

# Exploring Chemokine Signaling

## LUNARIS™ Chemokine Kits

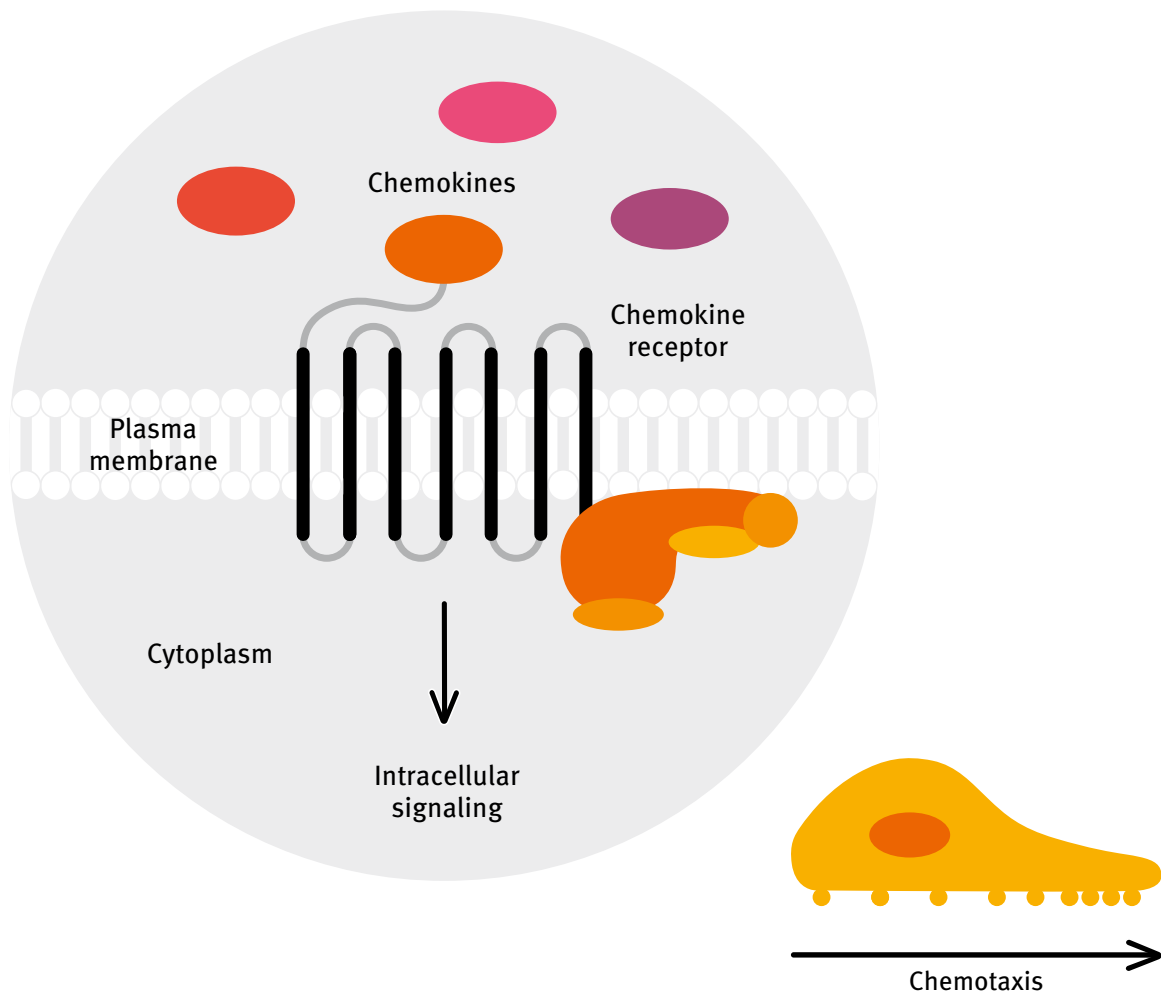
### Human 10-Plex:

CCL2 (MCP-1), CCL3, CCL4, CCL5 (RANTES),  
CCL11 (Eotaxin), CCL20, CXCL1, CXCL8 (IL-8),  
CXCL10 (IP-10), CXCL12 (SDF1A)



