IN FLIGHT miRNA ISOLATION AND RECOVERY ON THE ISS USING THE WETLAB-2 SYSTEM

Emily Johnson (NASA SLSTP) & Wetlab2 team
**Current Wetlab-2 system:** “end-to-end” (tissue to gene expression) capability on the ISS, for mRNA

**Goal of this project:** to extend the Wetlab-2 capability to snRNAs (including miRNA)

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From benchtop to SPM (sample prep module)

- mirVana miRNA Isolation Protocol
- Qiagen RNeasy Plant Protocol
- RNA Protect Protocol
- Claremont Bio Column Protocol

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Extracted samples are analyzed on small RNA chip
- miRNAs: ~20-40 nt; snRNAs: ~80-150 nt

To confirm extractions are miRNA, qPCR analysis with endogenous miRNA primers

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The CB column retains snRNA with higher yields than the benchtop MirVANA kit.

<table>
<thead>
<tr>
<th>Relative Total Amount (pg)</th>
<th>MICB</th>
<th>CBO</th>
<th>CBS</th>
<th>FCB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ave miRNA</td>
<td>17890</td>
<td>18450</td>
<td>22410</td>
<td>10770</td>
</tr>
<tr>
<td>Ave tRNA</td>
<td>4810</td>
<td>6020</td>
<td>5410</td>
<td>3830</td>
</tr>
<tr>
<td>Ave total snRNA</td>
<td>47530</td>
<td>50990</td>
<td>54170</td>
<td>32700</td>
</tr>
</tbody>
</table>

Stop by the Space Biosciences booth to see the Wetlab-2 system in person.