The 51st Annual Meeting of the Japanese Society for Immunology Category Keywords

	ematopoiesis and Immune Environment	Hematopoietic stem cells Hematopoietic progenitors Lymphoid precursors Self-renewal Pluripotency Plasticity Lineages Commitment Cell fate decision Mesenchymal stem cells Osteoblasts CAR cells Niche Stromal cells Homing Bone marrow transplantation Cytokines Chemokines Receptors Signal transduction Bone marrow Lymph nodes Thymus Peyer's patches Chemokines Chemokines Chemokines Chemokines Thymus Peyer's patches Chemokines	Chemokine receptors Chemotaxis Vascular endothelial cells Lymphatic endothelial cells Homing Adhesion molecules Selectins Cadherins Integrins Lectins GPCR Sphingosin-1-P Cytoskeleton HEV In vivo imaging Cell Migration Extracellular matrix Thymic microenvironment Thymic medulla Promiscuous gene expression AIRE Notch/Delta Follicular dendritic cell (FDC) Fibroblastic reticular cell (FRC) Co-receptor Transcription factors
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		Stromal cells Homing Bone marrow transplantation Cytokines Chemokines Receptors Signal transduction Bone marrow Lymph nodes Thymus Peyer's patches Chemokines Early B cell development V(D) J recombination Clonal selection	HEV In vivo imaging Cell Migration Extracellular matrix Thymic microenvironment Thymic medulla Promiscuous gene expression AIRE Notch/Delta Follicular dendritic cell (FDC) Fibroblastic reticular cell (FRC) Co-receptor
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2 B		Bone marrow transplantation Cytokines Chemokines Receptors Signal transduction Bone marrow Lymph nodes Thymus Peyer's patches Chemokines Early B cell development V(D) J recombination Clonal selection	Cell Migration Extracellular matrix Thymic microenvironment Thymic medulla Promiscuous gene expression AIRE Notch/Delta Follicular dendritic cell (FDC) Fibroblastic reticular cell (FRC) Co-receptor
2 B		Cytokines Chemokines Receptors Signal transduction Bone marrow Lymph nodes Thymus Peyer's patches Chemokines Early B cell development V(D) J recombination Clonal selection	Extracellular matrix Thymic microenvironment Thymic medulla Promiscuous gene expression AIRE Notch/Delta Follicular dendritic cell (FDC) Fibroblastic reticular cell (FRC) Co-receptor
2 B		Chemokines Receptors Signal transduction Bone marrow Lymph nodes Thymus Peyer's patches Chemokines Early B cell development V(D) J recombination Clonal selection	Thymic microenvironment Thymic medulla Promiscuous gene expression AIRE Notch/Delta Follicular dendritic cell (FDC) Fibroblastic reticular cell (FRC) Co-receptor
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2 B		Thymus Peyer's patches Chemokines Early B cell development V(D) J recombination Clonal selection	Follicular dendritic cell (FDC) Fibroblastic reticular cell (FRC) Co-receptor
2 B		Peyer's patches Chemokines Early B cell development V(D) J recombination Clonal selection	Fibroblastic reticular cell (FRC) Co-receptor
2 B		Chemokines Early B cell development V(D)J recombination Clonal selection	Co-receptor
2 B		Early B cell development V(D)J recombination Clonal selection	
2 B		Early B cell development V(D)J recombination Clonal selection	
2 B		V(D)J recombination Clonal selection	
2 B		Clonal selection	. Tarioonphori Taoloto
2 B			Placma colle
2 B			Plasma cells
2 B		Central tolerance	Complement receptor signaling
2 B		Repertoire	APRIL
2 B		B cell activation	BAFF
2 B		B cell receptor (BCR)	negative selection
2 B	B cells	pre-BCR	class switch
2 8			
		ITAM, ITIM	Somatic hypermutation
		Signal transduction	Secondary lymphoid organ
		Antigen-antibody interaction	Germinal center
		Adaptor protein	Affinity maturation
		Cytokines/Chemokines	AID
		Cytokine receptor	Long-lived plasma cells
		Costimulatory signals	memory B cell
		Inhibitory signals	Receptor editing
		GEM/Lipid microdomain	Regulatory B cell
		Early T cell development	Notch/Delta
		V(D)J recombination	Immunological synapse
		1 7	
		b-selection	Cytotoxic T cells
		Lineage commitment	Negative selection
		Positive/negative selection	Programmed cell death
		Repertoire selection	Gene regulation
		Central tolerance	Immunological memory
		TEC	CD4 memory
		Repertoire formation	Central memory
		T cell activation	Effector memory
		T cell receptor (TCR)	CD8 memory
		pre-TCR	Life-long memory
		Signal transduction	Immune diseases
		Adaptor proteins	Cell Migration
3 T (cells	Costimulatory signals	Th1
	T Cells	Inhibitory signals	Immune regulation
		Cytokines/Chemokines	Th17
		Cytokine receptors	tissue resident memory T cells
		Chemokine receptors	Epigenetics
		Transcription factors	memory T cells
		Thymus	Neuro-immune axis
		GEM/lipid raft	Immune-metabolism
		MHC	Cytokines
		CD1	Gene expression
		non-classical MHC	Antigen presenting cells
		Adhesion molecules	Cellular interaction
		Anergy	T-B interaction
		homeostasis	Secondary lymphoid organ
		Homeostatic proliferation	Chemokines
		AICD	Plasticity
-			
		NK cells	Va14
		NKT cells	Va24
1		MAIT cells	CD1
		NK receptors	Glycolipid
		Paired receptors	Extrathymic differentiation
		NK cell target molecules	gdT cells
4 Ini	nate lymphocytes	1,000	outokino
4 In	nate lymphocytes	ADCC	I CYLOKII I E
4 Ini	nate lymphocytes		cytokine RORat
4 ini	nate lymphocytes	Cytotoxic molecules	RORgt
4 Ini	unate lymphocytes		

		Differentiation	Regulatory macrophage
1	Dendritic cells, macrophages, granulocytes	Subsets	Antigen-presenting cell
		Immune regulation	Antigen peptides
		Immunological tolerance	Antigen processing
		MHC	Hsp
		Phagocytes	Ubiquitination
		Antigen transfer	Cathepsin
		Cell migration	Autophagy
		Cell circulation	Proteasome
		Th differentiation	CD1
5		Interferon	non-classical MHC
		Lectins	Cross-presentation
		TLR	Inflammasome
		NLR	Neutrophils
		Maturation/Activation	Inflammation
		Cytokines/Chemokines	Inflammatory cytokines and chemokines
		Costimulatory molecules	Differentiation
		T cell activation	Migration
		Intercellular interaction	Apoptosis
		Phagocytosis	Differentiation pathway
		Recognition of non-self	tussue macrophage
		Regulatory dendritic cell	
		Migration	Cytokine
	Allergy		
		Differentiation pathway	Mast cells
		IgE receptor	Activating and inhibitory signal transduction
		Differentiation	Airway inflammation
		Basophils	lgE
1		Allergens	Mast cells
