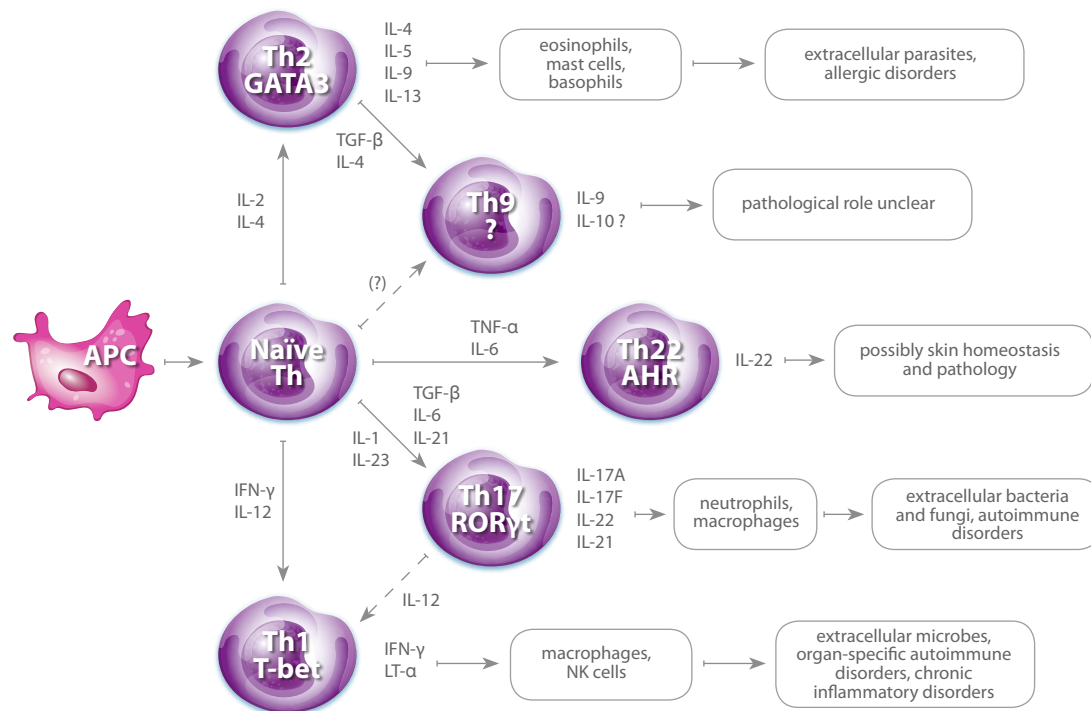


# Th Cell Differentiation

## Th1/Th2/Th9/Th17/Th22

FlowCytomix™ Multiple Analyte Detection System



- Detect up to 20 analytes simultaneously from 25 µl of cell culture supernatants, serum, or plasma
- Create individual custom panels
- Free easy-to-use analysis software

In the presence of IFNs and IL-12, naïve Th cells express T-box expressed in T cells (T-bet) and differentiate into Th1 cells producing IFN- $\gamma$  and lymphotoxin- $\alpha$  (LT- $\alpha$ ). Th1 cells protect against intracellular microbes and are thought to play a pathogenic role in organ-specific autoimmune and other chronic inflammatory disorders. IL-2 and IL-4 lead to expression of the transcription factor GATA binding protein-3 (GATA-3) and differentiation into a Th2 cell that, because of its production of IL-4, IL-5, IL-9 and IL-13, is protective against extracellular parasites, but can also be responsible for allergic disorders. In the presence of IL-4 and TGF- $\beta$ , the Th2 cell can further differentiate into a Th9 cell, which produces IL-9 and IL-10.

In the presence of TNF- $\alpha$  and IL-6, naïve Th cells differentiate into Th22 cells expressing aryl hydrocarbon receptor (AHR). They secrete IL-22 and might play a role in skin homeostasis and pathology. In the presence of TGF- $\beta$ , IL-6 and IL-21 (in mice) or of IL-1 and IL-23 (in humans), the naïve Th cell expresses retinoic acid-related orphan receptor (ROR) $\gamma$ t. It differentiates into a Th17 cell that produces IL-6, IL-17A, IL-17F, IL-20, IL-21, IL-22, IL-26, TNF- $\alpha$ , and CCL20, and is involved in the protection against extracellular bacteria and fungi, but can also be responsible for autoimmune disorders.

Reference:

Annunziato F and Romagnani S.  
Arthritis Research & Therapy 2009;11:257.

