平成19年　2　月　28　日

氏名 Prieka Khusnul Khatima

２１世紀ＣＯＥプログラム

拠点：大学院工学系研究科
応用化学専攻、化学システム工学専攻、
化学生命工学専攻、マテリアル工学専攻

“化学を基盤とするヒューマンマテリアル創成”

平成１８年度リサーチ・アシスタント報告書

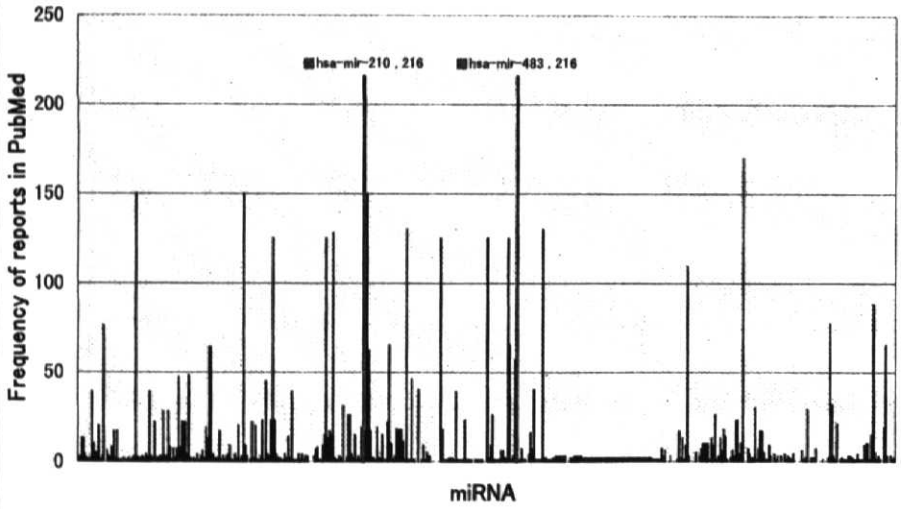
ふりがな 氏　　名	プリカ　フスヌル　ハティマ Prieka Khusnul Khatima	生　年　月　日
所属機関名	東京大学医科学研究所	
所　在　地	〒108-8639 東京都港区白金台　４－６－１	
申請時点での 学　　年	博士課程１年	
研究題目	Analysis of correlation between miRNA gene location and cancer	
指導教員の所属・氏名	東京大学医科学研究所ヒトゲノム解析センター 機能解析イン・シリコ分野　・　中井　謙太　教授	

氏名　: Prieka Khusnul Khatima

MicroRNAs are known to regulate the expression of genes during essential processes in organisms. Lack of knowledge about the target and function of miRNA underlines the importance of knowing the genomic distribution of miRNA genes. Chromosomal positions of genes often led to important insights into the roles of specific genes. Similarly, we hypothesized that chromosomal positions of miRNA genes are important in specific diseases, especially in cancer. Indeed, previous studies showed that specific miRNA genes contributes to the initiation and progression of cancer (Lu, et al. and Volini, et al., Nature, June 2005 Vol. 103), and that human microRNA genes are frequently located at genomic regions involved in cancers (Calin et al., PNAS, March 2004 vol. 101). These results indicate that chromosomal location of miRNA genes could be an important hint to find correlation between miRNAs and cancer. Our study aims to elucidate this correlation through bioinformatics approach.

Materials and Methods. *The miRNA Database*. The set of human 474 miRNA genes was from miR registry at http://microrna.sanger.ac.uk/. *Genome Analysis*. Ensembl was used to map the location of miRNA genes in the human genome. MiRNA genes were mapped to their exact location in chromosome cytobands. *PubMed Database*. PubMed was screened for papers describing a specific cytoband and cancer, using "(cytoband)" and "cancer" as keywords. The number of papers appeared in search result was then described in graph.

Fig.1 Correlation between miRNA gene location and cancer research



Results. The left figure shows the correlation between miRNA (shown orderly as in miR registry from 1-474) and the appearance frequency of its cytoband location in cancer studies screened from PubMed. The result showed that at least 22% (104 of 474) of the regions in which miRNA genes located, are frequently investigated in cancer researches (>10 reports).

Discussion. For example, hsa-miR-483 and hsa-mir-210 are located in 11p15.5 (shown in red mark in Fig.1). 11p15.5 marked the highest score (216 reports) in PubMed screening, in which it was reported mostly in Wilms' tumour (87 reports). Wilms' tumour is one of the most common solid tumours of childhood. Although genetic or epigenetic aberrations in 11p13 (WT1 locus) and 11p15.5 (WT2 locus) have been identified in many studies, it is still not clear how these loci are involved in Wilms' tumours. Many studies suggested that chromosome 11p is critical for the majority of Wilms' tumours, but none of the reports discussed about the possibility of miRNA involvement. Our result suggests that miR-483 and/or miR-210 could play an important role in Wilms' tumours. However, further investigation is needed to confirm this hypothesis. Similarly, we can examine the correlation of every miRNA with cancer using this method. We believe that our new perspective could be important in cancer and miRNA research. Currently we are constructing an algorithm to carry out this analysis automatically.

氏　　名　Prieka Khusnul Khatima

Ⅱ（1）　学術雑誌等に発表した論文A（掲載を決定されたものを含む.）
共著の場合、申請者の役割を記載すること.
（著者、題名、掲載誌名、年月、巻号、頁を記入）

特になし

氏　　名　Prieka Khusnul Khatima

Ⅱ（2）学会において申請者が口頭発表もしくはポスター発表した論文
（共同研究者（全員の氏名）、題名、発表した学会名、場所、年月を記載）

特になし