TruCulture® Blood Collection and Whole Blood Culture System (RUO)

The immune system is a complex, multi-layered signaling network comprised of multiple modulating components and cell types. This intricate system provides sensitive and specific responses to stimuli. Responses can vary greatly between individuals, yet patterns for a single individual have shown to be remarkably consistent. These patterns are sometimes masked by variables that can be attributed to sample collection and manipulation methods.

Researchers require an in vitro model that preserves physiological cellular interactions, and allows for easy measurement(s) of the immune system with and without stimulation. In order to ensure reliable data, the system must also be reproducible.

The TruCulture System is designed to capture immune cell activity without introducing sample collection and manipulation variables. The system employs a single, self-contained tube for whole blood collection and culture.

*Things should be made as simple as possible, but not any simpler*
~ Albert Einstein
**TruCulture Procedure**

Exactly 1 ml of blood is drawn directly into the TruCulture tube, instantly cultured and then incubated in a dry heat block at 37°C for up to 48 hours. A valve is then inserted to manually separate the supernatant from the cells for subsequent downstream analysis.

The procedure requires less than 5 minutes hands on time, no specialized laboratory equipment and can be performed by any person trained in phlebotomy.

**TruCulture Advantages**

**What it is/does**
- Integrated blood collection device and whole blood culture system
- Closed system
- Simple to use by any trained phlebotomist
- Reliable, reproducible
- Utilizes general purpose laboratory equipment
- Available with and without a variety of stimulants; customizable

**What it is not/does not do**
- Partition monocytes from other whole blood components including granulocytes, platelets and red blood cells
- Artificial, open system requiring transfer of specimen to another tube.
- Require multiple steps; laborious
- Variable
- Require centrifuge or specialized laboratory or personnel
Reproducibility of the TruCulture System

One of the most difficult aspects of accurately measuring leukocyte response is the variability of results due to the complexity inherent in the immune system.

Therefore, it is imperative that the in vitro system is consistent, and does not introduce artifacts that would result in incorrect conclusions.

The graphs to the right show immune system response to LPS/SEB at four different time points up to 25 days, for three different donors (A, B and C) measured for three different cytokines (IFNγ, IL-5 and IL-6). As expected, the immune response is variable between individuals. However, the data shows very consistent measurements within an individual with whole blood collected and cultured using TruCulture. In summary, the TruCulture tubes show consistent and reliable results, with CVs ranging from 5 to 14% for each data point.

TruCulture versus PBMC

The graph below represents preliminary data comparing immune cell responses with and without stimulation of an individual donor for TruCulture System versus PBMC cultures. In general, the response of immune cells cultivated in TruCulture mirrors that of PBMC for the majority of the cytokines measured; however, in this individual measurable stimulation is observed with TruCulture for cytokines such as IL-12p70 and IL-23, whereas no or negligible stimulation is observed with PBMC cultures.

By providing a more inclusive set of cellular components, TruCulture is able to show a more complete and more physiological picture of cytokine activation versus PBMC.
Ordering TruCulture

TruCulture tubes are provided with or without a stimulant. The table below describes the stimulants that are currently available, and the cells that are targeted by those stimulants. Custom stimulant TruCulture tubes are also available. Please inquire.

Null Tubes do not contain any stimulants and may be utilized for experimental control.

<table>
<thead>
<tr>
<th>Ready to Order Stimulants</th>
<th>Major Target Cells</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lipopolysaccharide (LPS)</td>
<td>Monocytes, T-cells</td>
</tr>
<tr>
<td>LPS + SE-B</td>
<td>Monocytes, T-cells and Th1&gt;&gt;Th2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Made to Order Stimulants</th>
<th>Major Target Cells</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anti-CD-3 antibody</td>
<td>Th1&gt;Th2 (~ 1 out of 6 donors does not respond to this type of stimulus in whole-blood)</td>
</tr>
<tr>
<td>Anti-CD3 antibody + Anti-CD28 antibody</td>
<td>Th1, Th2, regulatory T cells (~ 1 out of 6 donors does not respond to this type of stimulus in whole-blood)</td>
</tr>
<tr>
<td>Staphylococcal Enterotoxin type B (SE-B)</td>
<td>Th1&gt;&gt;Th2</td>
</tr>
<tr>
<td>Staphylococcal Enterotoxin type B (SE-B) + Anti-CD28 antibody</td>
<td>Th1&gt;Th2</td>
</tr>
<tr>
<td>Zymosan</td>
<td>Granulocytes, monocytes</td>
</tr>
</tbody>
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If you are interested in adding a custom compound or placing an order for TruCulture, please contact your local sales representative, or e-mail us at info@MyriadRBM.com.