

CURRICULUM VITA  
KATHRYN IRENE CLARK

Citizenship: United States

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Education

2011 expected	MS	University of Michigan, Ann Arbor, Michigan
1983-1990	Ph.D.	University of Michigan, Ann Arbor, Michigan
1981-1982	MS	University of Michigan, Ann Arbor, Michigan
1976-1980	BA	The College of Wooster, Wooster, Ohio
1972-1976		Western Reserve Academy, Hudson, Ohio

Professional Appointments

Present President & CEO, Docere, LLC

Docere is the Latin word for “teach”. My primary time is spent on the professional speaker’s circuit using my history with NASA to motivate and inspire others to reach for the stars in their profession. When I am not speaking or writing, I enjoy working to promote education with groups like the Jean-Michel Cousteau Society, the Square One Education Network, the Argos Foundation, the National Marine Sanctuaries, the Sea World Hubbs Institute, SAS Games, the National Space Grant Foundation, Arnold Schwarzenegger’s After School All Stars, and the 27 Foundation.

2003 – 2007 Special Government Employee, The Stafford/Anfimov Advisory Panel, NASA

The Stafford/Anfimov Advisory Panel, which consists of very high level people from both the Russian Space Agency and NASA, meets 6 weeks prior to the launch of each ISS crew exchange in order to assess the status of the crew and the ISS, any current problems on the ISS, and the readiness of the crew, the ground support personnel in both countries, and the ISS to accommodate a new crew for the duration of the expedition mission.

2002 - 2005 Special Government Employee, The Stafford-Covey Return to Flight Task Group, NASA

I served on the Stafford-Covey Return to Flight Task Group, an independent group overseeing NASA’s response to the Columbia Accident Investigation Board. I was the lead on CAIB Recommendation 6.4-1, requiring NASA to have the ability to inspect and repair damage to the thermal protection system or use the ISS as a safe haven until a rescue mission can be launched.

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2000-2002 NASA, Chief Scientist, Human Exploration & Development of Space Enterprise

As Chief Scientist, I worked with scientists from all other areas of NASA to communicate research needs and look for possible collaboration among the science programs at NASA. I also worked on the education and outreach activities related to any human space flight endeavors, including the International Space Station, the shuttle, any expendable launch vehicles intended to further human endeavors in space, and future missions to the Moon and Mars. My particular interest was in "Human Factors"; all the elements necessary for the health, safety, and efficiency of crews involved in long duration space flight. These include training, interfacing with machines and robotics, biological countermeasures for the undesirable physical changes associated with space flight, and the psychological issues that may occur in response to the closed, dangerous environments while traveling in space or living on other planets.

1998-2000 NASA Office of Space Flight, Chief Scientist, International Space Station

As Chief Scientist, I coordinated the national and international research communities and served as the advocate for research on the NASA Advisory Committees and Subcommittees responsible for the oversight of the International Space Station and related programs. I traveled extensively, briefing science Ministers, Agency Administrators, and a subcommittee of the United Nations on the benefits of collaborating on the International Space Station and the exploration beyond low Earth orbit.

1993-2002 The University of Michigan, Department of Cell and Developmental Biology, Research Investigator

The laboratory was focused on neuromuscular development and adaptation to altered environments. Experiments included immunohistochemistry and *in situ* hybridization studies on embryos (specifically skeletal muscle and spinal cord) that developed in the microgravity environment of the space shuttle, as well as *in vitro* studies of developing skeletal muscle using the NASA rotating wall vessel, which I have adapted to provide tension necessary for differentiation of skeletal muscle. Grant support for the laboratory supported students and a full time technician.

1996-1998 The Center for Microgravity Automation Technology, Deputy Director

The Center for Microgravity Automation Technology, one of NASA's Commercial Space Centers, was focused on supplying high quality imaging, automation and investigator interaction with experiments and commercial ventures on orbit in order to assist astronauts with the increased scientific and commercial workloads expected on the International Space Station.

As a member of the CMAT team, I brought the scientific and applications perspective to the group (also included a computer engineer, an optics expert and an imaging expert) in the creation of The Remote Scientist. Applications of this hardware targeted protein crystal growth, and three-dimensional tissue culture growth of skeletal muscle and spinal cord.

