



Summary of the evaluation of Human space missions and ISS Utilization

10 Research projects were ongoing/completed from 2013 to 2018

10 Scientific instruments were being developed/completed from 2013 to 2018

In 2016-2017, Jennifer Sidey and Joshua Kutryk were hired during a vast recruitment campaign. This brought about:

- \$14 million in advertising;
- 22 million media impressions;
- 925,000 social media engagements;
- Over 2 million visits to the astronauts' web page.



116%

Annual average rate of use of crew time planned for scientific research in the International Space Station. Canada's planned allocated time from among the partners is 2.3%.

Chris Hadfield participated in his third space mission from December 2012 to May 2013.



- 33 live events from space;
- 88 scientific videos produced, having received more than 42 million views;
- 7,000 students from approximately 300 schools communicated and interacted with Chris Hadfield during the mission.

47 peer-reviewed publications issued from program funding were published between 2013 and 2018.



- 254 citations in other scientific publications (on average 5.4 times each);
- 58% of the publications were an international collaboration with 10 countries;
- The average of citations related to researchers funded by the CSA is 1.46 for the period from 2011 to 2017.



- On average 58 HQP per year worked with a lead researcher;
- On average 13 students worked on projects funded by the CSA;
- The OSTEON instrument was involved in a number of missions: e-OSTEON (1998, 2003, 2007), OSTEON-4 (2015) and InVitroBone (2018);
- Astroskin was marketed as a line of intelligent clothing called Hexoskin.



- Dr. Peter Suedfeld received the Order of Canada in 2019;
- Dr. Giuseppe Iaria received the Established Researcher Award in 2017 from the University of Calgary;
- Dr. Richard Hughson received four recognition awards, including NASA's Exceptional Scientific Achievement Medal.





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About the evaluation

The evaluation's purpose was to collect and analyze evidence on the **relevance and performance** of the activities undertaken by the program.

It covers the period from **April 2013 to March 2018**.

It was led by the CSA evaluation team from June 2018 to September 2019 in response to the **Treasury Board Secretariat's Policy on Results**.

The evaluation used a **mixed-methods** approach that combined **qualitative and quantitative analyses** including:

- Document, performance and financial data review;
- Key informant interviews;
- Case studies.

What does the program focus on?

The objectives of this program are:

- 1) **To position Canada** at the forefront of science and technology;
- 2) To recruit, train and secure **flight opportunities for astronauts**;
- 3) To identify, understand, reduce and eliminate the risks to the **health of astronauts**;
- 4) To design, build, launch and operate space hardware **to conduct life science experiments**;
- 5) **To support the health of astronauts** and create **new jobs** in fields, such as engineering, science, manufacturing and administration.

What did we learn?

The program not only meets a demonstrated need by **maximizing the return on investments** made in the past (the full use of the time allocated to Canada in the ISS), but it also allows us to **take advantage of the experience and reputation acquired** by the CSA over the years.

The **delivery model is deemed sufficient** and the new space strategy allows us to position the program for the future.

Overall, the **outputs and results targeted** by the program were **achieved or surpassed**. Canadian researchers and astronauts are recognized by the international community and seem to garner the interest of the general population. Some projects led to uses on Earth and re-uses in space.

The partnership model of the ISS offers Canada **scientific and technological opportunities**, since it allows us to benefit from a unique research laboratory in space. The human resources working on the program are deemed competent and the time allotted for use of the ISS is maximized.

In conclusion...

The evaluation of the program demonstrated that the program is **relevant** and that it **achieves the targeted results** while being **efficient**.

It allows Canada to continue playing a key role in human space missions and also in health and life science research in space.

