# ネコ主要組織適合抗原遺伝子（ＭＨＣ）の多様性 ： 免疫に関与するバイオダイバーシティマーカー

**Polymorphism of cat MHC genes: important immunological marker**

**Naoya Yuhki**

(Laboratory of Genomic Diversity, National Cancer Institute at Frederick, MD., USA)

Biodiversity of immune system against infectious diseases in wildlife has become one of the most important issues for conservation and management. The major histocompatibility complex (MHC) was originally identified as transplantation antigen(s) in human and also as an immuno-regulatory genetic loci in mouse. Gene products encoded in this complex (MHC antigens) are known to have extremely high polymorphism in populations. More than seventeen hundred of alleles for MHC antigens have been found in human populations. These highly polymorphic MHC antigens play crucial roles in controlling immune systems against infectious diseases and tumors by presenting a wide spectrum of short peptides to T lymphocytes. Each MHC antigen has an unique peptide binding region which defines a range of the spectrum for its peptide binding capacity. Accordingly, the highly polymorphic nature of MHC antigens will give species better chances to survive and reproduce offsprings when they encounter newly emerging pathogens or pathogens which they will face when they expand their habitat or migrate to a new territory. In addition to this basic function for adaptive immunity, the MHC antigens also play roles in controlling innate immunity by interacting receptors which express on the surfaces of certain immune cells, such as Natural Killer (NK) cells. Recent advances in scientific technologies for rapid and large scale sequencing & also progress in genome sequence projects allow us to examine these important gene complex for immune system in cats. In this session, unique features of the MHC in cats will be presented and significance of biodiversity of these gene complex will be discussed.