6		Eosinophils	Contact hypersensitivity
1		IgE	Mucosal Immunology
1		Protease	Bronchial asthma
1		Vaccine for allergy	Innate lymphoid cells
1		Mucosal Immunology	Th2
1		Allergic conjunctivitis	Atopic dermatitis
1		Th2 disease	Allergic disease
—		Cytokines	Immune regulation
		Cytokines Cytokine receptors	Immune diseases
	Cytokines and chemokines	Chemokine	Jak/STAT
		Chemokine receptors	SOCS
_		Signal transduction	IRF
7		Interleukin	TRAF
		Interferon	Smad
		TNF family	Homing
		TGF-β family	Cell Migration
		CSF	In vivo imaging
		NF-kb	Gene regulation
		Tolerance	Tr1
		Peripheral tolerance	Regulatory CD8+ T cells
		Immune suppression	Tolerogenic dendritic cells
1		Immune homeostasis	Foxp3
		Organ transplantation	Transcription factors
		Organ transplantation Transplantation immunology	Transcription factors PD-1
		Transplantation immunology	PD-1
		Transplantation immunology Bone marrow transplantation	PD-1 ICOS-L
		Transplantation immunology Bone marrow transplantation MHC	PD-1 ICOS-L Cytokines
		Transplantation immunology Bone marrow transplantation MHC GvH	PD-1 ICOS-L Cytokines TGF-b
		Transplantation immunology Bone marrow transplantation MHC GvH GvL	PD-1 ICOS-L Cytokines TGF-b IL-10
8	Tolerance and Immune suppression	Transplantation immunology Bone marrow transplantation MHC GvH GvL Immunosuppressive agents	PD-1 ICOS-L Cytokines TGF-b IL-10 IL-2
8	Tolerance and Immune suppression	Transplantation immunology Bone marrow transplantation MHC GvH GvL Immunosuppressive agents Cytokines	PD-1 ICOS-L Cytokines TGF-b IL-10 IL-2 Co-stimulation
8	Tolerance and Immune suppression	Transplantation immunology Bone marrow transplantation MHC GvH GvL Immunosuppressive agents Cytokines Autoimmunity	PD-1 ICOS-L Cytokines TGF-b IL-10 IL-2 Co-stimulation dendritic cells
8	Tolerance and Immune suppression	Transplantation immunology Bone marrow transplantation MHC GvH GvL Immunosuppressive agents Cytokines Autoimmunity Inflammation	PD-1 ICOS-L Cytokines TGF-b IL-10 IL-2 Co-stimulation dendritic cells IDO
8	Tolerance and Immune suppression	Transplantation immunology Bone marrow transplantation MHC GvH GvL Immunosuppressive agents Cytokines Autoimmunity	PD-1 ICOS-L Cytokines TGF-b IL-10 IL-2 Co-stimulation dendritic cells
8	Tolerance and Immune suppression	Transplantation immunology Bone marrow transplantation MHC GvH GvL Immunosuppressive agents Cytokines Autoimmunity Inflammation	PD-1 ICOS-L Cytokines TGF-b IL-10 IL-2 Co-stimulation dendritic cells IDO
8	Tolerance and Immune suppression	Transplantation immunology Bone marrow transplantation MHC GyH GvL Immunosuppressive agents Cytokines Autoimmunity Inflammation Feto-maternal interaction	PD-1 ICOS-L Cytokines TGF-b IL-10 IL-2 Co-stimulation dendritic cells IDO Recognition of apoptotic cells
8	Tolerance and Immune suppression	Transplantation immunology Bone marrow transplantation MHC GvH GvL Immunosuppressive agents Cytokines Autoimmunity Inflammation Feto-maternal interaction Anergy	PD-1 ICOS-L Cytokines TGF-b IL-10 IL-2 Co-stimulation dendritic cells IDO Recognition of apoptotic cells TNF-TNFR family
8	Tolerance and Immune suppression	Transplantation immunology Bone marrow transplantation MHC GvH GvL Immunosuppressive agents Cytokines Autoimmunity Inflammation Feto-maternal interaction Anergy Receptor editing	PD-1 ICOS-L Cytokines TGF-b IL-10 IL-2 Co-stimulation dendritic cells IDO Recognition of apoptotic cells TNF-TNFR family CD28-B7 family
8	Tolerance and Immune suppression	Transplantation immunology Bone marrow transplantation MHC GvH GvL Immunosuppressive agents Cytokines Autoimmunity Inflammation Feto-maternal interaction Anergy Receptor editing Cell death Treg	PD-1 ICOS-L Cytokines TGF-b IL-10 IL-2 Co-stimulation dendritic cells IDO Recognition of apoptotic cells TNF-TNFR family CD28-B7 family CTLA4
8	Tolerance and Immune suppression	Transplantation immunology Bone marrow transplantation MHC GVH GVL Immunosuppressive agents Cytokines Autoimmunity Inflammation Feto-maternal interaction Anergy Receptor editing Cell death Treg Thymus-derived Treg	PD-1 ICOS-L Cytokines TGF-b IL-10 IL-2 Co-stimulation dendritic cells IDO Recognition of apoptotic cells TNF-TNFR family CD28-B7 family CTLA4 ILC
8	Tolerance and Immune suppression	Transplantation immunology Bone marrow transplantation MHC GvH GvH Immunosuppressive agents Cytokines Autoimmunity Inflammation Feto-maternal interaction Anergy Receptor editing Cell death Treg Thymus-derived Treg Peripherally-generated Treg	PD-1 ICOS-L Cytokines TGF-b IL-10 IL-2 Co-stimulation dendritic cells IDO Recognition of apoptotic cells TNF-TNFR family CD28-B7 family CTLA4 ILC Immune checkpoint
8	Tolerance and Immune suppression	Transplantation immunology Bone marrow transplantation MHC GVH GVL Immunosuppressive agents Cytokines Autoimmunity Inflammation Feto-maternal interaction Anergy Receptor editing Cell death Treg Thymus-derived Treg Peripherally-generated Treg Virus	PD-1 ICOS-L Cytokines TGF-b IL-10 IL-2 Co-stimulation dendritic cells IDO Recognition of apoptotic cells TNF-TNFR family CD28-B7 family CTLA4 ILC Immune checkpoint
8	Tolerance and Immune suppression	Transplantation immunology Bone marrow transplantation MHC GvH GvL Immunosuppressive agents Cytokines Autoimmunity Inflammation Feto-maternal interaction Anergy Receptor editing Cell death Treg Thymus-derived Treg Peripherally-generated Treg Virus Virus Viral peptides	PD-1 ICOS-L Cytokines TGF-b IL-10 IL-2 Co-stimulation dendritic cells IDO Recognition of apoptotic cells TNF-TNFR family CD28-B7 family CTLA4 ILC Immune checkpoint MDA5 Lgp2
8	Tolerance and Immune suppression	Transplantation immunology Bone marrow transplantation MHC GVH GVL Immunosuppressive agents Cytokines Autoimmunity Inflammation Feto-maternal interaction Anergy Receptor editing Cell death Treg Thymus-derived Treg Peripherally-generated Treg Virus Virus Viral peptides DNA vaccine	PD-1 ICOS-L Cytokines TGF-b IL-10 IL-2 Co-stimulation dendritic cells IDO Recognition of apoptotic cells TNF-TNFR family CD28-B7 family CTLA4 ILC Immune checkpoint MDA5 Lgp2 Cell surface receptors
