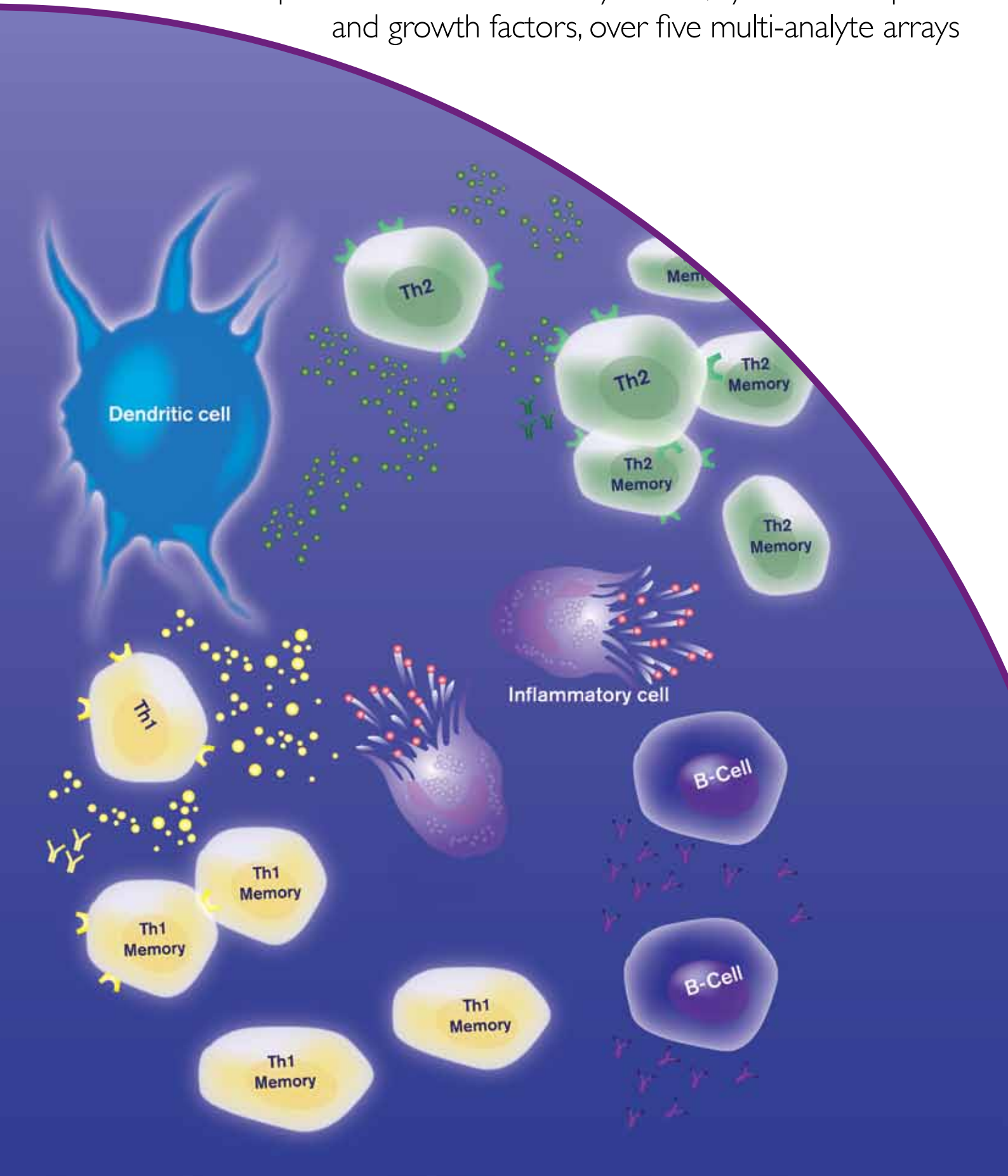


Cytokine Research

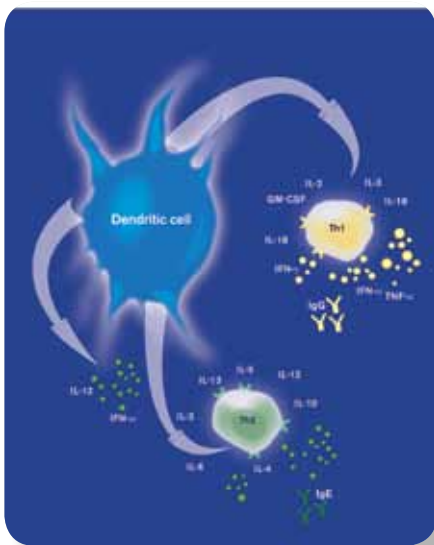
Offers a comprehensive menu of 34 cytokines, cytokine receptors and growth factors, over five multi-analyte arrays



Cytokine Research

INTRODUCTION

Cytokines are natural small regulatory proteins produced by various cell types, and function as intercellular chemical messengers. They act as external controlling elements in hematopoiesis and also mediate and control immune and inflammatory responses. They have been implicated in pathological conditions, such as cancer, cardiovascular diseases, allergic response and play a significant role in surgery recovery, including transplants.



