

# Shake 'N Plate

## Manual Plating Tool

2800 MITCHELL DRIVE / WALNUT CREEK / CA 94598  
[www.jgi.doe.gov](http://www.jgi.doe.gov)



**Before**



**After**

### Ergonomic Improvements

#### **Administrative:**

- Leg Room for seated option

#### **Off the Shelf:**

- Lighter plates
- Anti-fatigue Mat

#### **Custom Engineering:**

- Easy to use fixture (vs. hands) to hold the plates

#### **Results:**

- 25% ↑ throughput
- Reduced workers strain

### Before Intervention

<ul style="list-style-type: none"> <li>• 9"x9" bioassay plates</li> <li>• Weight: 1.4lbs/plate</li> <li>• 40 plates/process</li> <li>• 5 plates/cycle</li> </ul>	<ul style="list-style-type: none"> <li>• 1-2 minute shake time/cycle</li> <li>• Approx. 100 efforts/minute</li> <li>• Total processing time 40 minutes</li> <li>• Process 150 plates per day</li> </ul>
--	---

	<b>Before</b>	<b>After</b>
<b>Safety</b>	<ul style="list-style-type: none"> <li>• Grip Force 30-41% of maximum voluntary contraction</li> <li>• Strain Index = 40.5</li> </ul>	<ul style="list-style-type: none"> <li>• Grip Force 14-19% of maximum voluntary contraction</li> <li>• Strain Index = 2.3</li> </ul>
<b>Quality</b>	<ul style="list-style-type: none"> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• The quality of the sample did not change.</li> </ul>
<b>Delivery/Efficiency</b>	<ul style="list-style-type: none"> <li>• Process 4 bioassays per cycle manually.</li> </ul>	<ul style="list-style-type: none"> <li>• Process 5 bioassays per cycle with fixture.</li> <li>• Increased throughput by 25%.</li> </ul>
<b>Cost</b>	<ul style="list-style-type: none"> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Reduction in process time by 25%; ROI (10 years) = 0.6 months</li> </ul>
<b>Morale/Teamwork</b>	<ul style="list-style-type: none"> <li>• Common musculoskeletal complaints due to load on shoulders, back, and hands.</li> </ul>	<ul style="list-style-type: none"> <li>• Participatory process → production staff design concept.</li> <li>• The new workstations ↑ flexibility for multiple operators.</li> <li>• Increased morale due to improvement of task and potential for future automation &amp; cross training.</li> </ul>