SUPPORTING INFORMATION FOR

Automated Microfluidic Screening Assay Platform Based on DropLab

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Figure S1. Images of a flat tip capillary (150 µm i.d) and a tapered fused silica capillary (inner diameter of tip end, 25 µm). Left: viewing from side; Right: viewing from the cross section of the tip end.
Figure S2. Fabrication of slotted vial arrays. (A) 30 µL vials cut from 384-well plate. (B) and (C) Slotted vials with 0.5-mm-wide slots fabricated on the bottom of each vial.

Figure S3. Image of eight 10-cm-long capillaries in parallel experiments for lysozyme crystallization screening. Each capillary stored 50 droplets for screening of 50 precipitants as listed in Table S1.
Table S1. Compositions of the screened protein precipitants.

<table>
<thead>
<tr>
<th></th>
<th>Salt</th>
<th>Buffer</th>
<th>Precipitants</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.0 M Sodium chloride</td>
<td>0.1 M Sodium acetate trihydrate pH 4.6</td>
<td>25% w/v Polyethylene glycol 6,000</td>
</tr>
<tr>
<td>2</td>
<td>0.02 M Calcium chloride dihydrate</td>
<td>0.1 M Sodium acetate trihydrate pH 4.6</td>
<td>30% v/v (+/-)-2-Methyl-2,4-pentanediol</td>
</tr>
<tr>
<td>3</td>
<td>None</td>
<td>None</td>
<td>0.4 M Potassium sodium tartrate tetrahydrate</td>
</tr>
<tr>
<td>4</td>
<td>None</td>
<td>None</td>
<td>0.4 M Ammonium phosphate monobasic</td>
</tr>
<tr>
<td>5</td>
<td>None</td>
<td>0.1 M TRIS hydrochloride pH 8.5</td>
<td>2.0 M Ammonium sulfate</td>
</tr>
<tr>
<td>6</td>
<td>0.2 M Sodium citrate tribasic dihydrate</td>
<td>0.1 M HEPES sodium pH 7.5</td>
<td>30% v/v (+/-)-2-Methyl-2,4-pentanediol</td>
</tr>
<tr>
<td>7</td>
<td>0.2 M Magnesium chloride hexahydrate</td>
<td>0.1 M TRIS hydrochloride pH 8.5</td>
<td>30% w/v Polyethylene glycol 4,000</td>
</tr>
<tr>
<td>8</td>
<td>None</td>
<td>0.1 M Sodium cacodylate trihydrate pH 6.5</td>
<td>1.4 M Sodium acetate trihydrate</td>
</tr>
<tr>
<td>9</td>
<td>0.2 M Sodium citrate tribasic dihydrate</td>
<td>0.1 M Sodium cacodylate trihydrate pH 6.5</td>
<td>30% v/v 2-Propanol</td>
</tr>
<tr>
<td>10</td>
<td>0.2 M Ammonium acetate</td>
<td>0.1 M Sodium citrate tribasic dihydrate pH 5.6</td>
<td>30% w/v Polyethylene glycol 4,000</td>
</tr>
<tr>
<td>11</td>
<td>0.2 M Ammonium acetate</td>
<td>0.1 M Sodium acetate trihydrate pH 4.6</td>
<td>30% w/v Polyethylene glycol 4,000</td>
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<tr>
<td>12</td>
<td>None</td>
<td>0.1 M Sodium citrate tribasic dihydrate pH 5.6</td>
<td>1.0 M Ammonium phosphate monobasic</td>
</tr>
<tr>
<td>13</td>
<td>0.2 M Magnesium chloride hexahydrate</td>
<td>0.1 M HEPES sodium pH 7.5</td>
<td>30% v/v 2-Propanol</td>
</tr>
<tr>
<td>14</td>
<td>0.2 M Sodium citrate tribasic dihydrate</td>
<td>0.1 M TRIS hydrochloride pH 8.5</td>
<td>30% v/v Polyethylene glycol 400</td>
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<tr>
<td>15</td>
<td>0.2 M Calcium chloride dihydrate</td>
<td>0.1 M HEPES sodium pH 7.5</td>
<td>28% v/v Polyethylene glycol 400</td>
</tr>
<tr>
<td>16</td>
<td>0.2 M Ammonium sulfate</td>
<td>0.1 M Sodium cacodylate trihydrate pH 6.5</td>
<td>30% w/v Polyethylene glycol 8,000</td>
</tr>
<tr>
<td>17</td>
<td>None</td>
<td>0.1 M HEPES sodium pH 7.5</td>
<td>1.5 M Lithium sulfate monohydrate</td>
</tr>
<tr>
<td>18</td>
<td>0.2 M Lithium sulfate monohydrate</td>
<td>0.1 M TRIS hydrochloride pH 8.5</td>
<td>30% w/v Polyethylene glycol 4,000</td>
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<tr>
<td>19</td>
<td>0.2 M Magnesium acetate tetrahydrate</td>
<td>0.1 M Sodium cacodylate trihydrate pH 6.5</td>
<td>20% w/v Polyethylene glycol 8,000</td>
</tr>
<tr>
<td>20</td>
<td>0.2 M Ammonium acetate</td>
<td>0.1 M TRIS hydrochloride pH 8.5</td>
<td>30% v/v 2-Propanol</td>
</tr>
<tr>
<td></td>
<td>Concentration</td>
<td>pH Value</td>
<td>Polyethylene Glycol</td>
</tr>
<tr>
<td>---</td>
<td>------------------------</td>
<td>---------------------------</td>
<td>---------------------</td>
</tr>
</tbody>
</table>
| 21 | 0.2 M Ammonium sulfate | 0.1 M Sodium acetate trihydrate  