8	Tolerance and Immune suppression	Transplantation immunology Bone marrow transplantation MHC GVH GVL Immunosuppressive agents Cytokines Autoimmunity Inflammation Feto-maternal interaction Anergy Receptor editing Cell death Treg Thymus-derived Treg Peripherally-generated Treg Virus Viral peptides DNA vaccine Virus-specific CTL	PD-1 ICOS-L Cytokines TGF-b IL-10 IL-2 Co-stimulation dendritic cells IDO Recognition of apoptotic cells TNF-TNFR family CD28-B7 family CTLA4 ILC Immune checkpoint MDA5 Lgp2 Cell surface receptors Immune responses
8	Tolerance and Immune suppression	Transplantation immunology Bone marrow transplantation MHC GVH GVL Immunosuppressive agents Cytokines Autoimmunity Inflammation Feto-maternal interaction Anergy Receptor editing Cell death Treg Thymus-derived Treg Peripherally-generated Treg Virus Viral peptides DNA vaccine Virus-specific CTL Target cells	PD-1 ICOS-L Cytokines TGF-b IL-10 IL-2 Co-stimulation dendritic cells IDO Recognition of apoptotic cells TNF-TNFR family CD28-B7 family CTLA4 ILC Immune checkpoint MDA5 Lgp2 Cell surface receptors Immune responses Immune regulation
8	Tolerance and Immune suppression	Transplantation immunology Bone marrow transplantation MHC GvH GvL Immunosuppressive agents Cytokines Autoimmunity Inflammation Feto-maternal interaction Anergy Receptor editing Cell death Treg Thymus-derived Treg Peripherally-generated Treg Virus Viral peptides DNA vaccine Virus-specific CTL Target cells Host defense mechanism	PD-1 ICOS-L Cytokines TGF-b IL-10 IL-2 Co-stimulation dendritic cells IDO Recognition of apoptotic cells TNF-TNFR family CD28-B7 family CTLA4 ILC Immune checkpoint MDA5 Lgp2 Cell surface receptors Immune regulation Cytokine induction
8	Tolerance and Immune suppression	Transplantation immunology Bone marrow transplantation MHC GVH GVL Immunosuppressive agents Cytokines Autoimmunity Inflammation Feto-maternal interaction Anergy Receptor editing Cell death Treg Thymus-derived Treg Peripherally-generated Treq Virus Viral peptides DNA vaccine Virus-specific CTL Target cells Host defense mechanism CTL	PD-1 ICOS-L Cytokines TGF-b IL-10 IL-2 Co-stimulation dendritic cells IDO Recognition of apoptotic cells TNF-TNFR family CD28-B7 family CTLA4 ILC Immune checkpoint MDA5 Lgp2 Cell surface receptors Immune responses Immune regulation Cytokine induction Toxin
8	Tolerance and Immune suppression	Transplantation immunology Bone marrow transplantation MHC GVH GVL Immunosuppressive agents Cytokines Autoimmunity Inflammation Feto-maternal interaction Anergy Receptor editing Cell death Treg Thymus-derived Treg Peripherally-generated Treg Virus Virus Virus Virus-specific CTL Target cells Host defense mechanism CTL Immunological memory	PD-1 ICOS-L Cytokines TGF-b IL-10 IL-2 Co-stimulation dendritic cells IDO Recognition of apoptotic cells TNF-TNFR family CD28-B7 family CTLA4 ILC Immune checkpoint MDA5 Lgp2 Cell surface receptors Immune regulation Cytokine induction Toxin Host defense mechanism
8	Tolerance and Immune suppression	Transplantation immunology Bone marrow transplantation MHC GVH GVL Immunosuppressive agents Cytokines Autoimmunity Inflammation Feto-maternal interaction Anergy Receptor editing Cell death Treg Thymus-derived Treg Peripherally-generated Treq Virus Viral peptides DNA vaccine Virus-specific CTL Target cells Host defense mechanism CTL	PD-1 ICOS-L Cytokines TGF-b IL-10 IL-2 Co-stimulation dendritic cells IDO Recognition of apoptotic cells TNF-TNFR family CD28-B7 family CTLA4 ILC Immune checkpoint MDA5 Lgp2 Cell surface receptors Immune responses Immune regulation Cytokine induction Toxin Host defense mechanism Macrophages
8	Tolerance and Immune suppression	Transplantation immunology Bone marrow transplantation MHC GVH GVL Immunosuppressive agents Cytokines Autoimmunity Inflammation Feto-maternal interaction Anergy Receptor editing Cell death Treg Thymus-derived Treg Peripherally-generated Treg Virus Virus Virus Virus-specific CTL Target cells Host defense mechanism CTL Immunological memory	PD-1 ICOS-L Cytokines TGF-b IL-10 IL-2 Co-stimulation dendritic cells IDO Recognition of apoptotic cells TNF-TNFR family CD28-B7 family CTLA4 ILC Immune checkpoint MDA5 Lgp2 Cell surface receptors Immune regulation Cytokine induction Toxin Host defense mechanism
8	Tolerance and Immune suppression	Transplantation immunology Bone marrow transplantation MHC GVH GVL Immunosuppressive agents Cytokines Autoimmunity Inflammation Feto-maternal interaction Anergy Receptor editing Cell death Treg Thymus-derived Treg Peripherally-generated Treg Virus Viral peptides DNA vaccine Virus-specific CTL Target cells Host defense mechanism CTL Immunological memory Maintenance of memory	PD-1 ICOS-L Cytokines TGF-b IL-10 IL-2 Co-stimulation dendritic cells IDO Recognition of apoptotic cells TNF-TNFR family CD28-B7 family CTLA4 ILC Immune checkpoint MDA5 Lgp2 Cell surface receptors Immune responses Immune regulation Cytokine induction Toxin Host defense mechanism Macrophages
8	Tolerance and Immune suppression	Transplantation immunology Bone marrow transplantation MHC GVH GVL Immunosuppressive agents Cytokines Autoimmunity Inflammation Feto-maternal interaction Anergy Receptor editing Cell death Treg Thymus-derived Treg Peripherally-generated Treg Virus Viral peptides DNA vaccine Virus-specific CTL Target cells Host defense mechanism CTL Immunological memory Maintenance of memory Life-long memory	PD-1 ICOS-L Cytokines TGF-b IL-10 IL-2 Co-stimulation dendritic cells IDO Recognition of apoptotic cells TNF-TNFR family CD28-B7 family CTLA4 ILC Immune checkpoint MDA5 Lgp2 Cell surface receptors Immune responses Immune regulation Cytokine induction Toxin Host defense mechanism Macrophages Th1/Th2
8		Transplantation immunology Bone marrow transplantation MHC GVH GVL Immunosuppressive agents Cytokines Autoimmunity Inflammation Feto-maternal interaction Anergy Receptor editing Cell death Treg Thymus-derived Treg Peripherally-generated Treg Virus Virus Virus Virus Virus Virus Corl defense mechanism CTL Immunological memory Maintenance of memory Life-long memory Effector memory Effector memory Effector memory Effector memory Effector	PD-1 ICOS-L Cytokines TGF-b IL-10 IL-2 Co-stimulation dendritic cells IDO Recognition of apoptotic cells TNF-TNFR family CD28-B7 family CTLA4 ILC Immune checkpoint MDA5 Lgp2 Cell surface receptors Immune responses Immune regulation Cytokine induction Toxin Host defense mechanism Macrophages Th-17h2 Dendritic cells Neutrophils
