

**Biotechnology and Pharmaceutical Mission: 23 to 28 September 2013****CONTENTS**

- Introduction Page 2
- Participating UK institutions Page 2
- Key highlights Page 3
- Key statistics Page 6 & 12
- Feedback analysis (Participating UK institutions) Page 7 & 12
- Photographs Page 7, 8 & 12

**Introduction:**

A knowledge mission in the subjects of 'Biotechnology and Pharmaceuticals' was in the cities of Ahmedabad and Bangalore in September 2013. The mission was convened from 26 to 28 September in Bangalore and from 23 to 25 September in Ahmedabad.

A group of seven UK universities wanting to explore collaborative and recruitment opportunities visited educational institutions and industry in Ahmedabad and Bangalore. The mission comprised visits to higher education institutions and industry specialising in the fields of Biotechnology and Pharmaceuticals.

**Participating UK institutions****The UK delegation comprised of the following academicians:**

1. University of Brighton
2. Edinburgh Napier University
3. University of Greenwich
4. University of Hull
5. Kingston University
6. Nottingham Trent University
7. University of Warwick

The mission comprised a visit planned to a combination of an educational institution and industry. At the educational institution, the delegation had the opportunity to deliver seminars to the student audience on pre-designated specific research topics. Post the presentation to the student audience, a faculty discussion was convened wherein the respective faculty from the local institutions had the opportunity to showcase their areas of research and explore opportunities for collaborations post research interests shared by the UK delegation. Both the local and the UK institutions also highlighted the existing models of collaboration across other institutions globally.

At the industry level the group visited the research plants where they had the opportunity to meet the Research and development team coupled with the visit to the research and manufacturing units. Both the groups highlighted their areas of research coupled with their existing partnerships models in the industry to give the other better understanding on the feasibility and partnership model development for the future.

This mission created a platform on joint-collaboration between the Indian and the UK sector. This may lead to some of the long term relationship for future. In Bangalore, the delegates also got an opportunity of presenting a public seminar on Biotechnology to potential candidates. This seminar was organised in partnership with Bangalore University which created interest amongst the potential candidates who wanted to know what opportunities UK had on offer. While in Ahmedabad the delegation had a chance to visit the PERD centre followed by a plant visit to Dishman pharmaceuticals along with a visit to Nirma University and Gujarat State Board.

## **Key highlights: AHMEDABAD**

**Day one: 23 September 2013**

**Morning: Pharmaceutical Education and Research Development Centre**

### **Student Interaction:**

A series of seminars were delivered by the UK delegation to the student audience comprising of master's doctoral and research students. The following research topics were dwelled upon with the help of the student seminars.

Design & development novel co-encapsulated biodegradable nano-particles for pulmonary drug delivery

- Cell Biology including pharmacokinetics and toxicological studies
- Nanotechnology based drug delivery systems
- Optimising home chemotherapy through analytical research
- Rapid measurement of microbiological load activity of industrial/medical samples using fluorescence
- Medical Imaging in drug development

The above group delivered these seminars on the above mentioned topics at all visiting institutions hence it shall not be repeated in the following section of the report.

### **Faculty Interaction:**

The meeting with faculty revolved around opportunities for collaborative research across the following areas:

- Synthesizing condensed nitrides in acidic medium
- Pharmaceuticals
- Stress related mucosal disorder
- Cancer cell lines
- Molecular markers
- Herbal drug delivery
- Tissue culture
- Drug delivery systems
- Vesicular drug delivery
- Sensors for cardio vascular disease
- Biostatistics
- Post pathogenic reactions
- Stem cell research
- Lymphatics
- Characterisation in multiple in vitro models
- Primary screening

The discussions revolved around opening up platforms for research exchange in the key areas mentioned above using the full capacity utilisation for each of the entities for a joint research initiative. Apart from research exchange a discussion was spelled around faculty exchange programs for time duration of two to four weeks.

**Students met: 148, faculty met: 23**

## **Afternoon: Dishman Pharmaceuticals Limited**

At Dishman, this primarily works as a contract research manufacturing unit taking in service requests from customers for formulation production. They are also involved in API manufacturing and protein formulation studies.

Research:

As far as formulations were concerned, discussions revolved around the efficacy and microbial testing, protein testing opportunity and microbial detection techniques (biocides) and drug delivery systems. Thus Dishman would share research interests from UK institutions to communicate the same to other interested entities

Tripartite model:

The discussions revolved around a tripartite arrangement involving the UK institution, the customer (need based entity) and Dishman.

