IMMUNOLOGYEmil von BehringSerum antitoxinsRobert KochTBElie MetchnikoffPhagocytosisPaul EhrlichImmunityCharles RichetAnaphylaxisJules BordetComplementKarl LandsteinerABO blood group SSRGerald EdelmanStructure of antibodiesRodney PorterRIASnellMHCDausset BenacerafImmunoregulationKohlerMonoclonal antibodyMilsteinAntibody diversity DéjavuDie JameanTransplantation	1	MUST TO KNOW IN IMMUNOLOGY AND SEROLOGY			
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Susumu Tonegawa Antibody diversity   Déjavu Trangplantation	Milstein				
Déjavu Thomas	Susumu Tonegawa	Antibody diversity			
Thomas Transplantation	Susuna ronegawa	Déjavu			
	Thomas	Transplantation			
Murray	Murray				
Peter Doherty Dual recognition	Peter Doherty	Dual recognition			
Rolf Zinkernagel	Rolf Zinkernagel				
Barré-Sinoussi HIV	Barré-Sinoussi				
Luc Montagner	Luc Montagner	f 10			
Pope Innocent VII	Pope Innocent VII	No lood transfusion			
Christopher Country 1010 Claw world = smallnox	Christopher Columb P	Old working Alwayer Id = smallnox			
New world $\rightarrow$ Ob world = synhilis	christopher continues	New world $\rightarrow 0$ in world = synhilis			
1984 Year of discovery of T cell recentor gene	1984	Year of discovery of T cell recentor gene			
1979 (-) Small nox	1979	(-) Small nox			
US Pure culture of smallpox	IIS	Pure culture of smallnox			
Russia	Russia				
Lysozyme Attacks bacterial cell wall	Lysozyme	Attacks bacterial cell wall			
Ineffective against <i>Myconlasma</i> and <i>Ureanlasma</i> (no cell wall)	Lysozyme	Ineffective against <i>Myconlasma</i> and <i>Ureanlasma</i> (no cell wall)			
LAK cells NK cells + IL-2	LAK cells	NK cells + IL-2			
Against cancer	Linteens	Against cancer			
NK/Null/3 <sup>rd</sup> nonulation (-) Markers on T/B cells	NK/Null/3 <sup>rd</sup> population	(-) Markers on T/B cells			
lymphocyte Kills virus and tumor cells	lymphocyte	Kills virus and tumor cells			
CD 16 CD 56	ly inplice y ce	CD 16 CD 56			
Complement Major humoral immunity (natural)	Complement	Major humoral immunity (natural)			
Phagocytosis "ICED": Initiation Chemotaxis Engulfment Digestion	Phagocytosis	"ICED": Initiation Chemotaxis Engulfment Digestion			
Direct nhagocytosis Primitive nattern recognition recentor	Direct nhagocytosis	Primitive nattern recognition recentor			
Indirect phagocytosis Via opsonins	Indirect phagocytosis	Via onsonins			
Initiation (R3 (3 <sup>rd</sup> (' component)	Initiation	CR3 (3 <sup>rd</sup> C' component)			
Laminin recentor	mitiation	Laminin recentor			
Leucyl-formyl-methionyl-nhenylalanine recentor		Leucyl-formyl-methionyl-nhenylalanine recentor			
Chemotaxis (5a (notent chemotaxin)	Chemotaxis	C5a (notent chemotaxin)			
Ioh's syndrome = N-RA / Ahn-CA		Ioh's syndrome = N-RA / Ahn-CA			
Lazy = 0  by Reforme = Ahn-RA  and  CA		Lazy leukocyte syndrome = $Abn-RA$ and $CA$			
Boyden Chamber assay = test for chemotaxis		Boyden Chamber assay = test for chemotaxis			

Cell flow cytometry	Light scatter			
	Forward LS = cell size			
	Side/90 <sup>o</sup> LS = cell granularity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity/complexity	ty		
Fluorescence microscopy	Labeled monoclonal antibodies			
Rosette test	E-rosette assay = T cells (CD2)			
	EAC (Erythrocyte Ab Complement rosette) = B cells			
Differentiate T cells and B cells				
	T cell	B cell		
Function	СМІ	HI		
Organ	Thymus	BM (1 <sup>st</sup> : Bursa of Fabricius – birds)		
Concentration	60-80%	20-35% (10-20%)		
Lifespan	Longer	Shorter		