### Mouse 11-Plex:

CCL2 (MCP-1), CCL3, CCL4, CCL5 (RANTES),  
CCL11 (Eotaxin), CCL19, CCL20, CCL22, CXCL1,  
CXCL10 (IP-10), CX3CL1 (Fractalkine)



## LUNARIS™ Human & Mouse Chemokine Kits

### Validated, scalable, robust

- > Validated for quantitative analysis of up to 12 different chemokines in one sample
- > Profile homeostatic and proinflammatory chemokine signatures in sample volumes as low as 3 µL
- > Scalable and standardized assay architecture with robust chemistry guarantees reproducibility
- > Harmonized panels for human and murine samples allow rapid translation of results from lab to clinic

#### LUNARIS™ Human 10-Plex Chemokine Kit

Quantifies CCL2 (MCP-1), CCL3, CCL4, CCL5 (RANTES), CCL11 (Eotaxin), CCL20, CXCL1, CXCL8 (IL-8), CXCL10 (IP-10), CXCL12 (SDF1A) in serum and cell culture supernatant.

#### LUNARIS™ Mouse 11-Plex Chemokine Kit

Quantifies CCL2 (MCP-1), CCL3, CCL4, CCL5 (RANTES), CCL11 (Eotaxin), CCL19, CCL20, CCL22, CXCL1, CXCL10 (IP-10), CX3CL1 (Fractalkine) in serum and cell culture supernatant.

For Research Use Only. Not for use in diagnostic procedures.



## Chemokine Signaling

Chemokines constitute the largest family of cytokines and mediate versatile and powerful signaling in cell migration, homeostasis, inflammation, angiogenesis, embryogenesis, cancer metastasis and several other medically relevant functions.

The four classes of chemokines initiate complex signaling cascades by binding to specific 7-transmembrane G protein-coupled receptors.

Building fine-tuned concentration gradients, chemokines exert precise control of diverse regulatory pathways and cause pleiotropic effects that extend far beyond their originally described role as leucocyte chemoattractants. A plethora of literature bears witness to the known importance of these small cytokines in a vast number of biological functions, while a growing number of publications hints at a yet undescribed complex interplay between target cells and their respective chemokines.

Chemokine repertoires of some signaling axes are extensively conserved between mice and humans, making murine models the system of choice in more than just immunology contexts.

#### Relevant research areas:

- > Inflammation and infection biology
- > Allergy and autoimmune disease
- > Hematopoiesis and angiogenesis

#### Analytes contained in LUNARIS™ Chemokine Kits grouped by cellular function

##### Lymphocyte traffic



Th1, Th2, Th17 cells

CCL20, CCL22, CX3CL1, CXCL10

##### Mononuclear cell traffic



Macrophages, natural killer cells

CCL2, CCL3, CCL4, CCL5, CCL19, CX3CL1

##### Granulocyte traffic



Eosinophils, neutrophils

CCL11, CXCL1, CXCL8 (IL-8)

Note: CXCL12 is mainly involved in bone marrow homing (e.g., retention of granulocytes, B cells and monocyte precursors).

## Excellent Data Quality

### Validation of LUNARIS™ Human 10-Plex Chemokine Kit\*

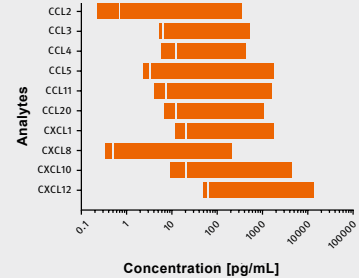
**Table 1: Performance**

Median assay parameters determined for a twelve point standard curve in more than ten experiments. Limit of detection (LoD), lower limit of quantification (LLOQ), and upper limit of quantification (ULOQ) given in pg/mL; dynamic range (DR) on a log scale.

