

<b>Cooperative Agreement Number:</b>	<b>NNH11CD70A</b>
<b>Name:</b>	<b>Center for the Advancement of Science in Space, Inc.</b>
<b>Date Submitted:</b>	<b>March 30, 2012</b>
<b>Section I</b>	<b>Technical Status Report</b>
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CASIS Executive Director, Dr. Jeanne L. Becker, Ph.D., resigned on 5 March 2012. After accepting Dr. Becker's resignation, the Board has requested formal approval from NASA of an action to have Mr. Jim Royston assume duties as the Interim Executive Director for a limited period. A nationwide search is being conducted to select a permanent Executive Director.

In the interim, the new CASIS management team has aggressively moved forward on many fronts. The focus since Dr. Becker's resignation has been heavily on marketing and communication efforts and as well as putting in place a team to identify research pathways in order to attract commercial researchers to the ISS U.S. National Laboratory.

To drive these efforts, interim management recruited additional personnel, appointing an Interim Chief Scientist, Dr. Timothy Yeatman, M.D., and a Director of Communications, Mr. Robert "Bobby" Block. The CASIS team is confident and focused on the milestones and recruiting participants to stimulate and promote interest and use of the ISS. Our STEM education program is also well underway with discussions with several professional organizations interested in sponsoring educational programs on Station and looking for synergies by creating educational games and mobile applications tying space research to popular sporting pastimes on earth.

### Section I: TECHNICAL STATUS REPORT

- **Board of Directors:** An executive search firm has been retained to strategically select the Board of Directors as well as the new Executive Director. This process will ensure a nationwide search is conducted for the most qualified candidates. The search process has been defined and will take place from March through the end of summer, with final selections being made by early fall.
- **Chief Scientist: Dr. Timothy Yeatman, M.D.,** named the Interim Chief Scientist.  
*(Dr. Yeatman will serve as the interim Chief Scientist until the new appointed Executive Director selects the Chief Scientist)*  
*Professor of Surgery/Senior Member of Oncological Sciences at Moffitt Cancer Center, Tampa, FL; Professor Molecular Biology and Biochemistry, University of South Florida College of Medicine; Former President and Founding Chief Scientific Officer, M2Gen, a personalized medicine company; Former Principal Investigator of the Total Cancer Care initiative in personalized medicine; Recipient of numerous National Cancer Institute Director Challenge Awards and other Federal research funding, including the "Director's Challenge" grant. BA from Duke University, Durham, North Carolina, 1980. Graduated from Emory University School of Medicine, Atlanta, Georgia, 1984. AACR Post-Graduate Course Workshop in Molecular Biology, Aspen, CO, July 1993.*
- **Recruitment of Scientific Review Board and Interim Scientific Collegium Members:**  
Headed up by Dr. Yeatman the interim Scientific Collegium was established to review and prioritize the experiments sent to the International Space Station and compare relevance to existing current research and market opportunities. This will help guide the CASIS science team in developing the initial research pathway maps. *(Once the Executive Director and Chief Scientist are in place, they will finalize the structure and participants of the Scientific Collegium.)*  
The Scientific Review Board and the interim Scientific Collegium members include:
  - **Leroy Hood, M.D., Ph.D.**
    - *President/Co-founder Institute for Systems Biology*
    - *Member, National Academy of Science, National Academy of Engineering, Institute of Medicine and National Inventors Hall of Fame (Also invented the DNA sequencer/synthesizer)*
    - *Founder of 14 companies including Amgen, Applied Bio systems and Integrated Diagnostic*
  - **Walter Chazin, Ph.D.**
    - *Professor, Biochemistry and Physics Vanderbilt University*
    - *Director, Center for Structural Biology and Ingram Professor of Cancer Research*
    - *Instrumental in the development of structural biology and molecular biophysics (involves complementary application of different structural approaches including*

*spectroscopy, scattering, crystallography and microscopy)*

- *Research focused on multi-protein complexes, 3-D structures and characterization of binding interfaces/interactions*

