京都大学若手人材海外派遣事業　ジョン万プログラム
研究者派遣プログラム

英文報告書

提出日：平成 26 年 4 月 25 日

１．渡航者　（日本語）			
氏　　名	宮田　淳	採択年度	平成 24 年度
部　　局	附属病院精神科神経科	電　話	
職　　名	助教	メール	
研究課題名	精神病高リスク者における妄想の認知神経基盤とカンナビジオールによるその変化の解明		
海外渡航期間	平成２５年３月３１日～　平成２６年３月２５日		
渡航先 （英語表記）	国名：英国 大学等研究機関名：　Institute of Psychiatry, King's College London 研究室名等：　Department of Psychosis Studies 受入研究者名：Philip McGuire		

２．渡航の報告　（英文）

渡航先の研究環境、研究者との交流、研究発表の状況等、渡航中の滞在経験について英語(500～1000語)で記述して下さい。受入研究者と撮影した写真や研究発表で用いた図等について、可能な範囲で別添として提出して下さい。ページ数については増加してもかまいません。

この報告は、ジョン万プログラムの成果として、京都大学ホームページ（英文）などに掲載されることがあります。

The Institute of Psychiatry (IoP), King's College London is located at south London and the ultra-high risk (UHR) subjects for psychosis are recruited from the Outreach and Support in South London (OASIS) network, which is affiliated with IoP, covers a population of 1.2 million in South London, and recruits approximately 2 new UHR subjects per week. Such a large scale, systematic recruitment for specific mental disorder is rare in Japan.

The Department of Psychosis Studies is one of the 13 departments of IoP, and a member of each department can easily participate in activities of different department. Using this inter-department collaborative activities I could meet researchers and ongoing researches from different departments. One of these encounter Included attending to the meeting of Department of Neuroimaging, where Dr. Donald-Tournier introduced so-called spherical deconvolution method to analyze high angular resolution diffusion weighted imaging (HARDI) data. This cutting edge technique is used for tractography, a method to virtually visualize neuronal fiber tracts using diffusion weighted MRI data. Tractography has methodological problem for those regions where multiple fiber tracts are crossing/merging, and spherical deconvolution is a sophisticated solution for this problem. I could talk with him in person and got latest information and tips regarding the data acquisition and analysis. I also had a chance to

meet with Dr. DellAcqua, who belongs to the Centre for Neuroimaging Sciences (CNS) department of IoP, and invented programs to perform tractography using spherical deconvolution. I got from him an instruction about usage of these programs.

The Department of Psychosis Studies itself is a huge department occupying 3 floors of IoP main building, and have researchers of many different countries of diverse background. I could learn processing and analysis methods for newly emerging resting MRI method of arterial spin labeling, which can measure cerebral blood flow by MRI non-invasively. I also could learn processing method for so-called MP2RAGE data, which is an improved version of MPRAGE (magnetization prepared rapid gradient echo MRI), a widely used T1 weighted 3D MRI. Compared to MPRAGE, MP2RAGE achieves spatially uniform contrast across the entire brain among gray matter, white matter and cerebrospinal fluid. However, in exchange for this improved signal uniformity, MP2RAGE has a drawback: the areas outside brain have amplified noise, thus segmentation of MP2RAGE data is difficult. I learned how to effectively segment MP2RAGE data using freely available imaging softwares.

During my stay in IoP I could have important results with independent component analysis (ICA) of resting state functional MRI data of the UHR subjects. Part of this results was presented at the 4th Schizophrenia International Research Society Conference (Florence, Italy, 5/4/2014-9/4/2014). There I could have a discussion about my findings with Dr. Lena Palaniyappan, who is one of the pioneer in the field of resting state functional MRI data analysis for psychosis.

The work-life balance was different in IoP from Kyoto. They valued spending time with their family and their own life apart from work. On the other hand, especially for female researchers with children, IoP allow flexible working style, and one can work at home via internet and unix system.

宮田 淳