2010 | July

### FEATURING

#### MULTIPLEX KITS

- Human  
Th1/Th2/Th9/Th17/Th22 13plex
- Mouse  
Th1/Th2/Th17/Th22 13plex

#### SIMPLEX KITS

- Human  
IL-9  
IL-17A  
IL-17F  
IL-18  
IL-22  
IL-23
- Mouse  
IL-17A  
IL-17F  
IL-18  
IL-21  
IL-22  
IL-23  
IL-27
- Rat  
IL-17A

Please see reverse for more  
Simplex Kits



## Th Cell Differentiation: Th1/ Th2/ Th9/ Th17/ Th22

### FlowCytomix™ Multiplex Kits

Product	Cat. No.	Analytes
Human Th1/Th2/Th9/Th17/Th22 13plex	BMS817FF	IFN- $\gamma$ , IL-1 $\beta$ , IL-2, IL-4, IL-5, IL-6, IL-9, IL-10, IL-12(p70), IL-13, IL-17A, IL-22, TNF- $\alpha$
Mouse Th1/Th2/Th17/Th22 13plex	BMS822FF	IFN- $\gamma$ , IL-1 $\alpha$ , IL-2, IL-4, IL-5, IL-6, IL-10, IL-13, IL-17A, IL-21, IL-22, IL-27, TNF- $\alpha$

### Human FlowCytomix™ Simplex Kits for Th1/Th2/Th9/Th17/Th22 research

Analyte	Cat. No.	Bead Set	Standard Range
IFN- $\gamma$	BMS8228FF	A4	27 - 20,000 pg/ml
IL-1 $\alpha$	BMS80243FF	B2	1.4 - 1,000 pg/ml
IL-1 $\beta$	BMS8224FF	B8	27 - 20,000 pg/ml
IL-2	BMS8221FF	A6	27 - 20,000 pg/ml
IL-4	BMS8225FF	B6	27 - 20,000 pg/ml
IL-5	BMS8278FF	B7	27 - 20,000 pg/ml
IL-6	BMS8213FF	A12	27 - 20,000 pg/ml
IL-9	BMS82081FF	A3	2.7 - 2,000 pg/ml
IL-10	BMS8215FF	A8	27 - 20,000 pg/ml
IL-12 (p70)	BMS8238FF	A2	27 - 20,000 pg/ml
IL-13	BMS8231FF	B4	27 - 20,000 pg/ml
IL-17A	BMS82017FF	A5	13.7 - 10,000 pg/ml
IL-17F	BMS82037FF	A5	27 - 20,000 pg/ml
IL-18	BMS8267FF	B5	27 - 20,000 pg/ml
IL-22	BMS82047FF	A11	110 - 80,000 pg/ml
IL-23	BMS82023FF	A2	69 - 50,000 pg/ml
TGF- $\beta$ 1	BMS8249FF	A3	13.7 - 10,000 pg/ml
TNF- $\alpha$	BMS8223FF	B9	27 - 20,000 pg/ml

### Mouse FlowCytomix™ Simplex Kits for Th1/Th2/Th17/Th22 research

Analyte	Cat. No.	Bead Set	Standard Range
IFN- $\gamma$	BMS8606/2FF	B6	27 - 20,000 pg/ml
IL-1 $\alpha$	BMS8611FF	A4	27 - 20,000 pg/ml
IL-1 $\beta$	BMS86002FF	B4	69 - 50,000 pg/ml
IL-2	BMS8601FF	A6	27 - 20,000 pg/ml
IL-4	BMS8613FF	B9	27 - 20,000 pg/ml
IL-5	BMS8610FF	A8	27 - 20,000 pg/ml
IL-6	BMS8603FF	A10	27 - 20,000 pg/ml
IL-10	BMS8614/2FF	A12	27 - 20,000 pg/ml
IL-12 (p70)	BMS86004FF	B5	27 - 20,000 pg/ml
IL-13	BMS86015FF	A2	27 - 20,000 pg/ml
IL-17A	BMS86001FF	B10	27 - 20,000 pg/ml
IL-17F	BMS86020FF	A7	27 - 20,000 pg/ml
IL-18	BMS8618FF	B3	412 - 300,000 pg/ml
IL-21	BMS86021FF	A9	27 - 20,000 pg/ml
IL-22	BMS86016FF	A5	6.9 - 5,000 pg/ml
IL-23	BMS86017FF	B5	55 - 40,000 pg/ml
IL-27	BMS82085FF	B2	69 - 50,000 pg/ml
TGF- $\beta$ 1	BMS8608FF	A3	13.7 - 10,000 pg/ml
TNF- $\alpha$	BMS8607/2FF	B7	27 - 20,000 pg/ml