**Arnold Levine, Ph.D.**

- *Professor, Institute of Advanced Study, Princeton University*
- *Professor, Department of Biochemistry, Robert Wood Johnson Medical School*
- *Former President and CEO of Rockefeller University*
- *Recipient of American Cancer Society Medal of Honor*
- *Co-Discoverer of p53 tumor suppressor gene*

**Torben Orntoft, Ph.D.**

- *Head, Department of Molecular Medicine, Aarhus University, Denmark.*
- *CEO of AROS Applied Biochemistry*
- *Member, European Academy of Cancer Sciences*
- *Member, Scientific Advisory Board, Novo Nordisk*
- *Research focused on identification of molecular biomarkers for use in disease classification and prediction*

**Jeffrey Trent, Ph.D.**

- *President, Translational Genomics Research Institute*
- *Founding Scientific Director, Intramural Research for the Human Genome Research Institute, NIH*
- *Member, multiple commercial company scientific advisory boards*

- **Space Life Sciences Lab:** The CASIS offices were established at the lab in mid December 2011, the offices received water damage and were vacated on 17 February 2012. Alternate space was established to support CASIS activities. Once the facility is back on line CASIS operations and support activities will move back to the SLSL.

- **CASIS Executive Director, Dr. Jeanne L. Becker, PH.D.,** resigned on 5 March 2012. After accepting Ms. Becker's resignation, the Board has requested formal approval from NASA of an action to have Mr. Jim Royston assume duties as the Interim Executive Director for a limited period, during which a nationwide search is being conducted to select a permanent Executive Director. Mr. Royston will fulfill these duties as a full time employee of CASIS reporting to the Board. Once a permanent Executive Director is selected, Mr. Royston will return to his former duties as the Director of Strategy & Planning.

- **CASIS Director of Administration, Joanne Hutcheson** submitted her resignation as the Secretary/Treasurer of CASIS effective 1 March 2012 and as the Director of Administration effective 30 March 2012. CASIS will place an interim position to support these roles until the new Executive Director can make a formal replacement selection.

## Section II: PERFORMANCE METRICS

- **Research Pathways:** Research pathway maps define a process for connecting basic research, applied research and resulting mission and market application. This approach will produce value by clarifying which pathways are more promising and facilitating a shorter cycle for translation of developing science and technology applications to practical use. Members of the interim Science Collegium have been using their diverse skills and technical experience in science and engineering disciplines to analyze data from (2001–2011) previous experiments as well as current ISS National Lab Users. The initial three major pathways in the first year will be Life Sciences, Materials Science, and Observational Science. The major pathway maps will be divided into sub pathways or vertical markets based on market place analysis. i.e initial life science pathway might be broken into Protein Crystal Growth, Tissue Engineering, and Osteoporosis. Updates to the pathway definitions will be provided in our quarterly updates
- **Solicitation Prioritization and Test Cases:** The top-level solicitation, valuation and prioritization methodology has been developed and is being tested. This process will be used and adjusted in Q3 as we prepare for the first formal solicitation. In addition, CASIS developed a fast track model aligned with NASA's LEAN integration process to test the viability of rapidly selecting and approving flight project opportunities that can be integrated into the increment planning process. This effort led to further development of CASIS' approach to receiving unsolicited or off-cycle proposals and prioritizing them based on our internal scientific/economic evaluation process and flight manifest opportunities. CASIS is focused on developing funding models including internal matched funding to outside funding in support of unsolicited and/or unfunded proposals.
  - Flight test cases are being evaluated and will be aligned with the initial pathway maps. These projects will be initiated in the 3<sup>rd</sup> quarter and utilize the current valuation and prioritization methodology.
  - Development and submission of an implementation partner/vendor "request for information" (RFI): An RFI was issued with a follow-on webinar Q&A session. Submissions are due 31 March 2012, the participation was desirable for our first RFI.
- **Membership and Marketplace:**
  - Membership structure has been defined and a software framework using "Blackbaud, Raiser's Edge" as membership and donor software architecture was procured and is being implemented.
  - Marketplace validation is underway as part of due diligence and ensuring CASIS is taking into account potential client requirements. Marketplace messaging has been developed for multiple target constituencies. Thought leadership sessions have been initiated to validate the messaging and to establish contacts within a variety of associations and academic institutions. In addition to having the interim Science Collegium analyze past activity to identify most promising commercial relevance, CASIS has continued to develop the overall strategy and has put in place a process whereby business executives, leading academics and venture capitalist are presented with the CASIS product offering and asked for their feedback on use, relevance, interest, what are the obstacles, and what does CASIS need to further do to make this commercially viable. A series of thought leadership sessions have been initiated to validate the messaging and to establish contacts within a