 |   |                        | pH 4.6                  | 25% w/v Polyethylene glycol 4,000 |
| 22 | 0.2 M Magnesium acetate tetrahydrate | 0.1 M Sodium cacodylate trihydrate pH 6.5 | 30% v/v (+/-)-2-Methyl-2,4-pentanediol |
| 23 | 0.2 M Sodium acetate trihydrate | 0.1 M TRIS hydrochloride pH 8.5 | 30% w/v Polyethylene glycol 4,000 |
| 24 | 0.2 M Magnesium chloride hexahydrate | 0.1 M HEPES sodium pH 7.5 | 30% v/v Polyethylene glycol 400 |
| 25 | 0.2 M Calcium chloride dihydrate | 0.1 M Sodium acetate trihydrate pH 4.6 | 20% v/v 2-Propanol |
| 26 | None | 0.1 M Imidazole pH 6.5 | 1.0 M Sodium acetate trihydrate |
| 27 | 0.2 M Ammonium acetate | 0.1 M Sodium citrate tribasic dihydrate pH 5.6 | 30% v/v (+/-)-2-Methyl-2,4-pentanediol |
| 28 | 0.2 M Sodium citrate tribasic dihydrate | 0.1 M HEPES sodium pH 7.5 | 20% v/v 2-Propanol |
| 29 | 0.2 M Sodium acetate trihydrate | 0.1 M Sodium cacodylate trihydrate pH 6.5 | 30% w/v Polyethylene glycol 8,000 |
| 30 | None | 0.1 M HEPES sodium pH 7.5 | 0.8 M Potassium sodium tartrate tetrahydrate |
| 31 | 0.2 M Ammonium sulfate | None | 30% w/v Polyethylene glycol 8,000 |
| 32 | 0.2 M Ammonium sulfate | None | 30% w/v Polyethylene glycol 4,000 |
| 33 | None | None | 2.0 M Ammonium sulfate |
| 34 | None | None | 4.0 M Sodium formate |
| 35 | None | 0.1 M Sodium acetate trihydrate pH 4.6 | 2.0 M Sodium formate |
| 36 | None | 0.1 M HEPES sodium pH 7.5 | 0.8 M Sodium phosphate monobasic monohydrate  
 |   |                        |                          | 0.8 M Potassium phosphate monobasic |
| 37 | None | 0.1 M Sodium acetate trihydrate pH 4.6 | 8% w/v Polyethylene glycol 4,000 |
| 38 | None | 0.1 M HEPES sodium pH 7.5 | 1.4 M Sodium citrate tribasic dihydrate |
| 39 | None | 0.1 M HEPES sodium pH 7.5 | 2% v/v Polyethylene glycol 400  
 |   |                        |                          | 2.0 M Ammonium sulfate |
| 40 | None | 0.1 M Sodium citrate tribasic dihydrate pH 5.6 | 20% v/v 2-Propanol  
<p>|   |                        |                          | 20% w/v Polyethylene glycol 4,000 |
| 41 | None | 0.1 M HEPES sodium pH 7.5 | 10% v/v 2-Propanol |</p>
<table>
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<tr>
<td>42</td>
<td>0.05 M Potassium phosphate monobasic</td>
<td>None</td>
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<tr>
<td>43</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>44</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>45</td>
<td>0.2 M Zinc acetate dihydrate</td>
<td>0.1 M Sodium cacodylate trihydrate pH 6.5</td>
</tr>
<tr>
<td>46</td>
<td>0.2 M Calcium acetate hydrate</td>
<td>0.1 M Sodium cacodylate trihydrate pH 6.5</td>
</tr>
<tr>
<td>47</td>
<td>None</td>
<td>0.1 M Sodium acetate trihydrate pH 4.6</td>
</tr>
<tr>
<td>48</td>
<td>None</td>
<td>0.1 M TRIS hydrochloride pH 8.5</td>
</tr>
<tr>
<td>49</td>
<td>1.0 M Lithium sulfate monohydrate</td>
<td>None</td>
</tr>
<tr>
<td>50</td>
<td>0.5 M Lithium sulfate monohydrate</td>
<td>None</td>
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</tbody>
</table>

<p>| | | |</p>
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</thead>
<tbody>
<tr>
<td>42</td>
<td>20% w/v Polyethylene glycol 4,000</td>
<td></td>
</tr>
<tr>
<td>43</td>
<td>20% w/v Polyethylene glycol 8,000</td>
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<tr>
<td>44</td>
<td>0.2 M Magnesium formate dihydrate</td>
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<tr>
<td>45</td>
<td>18% w/v Polyethylene glycol 8,000</td>
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<tr>
<td>46</td>
<td>18% w/v Polyethylene glycol 8,000</td>
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<tr>
<td>47</td>
<td>2.0 M Ammonium sulfate</td>
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<td>48</td>
<td>2.0 M Ammonium phosphate monobasic</td>
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<td>2% w/v Polyethylene glycol 8,000</td>
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<tr>
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<td>15% w/v Polyethylene glycol 8,000</td>
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