Induce, differentiate and analyze your mouse and human Th17 cells with novel reagents that are:
- Well-characterized in relevant models
- Both specific and sensitive

Flow Cytometry Antibodies:
- Act1
- CD161
- CD196
- IL-1RA
- IL-6
- IL-6Ra
- IL-17A

ELISA Kits:
- IL-6
- IL-17A
- IL-17F
- IL-17AF
- IL-21

Recombinant Proteins:
- IL-6
- IL-17A
- IL-17F
- IL-17AF
- IL-21

Staining of IL-17A and either IL-21 (left) or IL-22 (right) in Mouse Th17-polarized Splenocytes.

IL-6 induction in RAW264.7 cells after treatment with recombinant mouse IL-17A, IL-17F or IL-17AF.
**TLR/HEK 293 Stable Cell Lines & TLR/NF-κB/SEAPorter™ HEK 293 Stable Cell Lines**

Complete extensively validated sets of stably transfected or co-transfected cell lines to study TLR Expression and Functional Analysis or TLR-induced NF-κB activation pathways for screening TLR agonists and antagonists.

**TLR/HEK 293 Stable Cell Lines**
HEK 293 cells stably transfected with unique and original plasmids for human TLR1, TLR2, TLR3, TLR4, TLR5, TLR6, TLR7, TLR8 and TLR9.

**TLR/NF-κB/SEAPorter™ HEK 293 Cell Lines**
HEK 293 cells stably co-transfected with human Toll-like Receptor (TLR) and NF-κB reporter genes. Available are TLR2, TLR3, TLR4, TLR5, TLR7, TLR8 and TLR9/NF-κB co-transfected cell lines.

---

**TLR Ligands/Agonists**
- Pam3CSK4
- Poly(I):Poly(C)
- LPS
- Flagellin

**TLR & Associated Proteins**
- TLRs 1-13
- Phospho TLRs
- TRIF
- TRAM
- TIRAP/Mal
- TBK1
- MD-2
- NALPs 1-14

**Dendritic Cells**
- Caspase-1
- pDC/DC
- CD207
- BDNAC-2/CD303
- DC-SIGN/CD209
- CD11b
- CD11c
- CD123

**T Cells**
- CD3
- CD4
- CD8
- CD25
- CD40L
- CD127/IL7R
- GITR
- GITRL

**NF-κB Pathways**
- NF-κB Peptide Inhibitors
- Phospho-IκBα ActivELISATM Kit
- NF-κB SEAPorter™ Assay Kit

**ActivELISATM Kits for Cytokines, Chemokines + Inflammatory Mediators**
- TNFα
- IL-1β
- IL-1α
- PGE₂

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**TLR Overview & Handbook**
**IMGENEX & Innate Immunity: The Story Toll’d**

GET YOUR COPY NOW!
Important Safety Information

Immune Globulin Subcutaneous (Human), Vivaglobin, is indicated for the treatment of patients with primary immunodeficiency (PI).

As with all immune globulin products, Vivaglobin is contraindicated in individuals with a history of anaphylactic or severe systemic response to immune globulin preparations and in persons with selective immunoglobulin A deficiency who have known antibody against IgA. If anaphylactic or anaphylactoid reactions are suspected, discontinue administration immediately and treat as medically appropriate.

Vivaglobin is derived from human plasma. As with all plasma-derived products, the risk of transmission of infectious agents, including viruses and, theoretically, the Creutzfeldt-Jakob disease (CJD) agent, cannot be completely eliminated.

In clinical trials, the most frequent adverse event was injection-site reaction, consisting of mild or moderate swelling, redness, and itching. No serious local site reactions were observed, and reactions tended to decrease substantially after repeated use. Other adverse events irrespective of causality included headache, gastrointestinal disorder, fever, nausea, sore throat, and rash.

As with all immune globulin (Ig) products, patients receiving Ig therapy for the first time, receiving a new product, or not having received Ig therapy within the preceding eight weeks may be at risk for developing reactions including fever, chills, nausea, and vomiting. On rare occasions, these reactions may lead to shock. Such patients should be monitored in a clinical setting during the initial administration.