8	Virus infection	Transplantation immunology Bone marrow transplantation MHC GVH GVL Immunosuppressive agents Cytokines Autoimmunity Inflammation Feto-maternal interaction Anergy Receptor editing Cell death Treg Thymus-derived Treg Peripherally-generated Treg Virus Virus Viral peptides DNA vaccine Virus-specific CTL Target cells Host defense mechanism CTL Immunological memory Maintenance of memory Life-long memory Central memory Effector memory Interferon	PD-1 ICOS-L Cytokines TGF-b IL-10 IL-2 Co-stimulation dendritic cells IDO Recognition of apoptotic cells TNF-TNFR family CD28-B7 family CTLA4 ILC Immune checkpoint MDA5 Lgp2 Cell surface receptors Immune responses Immune regulation Cytokine induction Toxin Host defense mechanism Macrophages Th1/Th2 Dendritic cells Neutrophils Microbial immunoactivators
		Transplantation immunology Bone marrow transplantation MHC GvH GvL Immunosuppressive agents Cytokines Autoimmunity Inflammation Feto-maternal interaction Anergy Receptor editing Cell death Treg Thymus-derived Treg Peripherally-generated Treg Virus Viral peptides DNA vaccine Virus-specific CTL Target cells Host defense mechanism CTL Immunological memory Maintenance of memory Life-long memory Central memory Effector memory Interferon Escape mechanism	PD-1 ICOS-L Cytokines TGF-b IL-10 IL-2 Co-stimulation dendritic cells IDO Recognition of apoptotic cells ITNF-TNFR family CD28-B7 family CTLA4 ILC Immune checkpoint MDA5 Lgp2 Cell surface receptors Immune responses Immune regulation Cytokine induction Toxin Host defense mechanism Macrophages Th1/Th2 Dendritic cells Neutrophils
	Virus infection	Transplantation immunology Bone marrow transplantation MHC GvH GvL Immunosuppressive agents Cytokines Autoimmunity Inflammation Feto-maternal interaction Anergy Receptor editing Cell death Treg Thymus-derived Treg Peripherally-generated Treg Virus Viral peptides DNA vaccine Virus-specific CTL Target cells Host defense mechanism CTL Immunological memory Maintenance of memory Life-long memory Central memory Effector memory Interferon Escape mechanism NK cells	PD-1 ICOS-L Cytokines TGF-b IL-10 IL-2 Co-stimulation dendritic cells IDO Recognition of apoptotic cells IDO Recognition of apoptotic cells TNF-TNFR family CD28-B7 family CTLA4 ILC Immune checkpoint MDA5 Lgp2 Cell surface receptors Immune responses Immune regulation Cytokine induction Toxin Host defense mechanism Macrophages Th1/Th2 Dendritic cells Neutrophils Microbial immunoactivators Pathogen sensors Signaling molecules
	Virus infection	Transplantation immunology Bone marrow transplantation MHC GVH GVL Immunosuppressive agents Cytokines Autoimmunity Inflammation Feto-maternal interaction Anergy Receptor editing Cell death Treg Thymus-derived Treg Peripherally-generated Treg Virus Virus Virus Virus Virus Virus Corl defense mechanism CTL Immunological memory Maintenance of memory Life-long memory Effector memory Interferon Escape mechanism NK cells IRF3/7	PD-1 ICOS-L Cytokines TGF-b IL-10 IL-2 Co-stimulation dendritic cells IDO Recognition of apoptotic cells IDO Recognition of apoptotic cells TNF-TNFR family CD28-B7 family CTLA4 ILC Immune checkpoint MDA5 Lgp2 Cell surface receptors Immune responses Immune responses Immune regulation Cytokine induction Toxin Host defense mechanism Macrophages Th1/Th2 Dendritic cells Neutrophils Microbial immunoactivators Pathogen sensors Signaling molecules Effector cells
	Virus infection	Transplantation immunology Bone marrow transplantation MHC GVH GVL Immunosuppressive agents Cytokines Autoimmunity Inflammation Feto-maternal interaction Anergy Receptor editing Cell death Treg Thymus-derived Treg Peripherally-generated Treg Virus Virus Viral peptides DNA vaccine Virus-specific CTL Target cells Host defense mechanism CTL Immunological memory Maintenance of memory Life-long memory Central memory Effector memory Interferon Escape mechanism NK cells IRF3/7 TBK-1	PD-1 ICOS-L Cytokines TGF-b IL-10 IL-2 Co-stimulation dendritic cells IDO Recognition of apoptotic cells TNF-TNFR family CD28-B7 family CTLA4 ILC Immune checkpoint MDA5 Lgp2 Cell surface receptors Immune responses Immune regulation Cytokine induction Toxin Host defense mechanism Macrophages Th1/Th2 Dendritic cells Neutrophils Microbial immunoactivators Pathogen sensors Signaling molecules Effector cells Anti-microbial products
	Virus infection	Transplantation immunology Bone marrow transplantation MHC GVH GVL Immunosuppressive agents Cytokines Autoimmunity Inflammation Feto-maternal interaction Anergy Receptor editing Cell death Treg Thymus-derived Treg Peripherally-generated Treg Virus Viral peptides DNA vaccine Univar-specific CTL Target cells Host defense mechanism CTL Immunological memory Maintenance of memory Life-long memory Central memory Effector memory Interferon Escape mechanism NK cells IRF3/7 TBK-1 TLR	PD-1 ICOS-L Cytokines TGF-b IL-10 IL-2 Co-stimulation dendritic cells IDO Recognition of apoptotic cells TNF-TNFR family CD28-B7 family CTLA4 ILC Immune checkpoint MDA5 Lgp2 Cell surface receptors Immune responses Immune regulation Cytokine induction Toxin Host defense mechanism Macrophages Th1/Th2 Dendritic cells Neutrophils Microbial immunoactivators Pathogen sensors Signaling molecules Effector cells Lettorobial products Escape mechanisms
	Virus infection	Transplantation immunology Bone marrow transplantation MHC GvH GvL Immunosuppressive agents Cytokines Autoimmunity Inflammation Feto-maternal interaction Anergy Receptor editing Cell death Treg Thymus-derived Treg Peripherally-generated Treg Virus Viral peptides DNA vaccine Virus-specific CTL Target cells Host defense mechanism CTL Immunological memory Maintenance of memory Life-long memory Central memory Effector memory Interferon Escape mechanism NK cells IRF3/7 TBK-1 TLR MyD88	PD-1 ICOS-L Cytokines TGF-b IL-10 IL-2 Co-stimulation dendritic cells IDO Recognition of apoptotic cells IDO Recognition of apoptotic cells TNF-TNFR family CD28-B7 family CTLA4 ILC Immune checkpoint MDA5 Lgp2 Cell surface receptors Immune responses Immune regulation Cytokine induction Toxin Host defense mechanism Macrophages Th1/Th2 Dendritic cells Neutrophils Microbial immunoactivators Pathogen sensors Signaling molecules Effector cells Anti-microbial products Escape mechanisms Phagocytosis
