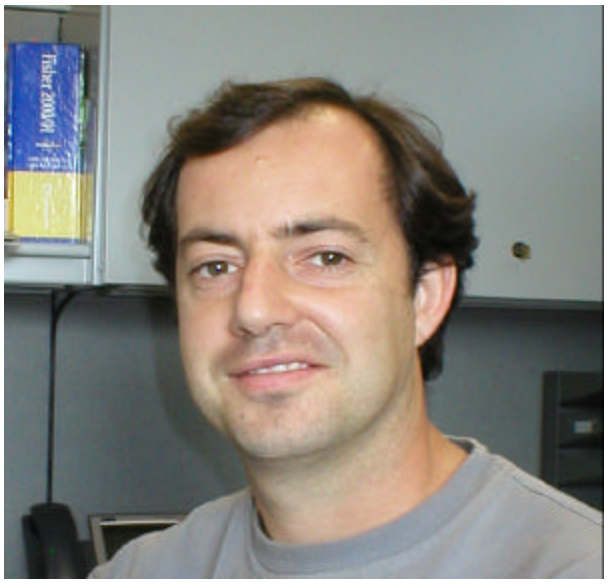
SLSTP 2004 PI's

Controlled Biological Systems Group (CBS)

1. Ignacio Eraso, PI



Ignacio received a Bachelor of Science Degree in anatomic pathology from Maria Immculada University in Pamplona Spain. He moved to the United States in 1992 to attend the University of Kentucky in Lexington. He graduated with a Master of Science degree in microbiology and went to work for Dynamac in Newport Oregon. He transferred to the Dynamac contract at the Kennedy Space Center in 1999 where he has been working on the RASTA space flight project, which was going to be manifested for a space shuttle mission in 2003.

2. Kathleen Daumer, PI

Kathleen received her Master's Degree in Marine Biology from Florida Institute of Technology in December 2001. She began working for Dynamac Corp. in May 2001, on a project that used a bioluminescent bio/reporter to measure microbial volatile organic contaminants. The area of interests includes different methods of biological detection and measurement environment state and quality.

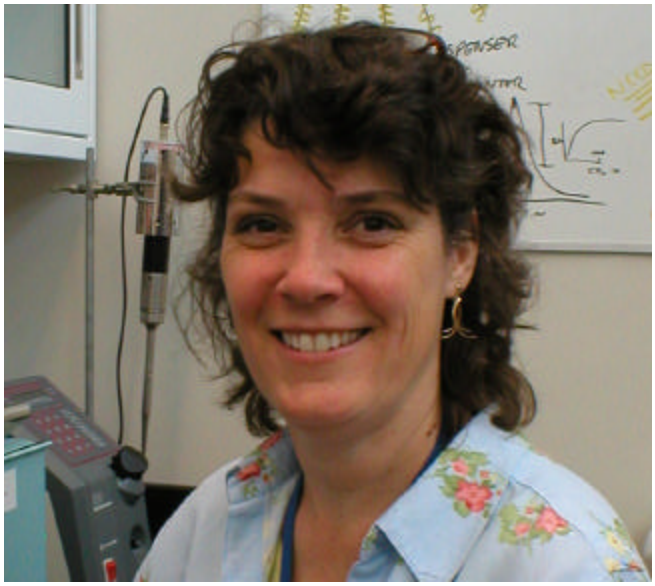
3. Philip Fowler, PI

Phil graduated with a Bachelor of Science degree in 1979, a Master of Science in 1994, and went on to pursue a Ph.D. in agricultural and biological engineering (with a minor in aquaculture) at the University of Florida. He graduated as Ph.D. in 1998 and came to work for Dynamac Inc. since fall that same year. He specializes in the design and testing of environmental control systems and is currently the lead engineer on the Mars Greenhouse Project and involved in low-pressure studies and effects on plants.

