論文の内容の要旨

論文題目　動的構造解析を用いたヒト主要組織適合複合体の安定化機構に関する研究（the Impact of Structural Fluctuation on Human Leukocyte Antigen）

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In infection defense HLA class 1 presents a variety of peptide sequences to cytotoxic T lymphocyte (CTL). Here we focus on HLA-B*3501, which is a HLA type sensitive to HIV infection. Previous studies indicated that CTL activity duration is important for effective killing of infected cells. In this thesis, we showed that this is caused by the thermal stabilization of HLA-peptide complex. However, many crystal structures of HLA class 1 inform us that the HLA-peptide complexes are very similar in crystal structures, and the mechanism of stabilization was unclear. To know the structural factor of HLA stabilization would be useful for effective CTL activation in cell therapy. In this thesis we propose a model where most of the peptide are loosely bound in solution, and fluctuation cause the induced-fit of the peptide, tuning the HLA structure to the tightly folded form. Our results are the first to show the detail of the fluctuation profile of HLA-peptide complexes in vitro.