

# OptiPrep™ Mini-Review MC02

## Mononuclear cells, monocytes and polymorphonuclear leukocytes: a bibliographical review

- ◆ This Mini-Review divides the published papers into cell type and (where necessary) method type and/or source, species and research topic; within each group references are listed alphabetically according to first author.
- ◆ A companion Mini-Review (MC01) is a methodological review of iodixanol gradient technology for purifying all mononuclear cells from blood and tissues.

### 1 Monocytes

#### 1a From a leukocyte-rich plasma (discontinuous flotation gradient)

Note that monocytes are also prepared from mononuclear cell preparations (see Section 2) by antibody-bead negative selection

##### 1a-1 Human

###### Adherence (to endothelial cells)

- AbdAlla, S., Lother, H., Langer, A., el Faramawy, Y. and Quitterer, U. (2004) *Factor XIIIa transglutaminase crosslinks AT<sub>1</sub> receptor dimers of monocytes at the onset of atherosclerosis* Cell, **119**, 343-354
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- Galettis, A., Campbell, S., Morris, J.M., Jackson, C.J., Twigg, S.M. and Gallery, E.D.M. (2004) *Monocyte adhesion to decidual endothelial cells is increased in pregnancies complicated by type 1 diabetes but not by gestational diabetes* Diabetes Care, **27**, 2514-2515
- Humphries, J., Gossage, J.A., Modarai, B., Burnand, K.G., Sisson, T.H., Murdoch, C. and Smith, A. (2009) *Monocyte urokinase-type plasminogen activator up-regulation reduces thrombus size in a model of venous thrombosis* J. Vasc. Surg., **50**, 1127-1134
- Ohlsson, S., Hellmark, T., Pieters, K., Sturfelt, G., Wieslander, J. and Segelmark, M. (2005) *Increased monocyte transcription of the proteinase 3 gene in small vessel vasculitis* Clin. Exp. Immunol., **141**, 174-182
- Ronald, J.A., Ionescu, C.V., Rogers, K.A. and Sandig, M. (2001) *Differential regulation of transendothelial migration of THP-1 cells by ICAM-1/LFA-1 and VCAM-1/VLA-4* J. Leukoc. Biol., **70**, 601-609
- Schwartz, B.R., Karsan, A., Bombeli, T. and Harlan, J.M. (1999) *A novel  $\beta_1$  integrin-dependent mechanism of leukocyte adherence to apoptotic cells* J. Immunol., **162**, 4842-4848
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### Angiogenic/immune responses

Agostini, L., Martinon, F., Burns, K., McDermott, M.F., Hawkins, P.N. and Tschopp, J. (2004) *NALP3 forms an IL-1 $\beta$ -processing inflammasome with increased activity in Muckle-Wells autoinflammatory disorder* Immunity, **20**, 319-325

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Li, C-Y., Chou, T-C., Lee, C-H., Tsai, C-S., Loh, S-H. and Wong, C-S. (2003) *Adrenaline inhibits lipopolysaccharide-induced macrophage inflammatory protein-1 $\alpha$  in human monocytes: the role of  $\beta$ -receptors* Anesth. Analg., **96**, 518-523

Lommatzsch, M., Schloetcke, K., Klotz, J., Schuhbaeck, K., Zingler, D., Zingler, C., Schulte-Herbruggen, O., Gill, H., Schuff-Werner, P. and Virchow, J.C. (2005) *Brain-derived neurotrophic factor in platelets and airflow limitation in asthma* Am. J. Respir. Crit. Care Med., **171**, 115-120

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Papaspyridonos, M., McNeill, E., de Bono, J.P., Smith, A., Burnand, K.G., Channon, K.M. and Greaves, D.R. (2008) *Galectin-3 is an amplifier of inflammation in atherosclerotic plaque progression through macrophage activation and monocyte chemoattraction* Arterioscler. Thromb. Vasc. Biol., **28**, 433-440

Ritter, U. and Moll, H. (2000) *Monocyte chemotactic protein-1 stimulates the killing of Leishmania major by human monocytes, acts synergistically with IFN- $\gamma$  and is antagonized by IL-4* Eur. J. Immunol., **30**, 3111-3120

### Cord blood

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### Dendritic cell, derived

Alvarez, Y., Municio, C., Alonso, S., San Román, J.A., Sánchez Crespo, M. and Fernández, N. (2009) *Cyclooxygenase-2 induced by zymosan in human monocyte-derived dendritic cells shows high stability, and its expression is enhanced by atorvastatin* J. Pharmacol. Exp. Ther., **329**, 987-994

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Wang, D., Cai, Ge. J. and Yin, L. (2015) *Brief exercises affect gene expression in circulating monocytes* Scand. J. Immunol., **82**, 429–435

### Heat-shock protein *see* Exercise effects

### Immune responses *see* Angiogenic/immune responses

### Inflammatory responses

Chaudhuri, N., Paiva, C., Donaldson, K., Duffin, R., Parker, L.C., Sabroe, I. (2010) *Diesel exhaust particles override natural injury-limiting pathways in the lung* Am. J. Physiol. Lung. Cell. Mol. Physiol. **299**, L263–L271

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Chen, S.S.H., Jenkins, A.J. and Majewski, H. (2009) *Elevated plasma prostaglandins and acetylated histone in monocytes in Type 1 diabetes patients* Diabet. Med., **26**, 182–186

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#### Leishmania

Ritter, U. and Moll, H. (2000) *Monocyte chemotactic protein-1 stimulates the killing of Leishmania major by human monocytes, acts synergistically with IFN- $\gamma$  and is antagonized by IL-4* Eur. J. Immunol., **30**, 3111-3120

#### Leukapheresis samples, from

Akiyama, Y., Oshita, C., Kume, A., Iizuka, A., Miyata, H., Komiyama, M., Ashizawa, T., Yagoto, M., Abe, Y., Mitsuya, K., Watanabe, R., Sugino, T., Yamaguchi, K. and Nakasu, Y. (2012)  *$\alpha$ -Type-1 polarized dendritic cell-based vaccination in recurrent high-grade glioma: a phase I clinical trial* BMC Cancer, **12**: 623

#### Liver, recruitment to

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#### LPS induced responses

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#### Macrophage differentiation/function

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#### Metalloproteinases

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#### Oxidation

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#### Thiosemicarbazones

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#### **Virus interactions**

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Semen (human)

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## 2c Tissues

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### **3 Mononuclear cells (mixer flotation)**

#### **3a-1 Blood (human and non-human primates)**

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### [3a-5 Tissues](#)

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#### [Liver](#)

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#### Spleen

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### 4 Mononuclear cells (barrier flotation)

#### Human blood

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### 5 Polymorphonuclear leukocytes (granulocytes)

#### Bovine peripheral blood

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