Nine male flies aged for 5 days were starved for 22–24 hrs. They were then placed in a dish with nine drops of 1% agar (25µl each). In the agar, each plate had 1, 10, or 50 mM sucrose. A camera recorded the behavior of the flies for 10 min. From the videos not only did we calculate the overall time spent, but we also quantified features such as the length of every individual feeding bout. We then examined behavioral patterns such as the number of agar drops visited by a fly with less than a 0.5-sec pause between each.

**Results**

<table>
<thead>
<tr>
<th>Sucrose (mM)</th>
<th>Percentage of flies that fed for more than 5 sec</th>
</tr>
</thead>
<tbody>
<tr>
<td>1mM</td>
<td>44%</td>
</tr>
<tr>
<td>10mM</td>
<td>100%</td>
</tr>
<tr>
<td>50mM</td>
<td>100%</td>
</tr>
</tbody>
</table>

We looked at the overall feeding time for all 9 flies. When sucrose concentration was increased, flies fed for a longer period of time overall. This agrees with previous findings that total consumption increases with sugar concentration.

**Feeding Cycles**

We defined a feeding cycle as at least one visit of at least 0.5 sec followed by a gap of at least 0.5 sec after the last drop visited. Most flies fed from one agar drop before retreating to the side. With an increase in sucrose concentration, flies were more likely to feed from multiple agar drops in a continuous cycle.

**Conclusion**

- Flies fed for a longer overall time with higher sucrose
- Flies fed in 2-sec bouts on average
- Flies visited more drops in a feeding cycle when sucrose concentration increased
- Video imaging would be useful for genetic analysis of feeding circuits

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**References**