### Rat FlowCytomix™ Simplex Kits for Th1/Th2/Th17 research

Analyte	Cat. No.	Bead Set	Standard Range
IFN- $\gamma$	BMS8621/2FF	B8	13.7 - 10,000 pg/ml
IL-1 $\alpha$	BMS8627FF	A6	27 - 20,000 pg/ml
IL-4	BMS8628FF	B10	3.0 - 2,000 pg/ml
IL-17A	BMS8635FF	A10	7 - 5,000 pg/ml
TNF- $\alpha$	BMS8622FF	A12	27 - 20,000 pg/ml

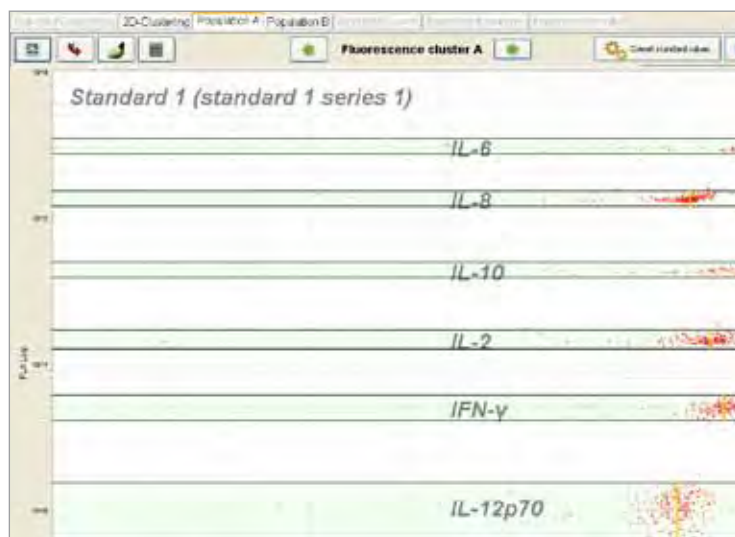
### FlowCytomix™ Basic Kits

Products	Cat. No.
Human Basic Kit	BMS8420FF
Mouse/Rat Basic Kit	BMS8440FF

A Basic Kit is needed in order to use Simplex Kits.

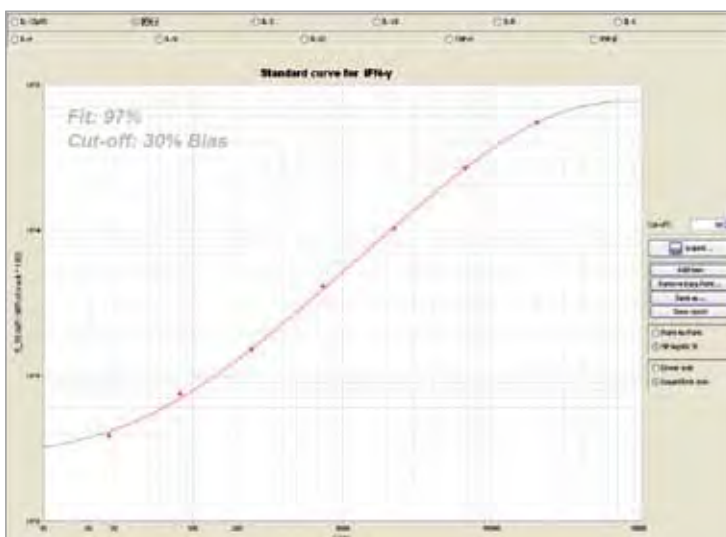
## FlowCytomix™ Pro Software - Analyze your data for free!

FlowCytomix™ Pro Software (BMS8401FF) is easy to use and allows users to obtain results in a minimum of time. The software is complimentary and can be ordered at [europa@eBioscience.com](mailto:europa@eBioscience.com) or downloaded from [www.bendermedsystems.com/software-download](http://www.bendermedsystems.com/software-download).



### Fluorescence clusters A and B

The bead clusters A and B contain several bead sets, each of them corresponding to a particular analyte. Two pages display the fluorescence intensities of these bead populations. The software automatically provides gray lines to separate the bead sets. Gates may be readjusted manually.



### Standard curves

FlowCytomix™ Pro establishes standard curves, which you may evaluate and manually adjust for later calculation of analyte concentrations.

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