Conference speaker. *On the human embryo*. Westchester Institute Scholars Forum. Washington, DC.
10/2006 Colloquium speaker. *The beginning of life: Human embryology*. DeVos Medical Ethics Colloquy. Grand Valley State University, Spectrum Health Hospitals, St. Mary's Hospital, Metropolitan Hospital, Calvin College, Aquinas College and the Van Andel Research Institute. Grand Rapids, Michigan. (CME)
5/2007 Conference speaker. *Defining embryos*. Westchester Institute Scholars Forum. Washington, DC.
11/2007 Invited panelist. *Bioethics panel discussion*. Witherspoon Institute conference. Princeton University, Princeton, NJ.
4/2008 Invited Colloquium speaker. Witherspoon Institute University Colloquium. *The nature of university education and the pursuit of truth in academic science*. Princeton University, Princeton, NJ.
4/2008 Conference speaker . *When Do We Die: Brain Death, Irreversible Circulatory Cessation, and the Debate over the End of Life.* Westchester Institute Scholars Forum. Washington, DC.
8/2008 Invited speaker. *Human Embryology and organismal function.* Newman Seminar Series. Kalamazoo MI.
10/2008 Invited speaker. *Human embryology and science politics*. Moral Conviction vs. Political Pressure. Allegheny General Hospital and Franciscan University of Steubenville. Steubenville, OH. (CME)
3/2009 Invited speaker. *The Politics of Knowledge; science and technology*. Women's and Gender Studies, University of South Carolina, Columbia, SC.
9/2009 Invited colloquium participant. The Neuhaus Colloquium on Ethics and Public Affairs. *Human life and scientific research*. The Witherspoon Institute, Princeton University. Princeton, NJ.
4/2010 Invited Speaker. Student Affairs. Notre Dame University. *When does life begin?* South Bend, IN.
3/2011 Invited Panelist. Scientific perspective on early embryogenesis. Student Affairs. Notre Dame University. South Bend, IN.

Regional/Local

10/1998 Symposium speaker. Interdepartmental Neuroscience program symposium, University of Utah. Salt Lake City, UT.
8/1999 Symposium speaker. Combined program in Molecular Biology and Biological Chemistry Student Orientation Seminar, University of Utah. Salt Lake City, UT.

3/2001 Invited educational lecture, Birth defects registry staff, University of Utah Hospital. General lecture for non-scientific staff on human development and the causes of birth defects. Salt Lake City, UT.
5/2001 Invited scientific panelist, "Stem cell research, panel discussion" Women's State Legislative Council of Utah. Salt Lake City, UT.
9/2002 Invited educational lecture. *Stem Cells and Human Life.* Newman Center, Salt Lake City, UT.
9/2004 Symposium series speaker. *"People need a fairy tale"; Stem cells and human life.* Educational Resource Development Council. University of Utah School of Medicine. Salt Lake City, UT.
10/2004 Symposium Speaker. *Control of sensory neuron fate.* Neuroscience Program Snowbird Scientific Symposium, Salt Lake City, UT.
2/2005 Symposium Speaker. *Growth cone motility and regeneration.* Spinal cord research interest group, The Brain Institute, University of Utah, Salt Lake City, UT.
3/2006 Symposium Speaker. *Growth cone motility and regeneration.* Spinal cord research interest group, The Brain Institute, University of Utah, Salt Lake City, UT.
3/2006 Invited educational lecture for spinal cord injured patient population, *Growth Cone Motility and Regeneration.* Spinal Cord forum, Salt Lake City, UT.
2/2008 Symposium series speaker. *Stem cell hope and hype.* Educational Resource Development Council. University of Utah School of Medicine. Salt Lake City, UT.
3/2008 Invited educational lecture for spinal cord injured patient population, *Stem Cells and Spinal Injury Update.* Spinal Cord forum, Salt Lake City, UT.
3/2009 Invited educational lecture for spinal cord injured patient population, *Stem Cells and Spinal Injury Update.* Spinal Cord forum, Salt Lake City, UT.
3/2010 Invited educational lecture for spinal cord injured patient population, *Stem Cells and Spinal Injury Update.* Spinal Cord forum, Salt Lake City, UT.
11/2010 Invited educational lecture, Gastrointestinal development. Pediatric Gastroenterology, Department of Pediatrics. University of Utah. Salt Lake City, UT.
3/2011 Invited educational lecture for spinal cord injured patient population, *Stem Cells and Spinal Injury Update.* Spinal Cord forum, Salt Lake City, UT.
4/2011 Invited Research In Progress Seminar. Amniotic fluid stem cells and congenital heart defects. Department of Pediatrics. University of Utah, Salt Lake City, UT. (CME).