Ig administration can transiently impair the efficacy of live attenuated virus vaccines, such as measles, mumps and rubella.

In clinical studies, administration of Vivaglobin has been shown to be safe and well tolerated in both adult and pediatric subjects. No pediatric-specific dose requirements were necessary to achieve the desired serum IgG levels. Safety and efficacy were not studied in pediatric subjects under two years of age.

Please see brief summary of Prescribing Information on adjacent page.

Manufacturing and Distribution:

Vivaglobin is manufactured by CSL Behring AG and distributed by CSL Behring LLC. Vivaglobin is a registered trademark of CSL Behring AG.

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King of Prussia, PA 19406-0901 • USA
10498546 12/2008
www.vivaglobin.com
Vivaglobin®

**Immune Globulin Subcutaneous (Human)**

**CSL Behring**

If only

Before prescribing, please consult full prescribing information, a brief summary of which follows:

**INDICATIONS AND USAGE**

Vivaglobin® (Immune Globulin Subcutaneous [Human]) is indicated for the treatment of patients with primary immune deficiency (PI).

**CONTRAINdications**

As with all immune globulin products, Vivaglobin® Immune Globulin Subcutaneous (Human) is contraindicated in individuals with a history of anaphylaxis or severe systemic reaction to immune globulin preparations and in persons with selective immunoglobulin A (IgA) deficiency (serum IgA < 0.5 mg/dL who have known antibody against IgA).

**WARNINGS**

Patients who receive immune globulin therapy for the first time, who are switched from another brand of immune globulin, or who have not received immune globulin therapy within the preceding eight weeks may be at risk for developing reactions including fever, chills, nausea, and vomiting. On rare occasions, these reactions may lead to shock. Such patients should be monitored for these reactions in a clinical setting during the initial administration of Vivaglobin® Immune Globulin Subcutaneous (Human).

If anaphylactic or anaphylactoid reactions are suspected, discontinue administration immediately. Treat any acute anaphylactic reactions medically as appropriate.

Vivaglobin® is made from human plasma. Products made from human plasma may contain certain infectious agents, such as viruses, that can cause disease. Because Vivaglobin® is made from human blood, it may carry a risk of transmitting infectious agents, e.g., viruses, and theoretically, the CD antigen. The risk that such plasma-derived products will transmit an infectious agent has been reduced by screening plasma donors for prior exposure to certain viruses, by testing for the presence of current certain virus infections, and by inactivating and/or removing certain agents during manufacture (see DESCRIPTION for virus reduction measures). Stringent procedures utilized at plasma collection centers, plasma testing laboratories and fractionation facilities are designed to reduce the risk of virus transmission.

The primary virus reduction steps of the Vivaglobin® manufacturing process are pasteurization (heat treatment of the aqueous solution at 40°C for 10 hours) and ultrafiltration/labile protein precipitation. Additional purification procedures used in the manufacture of Vivaglobin® also potentially provide virus reduction. Despite these measures, such products may still potentially contain human immune agents, including those not known or identified. Thus, the risk of transmission of infectious agents cannot be totally eliminated. Any infections thought by a physician to have been possibly transmitted by this product should be reported by the physician or healthcare provider to CSL Behring at 1-800-504-3949 in the US and Canada. The physician should discuss the risks and benefits of this product with the patient and the patient's caregiver.

During clinical trials, no cases of infection due to hepatitis A, B, C, HIV, or CMV were observed with the use of Vivaglobin®.

**PRECAUTIONS**

General Administration Vivaglobin® (Immune Globulin Subcutaneous [Human], subcutaneously), do not administer this product intravenously.

The recommended infusion rate and amount per injection site stated under DOSAGE AND ADMINISTRATION should be followed. When initiating therapy with Vivaglobin®, patients should be monitored for any adverse events during and after the infusion.

Laboratory Tests: After injection of immunoglobulins, the transitory rise in the various passively transferred antibodies in the patient's blood may add positive serological testing results, with the potential for misleading interpretation. Passive transmission of antibodies to endogenous antigens, e.g., A, B, D may cause a positive direct or indirect antiglobulin (Coombs') test.