Vadim Rygalov, co-PI

Vadim Ye. Rygalov, biophysicist, works in area of Closed Ecological Systems (CES) study and bio-regenerative Life Support (LS) since 1979. His Ph.D. for System's analysis of environment ~ macro-algae interaction and development he had got at 1986 from Institute of Biophysics Siberian Brunch Russian Academy of Sciences (Krasnoyarsk, Siberia, Russia) and Pacific Institute of Fishery Sciences & Oceanography (Vladivostok, Far East, Russia). Vadim is interested in investigation of principles of closure for ecological systems functioning, closed system environmental control and its applications for life support in different areas.

4. Mary Hummerick



Dr. Mary P. Hummerick joined the Dynamac Corporation in January 2000 as a Microbiological Research Associate in the CBS group as part of the LSSC. She received her Bachelor of Arts degree in biology from Saint Leo College, St. Leo, FL and a Master of Science degree in biology, concentrating in microbiology, from The University of South Florida in Tampa. She also has experience in the areas of environmental and food microbiology.

5. Oscar Monje, PI

Dr. Oscar Monje is a Plant Scientist for Dynamac Corp. at the Kennedy Space Center. He'd got his Ph.D. Plant Science in 1998 from Utah State University for "Predicting Transpiration Rates of Hydroponically-Grown Plant Communities in Controlled Environments". Specialties: The design of gas exchange systems and the application of gas exchange techniques for the study of plant community responses in controlled environments. Background: Plant physiology and modeling of biological systems, design and calibration of instrumentation, data acquisition, physical chemistry and biochemistry, and has cultivated a work ethic suitable for multidisciplinary and multicultural enterprises.

6. Jessica Prenger, PI

Dr. J. Prenger, currently WONDER Agricultural Engineer, Dynamac Corporation. She is responsible for the continuing ground research activities that will prepare the WONDER shuttle payload for flight. These include developing and producing new ground-based experimental equipment and maintaining the sensors, hardware, and computers used by WONDER. Before coming to KSC in 2002, Jessica completed a Master's Degree at The Ohio State University, where she used non-contact thermal sensors to detect plant stress and automatically control irrigation. Continuing in agricultural engineering here at SLSLab, Jessica is helping to develop the moisture sensing and irrigation control techniques that will be used in the WONDER flight hardware.

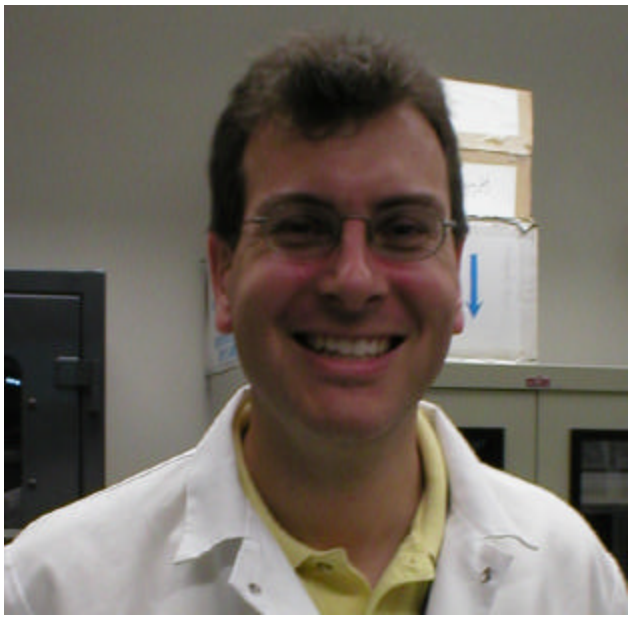
Donna Rouzan-Wheeldon, co-PI

Donna Rouzan-Wheeldon, Research Assistant, Dynamac Corporation / Bionetics Corporation, as a research assistant for the WONDER she is involved in technical support aspects, and preparing and maintaining the WONDER hydro/ponic growth systems. Her work also includes laboratory procedures and data analysis of the plant specimens. Donna is also involved in the collaboration of writing protocols, abstracts and papers involving the space flight experiment. Additionally she has an A.S. in veterinary technology and has previously worked on 3 flight payloads (CBTM, CEBAS, and FRESH) in support of these experiments.

