Search for CD1, a new antigen-presenting molecule, in birds

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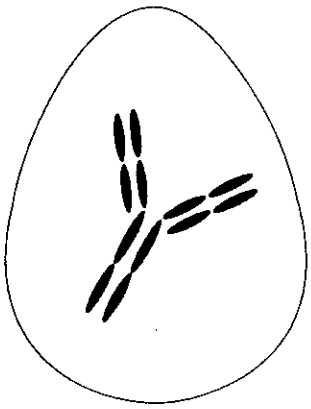

Organizing Committee

Olli Vainio

Olli Lassila

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Mika Korkeamäki

Kimmo Koskela

Riitta Koskinen

Jussi Liippo

Marko Luhtala

Scientific Program

Sunday, June 28

8.00am - 9.40 am SESSION I Stem Cells and Progenitors
Coffee break 9.40am-10.00am

10.00am-12.00am SESSION II T Cell Development
Lunch 12.00am-1.00pm

1.00pm-3.00pm SESSION III Regulation and Function of MHC Molecules
Coffee break 3.00pm-3.20pm

3.20pm-5.00pm SESSION IV Cytokines
Break 5.00pm-5.10pm
6.30pm-8.00pm Free time

Dinner at 8.00pm

Monday, June 29

8.00am-11.15am SESSION VI B Cell Development and Dendritic Cells
Coffee break 9.25am-9.45am
Lunch 11.15am-12.00am

Departure to Seili Island at 12.00am

Tuesday, June 30

9.00am-11.40am SESSION VII Immune Diseases and Protection
Coffee break 10.00am-10.20am
Lunch 12.00am

Sunday, June 28

8.00am - 9.40 am SESSION I Stem Cells and Progenitors

Toivanen Opening words: How to become avian immunologist?

Chairpersons: B. Imhof and F. Dieterlen-Lièvre

1.1 Dieterlen-Lièvre
Are hemangioblasts from aorta and allantois responsible for the seeding of immune organ rudiments? (30 min)

1.2 Pain Avian embryonic stem cells: a source for hemopoietic progenitors

1.3 Liippo Transcriptional control of early lymphocyte development

1.4 Corbel GPIIb-IIIa is expressed on multilineage progenitor cells

1.5 Dunon Analysis of HEMCAM function in cell adhesion and distribution of NOF, a HEMCAM heterophilic ligand

1.6 Ody Early T cell progenitors express MHC class II molecules

1.7 Lampisuo Characterization of prethymic progenitors within the chicken embryo

Coffee break 9.40am-10.00am

10.00am-12.00am SESSION II T Cell Development

Chairpersons: M.D. Cooper and T. Göbel

2.1 Cooper Monitoring thymic input of T cells to the peripheral lymphoid tissues (30 min)

2.2 Katevuo Analysis of ChT1

2.3 Göbel Assembly and structure of the chicken T cell receptor

2.4 Koskela Activation of avian gamma/delta T cells

2.5 Koskinen Chicken CD4

2.6 Ang Construction of mouse chicken chimaeric antibodies for chicken T-cell subset depletion

2.7 Erf Age-associated changes in CD4 and/or CD8 defined T cell subsets in spleen of young male commercial broilers

2.8 Luhtala Peripheral blood CD4+ CD8+ T cells in chicken: inheritance of CD8alpha expression on CD4+ T cells

2.9 Uchida Analysis of polymorphism in chicken CD8

Lunch 12.00am-1.00pm

1.00pm-3.00pm SESSION III Regulation and Function of MHC Molecules

Chairpersons: J. Kaufman and S. Lamont

3.1 Kaufman The chicken MHC--minimal, extended, enormous, broken, rearranged, primordial? (15 min)

3.2 Lamont DNA regulatory elements in a chicken major histocompatibility complex class II gene promoter

3.3 Shaw Differential expression of the major and minor chicken MHC class I genes can be attributed to gene deletions and sequence divergance in the upstream regulatory elements

3.4 Afanassieff Search for CD1, a new antigen-presenting molecule, in birds

SEARCH FOR CD1, A NEW ANTIGEN-PRESENTING MOLECULE, IN BIRDS.

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T-cell recognition of antigens is the central event in the specific cell-mediated immune response. It has been widely accepted that peptide presentation by MHC (Major Histocompatibility Complex) class I and II molecules is the basic mechanism underlying this process. Several other molecules show structural similarity with classical MHC-encoded molecules, and were therefore also suspected to play a role in peptide presentation. Among these is the CD1 family of cell surface glycoproteins, which despite its description more than 15 years ago, was only very recently demonstrated to be a third lineage of antigen-presenting molecules for specific T-cell responses. Recent studies of human and mouse CD1 proteins strongly suggest that they present hydrophobic peptide and non-peptide antigens to T cells and that the CD1 antigen presentation system may be functionally different and complementary to the classical MHC dependent one (for reviews see 1 and 2). CD1 glycoproteins have the typical structure of antigen presenting class I molecules. They are heterodimers consisting of an approximately 45-kDa glycosylated heavy chain interacting non-covalently with the β_2-microglobulin light chain. The heavy chains are extracellular portion of approximately 90 amino acids formed by α1, α2 and α3 domains, a transmembrane domain and a very short cytoplasmic tail. Analysis of known mammalian CD1 sequences shows that CD1 is a separate lineage of MHC-related proteins that is distantly related to both MHC-encoded antigen-presenting molecule families. The nearly equal sequence similarity of CD1 to both MHC class I and class II families is consistent with the idea that the CD1 family may have diverged from an anscestral antigen-presenting molecule (3). Two evolutionary theories may be possible. The first one predicts that the ancestor of all extant CD1 proteins emerged early in vertebrate evolution, as did the MHC class I and II families (4). In this case, CD1 proteins should be present in most or all species that show separate MHC class I and II genes famlies. One would therefore anticipate finding CD1 genes in all mammals and in birds, and possibly also in lower vertebrate species including fish, reptiles, and amphibians. The second theory suggests that CD1 and MHC may have diverged around the time of the bird-mammal divergence approximately 250-300 million years ago (5). If so, then CD1 genes may not be present in birds or more ancient vertebrate lineages. To gain insights the evolution of antigen-presenting molecules, we have looked for CD1 genes in birds by using two techniques. First we performed Southern hybridizations with DNA from a number of bird species using human CD1b (6) or mouse CD1d1 (7) as probes, in order to use these same probes to screen chicken genomic DNA libraries. Secondly we adapted a PCR-based strategy which allowed to discover carp MHC genes (8) and human non classical class I MR1 gene (9), by the use of degenerated primers corresponding to two conserved regions in the α3 domain of class I, class II and CD1 molecules. We will present here our strategies and our data. As yet our results have been negative. These strategies have not identified CD1 genes in chickens.

(1) Jullien *et al.* 1996 *Res. Immunol.* 147:321-328. (2) Jullien *et al.* 1997 *J. Clin. Invest.* 99:2071-2074. (3) Porcelli 1995 *Adv. Immunol.* 59:1-98. (4) Klein *et al.* 1993 *Annu. Rev. Immunol.* 11:269-295. (5) Hughes 1991 *Mol. Biol. Evol.* 8:185-201. (6) Aruffo and Seed 1989 *J. Immunol.* 143:1723-1730. (7) Brossay *et al.* 1998 *J. Immunol.* 160:3681-3688. (8) Hashimoto *et al.* 1990 *PNAS* 87:6863-6867. (9) Hashimoto *et al.* 1995 *Science* 269:693-695.