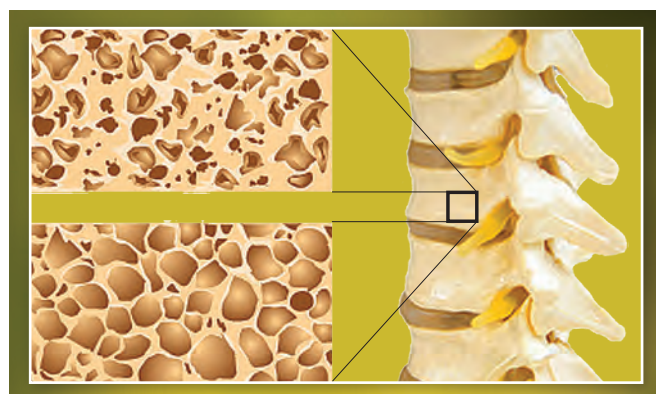


# Gain Deeper Insight into Osteoporosis Development

with FlowCytomix™ Multiplexing



**Osteoporosis** is a common disease of the skeleton that leads to an increased risk of fracture. In osteoporosis bone mineral density is reduced, bone microarchitecture is disrupted, and bone matrix protein levels are altered. The underlying mechanism in osteoporosis is an imbalance between bone resorption and bone formation.

eBioscience offers a reliable and efficient option for the early detection of imbalanced bone turnover, that may lead to the onset of osteoporosis. The measurement of bone-related biomarkers indicates the quality of the bone matrix, the critical determinant of a bone's ability to resist fracture.

#### Relevant Bone-related Biomarkers

RANKL	Induces osteoclast differentiation. Measurement of RANKL may allow early indication of non-traumatic bone fractions.
OPG (Osteoprotegerin)	Binds to RANKL and suppresses its ability to increase bone resorption.
Osteocalcin	Marker of bone formation.
Osteopontin	Structural proteins in the bone matrix.
Calcitonin	Regulates Ca <sup>2+</sup> release from the bone.
MMP-13	Marker for reduced cartilage metabolism; regulated by the estrogen receptor- $\alpha$ .

Analytes are easily measured simultaneously in only 25  $\mu$ L sample volume (serum, plasma, cell culture supernatants) using the FlowCytomix™ Multiple Analyte Detection System—a bead-based immunoassay system compatible with any commercial flow cytometer.

FlowCytomix™ Simplex kits are individual bead sets for the detection of one specific analyte. A combination of Simplex Kits can be used to create your own customized analytes panel for maximum flexibility. (Note: A Basic Kit is required for use in combination with Simplex Kits.)

#### Selected Literature References:

1. RANK/RANKL: regulators of immune responses and bone physiology. Leibbrandt A, Penninger JM. *Ann N Y Acad Sci.* 2008 Nov;1143:123-50. Review
2. The osteoprotegerin/RANK/RANKL system: a bone key to vascular disease. Kiechl S, Werner P, Knoflach M, Furtner M, Willeit J, Schett G. *Expert Rev Cardiovasc Ther.* 2006 Nov;4(6):801-11.
3. Blood concentrations and secretory capacity of calcitonin in blood in osteoporosis Fukunaga M, Sone T. *Clin Calcium.* 2001 Sep;11(9):1140-5.
4. Estrogen receptor alpha regulates matrix metalloproteinase-13 promoter activity primarily through the AP-1 transcriptional regulatory site. Lu T, Achari Y, Sciore P, Hart DA. *Biochim Biophys Acta.* 2006 Aug;1762(8):719-31.

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#### FEATURING

##### SIMPLEX KITS (BONE BIOLOGY)

Calcitonin  
MMP-13  
OPG (Osteoprotegerin)  
Osteocalcin  
Osteopontin  
RANKL

##### ADDITIONAL SIMPLEX KITS

Adiponectin  
Caspase-3  
CD40L  
CRP  
E-selectin  
FGF-2  
HGF  
ICAM-1  
IFN- $\gamma$   
IL-10  
IL-12 (p70)  
IL-17A  
IL-17AF  
IL-17F  
IL-18  
IL-1 $\alpha$   
IL-1 $\beta$   
IL-4  
IL-6  
IL-8  
Iso-Insulin  
Leptin  
MCP-1  
MIP-1 $\beta$   
MMP-9  
MPO  
NGF  
PAI-1  
P-selectin  
Resistin  
TGF- $\beta$ 1  
TIMP-1  
TNF-R(60kDa)  
TNF- $\alpha$   
t-PA  
VCAM-1



# FlowCytomix™ Multiple Analyte Detection System

## Bead-based multiplex immunoassays for the flow cytometer

Multiple analyte detection is an invaluable tool for the comprehensive study of biological systems, as they are comprised of networks of cytokines, chemokines, growth factors and related proteins. The eBioscience FlowCytomix™ Multiple Analyte Detection System is a bead-based immunoassay for simultaneous detection of up to 20 analytes in one sample.

- **Sample friendly** – requires only 25 µL of sample from serum, plasma, or cell culture supernatants.
- **Easy to customize** – choose from a menu of protein targets to create your own assay panels.
- **Flexible protocol** – adaptable for use with 96 well plates or individual tubes.
- **Free software** – no need to spend hundreds of dollars for data analysis software.
- **Broad usage** – can be used on most flow cytometers, including single laser instruments.