Soluble substances	Lymphokines	Antibodies		
ID	E-rosette	Surface immunoglobulins		
Mitogen	Concanavalin A	Lipopolysaccharide		
	Phytohemagglutinin	Pokeweed mitogen		
	Pokeweed mitogen	0		
Mitogen	Substances that cause cells to divide	Substances that cause cells to divide		
Lymphocyte capping	B cells			
HLA	Chromosome 6 (short arm)			
Class I MHC	Endogenous antigen			
	Locus/Ag = HLA - A. B. C			
	Chain structure = $\alpha$ -chain + $\beta_2$ microglo			
	Cell distribution = all nucleated el			
	Presents antigen to CD8 eis			
Class II MHC	For antigen four Consumace of the cell	2		
	Locus/hg = HLA - DP, DO, DR	0		
	<b>Chain</b> structure = $\alpha$ shain + β enain			
Cell distribution Cells and macrophages				
PIO	Presents antigen to CD4+ cells			
Class III MHC	"CCTB"			
	Locus/Ag = C2, C4, TNF, Factor B			
Dendritic cells	Most efficient APC			
Langerhans cells	DC in skin			
IL-2	T cell growth factor			
	Stimulates lymphocyte proliferation			
IL-3	Growth of stem cells and differentiation	of blood cells		
IL-4	B cell growth factor 1			
IL-5	B cell growth factor 2			
	Differentiates B cell $\rightarrow$ plasma cell			
	IL-5: eosinophil differentiation			
IL-6	Enhance antibody production of plasma cell			
IL-12	NK stimulating factor			
	Activates NK cells and cytotoxic T lymp	hocytes		
Heteroantigen	↑↑↑ Antigenic			
Graft rejection	1. Hyperacute = w/in mins			
	2. Accelerated = 2-5 days			
	3. Acute = 7-21 days			
	4. Chronic = >3 months			
Potent antigen	>10 kDa			
Albumin	40 kDa			
	Good immunogen			

	-HDN
	-HTR
	-AIHA
	-DIHA
IgG	Nonagglutinating Ab
	Can sensitize cells w/o causing visible agglutination
AHG reagent	Spans the distance between 2 IgG's
Mechanisms of DIHA	1. Drug absorption = Penicillin
	2. Membrane modification = Cephalosporin
	3. Immune complex formation = Stibophen, Phenacetin, Rifampin
	4. Autoantibody formation (Gen. to <u>Rh</u> ) = Methyldopa (Aldomet: Ab to <u>Kidd</u> ),
	Mefenamic acid (Ponstel)
HTR	(+) DAT
	(-) DAT
	(mf) DAT = some are lysed and some are not lysed by C'
IAT	In vitro sensitization
	Specimen: Patient <u>serum</u> (common)
	Uses:
	-Cross-matching
	-Ab detection
	-Ab identification
	-RBC Ag phenotyping (weak D) = Specimen: RBC
Wash 3x	To remove unbound globulins
Inadequate washing	False (-) antiglobulin test
	Unbound globulins can reptra il e ALG reagent
If (-) AHG	Confirm by adding Chick or Coomb's cell 2(0+ RBCs sensitized w/ IgG)
	-Valid: Aggleting to here a
	Thensure AHG was a ded or het neutralized
Types of AHG reager	1. Polyspecific Al-G = contain anti-IgG and anti-C3d (C' degradation products) 2. Mon specific Al-G = contain anti-IgG or anti-C3d
Radioimmunoassay (RIA)	Uses radioactive substances as label
	-Tritiated Hydrogen
	_125]
Scintillation counter	Measure radioactivity
	$\beta$ = liquid scintillation counter
	γ = crystal scintillation counter
Competitive binding assays (RIA)	Bound radiolabeled Ag is $1/\alpha$ to patient Ag present
Noncompetitive	Bound radiolabeled Ab is $\underline{\alpha}$ to patient Ag present in supernatant fluid
immunoradiometric assays	
(IRMA)	
RIST	Measure total IgE
RAST	Measure Allergen-specific IgE
Wastes container (DOH)	1. Red = sharps, needles
	2. Yellow = infectious
	3. Yellow w/ black band = chemical wastes
	4. Green = non-infectious wet waste
	5. Black = infectious dry waste
	6. Orange = radioactive waste
Enzyme immunoassay	Similar to IRMA except that it uses enzymes
(EIA)	1. Horseradish peroxidase = most common
	2. ALP