CYTOKINES

- Similar functions can be stimulated by different cytokines.
- They can act synergistically or antagonistically therefore measuring a single cytokine may miss an important facet of response progression
- Have duplicity of function when dealing with infection
- Can affect their host cell (autocrine), nearby cells (paracrine) or distant cells (endocrine)
- Commonly cascade so cytokines can more readily be observed if many are measured simultaneously
- Exert their influence through receptors in the cell membrane or within the cell

HYPERSENSITIVE RESPONSE

In some cases, the immune response over-reacts, turning cytokines against the body they are designed to protect. When the cytokine cascades fail to shut down, they drive the host into a state of chronically activated cells, which dominate an otherwise dormant immune system. Examples of the most obvious manifestations of this hypersensitivity are an unnecessary inflammatory response and fever; both of which can be life threatening if left untreated.

KEY BENEFITS

- Multiple results from a single sample
- Suitable for plasma and serum samples
- Small sample volume - 100µl total / from 8.3µl sample per test
- Excellent analytical performance
- Biochips are ready to use
- Fully and semi-automated analysers available

CYTOKINE BIOCHIP ARRAYS

To determine multiple cytokines in a single sample at a single time point, Randox offers a comprehensive menu of 34 cytokines, cytokine receptors and growth factors, over five multi-analyte arrays. Each cytokine assay is performed on a 9 x 9mm activated biochip with spatially discrete test regions containing antibodies specific to each of the analytes. The combination of highly specific antibodies and advanced chemistries enables up to 12 cytokines and growth factors to be detected simultaneously in a single sample, providing valuable information relating to each cytokine under test and possible associations between cytokines in each sample.

- Serum & Plasma samples
- Sample volume 100µl total / from 8.3µl sample per test
- Measure up to 12 cytokines simultaneously with the Cytokine Array I and Cytokine High Sensitivity Arrays

BIOCHIP SYSTEMS



Evidence Investigator



Evidence

TABLE I

Cytokine Biochip Arrays Available	
Cytokine Array I and Cytokine High Sensitivity Array	Cat. No.
<ul style="list-style-type: none"> • Interleukin-1α (IL-1α) • Interleukin-1β (IL-1β) • Interleukin-2 (IL-2) • Interleukin-4 (IL-4) • Interleukin-6 (IL-6) • Interleukin-8 (IL-8) • Interleukin-10 (IL-10) • Epidermal Growth Factor (EGF) • Interferon-γ (IFN-γ) • Monocyte Chemotactic Protein-1 (MCP-1) • Tumour Necrosis Factor-α (TNF-α) • Vascular Endothelial Growth Factor (VEGF) 	<p>EV3544 - Evidence, (180 biochips)</p> <p>EV3508 - Evidence, (360 biochips)</p> <p>EV3513 - Evidence Investigator, 54 biochips</p> <p>EV3561 - Cytokine Array Calibrator Series</p> <p>High Sensitivity</p> <p>EV3623 - Evidence Investigator, 54 biochips</p>
Cytokine Array II*	
<ul style="list-style-type: none"> • Eotaxin • Insulin-like Growth Factor 1 Free (IGF-1) • Interferon inducible protein - 10 (IP-10) • Interleukin 1 receptor antagonist (IL-1 RA) • Interleukin 12p40 (IL12-p40) • Platelet Derived Growth Factor BB (PDGF-BB) • RANTES 	
Cytokine Array III	
<ul style="list-style-type: none"> • Granulocyte Macrophage Colony Stimulating Factor (GM-CSF) • Interleukin-5 (IL-5) • Interleukin-15 (IL-15) • Macrophage Inflammatory Protein - 1α (MIP-1α) • Tumour Necrosis Factor β (TNF β) 	<p>EV3680 - Evidence (180 biochips)</p> <p>EV3678 - Evidence Investigator, 54 biochips</p> <p>EV3679 - Cytokine Array III Calibrator Series</p>
Cytokine Array IV	
<ul style="list-style-type: none"> • Matrix Metalloproteinase-9 (MMP-9) • Soluble IL-2 Receptor α (sIL-2Rα) • Soluble IL-6 Receptor (sIL-6R) • Soluble Tumour Necrosis Factor Receptor I (sTNFR I) • Soluble Tumour Necrosis Factor Receptor II (sTNFR II) 	<p>EV3659 - Evidence (180 biochips)</p> <p>EV3661 - Evidence Investigator, 54 biochips</p> <p>EV3658 - Cytokine Array IV Calibrator Series</p>
Cytokine Array V	
<ul style="list-style-type: none"> • Interleukin- 3 (IL-3) • Interleukin- 7 (IL-7) • Interleukin- 12 p70 (IL-12 p70) • Interleukin- 13 (IL-13) • Interleukin- 23 (IL-23) 	<p>EV3666 - Evidence Investigator, 54 biochips</p>