Invited/Visiting Professor Presentations

1/1996 Columbia University, Department of Pathology. New York, NY.
2/1996 University of Maryland, Biology Department. College Park, MD.
3/1996 University of Minnesota, Genetics and Cell Biology. Minneapolis, MN.
4/1996 Mount Sinai School of Medicine, Brookdale Center for Molecular Biology. New York, NY.
5/1996 University of Minnesota, Department of Cell Biology and Neuroanatomy. Minneapolis, MN.
11/1996 University of Utah, Department of Neurobiology and Anatomy. Salt Lake City, UT.
2/1997 University of Illinois at Chicago, Department of Anatomy and Cell Biology, Department of Biochemistry. Joint-Departmental seminar speaker. Chicago, IL.
4/1997 University of Texas, Southwestern Medical Center, Department of Neurobiology. Dallas, TX.
5/2000 University of Virginia, Department of Cell Biology. Charlottesville, VA.
10/2000 Case Western Reserve University, Department of Neuroscience. Cleveland, OH.
12/2000 University of Kentucky, Anatomy and Neurobiology. Lexington, KY.

4/2001 University of Rochester, Aab Institute of Biomedical Sciences. Center for Human Genetics and Molecular Pediatric Disease. Rochester, NY.
1/2002 University of Washington, Seattle. Graduate student invited seminar speaker. Program in Neurobiology and Behavior. Seattle, WA.
3/2002 University of Arizona, Tucson. Department of Cell Biology. Tucson, AZ.
10/2003 University of Utah, Departmental Seminar. *The role of adaptive motility in sensory neuron development.* Department of Neurobiology and Anatomy. Salt Lake City, UT.
11/2004 Michigan State University. *Integrin function in sensory development and regeneration.* Neuroscience Program and Department of Physiology. East Lansing, MI.
12/2004 Medical College of Ohio. *Control of cell motility and guidance in neural development.* Molecular and Cellular Neuroscience Program. Toledo, OH.
9/2005 University of Iowa. *Mechanisms of integrin dependent growth cone motility*. Biology Department Seminar speaker. Iowa City, IA
1/2006 Expert witness; Missourian's against human cloning. Challenge to wording of Amendment 2 ballot title. Jefferson City, MO.
4/2007 Invited speaker. *Conceptualizing conception*. Graduate Student invited seminar speaker. Phi Sigma Tau, The University of St. Thomas. Houston, TX.
4/2007 University of Utah, Departmental Seminar. *Alternative sources of pluripotent stem cells*. Department of Neurobiology and Anatomy. Salt Lake City, UT.
6/2007 University of Utah, Departmental Seminar. *Mechanisms of integrin dependent growth cone motility*. Department of Neurobiology and Anatomy. Salt Lake City, UT.
10/2008 Invited speaker. *Stem cells and human health.* St. Monica Parish. Diocese of Kalamazoo. Kalamazoo, MI.
1/2009 Invited speaker. Departmental seminar series. Department of Philosophy. Notre Dame University. South Bend, IN.
1/2009 Invited speaker. Departmental seminar series. *Mechanisms of motility in neural development.* Department of Biology. Notre Dame University. South Bend, IN.
10/2009 Invited speaker. Office of the Vice President and Department of Biology. Colorado State University. Boulder, Co.

Grand Rounds Presentations

12/1996 Baylor College of Medicine, Department of Surgery. Houston, TX.
11/1998 University of Utah, Grand Rounds seminar. *Stem cells in Pediatrics Medicine*. Department of Pediatrics. Salt Lake City, UT.
4/2001 University of Utah, Grand Rounds seminar. *Integrins in sensory neuron development and regeneration.* Department of Pediatrics. Salt Lake City, UT.

Industrial Presentations

Outreach Presentations/activities

1998-02 Middle school science fair judge. Interviews with students and evaluation of science fair projects. Salt Lake City, UT.
2005 Junior High School science fair judge. Salt Lake City, UT. Interviews with students, evaluation and ranking of science fair projects.
2007 Interviews, Catherine Caine, Maria Stone, Undergraduate students (Brigham Young University UT, Carlton College MN), Heather Borck (HS student, Nashville, TN). Research papers on regenerative medicine.
2007 Junior High School, Scientific methods lecture. Salt Lake City, UT. Presentation to 7th and 8th grade students about the scientific method.

2008 Interview; Jessica Rump, Nashville, TN. High School AP honors paper. Induced Pluripotent Stem Cells.
2010 Interview; Iris Xu, Leal Elementary, Cerritos, CA, 6th grade Neuroscience careers.

OTHER SCHOLARLY ACTIVITY