variety of associations and academic institutions. To date, sessions have taken place in San Diego and San Francisco with senior leaders from business, academic, and the VC community, including: Sheryl P. Denker, Senior Program Director, BayBio; Luke Evnin, Managing Director, MPM Capital; David Lacey, Senior Vice President, Amgen; Stephen Shrewsbury, Founder, Shrewsbury Clinical Consulting; David Webb, Adjunct Professor, Scripps Research Institute; Liz Bui, VP of Intellectual Property, Viacyste; Declan McCole, Asst. Adjunct Professor, Gastroenterology, UCSD; Mathew Mitchell, Licensing Officer, The Scripps Research Institute; Alysson Muotri, Asst. Professor, Cellular and Molecular Biology, UCSD; Rolf Muller, President, Biomatrix; Keith Murphy, CEO, Organovo; Victor Nizet, Professor, Pediatrics and Pharmacy, UCSD; Evan Snyder, Program Director and Professor of Stem Cells and Regenerative Medicine, Burnham Institute for Medical Research; John Wehrli, Partner, Latham & Watkins; and Steve Worland, Past CEO, Anadys Pharmaceuticals.

- **Marketing/Communications:** On 5 March 2012, Robert "Bobby" Block was named Director of Communications. Prior to joining CASIS, Block served as the vice president of corporate communications for Space Exploration Technologies (SpaceX), a commercial spaceflight company based in Hawthorne, CA. While at SpaceX, Block was credited by space industry media with making the company more "press friendly" and transparent. Prior to SpaceX, Block held senior-level news reporting positions at nationally-recognized organizations like Reuters, the Wall Street Journal and the Orlando Sentinel. He is an author and award-winning journalist with more than three decades of experience in media and public relations.

The CASIS Marketing/Communications (MarCom) team is busy implementing a basic media and outreach push as the first phase of a larger branding and messaging strategy. In order to form the high-value partnerships that will be critical to the success of CASIS advocacy and STEM support functions, as well as its ability to attract the interest of financiers and Fortune 100 companies, CASIS must build its brand into a recognizable entity synonymous with space innovation and research. To help achieve this objective, the CASIS MarCom team is focusing efforts on creating a dynamic new website that will be able reach and engage a wide audience, ranging from elementary school students to captains of industry.

The website will provide visitors with the basics about the organization and will entice them to become members/supporters of CASIS and, eventually, participants in an innovation exchange forum that will be hosted online. (This forum will be known as the CASIS Marketplace and will link a searchable intelligent database with networking software.) The website will also provide essential information for researchers, commercial entities and educators interested in opportunities to utilize the ISS U.S. National Laboratory. It will also link to important NASA webpages to be able to give visitors the complete breadth of ISS history and capabilities as well as station research. The new website will feature marketing and press videos, which are already in post production, as well as guest columns by well-known scientists and celebrities who are passionate about the importance of space-based research on ISS. The first of these has been written and is ready to go. The site will have links to CASIS Facebook and YouTube channels. The "front end" of the site is expected to come online in coming weeks and is expected to be completely "built out" with full multi-media, database and interactivity capabilities by the end of May.