7. Richard Dick Strayer, PI

Dick received a Bachelor of Science degree in Biology from Western Michigan University in 1968, a Masters degree (1973) and Ph.D. (1977) in Microbiology from Michigan State University. He joined ALS originally in 1985 as a research scientist. His research here focuses on applied microbiology: manipulation of mixed microbial communities to bioprocess ALS solid and liquid waste streams for recycling crop nutrients.

8. Jeffrey Richards, PI



Jeff Richards, Research Scientist Dynamac Corporation. Education: B. Sciences (Honor) Microbiology (1990), Acadia University, Wolfville, Nova Scotia, Canada; M. Sciences Plant Physiology (1997), Dalhousie University, Halifax, Nova Scotia, Canada. Jeff participate sin the research associated with the AHST Food and Crop Systems projects including cultivar evaluations of minimally-processed crops for suitability in space-based applications, environmental responses of selected cultivars to typical space environmental conditions, and mixed cropping effects of minimally-processed crops; GC, GC/MS analytical support for the characterization of the ability of thermal desorbing compounds to filter out specific International Space Station VOC cabin contaminants. Research interests include:

- Plant Physiology
- Low Pressure Plant Growth
- Mars Microbiology
- Remote Sensing of Plant Stress
- Plant Growth on Mars
- Controlled environment crop production
- Hydroponics
- Plant Growth Promoting Rhizo/bacteria

9. Michael Roberts, PI

Dr. M. Roberts received his Bachelor of Arts degree in 1985 from Maryville College (in Maryville, TN) with a major in Biology and minor in English Literature. He attended graduate school at Wesleyan University (Middletown, CT) and received a Ph.D. in 1993 in Population Biology. He then went on to a postdoctoral position at RIKEN (The Institute of Physical and Chemical Research) in Wako-shi, Japan, from 1994-1996 and then to The Center for Microbial Ecology at Michigan State University in East Lansing, MI, from 1997-1999. He joined the Dynamac Corporation in June of 1999.

Research Interests: as the principal scientist of the LSSC Molecular Microbial Ecology Laboratory, his research interests focus on the ecology of microbial populations among the diverse ecosystems of Kennedy Space Center; area of interest ranges from the salt marshes of the Merritt Island National Wildlife Refuge to the "space trash" returned from shuttle and ISS missions, and includes both the bioreactors and biomass production systems in development for NASA Advanced Life Support bio/regenerative research; microbes are everywhere and it is our mission to find them, count them, and describe them.

10. Tony Rector, PI

Tony Rector is a Bioprocess engineer for Dynamac Corporation at Kennedy Space Center. He received both his Bachelors (2000) and Masters of Science (2002) in Civil Engineering from Texas Tech University. He joined Dynamac in the spring of 2003 as the bioprocess engineer supporting advanced water recovery research. His current duties include development/evaluation/modeling of "simulated microgravity" bioreactors for the treatment of gray water streams produced during space missions/habitations and engineering support of solid waste composting. His other research interests include analytical instrumentation, membrane processes, fluid dynamics and mass transfer in membrane and fluid systems.

11. Wayne Nicholson, PI

Dr. W. Nicholson is currently Associate Professor, Department of Microbiology and Cell Science, University of Florida working at SLSLab. His Ph.D. in genetic he got in 1987 from University of Wisconsin, Madison.
Area of current interests is related to microbial aspects of eco/system functioning including survival of bacteria in extreme environments (as an example space) and microbial evolution during long-term cultivation.

Patricia Fajardo-Cavazos, co-PI

Dr. P. Fajardo-Cavazos is currently Assistant Scientist, Department of Microbiology and Cell Science, University of Florida. Her Ph. D. in Microbiology she got in 1991 From Instituto Politecnico Nacional, Mexico City. Area of current research interests is molecular biology of soil microorganisms in closed ecosystems.