	Virus infection	Transplantation immunology Bone marrow transplantation MHC GVH GVL Immunosuppressive agents Cytokines Autoimmunity Inflammation Feto-maternal interaction Anergy Receptor editing Cell death Treg Thymus-derived Treg Peripherally-generated Treq Virus Viral peptides DNA vaccine Virus-specific CTL Target cells Immunological memory Maintenance of memory Life-long memory Central memory Effector memory Interferon Escape mechanism NK cells IRF3/7 TBK-1 TLR MyD88 NF-kb	PD-1 ICOS-L Cytokines TGF-b IL-10 IL-2 Co-stimulation dendritic cells IDO Recognition of apoptotic cells ITNF-TNFR family CD28-B7 family CTLA4 ILC Immune checkpoint MDA5 Lgp2 Cell surface receptors Immune responses Immune regulation Cytokine induction Toxin Host defense mechanism Macrophages Th/1/Th2 Dendritic cells Neutrophils Microbial immunoactivators Pathogen sensors Signaling molecules Effector cells Anti-microbial products Escape mechanisms Phagocytosis Autophagy
	Virus infection	Transplantation immunology Bone marrow transplantation MHC GVH GVL Immunosuppressive agents Cytokines Autoimmunity Inflammation Feto-maternal interaction Anergy Receptor editing Cell death Treg Thymus-derived Treg Peripherally-generated Treg Virus Virus Virus Virus Virus Virus For CTL Target cells Host defense mechanism CTL Immunological memory Maintenance of memory Life-long memory Effector memory Interferon Escape mechanism NK cells IRF3/7 TBK-1 TLR MyD88 NF-kb MAP kinase	PD-1 ICOS-L Cytokines TGF-b IL-10 IL-2 Co-stimulation dendritic cells IDO Recognition of apoptotic cells TNF-TNFR family CD28-B7 family CTLA4 ILC Immune checkpoint MDA5 Lgp2 Cell surface receptors Immune responses Immune regulation Cytokine induction Toxin Host defense mechanism Macrophages Th1/Th2 Dendritic cells Neutrophils Microbial immunoactivators Pathogen sensors Signaling molecules Effector cells Anti-microbial products Escape mechanisms Phagocytosis Autophagy TLR
	Virus infection	Transplantation immunology Bone marrow transplantation MHC GVH GVL Immunosuppressive agents Cytokines Autoimmunity Inflammation Feto-maternal interaction Anergy Receptor editing Cell death Treg Thymus-derived Treg Peripherally-generated Treg Virus Viral peptides DNA vaccine Virus-specific CTL Target cells Host defense mechanism CTL Immunological memory Maintenance of memory Life-long memory Central memory Effector memory Interferon Escape mechanism NK cells IRF3/7 TBK-1 TLR MyD88 NF-kb MAP kinase TRAF	PD-1 ICOS-L Cytokines TGF-b IL-10 IL-2 Co-stimulation dendritic cells IDO Recognition of apoptotic cells TNF-TNFR family CD28-B7 family CTLA4 ILC Immune checkpoint MDA5 Lgp2 Cell surface receptors Immune responses Immune regulation Cytokine induction Toxin Host defense mechanism Macrophages Th1/Th2 Dendritic cells Neutrophils Microbial immunoactivators Pathogen sensors Signaling molecules Effector cells Effector cells Anti-microbial products Escape mechanisms Phagocytosis Autophagy TLR MyD88
	Virus infection	Transplantation immunology Bone marrow transplantation MHC GvH GvL Immunosuppressive agents Cytokines Autoimmunity Inflammation Feto-maternal interaction Anergy Receptor editing Cell death Treg Thymus-derived Treg Peripherally-generated Treg Virus Viral peptides DNA vaccine Virus-specific CTL Target cells Host defense mechanism CTL Immunological memory Maintenance of memory Life-long memory Central memory Effector memory Interferon Escape mechanism NK cells IRF3/7 TBK-1 TLR MyD88 NF-kb MAP kinase TRAF IRAK	PD-1 ICOS-L Cytokines TGF-b IL-10 IL-2 Co-stimulation dendritic cells IDO Recognition of apoptotic cells IDO Recognition of apoptotic cells TNF-TNFR family CD28-B7 family CTLA4 ILC Immune checkpoint MDA5 Lgp2 Cell surface receptors Immune responses Immune regulation Cytokine induction Toxin Host defense mechanism Macrophages Th1/Th2 Dendritic cells Neutrophils Metrophils Metrophils Microbial immunoactivators Pathogen sensors Signaling molecules Effector cells Anti-microbial products Escape mechanisms Phagocytosis Autophagy TLR MyD88 Nod like receptor (NLR)
	Virus infection	Transplantation immunology Bone marrow transplantation MHC GVH GVL Immunosuppressive agents Cytokines Autoimmunity Inflammation Feto-maternal interaction Anergy Receptor editing Cell death Treg Thymus-derived Treg Peripherally-generated Treq Virus Viral peptides DNA vaccine Virus-specific CTL Target cells Host defense mechanism CTL Immunological memory Maintenance of memory Life-long memory Central memory Effector memory Interferon Escape mechanism NK cells IRF3/7 TBK-1 TLR MyD88 NF-kb MAP kinase TRAF IRAK TIRAP	PD-1 ICOS-L Cytokines TGF-b IL-10 IL-2 Co-stimulation dendritic cells IDO Recognition of apoptotic cells IDO Recognition of apoptotic cells TNF-TNFR family CD28-B7 family CTLA4 ILC Immune checkpoint MDA5 Lgp2 Cell surface receptors Immune responses Immune regulation Cytokine induction Toxin Host defense mechanism Macrophages Th/Tn2 Dendritic cells Neutrophils Microbial immunoactivators Pathogen sensors Signaling molecules Effector cells Anti-microbial products Escape mechanisms Phagocytosis Autophagy TLR MyD88 Nod like receptor (NLR) Lectin receptors
	Virus infection	Transplantation immunology Bone marrow transplantation MHC GVH GVL Immunosuppressive agents Cytokines Autoimmunity Inflammation Feto-maternal interaction Anergy Receptor editing Cell death Treg Thymus-derived Treg Peripherally-generated Treg Virus Virus Viral peptides DNA vaccine Virus-specific CTL Target cells Host defense mechanism CTL Immunological memory Maintenance of memory Life-long memory Central memory Effector memory Interferon Escape mechanism NK cells IRF3/7 TBK-1 TLR MyD88 NF-kb MAP kinase TRAF IRAK TIRAP TRIF/TICAM-1	PD-1 ICOS-L Cytokines TGF-b IL-10 IL-2 Co-stimulation dendritic cells IDO Recognition of apoptotic cells IDO Recognition of apoptotic cells TNF-TNFR family CD28-B7 family CTLA4 ILC Immune checkpoint MDA5 Lgp2 Cell surface receptors Immune responses Immune resp
