

<b>NASA Johnson Space Center Bioastronautics Contract</b>	
<b>Employing Agency/Company:</b> Wyle Laboratories, Inc.	
<b>Points of Contact:</b>	
Jamie Downs, Contractual Lead 1290 Hercules, Houston, TX 77058 Phone: 281-204-1630/Fax: 281-212-1336 jdowns@wylehou.com	Jim Kula, Technical Lead 1290 Hercules, Houston, TX 77058 Phone: 281.212.1344/Fax: 281-212-1210 jkukla@wylehou.com
<b>Contract Description:</b> This contract supported the JSC Human Health and Performance Directorate. The scope of work includes biomedical research, biotechnology development, operational space medicine, clinical laboratories, human factors engineering, project management and facilitation, bonded storage, records and data management, space food laboratory development, biomedical engineering, biomedical hardware design, fabrication, testing, and payload and hardware integration with Space Shuttle and the International Space Station (ISS).	
<b>Place of Performance:</b> NASA JSC and Wyle, Houston, TX	<b>Period of Performance:</b> 08/01/2006-10/31/2015

### 3.1 - Research and Development Support

JES Tech delivered scientific support of the Exercise Physiology and Countermeasures Laboratory with graduate degree, ACLS certified scientists. We performed tests and experiments to evaluate, select, and adapt standard methods and exercise techniques. We conducted this testing both to monitor the health of individual crewmembers and to develop and validate exercise-based countermeasures for microgravity-induced deconditioning. Our staff developed and implemented research and operational protocols to more efficiently and comprehensively assess the response of the musculoskeletal, cardiovascular, and neuromuscular systems to prolonged spaceflight and to develop innovative countermeasures to the adverse effects of microgravity on these systems.

We organized and coordinate ground-based and flight testing of test subjects and astronauts, including collecting, reducing, analyzing, and interpreting physiological data. We performed equipment set up, calibration, and monitoring for these tests. Results of our work transformed standard pre- and post-flight physiologic testing for crewmembers and provided a clearer understanding of the exercise countermeasures hardware requirements for future deep space exploration missions.

JES Tech's team in the Immunology and Biochemical Analysis Laboratory led flight-analog and in-flight studies including the monitoring of pre-, in- and post-flight immune status and monitoring the risk of renal stone formation and the efficacy of countermeasures. Both areas are of high priority to NASA as part of the vision of long duration space flights. We supported crew landings and crew training along, with the Flight Analogs Project (Bed Rest) and NASA Extreme Environment Mission Operations (NEEMO). We processed biological samples for flight and ground analog studies where samples are analyzed to monitor immune status and risk of forming renal stones in crew members or test subjects. Results were compiled, reviewed and evaluated and delivered to the appropriate stakeholders.

<b>NASA Johnson Space Center Human Health Performance Contract (HHPC)</b>	
<b>Employing Agency/Company:</b> Wyle Laboratories, Inc.	
<b>Points of Contact:</b>	
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<b>Contract Description:</b> This contract supports human spaceflight activities, including fundamental and applied biomedical research; operational space medicine; occupational health and medicine at the Johnson Space Center and the White Sands Test Facility; management of clinical, biomedical, space food and environmental laboratories; design, fabrication, testing and operation of biomedical flight hardware; and payload and hardware integration with the International Space Station.	
<b>Place of Performance:</b> NASA JSC and Wyle, Houston, TX	<b>Period of Performance:</b> 11/01/2015-Present

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Our personnel also prepare scientific and technical reports, and then publish and present the results in peer-reviewed science journals and at national and international scientific meetings, respectively. Audiences include NASA HRP management, engineering groups (e.g., human factors, environmental systems), exploration mission designers, and members of the international science community

JES Tech microbiology personnel collect, process, and analyze microbial samples from environmental lab operations as well as ground and flight experiments using biochemical and molecular methods. We record results for operational and research activities within lab certification requirements.

Our personnel in the Toxicology and Environmental Chemistry Laboratory develop new assays for the analysis of water samples returned from the ISS. This early effort has proven very

promising and will open the doors to a wide-range of opportunities while providing technological collaboration between the two important areas of Crew Health and Environmental Monitoring.

Our team in the Nutritional Biochemistry lab implements biochemical nutritional assessment techniques to analyze samples for physiologic markers and provide detailed dietary intake assessments. Other work includes research and clinical dietetics, nutrition related physiological research, establishment of nutritional requirements, and bone remodeling assessment.