

Hello everyone!

My name is Sohini Guha. I am from the DasGupta Lab. My lab is one of the participating labs in the India-UK Nitrogen Fixation Centre which is striving to improve nutrition from rain-fed legume crops through cutting-edge biological research into nitrogen fixation.

I visited the Poole Lab in April 2017 and spent 4, really memorable months there.

The Poole lab is one of the most prestigious labs in the field of rhizobial genetics and the four months I spent there were indeed an intensive learning experience for me.

My projects involved

1. Comparative genomics of the endosymbiotic and endophytic *Bradyrhizobium*

We have sequenced the genomes from the Poole Laboratory, using MiSeq Illumina mode of genome sequencing. The assembly was done with SPAdes assembler followed by preliminary annotations using Prokka Victorian Bioinformatics Consortium (<http://www.vicbioinformatics.com/software/prokka.shtml>). Dr. Beatriz Jorrín was there to help me whenever I got stuck in any part of the analyses.

Statistics	WBAH10	WBAH23	WBAH30	WBAH33	WBAH41	WBAH42	WBOS01	WBOS02	WBOS04	WBOS07	WBOS08	WBOS16
Contigs	101	99	99	94	100	102	62	52	71	49	73	61
Total length	8278865	8279675	8281574	8281384	8282183	8276620	6733257	6719862	6620230	6720142	6619738	6720050
N50	299434	311379	274817	293232	279140	215249	318989	316802	201674	304445	200612	216592
N75	117791	136030	132965	133929	145381	132980	155866	150389	89660	125498	87694	108474
L50	7	8	9	6	8	10	8	9	10	7	12	10
L75	18	18	21	17	18	22	16	17	22	16	24	22

2. Labelling of the endosymbiotic and endophytic *Bradyrhizobium* by mini-Tn7 based Puc18 based suicide delivery plasmids

The Tn7 plasmids are pUC18-based suicide delivery plasmids containing mini-Tn7 elements. These plasmids are mobilizable derivatives of pUC18-mini-Tn7 and pUC18R6K-mini-Tn7. Dr. Beatriz Jorrín had developed the clusters bearing the fluorescently labelled tags along with their cognate promoters and terminators in the gentamycin-based and the kanamycin based Tn7 system. My bacteria of interest were spectinomycin sensitive. Hence I transferred the clusters to the Spectinomycin backbone based mini-Tn7 based -aad9 plasmids.

3. PGPR Effects of endophytic *Bradyrhizobium* on *Oryza sativa*

Significant PGPR effects were observed in *Oryza* when inoculated with the WBOS strains. Under nitrogen free conditions all the WBOS strains registered significant growth promotion in *Oryza*, individually as well in combination. However the effects were altered under nitrogen containing conditions.

My experiments met with mixed success but there was a greater part to it.

Like I said before, the entire period I spent in the lab was an intensive learning program for me.

The lab is extremely well-organized and every scholar rigorously maintains it. This made working very smooth. There is a central database open to the lab members where every single strain, clone, plasmid and primer is catalogued. Help is always around. Many a times the lab members went out of their way to help me out. There are regular lab round ups in the lab particularly on Thursdays. These are round table meetings where each lab member discuss what experiments they have been doing ,the problems and findings. There are regular seminars during these meetings given by the lab members where we are updated about their projects.

Fridays are reserved for the one to one meetings between Prof. Poole and the graduate students. I regularly participated in these meetings and those were extremely interesting sessions. Problems were discussed and solutions offered and I got to hear and know so many new things. Towards the end of my stay I got a chance to be in a networking session organized by the Poole Lab in the Department of Plant Sciences. It was a one day meeting where scientists from JIC, Imperial College, James Hutton Institute delivered talks. It was a memorable day filled with interesting sessions. Most importantly there was networking. Networking opens up opportunities and I was fortunate to be in one.

On a closing note, the Poole lab is a fun loving group. Everyone is very keen about it. There were frequent trips to the UniClub for coffee and beers.(They have the most delicious hot chocolate!!). Prof. Poole strongly suggests having fun in order to do good science. I have been to the punting trips and nice formal dinners at the Somerville College with the lab members and they were indeed memorable..

Reminiscing I cannot help but break into a smile every time I think of the punting trip the entire group took. I remember the Professor's words 'You will forget everyday but never will you forget this afternoon'

True!!

Thank You Poole Lab!

You are awesome!