Employability:

One of the highlight of the discussion was the placement opportunity for Indian UK graduates. The eligibility criteria was discussed to understand the fact that Dishman was primarily seeking graduates with an educational background i.e. a masters or a doctoral program either in synthetic chemistry, anticancer, formulation and dimensional chemistry. A short term placement option was explored which would have a probation of six months

**16 R&D executives were met with help of this visit.**

## **Day two: 24 September 2013**

### **Morning: Nirma University – Institute of Pharmacy**

#### **Student Interaction:**

A series of seminars were delivered by the UK delegation to the student's audience comprising Undergraduate and Postgraduate level. The seminars were followed by an interesting round of Q & A where the students had the opportunity to clarify their doubts on the specialised research sessions cascaded by the UK academicians.

#### **Faculty Interaction:**

Faculty exchange:

The discussions primarily revolved around exploring opportunities for faculty exchange programs. The duration of the program was discussed and streamlined between two to six week programme.

Research exchange

The research exchange was discussed with highlights thrown on their current research projects with the GMDC, DST and Bulgaria which was financially backed partly by the industry and part by the government. The university was keen on taking consultancy projects for product patents on specialised areas which could be culled out post discussions with individual partners.

Student exchange:

The discussions revolved around sending students working on specific research topics e.g. working on cancer to carry out material screen testing and compound testing.

Training programs:

The university was open to training program which were short term in duration to be cascaded across both ends.

Dual Degree:

A understanding of curriculum exchange as a long term possibility was explored where in the model existing with Edinburgh Napier University and Manipal University was discussed. As a part of this articulation program the first year of masters in pharmacy would be studied in India followed by the second year in UK for two trimesters; the third trimester would be a project undertaken in India. The discussions were on for mapping the curriculum and synergising the same for follow through.

Further the delivery model was explored as being flexible wherein the flying faculty could provide teaching in short visits with supporting material online in addition to giving support to local tutors to deliver the program. The student would have an option of spending one, two or three trimesters at the UK institution.

**Through this visit we could reach out to 29 faculty**

**Afternoon: Gujarat State Biotechnology Mission (GSBM)**

GSBM acts as the nodal point for the allocation of all research and collaborative projects being undertaken for the state of Gujarat. As far as academic collaborations are concerned they are responsible for allocating all types of exchanges be it student, staff or research exchanges in universities across the state. These exchanges are carried out on the basis of the number of credits and the timeframe involved.

For the research projects the funding is derived from the government post which they get in touch with the industry for collaborating on joint research. SBM also interacts with the small medium enterprises based on technology purchase.

**Faculty discussion:**

The discussions revolved around having exchanges at the UG and PG level with specialised research programs. The delivery of training programs in accordance with the industry was also explored therein. Skills development and capacity building programme offers 4 months training after Masters. The models on split PhD programs were also discussed, Technology transfer was one interesting aspect which could be dwelled on further with specifications being given in from both the UK universities as well as GSBM. Finally at the state level in accordance with GSBM a possibility of venture support was explored which would revolve around purchasing the research equity rights. GSBM would also contribute by giving in the necessary policy support for the collaborations both at the academic and the research strata.

**Through this visit, the delegation met 10 faculty members.**

### **Day 3: Wednesday, 25 September 2013**

#### **Morning: Claris Life Sciences Limited**

##### **Research**

The discussions revolved around understanding specific research needs of every university. Claris would be keen on collaborating on joint research in the areas of injectables and formulations. The scope of every research parameter would be decided in advance to the commencement of the project.

##### **Employability:**

An interesting aspect discussed to explore opportunities for Indian graduates returning from the UK. The area of specialisation would be decided and communicated to the sector. The mechanism would comprise a probationary period of six months prior to confirmation. The eligibility criteria for every field would vary as per the norms of the company.

**Through this visit, the delegation met 2 faculty members**

#### **Afternoon: St Xavier's College**

##### **Faculty Interaction:**

The faculty discussion revolved around discussing the existing models of the college with other partners. Currently they have on-going collaborations St Joseph's University in Philadelphia, IGNOU in India and Marquette University in Wisconsin in addition to collaborating with World learning for knowledge sharing and transition to move into a state of autonomy. The autonomous status is expected in early 2014.