	Virus infection	Transplantation immunology Bone marrow transplantation MHC GVH GVL Immunosuppressive agents Cytokines Autoimmunity Inflammation Feto-maternal interaction Anergy Receptor editing Cell death Treg Thymus-derived Treg Peripherally-generated Treq Virus Viral peptides DNA vaccine Virus-specific CTL Target cells Host defense mechanism CTL Immunological memory Maintenance of memory Life-long memory Central memory Effector memory Interferon Escape mechanism NK cells IRF3/7 TBK-1 TLR MyD88 NF-kb MAP kinase TRAF IRAK TIRAP	PD-1 ICOS-L Cytokines TGF-b IL-10 IL-2 Co-stimulation dendritic cells IDO Recognition of apoptotic cells IDO Recognition of apoptotic cells TNF-TNFR family CD28-B7 family CTLA4 ILC Immune checkpoint MDA5 Lgp2 Cell surface receptors Immune responses Immune regulation Cytokine induction Toxin Host defense mechanism Macrophages Th/Tn2 Dendritic cells Neutrophils Microbial immunoactivators Pathogen sensors Signaling molecules Effector cells Anti-microbial products Escape mechanisms Phagocytosis Autophagy TLR MyD88 Nod like receptor (NLR) Lectin receptors
	Virus infection	Transplantation immunology Bone marrow transplantation MHC GVH GVL Immunosuppressive agents Cytokines Autoimmunity Inflammation Feto-maternal interaction Anergy Receptor editing Cell death Treg Thymus-derived Treg Peripherally-generated Treg Virus Virus Viral peptides DNA vaccine Virus-specific CTL Target cells Host defense mechanism CTL Immunological memory Maintenance of memory Life-long memory Central memory Effector memory Interferon Escape mechanism NK cells IRF3/7 TBK-1 TLR MyD88 NF-kb MAP kinase TRAF IRAK TIRAP TRIF/TICAM-1	PD-1 ICOS-L Cytokines TGF-b IL-10 IL-2 Co-stimulation dendritic cells IDO Recognition of apoptotic cells IDO Recognition of apoptotic cells TNF-TNFR family CD28-B7 family CTLA4 ILC Immune checkpoint MDA5 Lgp2 Cell surface receptors Immune responses Immune resp

		Mannose receptor	Redox
		Lectin	Reactive oxygen
		Complement	Nitric oxide
		Classical pathway	IRF3/7
		Alternative pathway	TBK-1
		Protease	TLR
		Hyaluronic acid	NLR
		-	
		Lipid	MDA5
		Nucleic acid	RIG-I
		Uric acid	STING
		Inflammatory mediators	cGAS
		Apoptosis	DNase
		Necrosis	RNase
	Innate immunity	Heat shock protein	MyD88
			NF-kb
10		Chaperone	
		Antigen presenting cells	MAP kinase
		Immune adjuvant	TRAF
		Immune response	IRAK
		Immune regulation	TIRAP
		Purinergic receptor	TRIF/TICAM-1
		Caspase	MD-1/2
		Cytokine	Recognition of apoptotic cells
		Signal transduction	TNF
		Autophagy	TRAIL
		Organelle	Bcl-2 family
		Intracellular trafficking	Caspase
1		Phagocytosis	HMGB-1
1		Inflammation	MRP8
1		Tissue damage	metabolic change
		Atherosclerosis	inflammasome
 	<u> </u>	Commensal bacteria	
1			Treg
1		Gut-associated lymphoid tissues (GALT)	Tr1
1		Mucosa-associated lymphoid tissues (MALT)	Epithelial cell
1		Bronchus-associated lymphoid tissues (BALT)	M cells
1	11 Mucosal-Skin Immunity	Nasopharyngeal-associated lymphoid tissues (NALT)	Dendritic cells
1		Peyer's patch	Macrophages
		Intraepithelial T lymphocytes	IgA
1		Isolated lymphoid follicles (ILF)	Mucosal vaccine
11			
1 ''		B-1(Ly-1)cells	Mucosal adjuvant
1		Oral tolerance	Homing
1		Cytokines	Inflammatory bowel diseases
1		ILC1	Food allergy
1		ILC2	Upper respiratory allergy
1		ILC3	Mucin
		Th1	Skin immunity
		Th2	Atopic dermatitis
		Th17	Langerhans cell
1		Autoimmunity	Cytokine receptors
		Inflammatory arthropathy	Adhesion molecules
		Model animals	Costimulatory molecules
		Animal model of arthritis	Cellular interaction
		NOD mouse	Synovial cells
		EAE	Osteoclasts
			Osteoblasts
		Sjogren's syndrome	Osteoblasts MMPs
		Sjogren's syndrome PBC (Primary biliary cirrhosis)	MMPs
		Sjogren's syndrome PBC (Primary biliary cirrhosis) Multiple sclerosis (MS)	MMPs SLE
		Sjogren's syndrome PBC (Primary biliary cirrhosis) Multiple sclerosis (MS) Myasthenia gravis	MMPs SLE Scleroderma
12	Autoimmune diseases	Sjogren's syndrome PBC (Primary biliary cirrhosis) Multiple sclerosis (MS)	MMPs SLE
12	Autoimmune diseases	Sjogren's syndrome PBC (Primary biliary cirrhosis) Multiple sclerosis (MS) Myasthenia gravis	MMPs SLE Scleroderma
12	Autoimmune diseases	Sjogren's syndrome PBC (Primary biliary cirrhosis) Multiple sclerosis (MS) Myasthenia gravis Crohn's disease	MMPs SLE Scleroderma Dermatomyositis/Polymyositis
12	Autoimmune diseases	Sjogren's syndrome PBC (Primary biliary cirrhosis) Multiple sclerosis (MS) Myasthenia gravis Crohn's disease Inflammatory bowel disease	MMPs SLE Scleroderma Dermatomyositis/Polymyositis Angiitis/angitis Autoantigens
12	Autoimmune diseases	Sjogren's syndrome PBC (Primary biliary cirrhosis) Multiple sclerosis (MS) Myasthenia gravis Crohn's disease Inflammatory bowel disease Autoimmune thyroiditis Pemphigus	MMPs SLE Scleroderma Dermatomyositis/Polymyositis Angiitis/angitis Autoantigens Anti-phospholipid antibody syndrome
12	Autoimmune diseases	Sjogren's syndrome PBC (Primary biliary cirrhosis) Multiple sclerosis (MS) Myasthenia gravis Crohn's disease Inflammatory bowel disease Autoimmune thyroiditis Pemphigus Type I diabetes	MMPs SLE Scleroderma Dermatomyositis/Polymyositis Angittis/angitis Autoantigens Anti-phospholipid antibody syndrome Systemic rheumatic disease
12	Autoimmune diseases	Sjogren's syndrome PBC (Primary biliary cirrhosis) Multiple sclerosis (MS) Myasthenia gravis Crohn's disease Inflammatory bowel disease Autoimmune thyroiditis Pemphigus Type I diabetes Pernicious anemia	MMPs SLE Scleroderma Dermatomyositis/Polymyositis Angiitis/angitis Autoantigens Anti-phospholipid antibody syndrome Systemic rheumatic disease MPO-ANCA
12	Autoimmune diseases	Sjogren's syndrome PBC (Primary biliary cirrhosis) Multiple sclerosis (MS) Myasthenia gravis Crohn's disease Inflammatory bowel disease Autoimmune thyroiditis Pemphigus Type I diabetes Pernicious anemia Disease-associated gene analysis/SNP	MMPs SLE Scleroderma Dermatomyositis/Polymyositis Angiitis/angitis Autoantigens Anti-phospholipid antibody syndrome Systemic rheumatic disease MPO-ANCA Disease-associated gene
12	Autoimmune diseases	Sjogren's syndrome PBC (Primary biliary cirrhosis) Multiple sclerosis (MS) Myasthenia gravis Crohn's disease Inflammatory bowel disease Autoimmune thyroiditis Pemphigus Type I diabetes Pernicious anemia Disease-associated gene analysis/SNP Gene expression	MMPs SLE Scleroderma Dermatomyositis/Polymyositis Angiitis/angitis Autoantigens Anti-phospholipid antibody syndrome Systemic rheumatic disease MPO-ANCA Disease-associated gene Biologics
