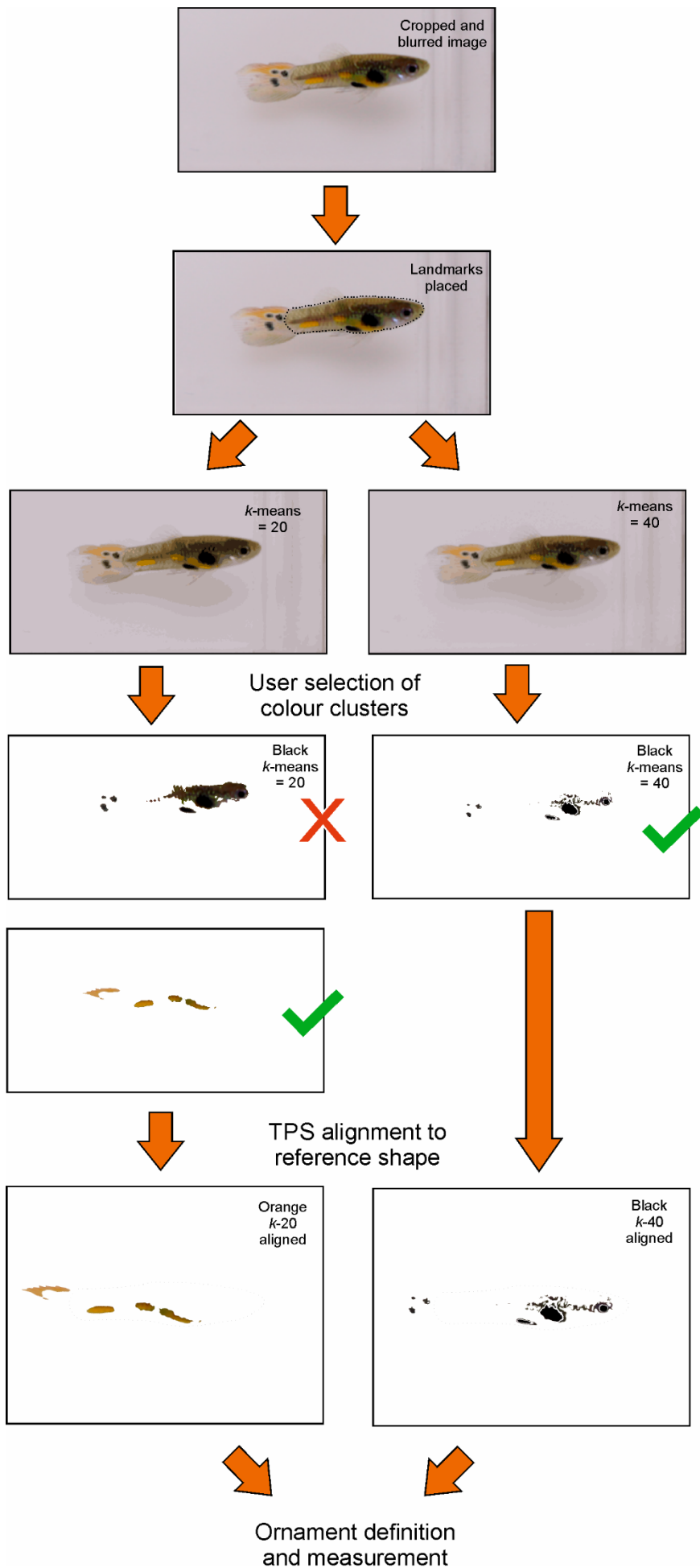


**Supplementary Fig. 1. Crossing design for pedigrees with generations 1-3. All phenotyped males and females used for breeding are shown.**





**Supplementary Table 3. Strength of correlations for ornament saturation, among carotenoid and melanic ornaments.** Below diagonal; adjusted P-value (significant values P <0.05 in bold), and above diagonal; the correlation coefficient.

| Ornament | OI            | OII              | OIII          | OIV         | BI     | BII              | BIII          | BIV           | BV          |
|----------|---------------|------------------|---------------|-------------|--------|------------------|---------------|---------------|-------------|
| OI       | -             | <b>0.53</b>      | 0.25          | -0.05       | -0.05  | 0.07             | -0.28         | 0.04          | -0.24       |
| OII      | <b>0.0004</b> | -                | <b>0.72</b>   | <b>0.4</b>  | 0.01   | -0.03            | 0.2           | 0.21          | 0.21        |
| OIII     | 0.6668        | <b>&lt;.0001</b> | -             | <b>0.41</b> | -0.01  | 0.03             | 0.21          | 0.17          | 0.02        |
| OIV      | 1.0000        | <b>0.0085</b>    | <b>0.0019</b> | -           | 0.27   | -0.1             | 0.13          | -0.01         | -0.13       |
| BI       | 1.0000        | 1.0000           | 1.0000        | 1.0000      | -      | 0.35             | 0.37          | 0.41          | 0.33        |
| BII      | 1.0000        | 1.0000           | 1.0000        | 1.0000      | 0.0548 | -                | 0.21          | <b>0.54</b>   | <b>0.48</b> |
| BIII     | 1.0000        | 1.0000           | 1.0000        | 1.0000      | 0.2563 | 1.0000           | -             | 0.52          | <b>0.62</b> |
| BIV      | 1.0000        | 1.0000           | 1.0000        | 1.0000      | 0.5327 | <b>&lt;.0001</b> | 0.6668        | -             | <b>0.57</b> |
| BV       | 1.0000        | 1.0000           | 1.0000        | 1.0000      | 1.0000 | <b>0.0031</b>    | <b>0.0056</b> | <b>0.0141</b> | -           |