CDB SEMINAR

Speaker: Osami Kanagawa

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Title: "Secondary rearrangement of TcR alpha chain in vivo: shaping and reshaping T cell repertoire"

Date: Tuesday, December 2
Time: 16:00 -17:00
Place: 7th floor Conference Room of Building A

Summary:

The genetic structure of the TcR α locus and the lack of allelic exclusion permit multiple rearrangements on a single chromosome. Using TcR α chain knock-in (KI) mice, we demonstrated the frequent secondary rearrangement of TcR α chain in vivo. Furthermore, we provided evidence that α locus rearrangement occurs initially using downstream Vα and upstream Jα and continue to use upstream Vα and downstream Jα for secondary rearrangement. These results indicate that single T cell can express TcRs with different specificity during thymic selection. These results together with our current analysis of the mouse line that lacks capacity to undergo TcR α chain secondary rearrangement clearly demonstrate that multiple TcR α chain rearrangements play a crucial role in the formation of functional T cell repertoire.

Analysis of TcR α chain KI mouse lines revealed that the interaction between certain antigen/superantigen and mature peripheral T cells induces RAG dependent TcR α locus secondary rearrangement. In non-immunized TcR KI mice, this change occurs in an age-dependent fashion and significantly affects peripheral T cell repertoire. Thus, secondary rearrangement of the TcR α chain in mature T cells may play an important role in the age dependent-immune dysfunction.

Host: Shin-ichi Nishikawa <Stem Cell Biology, CDB>
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