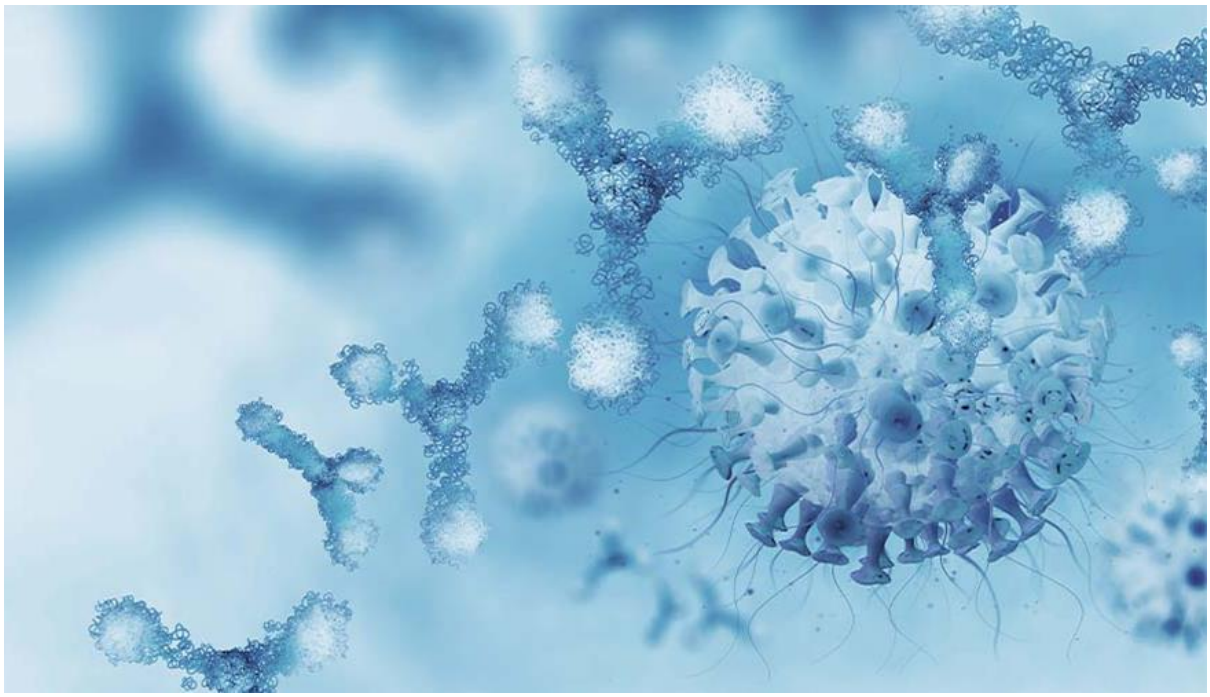
Beyond the basics – essential immune response insights for clinicians from a modern haematology analysis

List of scientific references



Date: July 2023
Subject: Scientific reference list
Issued by: Scientific Customer Services, Haematology
Number: 2023 - 1
Note: Whether references are given in British or American English depends on the original.

Sysmex Europe SE · Bornbarch 1, 22848 Norderstedt, Germany · Phone +49 40 52726-0 · Fax +49 40 52726-100
info@sysmex-europe.com · **www.sysmex-europe.com**

Chapter 1: Introduction

[1] Carillo JLM *et al.* 2017

Physiology and Pathology of Innate Immune Response Against Pathogens. InTech.
Textbook about the human immune response

Chapter 2: Immune response pattern

[2] Centers for Disease Control and Prevention
https://www.cdc.gov/patientsafety/features/be-antibiotics-aware.html (visited on 10.05.2023)
Antibiotic stewardship

[3] Henriot I *et al*. 2017

New parameters on the hematology analyzer XN-10 (SysmexTM) allow to distinguish childhood bacterial and viral infections.

Int J Lab Hematol. 39(1):14

The authors found that the parameter AS-LYMP was significantly higher in children with viral infections.

[4] Rutkowska E *et al.* 2021

Usefulness of the New Hematological Parameter: Reactive Lymphocytes RE-LYMP with Flow Cytometry Markers of Inflammation in COVID-19.