A major focus of this group was macroscopic imaging of experiments intended to be down-linked into high school and junior high school classrooms in the United States and around the world with the goal of stimulating interest in math and science. This project, originally called "Launching Education in Orbit" (LEO) had its first flight on STS-93. The project is still active with experiments on the last few shuttle missions and continuing on the International Space Station, although the name has been changed to Orion's Quest. In the years since its inception, this little education project has served hundreds of students from all over the United States.

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Selected Honors

- 2007 Board of Trustees, National Marine Sanctuaries Foundation
- 2006 Board of Advisors, Jean-Michel Cousteau Society
- 2006 Chair, Board of Control, Michigan Technological University
- 2006 Roskosmos (Russian Space Agency) Certificate of Appreciation in recognition of the 10 Year Anniversary of the Stafford-Anfimov ISS Task Force
- 2006 National Aeronautics & Space Administration Certificate of Appreciation in recognition of the 10 Year Anniversary of the Stafford-Anfimov ISS Task Force
- 2005 National Aeronautics & Space Administration Public Service Medal for Service on the Return to Flight Task Group
- 2005- 2010 Board of Trustees, Western Reserve Academy
- 2003 Western Reserve Academy Morley Science Medal
- 2001 Chair, Academic Affairs Committee, Board of Control, Michigan Tech University. Appointed by both Governor Engler (2001) and Governor Granholm (2005) of Michigan
- 2001 National Aeronautics & Space Administration Goddard Space Flight Center Customer Service Excellence Award
- 2001 Women in Aerospace International Award
- 2001 Inducted into the National Women's Museum
- 2000-2004 Space Day Foundation Board
- 2000 Western Reserve Academy Waring Prize for Outstanding Alumni Contributions to the community
- 1999 National Aeronautics & Space Administration Space Flight Awareness Team Award
- 1998-2004 Western Reserve Academy Board of Visitors
- 1998-2000 Women in Aerospace Board of Directors

Selected Speeches

- 11-10-10 The Imposter Syndrome: Confessions of a Rocket Scientist. ATHENA WIN, Lansing, MI
- 04-30-10 Commencement, School of Kinesiology, The University of Michigan. Ann Arbor, MI
- 03-30-09 Houston, We Have a Water Problem. Missouri Water Assn. St. Louis, MO
- 08-11-08 Leadership & Disaster. SAE, Traverse City, MI
- 12-10-05 Commencement, Michigan Technological University, Houghton, MI
- 04-25-08 To Boldly Go: NASA's Exploration Program. Traverse City School Fundraiser. Traverse City, MI
- 05-19-07 It Doesn't Take a Rocket Scientist to Engage Students, but it helps...Michigan Aviation/ Aerospace Teacher Workshop, Kalamazoo, MI
- 03-27-07 We Have Ignition: Keeping Dreams Alive. Teacher Synergy Day, Convergence Education Foundation. Flint, MI
- 11-14-04 Exercise in Space: Who Needs it and Why? Michigan Association for Health, Physical Education, Recreation and Dance, Grand Rapids, Michigan
- 05-17-03 Creating the Future: the Aeronautics in NASA Ninety-nines North Central Sectional Meeting, Novi, Michigan
- 04-13-03 What's NEXT (NASA Exploration Team)? Exploring Mars 3<sup>rd</sup> Annual William H. Farrand Public Lecture, University of Michigan Museum of Natural History
- 02-06-02 How Far Can Virtual Learning Go? "Leadership Strategies for E-Learning: High School to Higher Ed" Conference, Lansing, Michigan,
- 11-03-01 The Use of Intelligent Systems in Space Exploration Nordic Interactive Conference, Copenhagen, Denmark
- 10-25-01 Do I Have Your Attention? Education Using the International Space Station Teachspace, 2001, European Space Agency, Noordwijk, the Netherlands.

