

GP report 2010: Collaborative research program among Kumamoto University and King's college London

Name: Khandaker Ahtesham Ahmed

Grade: 4th year, Doctoral course (D-4)

Affiliation: Department of Microbiology, School of Medical Sciences, Kumamoto University, Japan

Collaborative research Location: Cardiovascular Divisions, King's College London, UK.

Travel period: February 22nd to march 13th, 2010

Research title: A unique activation of protein kinase G by 8-nitro-cGMP

Introduction:

We recently clarified the physiological formation of 8-nitroguanosine 3',5'-cyclic monophosphate (8-nitro-cGMP) as the first demonstration, since the discovery of cGMP more than 40 years ago, of a new second messenger derived from cGMP in mammals Sawa et al, 2007; Ahmed et al, 2010. 8-Nitro-cGMP is electrophilic and reacts efficiently with sulfhydryls of proteins to produce a novel PTM via cGMP adduction, a process that we named protein S-guanylation. In our previous study with Dr Philip Eaton's group at King's College London, we found the time and dose dependent PKG1a S-guanylation. Further we have demonstrated the location of amino acid residue that undergoes guanylation by MS/MS analysis. We hypothesize that guanylation of PKG will lead to a persistent activation of PKG in sepsis model. Thus we planned to perform the organ bath assay at King's College London with Dr Phil's group who has the full setup and expertise in PKG related assays in organ bath.

Research work and findings:

We did organ bath assay with the mice aorta rings. We observed the effect of 8-nitro-cGMP on the vasorelaxation and the co-stimulatory effect of 8-nitro-cGMP and vasoconstrictor. During these studies, I have learned the organ bath assay technique with the kind help of

Dr Prysyazhna Oleksandra, postdoc of Dr Phils lab. During my visit she really helped me a lot to learn different issues of organ bath assay.



Performing Organ bath assay



Radio active kinase activity assay

We also performed the comparative analysis of the PKG mutants we prepared at Kumamoto University with the radioactivity assay. During this procedure I have learned important techniques about handling the radioisotope P32 as well as the disposal of the radioactive waste. I performed those assays in imaging science department, King's College London.

Delicious foods at London:

On my departure, Dr Phil honored me a party in a very exclusive and elite restaurant. It was a very pleasant evening with all the group member of Phil's Lab. Lots of talk, chat, discussions made the evening joyous. The foods were really delicious. Many delicious (nihongo de: Oishi!!!!!!!) food were



Me with Phil's group members

there in the dinner includes, nan, paratha, lamb shish, chicken shish, chicken masala, lentils, and many more. Below is the photographs of some delicious foods at London.



Lamb and Chicken Shish kebab



Shahi nan and Chiken masala curry

A walk beside Thames River

If you go to London and never had a walk at the bank of River Thames, then it's meaningless per say. I have a chance too in a beautiful Saturday morning at London. You will see that human being and birds are playing together at the river side.



Birds at the river side of Thames, London

You can see people from different countries, Japan, China, America, Europe. Some time I was surprised to hear some nihon gin's nihongo. I also had a chance to go to National History museum, London. Here is some pictures taken by my camera.



National history museum

Conclusion:

The support from GP, for this trip was really helpful to gain knowledge about new techniques, gain ideas, and attend the English speaking seminars etc. I am really thankful to GP to give me such opportunity and help me continue this important study. I hope this study will help us to resolve some big issues regarding sepsis in very near future.