t-cell

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T-Cell: Publications and Research from SwissMixIt

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PDF Version of the webpage (first pages)

T Cell Botanical Information

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Keywords: Human Immunology, memory T cells, T cell dysfunction, immunity, cancer, immunotherapy, tumor microenvironment, Antioxidants, Metabolism, Autoimmunity, adoptive immunotherapy, melanoma, Thiols, Oxidative stress, Free radicals, Active oxygen, Biomarkers, immune aging, T cells, inflammation, DNA damage, glycolysis, lipid rafts, aging skin, antiaging, Ayurveda, cosmetics, epidermal stem cells, herbs, plant stem cells, regeneration, T cell receptor (TCR), Chimeric antigen receptor (CAR), alpha beta T cells, gamma delta T cells, Memory T cells, Immune synapse, Reprogramming, Adoptive cell therapy, Signal transduction, TCR clustering
Description and Research Abstract: T cells coordinate multiple aspects of adaptive immunity throughout life, including responses to pathogens, allergens, and tumors. T cells control multiple insults simultaneously throughout the body and maintain immune homeostasis over decades. T cells are a functional role in immune responses. Considering age and tissue influences on human T cells is important for developing targeted strategies to modulate T cell-mediated immunity in vaccines and immunotherapies.
The process of development and maturation of the T Cells in mammals begins with the haematopoietic stem cells (HSC) in the fetal liver and later in the bone marrow where HSC differentiate into multipotent progenitors.
The T lymphocyte, especially its capacity for antigen-directed cytotoxicity, has become a central focus for engaging the immune system in the fight against cancer. Basic science discoveries elucidating the molecular and cellular biology of the T cell have led to new strategies in this fight, including checkpoint blockade, adoptive cellular therapy and cancer vaccinology.

Improving persistence and sustained function of effector CD8+ T cell response is key for achieving significant tumor control in adoptive T cell immunotherapy protocols. Our recent report shows that high anti-oxidant property is central to potent anti-tumor effector T cells, and directly correlates to CD62Lhi central memory, low glycolytic and low mitochondrial membrane potential phenotype, all of which may be linked and contribute to better tumor control.
T lymphocytes, a critical component of the adaptive immune system, provide lifelong protection against pathogens by orchestrating immune responses at diverse sites of infection. Naive T cells emerge from the thymus and populate lymphoid tissues sites, where they differentiate to effector T cells upon antigen encounter, and subsequently can develop into long-lived memory T cells.
Plants are equipped with a robust mechanism for regeneration of their tissues under stress. Significant efforts have been put into understanding this mechanism in the expanding field of plant biotechnology.
Regulatory T cells (Treg) are critical in maintaining immune tolerance and suppressing autoimmunity.
In cancer, T cells become dysfunctional owing to persistent antigen exposure. Dysfunctional T cells are characterized by reduced proliferative capacity, decreased effector function, and overexpression of multiple inhibitory receptors.
Memory T cells are typically parsed into discreet subsets based on phenotypic definitions that connote distinct roles in immunity. At a functional level, immunological memory typically refers to an enhanced immune response upon reencounter with an antigen relative to the first encounter.
Several biological activities have been described for polyphenolic compounds, including a modulator effect on the immune system.
Lipid rafts are sphingolipid- and cholesterol-rich domains of the plasma membrane which contain a variety of signalling and transport proteins. Different subtypes of lipid rafts can be distinguished according to their protein and lipid composition.
Chronic energy stress affects the longevity and the functional differentiation of older T cells. Altered metabolic patterns provide opportunities to therapeutically target the immune aging process through metabolic interference.
Vaccines protect by inducing effector mechanisms (cells or molecules) capable of rapidly controlling replicating pathogens or inactivating their toxic components. Vaccine-induced immune effectors are essentially antibodies produced by B lymphocytes capable of binding specifically to a toxin or a pathogen. Other potential effectors are cytotoxic CD8+ T lymphocytes that may limit the spread of infectious agents by recognizing and killing infected cells or secreting specific antiviral cytokines and CD4+ T-helper (Th) lymphocytes.
Lipid rafts is a blanket term used to describe distinct areas in the plasma membrane rich in certain lipids and proteins and which are thought to perform diverse functions. A large number of studies report on lipid rafts having a key role in receptor signalling and activation of lymphocytes. In T cells, lipid raft involvement was demonstrated in the early steps during T cell receptor (TCR) stimulation. Interestingly, recent evidence has shown that signalling in these domains differs in T cells isolated from patients with autoimmune diseases.
Data indicate that initial antigen encounter triggers an instructive developmental program that does not require further antigenic stimulation and does not cease until memory CD8 T cell formation.
Regulatory T cells engage in the maintenance of immunological self-tolerance by actively suppressing self-reactive lymphocytes. Foxp3 is a key regulatory gene for the development of regulatory T cells.
ATOs provide a robust tool for studying human T cell development and stem cell based approaches to engineered T cell therapies.
TSCM stemness could be therapeutically leveraged to enhance the efficacy of vaccines and adoptive T-cell therapies for cancer and infectious diseases or, conversely, disrupted to treat TSCM-driven and sustained diseases such as autoimmunity.
Advances in multiparameter flow cytometry over the last 20 years have allowed us to dissect the heterogeneity of the T-cell compartment with ever-increasing precision.
T lymphocytes rely on several metabolic processes to produce the high amounts of energy and metabolites needed to drive clonal expansion and the development of effector functions.
Oxidative stress is well known to be involved in the pathogenesis of lifestyle-related diseases, including atherosclerosis, hypertension, diabetes mellitus, ischemic diseases, and malignancies.
Oxidative stress has been defined as harm- ful because oxygen free radicals attack biological molecules such as lipids, pro- teins, and DNA. However, oxidative stress also has a useful role in physiologic adaptation and in the regulation of intracellular signal transduction.

Natural polysaccharides exhibit an immunostimulatory effect with low toxicity in humans and animals. It has shown that polysaccharide extracted from Codium fragile (CFP) induces anti-cancer immunity by dendritic cell (DC) activation.
The objective of this study was to assess the inhibitory effect of the flavonoid aromadendrin on T cell activity to identify a non-cytotoxic immunosuppressive reagent.

The gut-associated lymphoid tissue represents an integral part of the immune system. Among the powerful players of the mucosa-associated lymphoid tissue are isolated lymphoid structures (ILSs), which as information centers, drive the local (and systemic) adaptive immune responses.
Oxya chinensis sinuosa (Ocs) is consumed as representative edible insects in Asia, but its function in various immune systems remains unclear. This study aimed to demonstrate the immunomodulatory effect, particularly on the innate and adaptive immune response.
The advent of immunotherapy has had a major impact on the outcome and overall survival in many types of cancer. Current immunotherapeutic strategies typically aim to (re)activate anticancer T cell immunity, although the targeting of macrophage-mediated anticancer innate immunity has also emerged.
Stromal cells (SCs) are strategically positioned in both lymphoid and nonlymphoid organs to provide a scaffold and orchestrate immunity by modulating immune cell maturation, migration and activation. Recent characterizations of SCs have expanded our understanding of their heterogeneity and suggested a functional specialization.
In the past decade, the rise of immunometabolism has fundamentally reshaped the face of immunology. As the functions and properties of many (immuno)metabolites have now been well described, their exchange among cells and their environment have only recently sparked the interest of immunologists.

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