- 08-23-01 ISS Program Overview (Technical & Scientific Aspects) Aeronautical Polytechnical Academy III Aerospace Engineering Meeting, Santiago, Chile
- 07-23-01 The ISS US-User Organization for the First Increments ISS Utilization Forum, Tokyo, Japan
- 06-08-01 Do I Have Your Attention? Education Using the International Space Station ISS Forum 2001, East Berlin, Germany
- 04-28-01 Teamwork Parallels Between Polar and Space Exploration, Interview with Women Polar Explorers NASA COOL SPACE project, North Pole
- 04-26-01 Scientific Research Aboard the International Space Station Polaris Mine Workers, North Pole
- 02-01-01 Vignettes of a Woman Scientist Women's Museum, Dallas following my induction
- 01-30-01 Scientific Research Aboard the International Space Station Industrial Light & Magic, California
- 02-10-00 Overview of the International Space Station United Nations Scientific & Technical Subcommittee of the Committee on Peaceful Uses of Outer Space, Vienna, Austria
- 12-12-99 Science on the ISS: An International Effort Portuguese Council of Science, Lisbon, Portugal
- 11-11-99 Getting the Most out of The International Space Station 15<sup>th</sup> Annual Meeting of the American Society of Gravitational & Space Biology, Seattle, Washington
- 10-15-99 Science on the ISS: An International Effort NASDA & STA, Tokyo, Japan.
- 09-29-99 International Space Station: Open for Business. Women in Business International, Washington, DC.
- 05-11-99 International Space Station: Enabling World-class Science Brazilian Space Agency and Department of Commerce, Sao Paulo, Brazil
- 03-24-99 International Space Station Overview National Research Council, San Diego, California
- 11-18-98 Views from NASA's Space Station Chief Scientist 2<sup>nd</sup> European Symposium Utilisation of the International Space Station, Noordwijk, The Netherlands.
- 11-11-98 International Space Station: Enabling World-class Science Sigma Xi Annual Forum, Vancouver, Canada.

#### Selected Publications

- Clark, K, Bielitzki, JT, Wagner, EG. The international space station: globalizing life sciences. *Lab Anim* (NY) 29 (6):38-39, 2000.
- Clark, KI International Space Station: Enabling World Class Science. *International Cooperation in Science & Technology*. Sigma XI Forum Proceedings, 1998.
- Clark, KI and S.R. Barry. Aminophylline potentiates skeletal muscle tension in rana pipiens: effects on adenosine receptors and intracellular Ca<sup>2+</sup>. *J Physiol*. 481: 129-137, 1994.
- White, T.P., G.A. Alderink, K.A. Esser, and KI Clark. Postoperative physical activity alters growth of skeletal muscle grafts. in *Proceedings of the 3rd Vienna Muscle Symposium*. Freilinger (ed.). Facultar Universitat Verlag, Vienna, 1990.
- Clark, KI and T.P. White. Neuromuscular adaptations to cross-reinnervation in 12- and 29- month Fischer 344 rats. *Am. J. Physiol*. 260(Cell Physiol.29):C96-C103, 1991.
- Clark, K.I., P.G. Morales, and T.P. White. Mass and fiber cross-sectional area of soleus muscle grafts following training. *Med. Sci. Sports and Exerc*. 21:432-436, 1989.
- Clark, K.I. and T.P. White. Morphology of stable muscle grafts of rats: effects of gender and muscle type. *Muscle and Nerve*. 8: 99-104, 1985.

#### Abstracts

- Vigue, C.A., S.T. Devor, P.C. Davis, KI Clark, and T.P. White. Effects of food restriction and running on muscle regeneration in old rats. *Med. Sci. Sports and Exerc*. 23:135, 1991.
- Clark, KI and S.R. Barry. Role of adenosine receptors in skeletal muscle force production. *Med. Sci. Sports and Exerc*. 23:755, 1991.

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- Clark, KI. Effects of spaceflight on development of neuromuscular systems. ASGSB Bulletin 9:173, 1995.
- Clark, KI, D.C. Brown, and T. Goodwin. Characterization of skeletal muscle atrophy induced in simulated microgravity culture systems. *In Vitro Cell. Dev. Biol.* 31:42A, 1995.
- Clark, KI, D.C. Brown, and T. Goodwin. Role of tension in the development of skeletal muscle. *In Vitro Cell. Dev. Biol.* 32:46A, 1996.