The FlowCytomix™ Pro Software (BMS8402FF) is easy to use and allows users to obtain results in a minimum of time. The software is complimentary and can be downloaded from our website [www.bendermedsystems.com/software-download](http://www.bendermedsystems.com/software-download)

### FlowCytomix™ Human Simplex Kits for Bone Biology

Analyte	Cat.No.	Bead Population	Sensitivity	Standard Range
Calcitonin	BMS82067FF	A9	12 pg/ml	14-10,000 pg/ml
MMP-13	BMS82022FF	B4	0.05 ng/ml	0.17-125 ng/ml
OPG (Osteoprotegerin)	BMS82021FF	A6	7.9 pg/ml	27-20,000 pg/ml
Osteocalcin	BMS82020FF	B5	6.9 pg/ml	27-20,000 pg/ml
Osteopontin	BMS82066FF	A5	432 pg/ml	274-200,000 pg/ml
RANKL	BMS82005FF	A3	16 pg/ml	55-40,000pg/ml

### Additional FlowCytomix™ Human Simplex Kits

Analyte	Cat.No.	Bead Population	Sensitivity	Standard Range
Adiponectin <sup>1)</sup>	BMS82032FF	B7	0.06 ng/ml	0.1-50 ng/ml
Caspase-3 <sup>6)</sup>	BMS82012FF	B9	20 pg/ml	82-60,000 pg/ml
CD40L	BMS8239/2FF	A3	23.4 pg/ml	55-40,000 pg/ml
CRP <sup>1)</sup>	BMS8288FF	A9	0.07 ng/ml	0.1-70 ng/ml
E-selectin	BMS8205FF	A9	1.2 ng/ml	4.0-3,000 ng/ml
FGF-2	BMS82074FF	B4	11 pg/ml	27-20,000 pg/ml
HGF	BMS82069FF	A3	52 pg/ml	206-150,00 pg/ml
ICAM-1	BMS80201FF	A11	5.3 ng/ml	5.4-4,000 pg/ml
IFN-γ	BMS8228FF	A4	1.6 pg/ml	27-20,000 pg/ml
IL-10	BMS8215FF	A8	1.9 pg/ml	27-20,000 pg/ml
IL-12 (p70)	BMS8238FF	A2	1.5 pg/ml	27-20,000 pg/ml
IL-17A	BMS82017FF	A5	2.5 pg/ml	13.7-10,000 pg/ml
IL-17AF	BMS82082FF	A5	16 pg/ml	27-20,000 pg/ml
IL-17F	BMS82037FF	A5	8.0 pg/ml	27-20,000 pg/ml
IL-18	BMS8267FF	B5	3.34 pg/ml	27-20,000 pg/ml
IL-1α	BMS80243FF	B2	0.5 pg/ml	1.4-1,000 pg/ml
IL-1β	BMS8224FF	B8	4.2 pg/ml	27-20,000 pg/ml
IL-4	BMS8225FF	B6	20.8 pg/ml	27-20,000 pg/ml
IL-6	BMS8213FF	A12	1.2 pg/ml	27-20,000 pg/ml
IL-8	BMS8204FF	A10	0.5 pg/ml	13.7-10,000 pg/ml
Iso-Insulin	BMS82003FF	B6	80 pg/ml	274-200,000 pg/ml
Leptin	BMS82039/2FF	B10	0.05 ng/ml	0.3-250 ng/ml
MCP-1	BMS8281FF	A7	2.2 pg/ml	41-30,000 pg/ml
MIP-1β	BMS82030FF	A5	1.0 pg/ml	4.0-3,000 pg/ml
MMP-9 <sup>15)</sup>	BMS82016FF	A4	95 pg/ml	0.1-100 ng/ml
MPO	BMS82038FF	A9	0.02 ng/ml	0.14-100 ng/ml
NGF	BMS82044FF	A8	126.75 pg/ml	412-300,000 pg/ml
PAI-1 <sup>13)</sup>	BMS82033FF	B8	13.5 pg/ml	137-100,000 pg/ml
P-selectin	BMS8219/2FF	B4	1.2 ng/ml	2.8-2,000 ng/ml
Resistin	BMS82040FF	B4	1.7 pg/ml	55-40,000 pg/ml
TGF-β1 <sup>4)</sup>	BMS8249FF	A3	10.0 pg/ml	13.7-10,000 pg/ml
TIMP-1 <sup>15)</sup>	BMS82018FF	B5	28 pg/ml	137-100,000 pg/ml
TNF-R(60kDa) <sup>2)</sup>	BMS8203FF	A5	0.08 ng/ml	0.14-100 ng/ml
TNF-α <sup>2)</sup>	BMS8223FF	B9	3.2 pg/ml	27-20,000 pg/ml
t-PA <sup>3)</sup>	BMS8258FF	A5	4.8 pg/ml	27-20,000 pg/ml
VCAM-1 <sup>1)</sup>	BMS8232/2FF	B5	0.9 ng/ml	3.0-2,000 ng/ml

1) Samples must be prediluted in Assay Buffer before starting the test procedure. In combination with other Simplex Kits, it is recommended to evaluate both an undiluted and a prediluted sample. 2) The TNF-R1 Simplex Kit cannot be assayed simultaneously with the TNF-α or TNF-β Simplex Kit. 3) PAI-1 and t-PA Simplex Kits cannot be assayed simultaneously. 4) Samples must be pretreated (acidified) with HCl before starting the test procedure and therefore this Simplex Kit cannot be combined with other Simplex or Multiplex Kits. 5) MMP Simplex Kits cannot be combined with the TIMP-1 Simplex Kit. 6) The Caspase-3 Simplex Kit may only be combined with the Caspase-9 Simplex Kit and vice versa.

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