Drug Interactions: Immunoglobulin administration can transiently impair the efficacy of five antiviral drugs, including acyclovir, ganciclovir and valacyclovir. The immunologist should be informed of recent therapy with Vivaglobin® Immune Globulin Subcutaneous (Human), so that appropriate precautions can be taken.

Vivaglobin® should not be mixed with other medicinal products.

Pregnancy Category C: Animal reproduction studies have not been conducted with Vivaglobin® Immune Globulin Subcutaneous (Human). It is also not known whether Vivaglobin® can cause fetal harm when administered to a pregnant woman or if it can affect reproductive capacity. Vivaglobin® should not be given to a pregnant woman if it is clearly needed.

Pediatric Use: Vivaglobin® was evaluated in 6 children and 4 adolescents in the US and Canada study and in 16 children and 6 adolescents in the non-IND Europe and Brazil clinical study. There were no apparent differences in the safety and efficacy profiles as compared to adult subjects. No pediatric-specific dose requirements were necessary to achieve the desired serum IgG levels. The safety and efficacy of Vivaglobin® was not studied in pediatric subjects under two years of age.

Geriatric Use: The clinical study of Vivaglobin® Immune Globulin Subcutaneous (Human), did not include sufficient numbers of subjects aged 65 and over to determine whether they respond differently from younger subjects.

**ADVERSE REACTIONS**

In clinical studies, administration of Vivaglobin® Immune Globulin Subcutaneous (Human), has been shown to be safe and well tolerated in both adult and pediatric subjects. Reactions similar to those reported with administration of other immune globulin products may also occur with Vivaglobin®. Rarely, immediate anaphylactic and hypersensitivity reactions may occur. In exceptional cases, sensitisation to IgG may result in anaphylactic reaction (see CONTRAINDICATIONS).

Should evidence of an acute hypersensitivity reaction be observed, the infusion should be stopped promptly, and appropriate treatment and supportive therapy should be administered.

In the US and Canada clinical study, the safety of Vivaglobin® was evaluated for 15 months (3-month wash-in/wash-out period followed by 12-month efficacy period) in 60 subjects with PI. The most frequent adverse reaction was local reaction at the injection site. Table 5 summarizes the most frequent adverse events by subject-reported in the clinical study, and Table 6 summarizes the most frequent adverse events by infusion.

**STORAGE**

Vivaglobin® Immune Globulin Subcutaneous (Human), is supplied in single-use vials containing 180 mg IgG per mL. The following storage forms are available:

- NDC 0053-7596-03 Box of ten 3 mL vials
- NDC 0053-7596-10 10 mL vial
- NDC 0053-7596-16 Box of ten 10 mL vials
- NDC 0053-7596-20 20 mL vial
- NDC 0053-7596-25 Box of ten 20 mL vials

**STORAGE**

Vivaglobin® Immune Globulin Subcutaneous (Human), is supplied in single-use vials containing 180 mg IgG per mL. The following storage forms are available:

- NDC 0053-7596-03 Box of ten 3 mL vials
- NDC 0053-7596-10 10 mL vial
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- NDC 0053-7596-25 Box of ten 20 mL vials

**STORAGE**

CSL Behring GmbH

35041 Marburg, Germany

US License No. 1765

Distributed by:

CSL Behring LLC

Kankakee, IL 60901 USA

Table 7 summarizes the most frequent related adverse events by subject reported in the clinical study, and Table 8 summarizes the most frequent related adverse events by infusion.

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**Table 7: Most Frequent Related Adverse Events by Subject in the US and Canada Study**

<table>
<thead>
<tr>
<th>Related Adverse Event</th>
<th>No. of Subjects (％ of total)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Injection Site Reactions</td>
<td></td>
</tr>
<tr>
<td>Headache</td>
<td>21 (32%)</td>
</tr>
<tr>
<td>Nausea</td>
<td>7 (11%)</td>
</tr>
<tr>
<td>Rash</td>
<td>4 (6%)</td>
</tr>
<tr>
<td>Asthenia</td>
<td>3 (5%)</td>
</tr>
<tr>
<td>Gastrointestinal disorder</td>
<td>2 (3%)</td>
</tr>
<tr>
<td>Fever</td>
<td>2 (3%)</td>
</tr>
<tr>
<td>Skin disorder</td>
<td>2 (3%)</td>
</tr>
<tr>
<td>Tachycardia</td>
<td>1 (2%)</td>
</tr>
<tr>
<td>Urine abnormality</td>
<td>1 (2%)</td>
</tr>
</tbody>
</table>

