THE HAYABUSA CURATION FACILITY AT JOHNSON SPACE CENTER. M. Zolensky[1], R. Bastien[2], B. McCann[2], D. Frank[2], C. Gonzalez[2], M. Rodriguez[2]; [1]ARES, NASA Johnson Space Center, Houston, TX 77058, USA (e-mail: michael.e.zolensky@nasa.gov); [2]JETS/NASA Johnson Space Center, Houston, TX 77058 USA.

Introduction: The Japan Aerospace Exploration Agency (JAXA) Hayabusa spacecraft made contact with the asteroid 25143 Itokawa and collected regolith dust from Muses Sea region of smooth terrain [1]. The spacecraft returned to Earth with more than 10,000 grains ranging in size from just over 300 μm to less than 10 μm [2, 3]. These grains represent the only collection of material returned from an asteroid by a spacecraft. As part of the joint agreement between JAXA and NASA for the mission, 10% of the Hayabusa grains are being transferred to NASA for parallel curation and allocation. In order to properly receive process and curate these samples, a new curation facility was established at Johnson Space Center (JSC).

A Pristine Curation Environment: Since the Hayabusa samples within the JAXA curation facility have been stored free from exposure to terrestrial atmosphere and contamination [4], one of the goals of the new NASA curation facility was to continue this treatment. An existing lab space at JSC was transformed into a 120 sq.ft. ISO class 4 (equivalent to the original class 10 standard) clean room. Hayabusa samples are stored, observed, processed, and packaged for allocation inside a stainless steel glove box under dry N_2. Construction of the clean laboratory was completed in 2012. Currently, 25 Itokawa particles are lodged in NASA's Hayabusa Lab. Special care has been taken during lab construction to remove or contain materials that may contribute contaminant particles in the same size range as the Hayabusa grains. Several witness plates of various materials are installed around the clean lab and within the glove box to permit characterization of local contaminants at regular intervals by SEM and mass spectrometry, and particle counts of the lab environment are frequently acquired. Of particular interest is anodized aluminum, which contains copious sub-mm grains of a multitude of different materials embedded in its upper surface. Unfortunately the use of anodized aluminum was necessary in the construction of the clean room frame to strengthen it and eliminate corrosion and wear over time. All anodized aluminum interior to the lab was thus covered or replaced by minimally-contaminating materials.

Manipulating Sub-mm Asteroid Grains: Although NASA already curates other collections containing sub-mm extraterrestrial particles, the Hayabusa asteroid grains are "naked", and some other form of assistance is required. JAXA/ISAS and researchers at Kyushu University and Sendai University, under the direction of Tomoki Nakamura and Akio Fujimura, have developed an electrostatic particle manipulator system, which we are now adapting to our lab. Alternatively, we are testing the efficacy of a "vacuum tweezers" system using quartz glass needles with an open tip diameter less than 5 μm. However, such a vacuum system would necessarily be located outside of the glove box.

Additional information about NASA's Hayabusa collection is available at http://curator.jsc.nasa.gov/hayabusa/.

References: [1] Yano et al. (2006) *Science* **312**, 1350, [2] Nakamura et al. (2011) *Science* **333**, 1113, [3] Abe M. (2011) pers. com., [4] Yada et al. (2011) *Meteoritics & Planetary Science* ***74*** abst. 5386.