12	Autoimmune diseases	Sjogren's syndrome PBC (Primary biliary cirrhosis) Multiple sclerosis (MS) Myasthenia gravis Crohn's disease Inflammatory bowel disease Autoimmune thyroiditis Pemphigus Type I diabetes Pernicious anemia Disease-associated gene analysis/SNP Gene expression Chemokines	MMPs SLE Scleroderma Dermatomyositis/Polymyositis Angiitis/angitis Autoantigens Anti-phospholipid antibody syndrome Systemic rheumatic disease MPO-ANCA Disease-associated gene Biologics regulatory T cells
12	Autoimmune diseases	Sjogren's syndrome PBC (Primary biliary cirrhosis) Multiple sclerosis (MS) Myasthenia gravis Crohn's disease Inflammatory bowel disease Autoimmune thyroiditis Pemphigus Type I diabetes Pernicious anemia Disease-associated gene analysis/SNP Gene expression Chemokines Chemokine receptors	MMPs SLE Scleroderma Dermatomyositis/Polymyositis Angiitis/angitis Autoantigens Anti-phospholipid antibody syndrome Systemic rheumatic disease MPO-ANCA Disease-associated gene Biologics regulatory T cells AIRE
12	Autoimmune diseases	Sjogren's syndrome PBC (Primary biliary cirrhosis) Multiple sclerosis (MS) Myasthenia gravis Crohn's disease Inflammatory bowel disease Autoimmune thyroiditis Pemphigus Type I diabetes Pernicious anemia Disease-associated gene analysis/SNP Gene expression Chemokines	MMPs SLE Scleroderma Dermatomyositis/Polymyositis Angiitis/angitis Autoantigens Anti-phospholipid antibody syndrome Systemic rheumatic disease MPO-ANCA Disease-associated gene Biologics regulatory T cells
12	Autoimmune diseases	Sjogren's syndrome PBC (Primary biliary cirrhosis) Multiple sclerosis (MS) Myasthenia gravis Crohn's disease Inflammatory bowel disease Autoimmune thyroiditis Pemphigus Type I diabetes Pernicious anemia Disease-associated gene analysis/SNP Gene expression Chemokines Chemokine receptors	MMPs SLE Scleroderma Dermatomyositis/Polymyositis Angiitis/angitis Autoantigens Anti-phospholipid antibody syndrome Systemic rheumatic disease MPO-ANCA Disease-associated gene Biologics regulatory T cells AIRE
12	Autoimmune diseases	Sjogren's syndrome PBC (Primary biliary cirrhosis) Multiple sclerosis (MS) Myasthenia gravis Crohn's disease Inflammatory bowel disease Autoimmune thyroiditis Pemphigus Type I diabetes Pernicious anemia Disease-associated gene analysis/SNP Gene expression Chemokines Chemokine receptors Cytokines	MMPs SLE Scleroderma Dermatomyositis/Polymyositis Angiitis/angitis Autoantigens Anti-phospholipid antibody syndrome Systemic rheumatic disease MPO-ANCA Disease-associated gene Biologics regulatory T cells AIRE autoantibody
12	Autoimmune diseases	Sjogren's syndrome PBC (Primary biliary cirrhosis) Multiple sclerosis (MS) Myasthenia gravis Crohn's disease Inflammatory bowel disease Autoimmune thyroiditis Pemphigus Type I diabetes Pernicious anemia Disease-associated gene analysis/SNP Gene expression Chemokines Chemokine receptors Cytokines Cancer tumor microenvironment	MMPs SLE Scleroderma Dermatomyositis/Polymyositis Angiitis/angitis Autoantigens Anti-phospholipid antibody syndrome Systemic rheumatic disease MPO-ANCA Disease-associated gene Biologics regulatory T cells AIRE autoantibody Chemokines
12	Autoimmune diseases	Sjogren's syndrome PBC (Primary biliary cirrhosis) Multiple sclerosis (MS) Multiple sclerosis (MS) Myasthenia gravis Crohn's disease Inflammatory bowel disease Autoimmune thyroiditis Pemphigus Type I diabetes Pernicious anemia Disease-associated gene analysis/SNP Gene expression Chemokines Chemokines Chemokines Cancer tumor microenvironment Tumor antigen	MMPs SLE Scleroderma Dermatomyositis/Polymyositis Angiitis/angitis Autoantigens Anti-phospholipid antibody syndrome Systemic rheumatic disease MPO-ANCA Disease-associated gene Biologics regulatory T cells AIRE autoantibody Chemokines Immuno-evasion Checkpoint blockade
12	Autoimmune diseases	Sjogren's syndrome PBC (Primary biliary cirrhosis) Multiple sclerosis (MS) Myasthenia gravis Crohn's disease Inflammatory bowel disease Autoimmune thyroiditis Pemphigus Type I diabetes Pernicious anemia Disease-associated gene analysis/SNP Gene expression Chemokines Chemokines Chemokine receptors Cytokines Cancer tumor microenvironment Tumor antigen Peptide vaccine	MMPs SLE Scleroderma Dermatomyositis/Polymyositis Angiitis/angitis Autoantigens Anti-phospholipid antibody syndrome Systemic rheumatic disease MPO-ANCA Disease-associated gene Biologics regulatory T cells AIRE autoantibody Chemokines Immuno-evasion Checkpoint blockade Neoantigens
12	Autoimmune diseases	Sjogren's syndrome PBC (Primary biliary cirrhosis) Multiple sclerosis (MS) Multiple sclerosis (MS) Myasthenia gravis Crohn's disease Inflammatory bowel disease Autoimmune thyroiditis Pemphigus Type I diabetes Pernicious anemia Disease-associated gene analysis/SNP Gene expression Chemokines Chemokines Cytokines Cancer tumor microenvironment Tumor antigen Peptide vaccine Adjuvant	MMPs SLE Scleroderma Dermatomyositis/Polymyositis Angiitis/angitis Autoantigens Anti-phospholipid antibody syndrome Systemic rheumatic disease MPO-ANCA Disease-associated gene Biologics regulatory T cells AIRE autoantibody Chemokines Immuno-evasion Checkpoint blockade Neoantigens Co-inhibitory molecules
12	Autoimmune diseases	Sjogren's syndrome PBC (Primary biliary cirrhosis) Multiple sclerosis (MS) Myasthenia gravis Crohn's disease Inflammatory bowel disease Autoimmune thyroiditis Pemphigus Type I diabetes Pernicious anemia Disease-associated gene analysis/SNP Gene expression Chemokines Chemokine receptors Cytokines Cancer tumor microenvironment Tumor antigen Peptide vaccine Adjuvant Antigen processing	MMPs SLE Scleroderma Dermatomyositis/Polymyositis Angiitis/angitis Autoantigens Anti-phospholipid antibody syndrome Systemic rheumatic disease MPO-ANCA Disease-associated gene Biologics regulatory T cells AIRE Autoantibody Chemokines Immuno-evasion Checkpoint blockade Neoantigens Co-inhibitory molecules Co-stimulatory molecules
12	Autoimmune diseases	Sjogren's syndrome PBC (Primary biliary cirrhosis) Multiple sclerosis (MS) Multiple sclerosis (MS) Myasthenia gravis Crohn's disease Inflammatory bowel disease Autoimmune thyroiditis Pemphigus Type I diabetes Pernicious anemia Disease-associated gene analysis/SNP Gene expression Chemokines Chemokine receptors Cytokines Cancer tumor microenvironment Tumor antigen Peptide vaccine Adjuvant Antigen processing Antigen presentation	MMPs SLE Scleroderma Dermatomyositis/Polymyositis Angiitis/angitis Autoantigens Anti-phospholipid antibody syndrome Systemic rheumatic disease MPO-ANCA Disease-associated gene Biologics regulatory T cells AIRE autoantibody Chemokines Immuno-evasion Checkpoint blockade Neoantigens Co-stimulatory molecules recombinat virus