Analyte	LoD	LLOQ	ULOQ	DR
CCL2	0.2	0.7	400	2.6
CCL3	4.7	6.1	600	2.8
CCL4	5.2	12.3	480	2.7
CCL5	2.1	3.3	2000	3.3
CCL11	3.6	7.4	1800	3.3
CCL20	5.9	12.3	1200	3.1
CXCL1	10.6	20.5	2000	3.3
CXCL8	0.3	0.4	240	2.4
CXCL10	8.2	20.5	5000	3.7
CXCL12	42.7	61.4	15000	4.2

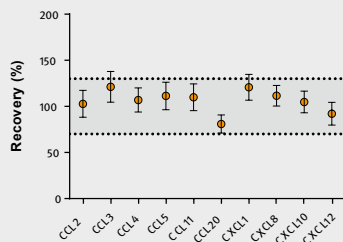
**Figure 1: Performance**

Bar diagram depicting the median assay parameters shown in table 1. The orange bars represent the dynamic range of the assay from LoD (left border) to the ULOQ (right border). The LLOQ is depicted as a white line.



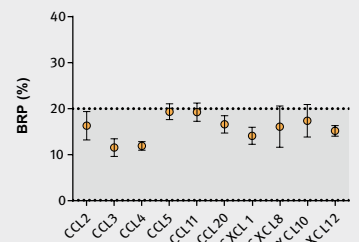
**Figure 2: Accuracy**

Median recovery rate from 10 experiments quantifying markers in quality control samples spiked at two different concentrations into cell culture supernatants. The targeted recovery range (70–130%) is denoted by the dotted lines/grey shaded area.



**Figure 3: Precision**

Between-run precision (BRP) of QC samples spiked into cell culture supernatants. Each data point represents the median between-run precision of two different QC sample concentrations measured in 10 experiments. The targeted precision (<20%) is denoted by the dotted lines/grey shaded area.



\*Validation data of the corresponding mouse kit are available upon request.

## LUNARIS™ Technology

### Innovative technology for translational proteomics

- > **Ease of readout and handling**
- > **Fully integrated system**
- > **Flexible scalability from low to high throughput**
- > **Readout of 384 samples in less than one hour**

AYOXXA's proprietary LUNARIS™ platform for multiplex protein analysis is a fully integrated and scalable system. A dedicated reader automates image-based analysis of immunoassay beads in a planar array, so every bead is read and every bead counts.

LUNARIS™ is optimized for sample volumes as low as 3 µL – one-tenth the volume required for similar technologies – yet allows full multiplex testing without compromising data quality or precision from precious samples.

With advantages of superior data quality, workflow flexibility and conservation of precious samples, LUNARIS™ enables reliable quantification of biomarkers from model to man – from lab to clinic – from data to insight.