*in development

Research Applications for Cytokine Biochip Arrays

Cytokine Biochip Arrays have been used in a number of research and clinical studies, with independent publications shown in Table 2

TABLE 2

Disease State	Research application	References
Coronavirus-associated severe acute respiratory syndrome (SARS)	Cytokine measurement in SARS patients at different stages.	Guo, G.H. et al. (2004) <i>Chin. J. Lab. Med.</i> 27 :277
Tendinopathies	Measurement of cytokine levels after local treatment with platelet rich plasma.	Banfi, G. et al. (2006) <i>Br. J. Sports Med.</i> 40 :816
STANISLAS study	Biological determinants, associations and reference values. Heritability for plasma VEGF concentration. MCP-1 plasma concentrations and polymorphisms. Association of inflammatory markers with high sensitivity CRP.	Berrahmoune, H. et al. (2006) <i>Clin. Chem.</i> 52 :504-510 Berrahmoune, H. et al. (2007) <i>Ann. Hum. Genet.</i> 71 :54-63 Berrahmoune, H. et al. (2007) <i>Atherosclerosis</i> 192 :348-353 Berrahmoune, H. et al. (2007) <i>Clin. Chem. Lab. Med.</i> 45 :1339-1346
Alzheimer's disease & mild cognitive impairment	Alzheimer's disease and cognitive decline.	Chiappelli, M. et al. (2006) <i>Rejuvenation Res.</i> 9 :485-493
Down's syndrome	Altered levels of signalling molecules. Age related changes in plasma levels	Licastro, F. et al. (2006) <i>Int. J. Immunopathol. Pharmacol.</i> 19 :181-185 Dogliotti, G. et al. (2010) <i>Immunity and Ageing.</i> 7 :2
HIV	Immunological and virological discordance.	Sachdeva, N. et al. (2007) <i>Scand. J. Immunol.</i> 65 :549 - 554
Renal failure	Simultaneous determination of cytokines in patients on haemodialysis.	Sertic, J. et al. (2007) <i>Clin. Chem. Lab. Med.</i> 45 :1347-1352 Badiou, S. et al. (2008) <i>Clin. J. Am. Soc. Nephrol.</i> 3 :423-430
Acute coronary syndromes	Risk stratification for heart failure and death. Cytokine profiling in women with ACS. Determination of upstream markers for early identification of patients at risk for myocardial necrosis and adverse outcomes.	Kavsak, P.A. et al. (2007) <i>Clin. Chem.</i> 53 :2112-2118 Kavsak, P.A. et al. (2008) <i>Clin. Biochem.</i> 41 :607-610 Kavsak, P.A. et al. (2008) <i>Clin. Chem. Acta</i> 387 :133-138
Hereditary hemochromatosis	MCP-1 levels and correlations with HFE mutation status and iron indexes.	Lawless, M.W. et al. (2007) <i>Tissue Antigens</i> 70 :294-300
Rheumatoid arthritis	Response to etanercept therapy.	Fabre, S. et al. (2008) <i>Clin. Exp. Immunol.</i> 153 :188-195
Insulin resistance & Metabolic Syndrome	Measurement of inflammatory markers	Ingelsson, E. et al. (2008) <i>Eur. J. Clin. Invest.</i> 38 : 502-509
Age related macular degeneration	Bevacizumab treatment.	Roh M.I. (2009) <i>Retina</i> 29 : 523-529
Macular edema	Bevacizumab treatment	Roh, M.I. (2009) <i>Ophthalmology</i> 116 : 80 - 86
Metastatic disease	Response to anti-metastatic agent.	Kavsak, P.A. (2009) <i>Clin. Biochem.</i> 42 : 1162-1165
Post myocardial infarction	Association between inflammatory markers and MMPs in men and women.	Samnegård, A. et al. (2009) <i>Atherosclerosis</i> 202 : 550-556
Stress	Psychological stress in women.	Asberg, M. et al. (2009) <i>Plus ONE</i> , 4 : es590
Exercise	Cytokine measurement in triathlon athletes during a competitive season.	Banfi, G. et al. (2008) <i>Clin. Chem. Lab. Med.</i> 46 :250-252
In vitro study	TCR-MHC Class II interactions between T cells and monocytes.	Van Beem, R.T. (2008) <i>J. Immunol.</i> 180 : 5141 - 5148



Quality control is an important aspect in all multiplex testing, so Randox offers Quality Controls to complement their cytokine arrays.

With a rapidly increasing portfolio of multiplex assays, Randox will have a quality control sera to suit your needs.

- | | |
|------------------------------------|--------|
| Cytokine Controls. | CY5006 |
| Cytokine Controls (Series III) | CY5012 |
| Cytokine Controls (Series IV) | CY5011 |
| Cytokine Controls (Series V) | CY5010 |
| High Sensitivity Cytokine Controls | CY5005 |

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