12. Peter Chetirkin, PI

Peter Chetirkin received a Bachelor of Arts degree in Biology from University of Miami in 1976, and is currently working towards a Masters degree in Education. He has been at KSC since 1982 and with Dynamac Corporation since 1995. His work included crop database development associated with the ALS program and supported US/East European collaborative science research and education programs. Presently he is part of the Fundamental Space Biology Outreach Program team. His present work includes developing science education projects associated with ALS and gravitational biology.

Ecology Group

1. Geoff Carter, PI

Geoff was born in Vero Beach, Fl and received his B.S. in Biology at the University of Central Florida in 1994. In 1996 he enrolled in the M.S. program at Eastern Kentucky University where he studied the mating system of Indigo Buntings. Geoff completed his masters, in Biology, in 1999 and came to work for Dynamac at Kennedy Space Center as a Wildlife Biologist. His research interests are avian ecology, conservation, and behavior. His research at KSC is focused on Florida Scrub-Jay ecology and conservation. Geoff spends his free time hiking with his Australian shepherds and fishing.

2. Donna Oddy, PI

Donna received a B.S. in marine biology in 1988 from the Florida Institute of Technology. She earned a M.S. in biology/ecology from the University of Central Florida in 2000. Donna is currently a wildlife biologist working in the habitat assessment group at Dynamac. Donna's research interests include threatened and endangered species management and conservation, avian and small mammal ecology, and fire ecology.

3. Carlton Hall, PI

Carlton received a B.S. in Wildlife and Fisheries Science in 1975 and a M.S. in Fisheries Ecology in 1977 from Texas A&M University. Carlton is currently working on a Ph.D. in Environmental Science at the Florida Institute of Technology. Carlton's research interests include estuarine ecology, fisheries science, and water quality as they relate to local and regional watershed characteristics, mesoscale meteorology, and hydrodynamics. He is also involved in research investigating applications of advanced technologies such as satellite and aircraft remote sensing and geographic information systems to environmental management issues. Current research includes determination of plant canopy biophysical and biochemical features and their relationships to absorption and scattering coefficients in terms of radiative transfer modeling, derivative spectroscopy, and interpretation of hyperspectral remote sensing data at the watershed scale.

4. Manuel Gimond, PI

Manny received a B.S. (1992), a M.S. (1996) and a Ph.D. (2000) in Environmental Science from the Florida Institute of technology. Manny is an Earth System Modeler currently working for Dynamac in the Earth Systems Modeling and Data Management Lab. His research interests include remote sensing, particularly hyperspectral data analysis and application of the radiative transfer theory to hydrologic optics, and geophysical modeling including estuarine circulation, coupling of the radiative transfer theory with air/water dynamics and mesoscale dynamics. Manny also develops GIS and web based tools for visualization of geospatial and time series data.

5. Ron Schaub, PI

Ron Schaub has a B.S. in biology (1984) from Mercy College and a M.S. (1990) in zoology from the University of South Florida. Ron is an Ecologist/Remote Sensing Analyst currently working for the Dynamac Corporation in the Earth Systems Modeling and Data Management Lab at Kennedy Space Center. Ron leads the Coastal Mapping and Analysis Project (CMAP) to assess the influence of natural processes and anthropogenic activities on the long-term stability of the Cape Canaveral – Merritt Island Barrier Island Complex. Ron also conducts wildland fire research and is lead developer of the Fire Management and Analysis Network (FireMAN), an operational application providing relevant information to support prescribed burning and wildfire response.

6. Paul Schmalzer, PI

Paul grew up in Parkton, Maryland. He received his B.A. in Biology in 1976 from Western Maryland College. He then enrolled in the University of Tennessee and received his M.S. in Ecology in 1978 and Ph.D. in Ecology 1982. His Research Interests are scrub ecology and restoration, fire ecology, and vegetation dynamics. At Kennedy Space Center he is a plant ecologist and the technical lead for the vegetation studies group at Dynamac.

