For more than 30 years Thermo Fisher Scientific has strived to further define the components of serum for cell culture. In this process we have measured several growth factors in various bovine sera and published these results in our Art to Science newsletter. This note provides a summary of that data.

### Explanation of Thermo Scientific HyClone Serum Product Testing

**Defined Fetal Bovine Serum**
This is our highest quality FBS product. Serum is produced from blood collected from animals prior to birth. (Cat# SH30070) Origin = USA.

**Charcoal/Dextran Treated Fetal Bovine Serum**
This product is a high quality FBS that has been treated via a proprietary charcoal/dextran process to reduce steroid hormone levels. The serum is produced from blood collected from animals prior to birth. (Cat# SH30068) Origin = USA.

**Dialyzed Fetal Bovine Serum**
This product is a high quality FBS that has been dialyzed with a 10,000 MW cutoff membrane against normal saline. The serum is produced from blood collected from animals prior to birth. (Cat# SH30079) Origin = USA.

**Iron-Supplemented Bovine Calf Serum**
This is a high quality bovine calf serum with added iron. The serum is produced from blood collected from formula fed veal animals ranging from 16-22 weeks of age. (Cat# SH30072) Origin = USA.

**Cosmic Calf Serum**
This is a high quality bovine calf serum with a proprietary supplementation. The serum is produced from blood collected from formula fed veal animals ranging from 16-22 weeks of age. (Cat# SH30087) Origin = USA.

**FetalClone I**
This is a lower cost alternative to FBS. It is produced from processed bovine calf serum collected from formula fed veal animals ranging from 16-22 weeks of age. It is supplemented with a proprietary supplement optimized for fibroblast culture. (Cat# SH30066) Origin = USA.

**FetalClone II**
This is a lower cost alternative to FBS. It is produced from processed bovine calf serum collected from formula fed veal animals ranging from 16-22 weeks of age. It is supplemented with a proprietary supplement optimized for CHO cell culture. (Cat# SH300109) Origin = USA.

**FetalClone III**
This is a lower cost alternative to FBS. It is produced from processed bovine calf serum collected from formula fed veal animals ranging from 16-22 weeks of age. It is supplemented with a proprietary supplement optimized for hybridoma culture. (Cat# SH30080) Origin = USA.

**Newborn Bovine Calf Serum**
This is a high quality produced from blood collected from animals typically less than 10 days old. (Cat# SH30118) Origin = USA.

**Donor Adult Bovine Serum**
This is a high quality adult bovine serum produced from blood collected from adult donor animals. (Cat# SH30075) Origin = USA.

### Growth Factor Levels in FBS

<table>
<thead>
<tr>
<th>Growth Factor</th>
<th>Unit</th>
<th>FBS</th>
<th>CH/DX FBS</th>
<th>Dialyzed FBS</th>
</tr>
</thead>
<tbody>
<tr>
<td>IGF-1</td>
<td>ng/mL</td>
<td>111</td>
<td>49.3</td>
<td>98.7</td>
</tr>
<tr>
<td>TGF-Beta1</td>
<td>ng/mL</td>
<td>12.6</td>
<td>7.3</td>
<td>12.3</td>
</tr>
<tr>
<td>FGF-2</td>
<td>pg/mL</td>
<td>37.3</td>
<td>32.7</td>
<td>43.3</td>
</tr>
</tbody>
</table>

See product descriptions. All results are the average of three lots. For testing methodology, more information and discussion, including possible effects on cell culture, please see the following Art to Science newsletters: Art To Science, Vol. 19 No. 1, Art To Science, Vol. 19 No. 3, and Art To Science, Vol. 20 No. 1. These can currently be found at www.thermo.com/hyclone.
Comparison of average FGF-2 concentration in various HyClone Bovine Serum Products (n=3). Error bars show +/- one standard deviation.

Comparison of average TGF-Beta concentration in various HyClone Bovine Serum Products (n=3). Error bars show +/- one standard deviation.

Comparison of average FGF-2 concentration in various HyClone Bovine Serum Products (n=3). Error bars show +/- one standard deviation.