12	Autoimmune diseases	Sjogren's syndrome PBC (Primary biliary cirrhosis) Multiple sclerosis (MS) Multiple sclerosis (MS) Myasthenia gravis Crohn's disease Inflammatory bowel disease Autoimmune thyroiditis Pemphigus Type I diabetes Pernicious anemia Disease-associated gene analysis/SNP Gene expression Chemokines Chemokine receptors Cytokines Cancer tumor microenvironment Tumor antigen Peptide vaccine Adjuvant Antigen processing Antigen presentation Immunogenicity	MMPs SLE SLE Scleroderma Dermatomyositis/Polymyositis Angiitis/angitis Autoantigens Anti-phospholipid antibody syndrome Systemic rheumatic disease MPO-ANCA Disease-associated gene Biologics regulatory T cells AIRE autoantibody Chemokines Immuno-evasion Checkpoint blockade Neoantigens Co-inhibitory molecules recombinat virus Immunotherapy
12	Autoimmune diseases	Sjogren's syndrome PBC (Primary biliary cirrhosis) Multiple sclerosis (MS) Multiple sclerosis (MS) Myasthenia gravis Crohn's disease Inflammatory bowel disease Autoimmune thyroiditis Pemphigus Type I diabetes Pernicious anemia Disease-associated gene analysis/SNP Gene expression Chemokines Chemokine receptors Cytokines Cancer tumor microenvironment Tumor antigen Peptide vaccine Adjuvant Antigen processing Antigen presentation	MMPs SLE Scleroderma Dermatomyositis/Polymyositis Angiitis/angitis Autoantigens Anti-phospholipid antibody syndrome Systemic rheumatic disease MPO-ANCA Disease-associated gene Biologics regulatory T cells AIRE autoantibody Chemokines Immuno-evasion Checkpoint blockade Neoantigens Co-stimulatory molecules recombinat virus
12	Autoimmune diseases	Sjogren's syndrome PBC (Primary biliary cirrhosis) Multiple sclerosis (MS) Multiple sclerosis (MS) Myasthenia gravis Crohn's disease Inflammatory bowel disease Autoimmune thyroiditis Pemphigus Type I diabetes Pernicious anemia Disease-associated gene analysis/SNP Gene expression Chemokines Chemokine receptors Cytokines Cancer tumor microenvironment Tumor antigen Peptide vaccine Adjuvant Antigen processing Antigen presentation Immunogenicity	MMPs SLE SLE Scleroderma Dermatomyositis/Polymyositis Angiitis/angitis Autoantigens Anti-phospholipid antibody syndrome Systemic rheumatic disease MPO-ANCA Disease-associated gene Biologics regulatory T cells AIRE autoantibody Chemokines Immuno-evasion Checkpoint blockade Neoantigens Co-inhibitory molecules recombinat virus Immunotherapy
12	Autoimmune diseases Tumor immunity	Sjogren's syndrome PBC (Primary biliary cirrhosis) Multiple sclerosis (MS) Myasthenia gravis Crohn's disease Inflammatory bowel disease Autoimmune thyroiditis Pemphigus Type I diabetes Pernicious anemia Disease-associated gene analysis/SNP Gene expression Chemokines Chemokines Chemokine receptors Cytokines Cancer tumor microenvironment Tumor antigen Peptide vaccine Adjuvant Antigen processing Antigen presentation Immunogenicity Immunogenic cell death	MMPs SLE Scleroderma Dermatomyositis/Polymyositis Angiitis/angitis Autoantigens Anti-phospholipid antibody syndrome Systemic rheumatic disease MPO-ANCA Disease-associated gene Biologics regulatory T cells AIRE autoantibody Chemokines Immuno-evasion Checkpoint blockade Neoantigens Co-inhibitory molecules Co-stimulatory molecules recombinat virus Immunoterapy Monoclonal antibodies
		Sjogren's syndrome PBC (Primary biliary cirrhosis) Multiple sclerosis (MS) Multiple sclerosis (MS) Myasthenia gravis Crohn's disease Inflammatory bowel disease Autoimmune thyroiditis Pemphigus Type I diabetes Pernicious anemia Disease-associated gene analysis/SNP Gene expression Chemokines Chemokine receptors Cytokines Cancer tumor microenvironment Tumor antigen Peptide vaccine Adjuvant Antigen processing Antigen presentation Immunogenicity Immunogenic cell death Immuno-surveillance helper T cells	MMPs SLE Scleroderma Dermatomyositis/Polymyositis Angiitis/angitis Autoantigens Anti-phospholipid antibody syndrome Systemic rheumatic disease MPO-ANCA Disease-associated gene Biologics regulatory T cells AIRE autoantibody Chemokines Immuno-evasion Checkpoint blockade Neoantigens Co-inhibitory molecules Co-stimulatory molecules recombinat virus Immunotherapy Monoclonal antibodies Engineered antibodies Adoptive immunotherapy
		Sjogren's syndrome PBC (Primary biliary cirrhosis) Multiple sclerosis (MS) Multiple sclerosis (MS) Myasthenia gravis Crohn's disease Inflammatory bowel disease Autoimmune thyroiditis Pemphigus Type I diabetes Pernicious anemia Disease-associated gene analysis/SNP Gene expression Chemokines Chemokine receptors Cytokines Cancer tumor microenvironment Tumor antigen Peptide vaccine Adjuvant Antigen processing Antigen presentation Immunogenic cell death Immuno-surveillance helper T cells CTL	MMPs SLE SLE SCleroderma Dermatomyositis/Polymyositis Angiitis/angitis Autoantigens Anti-phospholipid antibody syndrome Systemic rheumatic disease MPO-ANCA Disease-associated gene Biologics regulatory T cells AIRE autoantibody Chemokines Immuno-evasion Checkpoint blockade Neoantigens Co-inhibitory molecules recombinat virus Immunotherapy Monoclonal antibodies Engineered antibodies Adoptive immunotherapy CAR-T cells
		Sjogren's syndrome PBC (Primary biliary cirrhosis) Multiple sclerosis (MS) Myasthenia gravis Crohn's disease Inflammatory bowel disease Autoimmune thyroiditis Pemphigus Type I diabetes Pernicious anemia Disease-associated gene analysis/SNP Gene expression Chemokines Chemokines Chemokine receptors Cytokines Cancer tumor microenvironment Tumor antigen Peptide vaccine Adjuvant Antigen processing Antigen presentation Immunogenicity Immunogenic cell death Immuno-surveillance helper T cells CTL B cells	MMPs SLE Scleroderma Dermatomyositis/Polymyositis Angiitis/angitis Autoantigens Anti-phospholipid antibody syndrome Systemic rheumatic disease MPO-ANCA Disease-associated gene Biologics regulatory T cells AIRE autoantibody Chemokines Immuno-evasion Checkpoint blockade Neoantigens Co-inhibitory molecules recombinat virus Immunoterapy Monoclonal antibodies Engineered antibodies Adoptive immunotherapy CAR-T cells Gene therapy
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