Whole Body Differences that affect Wool Production

Produced for the CRC for Premium Quality Wool undergraduate program by; Dr. Janelle Hocking Edwards, The University of Western Australia.
## Variation between merino strains

<table>
<thead>
<tr>
<th></th>
<th>Fine-wool</th>
<th>Medium-wool</th>
<th>Strong-wool</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GFW (kg)</strong></td>
<td>4.4</td>
<td>4.5</td>
<td>5.4</td>
<td>28</td>
</tr>
<tr>
<td><strong>CFW (kg)</strong></td>
<td>2.6</td>
<td>3.0</td>
<td>3.7</td>
<td>28</td>
</tr>
<tr>
<td><strong>Yield (%)</strong></td>
<td>59.7</td>
<td>66.2</td>
<td>69.0</td>
<td>29</td>
</tr>
<tr>
<td><strong>Density (fibres/m²)</strong></td>
<td>37.1</td>
<td>36.8</td>
<td>30.4</td>
<td>27</td>
</tr>
<tr>
<td><strong>Crimps per 25mm</strong></td>
<td>15.8</td>
<td>12.3</td>
<td>8.0</td>
<td>74</td>
</tr>
<tr>
<td><strong>Fibre diameter (µm)</strong></td>
<td>19.8</td>
<td>20.5</td>
<td>24.1</td>
<td>43</td>
</tr>
<tr>
<td><strong>Staple length (mm)</strong></td>
<td>83</td>
<td>97</td>
<td>112</td>
<td>50</td>
</tr>
</tbody>
</table>
Genetically superior sheep for wool production do not:

- tend to be bigger sheep
- eat more feed per unit live weight
- have a more effective digestion system
- have a different metabolic rate

They tend to be more efficient converters of feed to wool
Wool growth is directly related to feed intake.

Clean, dry wool growth (g/d)

Digestible dry matter intake (g/d)

- Average wool growth of grazing sheep
- Genetically-high producer
- Genetically-low producer
Whole body metabolism

- cystine
  - Fleece Plus < Fleece minus

- endocrinology
  - Thyroxine

- metabolites
  - urea, acetate, lactate, glutathione, K