## LUNARIS™ Services

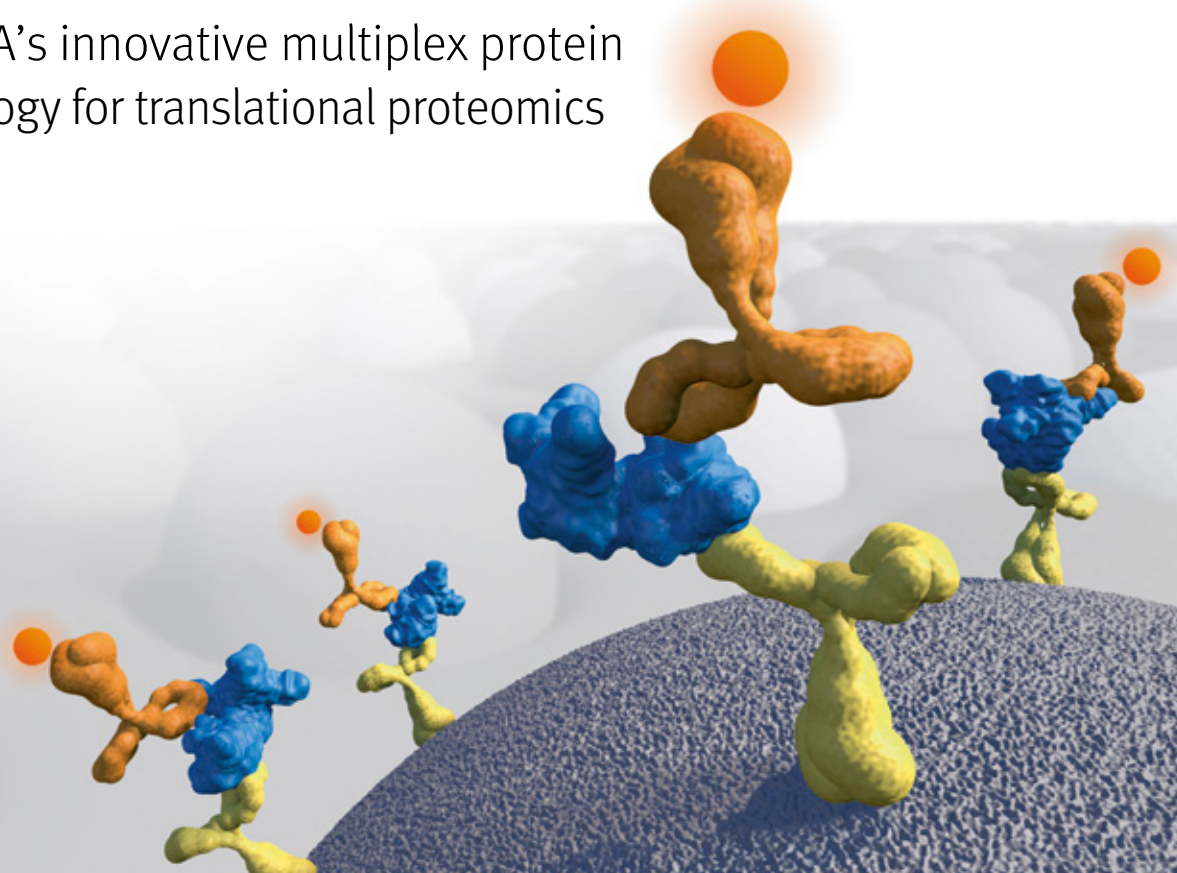
### Multiple options to access the advantages of LUNARIS™

- > **Complete testing and readout services**
- > **Send in samples for testing and receive a complete analysis report**
- > **Perform assays in your lab, then send in completed assay plates for readout**
- > **Innovative panel development**
- > **Custom panel configuration**
- > **Custom multiplex assay development**



# LUNARIS™ Technology

AYOXXA's innovative multiplex protein technology for translational proteomics



## Ordering information

LUNARIS™ Kits	No. of BioChips	Cat. No.	No. of samples*
Human 10-Plex Chemokine Kit	1 × 96	LHCK-20100S	40
	4 × 96	LHCK-20100F	160
Mouse 11-Plex Chemokine Kit	1 × 96	LMCK-20110S	40
	4 × 96	LMCK-20110F	160

\* Measured in duplicate

**AYOXXA Biosystems** is dedicated to the vision of enabling success in translational research.

Building upon an innovative technology platform, our mission is to develop robust assay panels for translational research applications. Our LUNARIS™ multiplex protein analysis platform is optimized for translating knowledge from basic to clinical research. With its advantages in terms of quality, flexibility and efficiency, LUNARIS™ enables reliable quantification of biomarkers from model to man – from lab to clinic – from data to insight.

Exploring chemokine signaling

**Call the experts:**

**+49 (0)221-222 529-0**

[chemokines@ayoxxa.com](mailto:chemokines@ayoxxa.com)

[www.ayoxxa.com](http://www.ayoxxa.com)

### HEADQUARTERS GERMANY

AYOXXA Biosystems GmbH  
BioCampus Cologne  
Nattermannallee 1  
50829 Köln, Germany  
Phone: +49 (0) 221 222 529-0  
E-Mail: [sales@ayoxxa.com](mailto:sales@ayoxxa.com)

### USA

AYOXXA Biosystems Inc.  
c/o Platinum CFO  
2600 Tower Oaks Blvd., Suite 220  
Rockville, MD 20852  
USA  
E-Mail: [sales@ayoxxa.com](mailto:sales@ayoxxa.com)