Cells. 10(1):82

The study showed that RE-LYMP% correlated with the presence of plasmablasts (activated B cells) on viral infected patients.

[5] Linssen J *et al*. 2008

Automation and validation of a rapid method to assess neutrophil and monocyte activation by routine fluorescence flow cytometry in vitro.

Cytometry B Clin Cytom. 74(5):295

Feasibility study about the assessment of neutrophil and monocyte activation using a Sysmex analyser.

[6] Cornet E *et al*. 2015

Contribution of the new XN-1000 parameters NEUT-RI and NEUT-WY for managing patients with immature granulocytes.

Int J Lab Hematol. 37(5):e123

The authors found that NEUT-RI and NEUT-WY could predict IG% values within a 72 h time frame in this study.

[7] Nierhaus A *et al.* 2013

Revisiting the white blood cell count: immature granulocytes count as a diagnostic marker to discriminate between SIRS and sepsis - a prospective, observational study.

BMC Immunol. 14:8

The authors found that IG count significantly discriminates between infected and non-infected patients.

[8] Linssen J *et al.* 2007

Identification and quantification of high fluorescence-stained lymphocytes as antibody synthesizing/secreting cells using the automated routine hematology analyzer XE-2100.

Cytometry B Clin Cytom. 72(3):157

The authors verified high fluorescence-stained lymphocytes as antibody synthesising cells by flow cytometry immunophenotyping analysis.

[9] Rolla R *et al.* 2021

Reduced activity of B lymphocytes, recognised by Sysmex XN-2000™ haematology analyser, predicts mortality in patients with coronavirus disease 2019.

Int J Lab Hematol. 43(1):e5

The study investigated mortality in patients with COVID-19 by assessing the B lymphocyte activity.

Chapter 3: Case studies

[10] Stiel L *et al.* 2016

Neutrophil Fluorescence: A New Indicator of Cell Activation During Septic Shock-Induced Disseminated Intravascular Coagulation.

Crit Care Med. 44(11):e1132

The authors concluded that NEUT-SFL (corresponds to NEUT-RI) is a surrogate for neutrophil activation.

[11] Lemkus L *et al*. 2022

The utility of extended differential parameters as a biomarker of bacteremia at a tertiary academic hospital in persons with and without HIV infection in South Africa.

PLoS One. 17(2):e0262938

The authors identified highest corelation for NE-SFL (corresponds to NEUT-RI) and IG% with bacterial infection, respectively.

[12] L van Pelt J *et al.* 2022

Reference intervals for Sysmex XN hematological parameters as assessed in the Dutch Lifelines cohort.

Clin Chem Lab Med; 60(6):907
Reference intervals for all 105 Sysmex XN parameters including the extended inflammation parameters: NEUT-RI, NEUT-GI, AS-LYMP, RE-LYMP, IG

[13] Ustyantseva M *et al.* 2019

Innovative Technologies in the Evaluation of the Neutrophil Functional Activity in Sepsis.
Sys J Int. 29:1
Study about the evaluation of neutrophil activity parameters in septic patients (not peer-reviewed journal).

Chapter 4: Summary

[14] Delabranche X *et al.* 2017

Evidence of Netosis in Septic Shock-Induced Disseminated Intravascular Coagulation.
Shock. 47(3):313
The study investigated neutrophil activation in severe cases of bacterial infection.

[15] Ha SO *et al.* 2015

Fraction of immature granulocytes reflects severity but not mortality in sepsis.
Scand J Clin Lab Invest. 75(1):36
The study investigated IG in cases of severe infection.

[16] Fujimoto H *et al.* 2000

Flow cytometric method for enumeration and classification of reactive immature granulocyte populations.
Cytometry. 42(6):371
The study investigated a flow cytometric method for the enumeration and classification of nonmalignant immature granulocytes (IG).

[17] Urrechaga E et al. 2021

Leukocyte differential and reactive lymphocyte counts from Sysmex XN analyzer in the evaluation of SARS-CoV-2 infection.
Scand J Clin Lab Invest. 81(5):394
The authors concluded that RE-LYMP was useful to distinguish COVID 19 and bacterial infections.