Including infections:

- **Non-Injection Site Reactions**
  - Headache: 21 (32%)
  - Nausea: 7 (11%)
  - Rash: 4 (6%)
  - Asthenia: 3 (5%)
  - Gastrointestinal disorder: 2 (3%)
  - Fever: 2 (3%)
  - Skin disorder: 2 (3%)
  - Tachycardia: 1 (2%)
  - Urine abnormality: 1 (2%)

**Table 8: Most Frequent Related Adverse Events by Infusion in the US and Canada Study**

<table>
<thead>
<tr>
<th>Related Adverse Event</th>
<th>No. of AE(s) (Rate %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Injection Site Reactions</td>
<td></td>
</tr>
<tr>
<td>Headache</td>
<td>58 (1.6%)</td>
</tr>
</tbody>
</table>
| Rash | 9 (0.2%)
| Nausea | 9 (0.2%)
| Dizziness | 4 (0.1%)
| Asthenia | 3 (0.1%)
| Gastrointestinal disorder | 3 (0.1%)
| Skin disorder | 3 (0.1%)
| Urine abnormality | 3 (0.1%)
| Fever | 2 (0.1%)
| Diaphoresis | 2 (0.1%)
| Gastrointestinal pain | 2 (0.1%)
| Tachycardia | 2 (0.1%)

Including infections:

**Non-Injection Site Reactions**

- Headache: 58 (1.6%)
- Rash: 9 (0.2%)
- Nausea: 9 (0.2%)
- Dizziness: 4 (0.1%)
- Asthenia: 3 (0.1%)
- Gastrointestinal disorder: 3 (0.1%)
- Skin disorder: 3 (0.1%)
- Urine abnormality: 3 (0.1%)
- Fever: 2 (0.1%)
- Diaphoresis: 2 (0.1%)
- Gastrointestinal pain: 2 (0.1%)
- Tachycardia: 2 (0.1%)

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Based on April 2007 revision.
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Produced in barley, these proteins are animal, bacterial, and viral free, and are ultra pure, with extremely low endotoxin.

Cell Sciences offers innovative, unique growth factors and hard-to-produce recombinant proteins, bypassing the use of bacterial or animal cell systems. These ultra pure proteins contain no contamination from other growth factors and negligible amounts of endotoxin.

Background: barley endosperm

The host organism, barley, with its specialized endosperm storage tissue, provides many unique features including proficient protein machinery, with eukaryotic folding, and a distinct route for long-term protein protection and storage. A biochemically inert environment, void of endotoxins, low protease activity and secondary metabolite content, and a simple protein profile, aid in downstream processing. Barley has also a G.R.A.S. (generally recognized as safe) status from the FDA.

Cell Sciences ultra pure growth factors and cytokines are produced for use in basic and applied medical scientific research, cell culture media and diagnostics.

- serum free
- animal, bacterial & viral free
- extremely low endotoxin (<0.005 ng/ug)
- highly biologically active
- easier regulatory clearance
- perfect for cell culture, drug development, stem cell research, animal research
- for use in all in vitro cellular studies
- for use in all in vivo animal studies

Ultra pure cytokines & growth factors

- FGF1, human
- FGF2, human
- FLT3 ligand, human
- GCSF, human
- IFNA2, human
- IFN-gamma, human
- IGf1, human
- IL1-alpha, human
- IL2, human
- IL3, human
- IL4, human
- IL5, human
- IL6, human
- IL7, human
- IL9, human
- IL16, human
- IL22, human
- KGF, human
- M-CSF, human
- NRG1/HRG beta 2, human
- SCF, mouse
- SF20/IL25, human
- TNF-alpha, human
- TNF-beta, human
- VEGF121, human
- VEGF165, human