



Prof. Ariel Munitz, Ph.D.

Department of Clinical Microbiology and Immunology
Sackler Faculty of Medicine



Regulatory Mechanisms in Mucosal Inflammation

Position

Senior Lecturer, Sackler Faculty of Medicine

Associate Editor, *Journal of Allergy and Clinical Immunology*

Research

The gastrointestinal, respiratory and urogenital tracts are primary entry points of numerous pathogens and antigens. Therefore, complex immunological mechanisms evolved to efficiently and potently respond to such antigens. Notably, exaggerated immune responses such as those observed in asthma and inflammatory bowel disease are often harmful and may lead to substantial morbidity.

Our goal is to identify immunological mechanisms that can be pharmacologically targeted in diseases affecting the lung and gastrointestinal tract. We are specifically interested in defining the roles of immune inhibitory receptors in these mucosal sites. To achieve this goal we use a combination of novel in-vivo (unique gene targeted mice) and in-vitro approaches combining genomics, proteomics, molecular biology and biochemistry.

Publications

Shik D, Moshkovits I, Karo-Atar D, Reichman H, **Munitz A**. IL-33 requires CMRF35-like molecule-1 (CLM-1) expression for induction of myeloid cell activation. *Allergy*. 2014; *In press*.

Baruch-Morgenstern NB, Shik D, Moshkovits I, Itan M, Karo-Atar D, Bouffi C, Fulkerson PC, Rashkovan D, Jung S, Rothenberg ME, **Munitz A**. Paired immunoglobulin-like receptor A is an intrinsic, self-limiting suppressor of IL-5-induced eosinophil development. *Nat Immunol*. 2014, 15:36-44.

Moshkovits I, Shik D, Itan M, Karo-Atar D, Bernshtein B, Hershko AY, van Lookeren Campagne M, **Munitz A**. CMRF35-like molecule 1 (CLM-1) regulates eosinophil homeostasis by suppressing cellular chemotaxis. *Mucosal Immunol*, 2013. 7:292-303.

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Semis R, Shai N, **Munitz, A**, Zaslavsky Z, Polacheck I, Segal E. Pharmacokinetics, tissue distribution and immunomodulatory effect of intralipid formulation of nystatin in mice. *J of Antimicrob Chem*; 2012;67:1716-21.

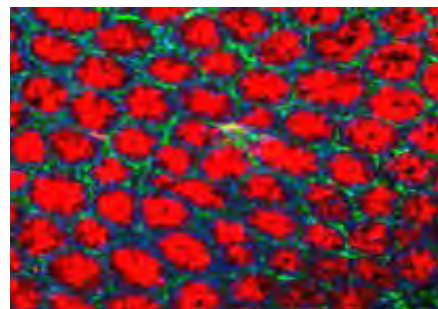
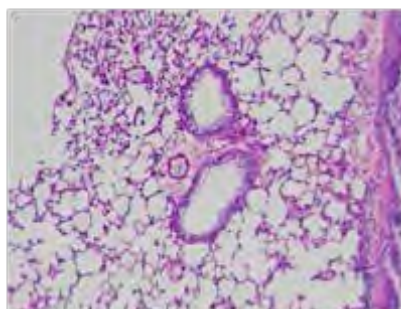
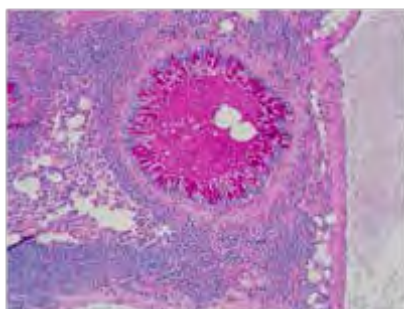


Figure legend: A photomicrograph of a normal lung displaying two large airways and a blood vessel (left). In many inflammatory conditions such as asthma and COPD, the airway is filled with mucus plugs (middle, pink stain). Right - an immunofluorescent stain of resistin-like molecule alpha (red), a proinflammatory, immunoregulatory molecule that is highly upregulated in gastrointestinal epithelial in conditions such as inflammatory bowel disease (IBD).

Munitz A, Cole ET, Karo-Atar D, Finkelman FD, Rothenberg ME. Resistin-like molecule alpha regulates IL-13-induced chemokine production but not allergen-induced airway responses. *Am J Res Cell Mol Biol*; 2012;46:703-13.

Rothenberg ME, Wen T, Shik D, Cole ET, Mingler M, **Munitz A**. IL-13R α 1 differentially regulates aeroallergen-induced lung responses. *J Immunol*, 2011; 187:4873-4880.

Waddell A, Ahrens R, Steinbrecher K, Donovan B, Rothenberg ME, **Munitz A**, Hogan SP. Colonic eosinophilic inflammation in experimental colitis is mediated by Ly6C(high) CCR2(+) inflammatory monocyte/macrophage-derived CCL11. *J Immunol*. 2011; 186:5993-6003.

Munitz A, Cole ET, Waddell A, Groschwitz K, Ahrens R, Steinbrecher K, Willson T, Han X, Denson L, Rothenberg ME, Hogan SP. Paired immunoglobulin-like receptor B (PIR-B) negatively regulates macrophage activation in experimental colitis. *Gastroenterology*, 2010; 139:530-541.

Reviews and Chapters

Lacy P, **Munitz A**. Mutations in CCR3 render it “missing in action”. *J Allergy Clin Immunology*. 2010;126:158-159.

Stein M, **Munitz A**. Targeting interleukin 5 in asthma and hypereosinophilic syndromes. *Recent Pat Inflamm Allergy Drug Discov*. 2010;4;201-209.

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Grants

2013-2016 Fritz Thyssen Stiftung, The role of IL-13R α 1 in pulmonary fibrosis

2012-2016 US-Israel Binational Scientific Foundation (BSF), The expression and function of paired immunoglobulin-like receptor B in eosinophils

2011-2015 The Israel Science Foundation (ISF), Expression and function of CLM-1 in eosinophils”

2014-2017 Israel Ministry of Health

2014-2015 Israeli Cancer Association

2014-2015 ICRF Research Career Development Award