The following models were discussed at the academic level:

- Bridge course option post bachelors
- Summer training equivalent to the Egypt model currently being run by Greenwich
- Franchisee dual degree model run by Greenwich in Greece
- Joint doctoral programs (MPhils/Phd)
- Online tutoring and learning
- Short term courses conducted by flying faculty
- Development of SMEs
- 3 + 1 arrangement (fourth year at UK University)
- Part time doctoral program (working in India with industry sponsor)

**Through this visit, the delegation met 6 faculty members.**

##### **Total Audience:**

**Students: 310**

**Faculty: 86**

## Feedback analysis (Participating UK institutions): AHMEDABAD

- All delegates that participated in the mission mentioned in their feedback that the mission met their expectations
- All delegates (100%) mentioned that the 'quality of institutions' targeted during the visit were 'Good.'
- All delegates mentioned that the Interaction and content of the programme at institutions was 'excellent'
- 83% delegates 'agreed' that the mission met their expectations
- 67% delegates 'strongly agreed' that they have acquired knowledge about institutions and industry in Bangalore through this mission
- Comment by delegates:
  - 'The visit was extremely well organised, and allowed us opportunities to visit with institutes in the area, and to have (and give) presentations and discussions with staff at each visit. It would be difficult to organise this as an individual, and in my opinion, is a good starting point for making initial links'
  - 'Huge range of research interest, many researchers have shown keen interest and I am sure we will explore more via emails'
  - 'The visit to all institutions was quite interesting. I wish there was some more time to discuss various aspects and to have seen the premises of these institutions. I particularly would like to thank Claris Biosciences for their hospitality and patience to host us even though the entire site was flooded. I did like the visit to their production facility'
  - 'Similar events if held in the future should be more spaced out with a possibility of a day gap between different cities. There is a lot of travelling between each institution within the city and it is not possible to do justice to either of the meetings in a single day'
  - 'Overall I found the visit to Ahmedabad very useful and would like to form links with Nirma University and potentially Xavier. I feel that there could be some productive overlap in terms of course opportunities and research collaborations. It was interesting to see how Dishman operates in terms of their commitment to quality and employment of the best graduates. We hope to continue a productive relationship with this company'.

### Press coverage:

<http://deshgujarat.com/2013/09/26/british-councils-biotechnology-and-pharmaceutical-mission-visits-ahmedabad/>

### Photographs taken at institutions:







## **Key highlights: BANGALORE**

**Day one: 26 September 2013**

**Morning: PESIT College Bangalore**

### **Student Interaction:**

A series of seminars were delivered by the UK delegation to the student audience comprising of master's doctoral and research students. The following research topics were dwelled upon with the help of the student seminars.

- Design & development novel co-encapsulated biodegradable nano-particles for pulmonary drug delivery
- Cell Biology including pharmacokinetics and toxicological studies
- Nanotechnology based drug delivery systems
- Optimising home chemotherapy through analytical research
- Rapid measurement of microbiological load activity of industrial/medical samples using fluorescence
- Medical Imaging in drug development

### **Faculty Interaction:**

The meeting with faculty revolved around opportunities for collaborative research across the following areas The College was open to any joint-ventures in terms of faculty exchange or student exchange programmes.

Some of the discussions were:

- To send students for short-tem for an exchange programme from both India and the UK
- Suggestion to have teacher exchange programme or guests lectures. If a faculty is visiting from the UK, PESIT will bear all the charges towards the visit.
- Suitable times for student exchange will be May-July reason being this period is free for students.
- Biomedical is a new course which will be added next year in PESIT curriculum

There were a lot of similar interests which arose out of discussion within the group who would want to take this visit to next level in partnering.

**Faculty: 14, students : 85**

**Day one: 26 September 2013**

**Afternoon: Biocon Ltd**

In Biocon the discussion was focussed on employability. Delegates asked questions to the group on hiring agenda at Biocon to find out any gap that existed between the UK education and corporate sector.

Biocon hires all those who have got some prior experience. However they feel that just a degree from the UK holds no weightage as they have to fine-tune those who are hired in Biocon as per their requirements. They also discussed on the recognition of one year's UK master's degree programmes in the UK vs two year courses in India which are more recognised in India.

The delegation then got an opportunity to visit their manufacturing plant to understand process Biocon follows.

**Faculty : 5**

**Day Two: 27 September 2013**

**Morning: MS Ramaiah Institute of Technology**

On day two the group visited MS Ramaiah Institute of Technology (MSRIT)

The Principal at MS Ramaiah Institute of Technology presented during the faculty discussion.

MSRIT was very keen and accepted the fact that they were open for partnering with UK on various models of collaborations. Few of interesting discussions were on:

- Nano-biotechnology
- Environmental biotechnology

The delegation and MSRIT had a lot of common areas of interest. They have partnered with numerous industries which help the students to be placed on an internship project / work after their graduation. They were keen on faculty exchange and student exchange programmes. They are open to have visiting faculty for delivering lectures to their students.

Post the faculty discussion, the group was spilt into 3 groups and was given an opportunity to deliver lecture on Biotechnology to students there.