7. Doug Scheidt, PI

Douglas was born in Gary, Indiana. He received his B.S. in Zoology from the University of Central Florida in 1983. His research interests are utilization and movement of ichthyofauna and macrocrustaceans in impounded coastal and estuarine wetlands, and curing world hunger. At Kennedy Space center he studies local and regional ichthyofauna, marine mammals, sea turtles, seagrass distribution, and water quality. Doug has very little spare time but when he does find a moment to himself he likes to work on unsolved problems like the Poincaré Conjecture, the Riemann Hypotheisis, Navier-Stokes Existence and Smoothness, and determining if the light in a refrigerator stays on when the door is closed.

Russ Lowers, co-PI

Russ Lowers received a B.S. in Biological Science from Western State College in 1988. Russ currently works for Dynamac as a Wildlife Biologist in the Aquatics Group.

Flight Experiments Group (FE)

1. Anna-Lisa Paul, PI

Dr. Anna-Lisa Paul, Ph.D. is Research Faculty at the University of Florida, Department of Horticultural Sciences and Program of Plant Molecular and Cellular Biology. Her research interests focus on the regulation of plant gene expression in response to abiotic stress and extreme environments, with a particular interest in the role of chromatin structure in gene regulation. Paul, and her colleague Rob Ferl, launched a Shuttle flight experiment in 1999 (STS-93) using transgenic Arabidopsis plants engineered with a reporter designed to monitor tissue specific changes in gene expression in response to spaceflight environments. Paul is currently engaged in investigations examining the effects of reduced atmospheric pressures on gene expression, and in preparations for another Flight experiment.

2. Rob Ferl, PI

Dr. Robert Ferl, Ph.D. is a Professor of Molecular Biology at the University of Florida, Department of Horticultural Sciences and Program of Plant Molecular and Cellular Biology. Ferl is director of UF's NASA-affiliated Center for Space Agriculture and Biotechnology Research and Education (SABRE), a program dedicated to finding ways to get plants to survive the rigors of spaceflight. Ferl and colleagues launched a Shuttle flight experiment in 1999 (STS-93) using transgenic Arabidopsis plants engineered with a reporter designed to monitor tissue specific changes in gene expression in response to spaceflight environments. His Program at the University of Florida encompasses aspects of gene regulation that range from biophysical function of regulatory proteins to genome wide responses of plants to abiotic stress.

3. Randall Sumner, PI

Dr. Randall M. Sumner, Lead Environmental Microbiologist, KSC Environmental Microbiology Laboratory. Education: BA - University of South Florida, MS - University of South Florida. Employed by The Bionetics Corporation since 1985, Randall has worked in both the KSC Clinical and Environmental Microbiology Laboratories and is currently the Lead Microbiologist for the Environmental Microbiology Laboratory. His primary responsibilities are supervising the activities involved with routine microbial sampling of flight vehicles, hardware and payloads. In addition, he oversees the operation of the State of Florida Certified Drinking Water Laboratory, coordination between Environmental Health personnel with indoor air quality surveys and microbial sampling and analyses for various research projects. He has been involved with the SLSTP program for many years.

4. **Oliver Van Den Ende, PI**

Oliver is a scientist in the Research Support division at the Space Life Sciences Lab. He is part of a team that provides laboratory and technical support to scientists and engineers when they come to KSC to have their space life science experiment launched. In addition, he works as a technician in the Advanced Life Support division helping grow plants hydro-ponically under conditions that the plants may encounter on future long-duration space flights. He has a BS in Marine Biology (Florida Tech, Melbourne), MS in Zoology (University of Maine, Orono) and is currently a PhD student at Florida Tech in Marine Biology (emphasis: fish eco-physiology).