In order to establish a wider CASIS communications presence and to better be able to articulate our message, the CASIS MarCom team now has a presence in Washington DC with the appointment of a Strategic Communications Manager. The new Communications Director has also been in consultation with NASA PAO at headquarters and will be part of a new agency-wide push towards creating a long-term communications strategy to realign NASA messaging to support Station and ISS utilization. The MarCom team will also be helping headquarters coordinate the efforts among the various entities such as Delaware North and Destination Station to improve advocacy and STEM efforts in order to share resources for better results and avoid wasteful duplication of effort. The CASIS MarCom team is also preparing for upcoming conferences, and has prepared news releases for important upcoming announcements, including a major commercial research announcement in April, possibly at the National Press Club in Washington DC and again at the National Space Symposium.

A press release about the work and preliminary findings of the first Scientific Review panel was issued in March and will soon be followed with a video release tied to the appointment of our interim chief science officer. As a new executive director and permanent Chief Science Officer are selected, we can move toward rolling them out to editorial boards across the country. Preparations are also underway to prepare for the next phase of branding which will include a push to raise awareness of CASIS in popular culture outlets, from TV shows to video games. We will soon be hosting a contest to design and name a mascot for CASIS, which will be used by the education group as an avatar to engage children. In addition, we have started to investigate simple merchandizing opportunities in line with our role as a non-profit organization.

- **Transition Existing ISS National Lab User Groups:** CASIS received all identified ISS National Lab Space Act Agreements and transitioned them into Memorandums of Agreement. These were submitted to the academic or commercial institution for internal review and approval. CASIS is now working directly with those entities to finalize all agreements. Additionally, CASIS is developing its first new agreement with an entity that was not previously associated with the National Lab office. This agreement will allow CASIS to work with this entity to develop its first flight payload.

- **Compliance:** Control, authorization, contract reporting and compliance policies and procedures have been implemented, including the following attached documents:
  - Procurement Code of Conduct
  - Procurement Procedures and Requirements
  - Subcontractor Standard Agreement
  - Personal Conflict of Interest Policy
  - Organizational Conflict of Interest Mitigation Plan
  - Employee Confidentiality Agreement
  - Subcontractor Confidentiality Agreement
  - Intellectual Property Management Plan
  - Contracts Process Management
- **Organization Ethics Protocols:** An organizational ethics protocol has been implemented, the Code of Organizational Ethics and Integrity, a copy of this policy is attached.

- **IT Infrastructure:** Much activity on the development of the CASIS IT infrastructure has been accomplished to significantly improve the support of dynamic activity for grants, membership and the marketplace exchange. An interim website, CASIS 1.5, is in beta testing, and additional website pages are in process, fully explaining and communicating the CASIS mission. A fully integrated website page will be in beta testing by March 31, 2012. This includes the selected of Blackbaud's Raiser's Edge software to track CASIS constituent information including membership, donors, grant recipients, implementation partners, researchers, investors, etc. This new software package also serves as CASIS contact relationship management system and merchant services for collecting donations and membership fees through the CASIS website. Implementation and training have begun and will be fully functional by mid April. The CASIS website has also been modified to allow submission of RFIs and a Twitter account. In addition to the website, CASIS has made progress on other IT infrastructure including a contract management system ("Contract Logistix") and compliance package.

### Section III: BUSINESS STATUS REPORT

29 February 2012

	Budget	Actuals YTD 2011-2012	Variance
	<b>\$19,958,755</b>	<b>\$2,994,570</b>	<b>\$16,964,185</b>
Direct Labor	7,479,083	1,267,345	6,211,738
Grants to be Awarded	3,000,000	0	3,000,000
Equipment (Permanent > \$5k)		0	0
Equipment (Expendable and Supplies)	323,800	114,512	209,288
Other Direct Costs	2,552,978	104,192	2,488,786
Subcontract Costs	6,014,394	1,403,484	4,610,910
Travel	588,500	105,037	483,463