**Faculty : 4, Students: 80**

**Day two: 27 September 2013**

**Afternoon: AstraZeneca India Pvt Ltd**

The delegation then visited AstraZeneca Company. The delegation asked direct questions to the panel members from AstraZeneca as to what does industry requires from a UK graduate.

AstraZeneca response to this was an eye-opener which will help in bridging the gap between industry and UK degree. AstraZeneca preferred a 2 year Indian degree as they felt that the students were ready to take on the lab jobs as oppose to a student who has completed his graduation from the UK as they are not exposed much to lab work when compared to an Indian student.

In order to fill this gap, the group questioned if they were happy to have partnership with them for any internship programme with the UK. AstraZeneca were open to this idea and suggested various models which they thought might be useful varying on the student credibility and University norms. Some of the models were:

- Summer programmes for 6 months to one year where AstraZeneca can provide training to the selected students. For PhD students this could be for one year- one year of studying in the university and one year of hands on in AstraZeneca.
- AstraZeneca delivers sessions to students in Indian colleges which help Indian education curriculum to bridge gap between the 2 sectors. This has led to development of a question paper in itself of 100 marks for students.
- New joiners have to undergo a course on drug delivery which is a 2 day programme.

**Faculty: 7**

### **Day three: 28 September 2013**

#### **Morning: Bangalore University**

On day 3 there was a visit to Bangalore University for a public seminar. The group met Vice-chancellor of Bangalore University. The inauguration took place following which seminar on "Opportunities in Biotechnology" was delivered to potential students.

There were sessions from the Indian speakers on the present trends in Biotechnology in India. The UK delegation presented on various topics related to the theme of Opportunities in Biotechnology.

The seminar concluded at 2pm and delegates got an opportunity to meet & network with students

Following this there was a round table discussion where the faculties from the Biotech department of Bangalore University and the visiting delegation met. Given below are some of the interesting points which emerged during discussion:

- Bangalore University is flexible in delivering a dual degree model from Bangalore University and the UK University on MSc courses.
- PhD and advanced collaborations are in Bangalore University remit and they can control the model of partnership as it does not require administrative approvals.
- They are keen on faculty exchange based on research interests.
- They are more interested on individual partnering based on common interest following which a longer term partnership model can be established.

#### **Faculty: 10 , students :380**

Some prominent dailies covered the pre-event and also post event the mission. The links are given below:

#### **Pre-event:**

<http://www.thehindu.com/features/education/college-and-university/campus-capsule/article5204884.ece>

<http://bestbengaluru.com/news/one-day-seminar-on-biotechnology-opportunities/>

#### **Post event:**

<http://www.thehindu.com/features/education/college-and-university/campus-capsule/article5204884.ece>

<http://bestbengaluru.com/news/one-day-seminar-on-biotechnology-opportunities/>

<http://www.blrstudies.com/news/seminar-on-opportunities-in-biotechnology/>

2 local news channels Act city and KF9 (Cable first 9) screened the seminar to local television

## **Key Statistics: BANGALORE**

**Total students - 545**

**Total faculty - 40**

## **Feedback analysis (Participating UK institutions): BANGALORE**

- All delegates that participated in the mission mentioned in their feedback that the mission met their expectations
- 50% delegates mentioned that the quality of institutions visited were 'excellent' while 50% commended that the quality was 'Good'.
- 67% institutions commented that the Interaction and content of the programme at institutions was 'Good'.
- 83% delegates 'strongly agreed' that the mission met their expectations while 67% 'agreed' that the mission was a high quality event
- Comments by delegates
  - 'Visit to multinational companies was very interesting, but I didn't feel there was much that we could offer to them, we learnt far more about their work. The format perhaps could have been more of a discussion about educational expectations, rather than talks about research which the universities undertake'
  - 'My overall impression was that the mission was extremely well organised and the British Council guides were very helpful, friendly and professional. The quality of the establishments visited was excellent and the hosts seemed genuinely pleased to welcome us and interested in our talk'
  - 'Try to space out the programme. It was packed and without any breaks'
  - 'The visit to all three academic institutions was quite good. I wish there was some more time to discuss various aspects and to have seen their premises. The visit to Astra Zeneca exceeded my expectations. I am not sure whether they have the power to engage in collaborative research – they will probably refer us back to UK branch of AZ, but to me personally the visit was quite educational'
  - 'It was very interesting to see around the Biocon and Astra Zeneca pharmaceutical industry research operations. There was not much opportunity for future interactions but it is very valuable to know how these companies are operating and the types of students that they are employing'.

**Photographs: BANGALORE**

