Immunology and immune-related diseases

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The main scientific interest of Dr. Galgani's research group is focused on the comprehension of the biological and molecular mechanisms regulating the immune response in autoimmune diseases, chronic inflammatory conditions and cancer.
Over the last few years, Galgani's research group investigated the role different regulatory T cell subsets as key players at the basis of deregulated immune response in pathological conditions, such as Type 1 Diabetes, Multiple Sclerosis and chronic obstructive pulmonary disease. Specifically, these studies explored frequency, metabolic asset and suppressive function of both canonical regulatory T (Treg) cells, which express the transcription factor FoxP3 with its splicing variants, and of a novel regulatory ($T_{R3\text{-}56}$) cell subset, characterized by the co-expression of the surface molecules CD3 and CD56. Also, research activity of Dr. Galgani aims to identify novel biomarkers able to predict development and progression overtime of inflammatory and autoimmune disorders.

1. CD4+ T Cell Defects in a Mulibrey Patient With Specific TRIM37 Mutations.
Bruzzaniti S, Cirillo E, Prencipe R, Giardino G, Lepore MT, Garziano F, Perna F, Procaccini C, Mascolo L, Pagano C, Fattorusso V, Mozzillo E, Bifulco M, Matarese G, Franzese A, Pignata C, Galgani M. Front Immunol. 2020 Sep 18;11:1742. doi: 10.3389/fimmu.2020.01742. eCollection 2020. PMID: 33042106

2. T1D progression is associated with loss of CD3+CD56+ regulatory T cells that control CD8+ T cell effector functions.
Terrazzano G, Bruzzaniti S, Rubino V, Santopaolo M, Palatucci AT, Giovazzino A, La Rocca C, de Candia P, Puca A, Perna F, Procaccini C, De Rosa V, Porcellini C, De Simone S, Fattorusso V, Porcellini A, Mozzillo E, Troncone R, Franzese A, Ludvigsson J, Matarese G, Ruggiero G, Galgani M. Nat Metab. 2020 Feb;2(2):142-152. doi: 10.1038/s42255-020-0173-1. Epub 2020 Feb 17. PMID: 32500117

3. An immunometabolic pathomechanism for chronic obstructive pulmonary disease.
Bruzzaniti S, Bocchino M, Santopaolo M, Calì G, Stanziola AA, D'Amato M, Esposito A, Barra E, Garziano F, Micillo T, Zuchegna C, Romano A, De Simone S, Zuccarelli B, Mottola M, De Rosa V, Porcellini A, Perna F, Matarese G, Galgani M. Proc Natl Acad Sci U S A. 2019 Jul 30;116(31):15625-15634. doi: 10.1073/pnas.1906303116. Epub 2019 Jul 15. PMID: 3130823

4. Glycolysis controls the induction of human regulatory T cells by modulating the expression of FOXP3 exon 2 splicing variants.
De Rosa V, Galgani M, Porcellini A, Colamatteo A, Santopaolo M, Zuchegna C, Romano A, De Simone S, Procaccini C, La Rocca C, Carrieri PB, Maniscalco GT, Salvetti M, Buscarinu MC, Franzese A, Mozzillo E, La Cava A, Matarese G. Nat Immunol. 2015 Nov;16(11):1174-84. doi: 10.1038/ni.3269. Epub 2015 Sep 28. PMID: 26414764

5. Meta-immunological profiling of children with type 1 diabetes identifies new biomarkers to monitor disease progression.
Galgani M, Nugnes R, Bruzzese D, Perna F, De Rosa V, Procaccini C, Mozzillo E, Cilio CM, Elding Larsson H, Lernmark A, La Cava A, Franzese A, Matarese G.
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PMID: 23396400