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BioSpectrum Biotech Schools Survey 2008 (Part-2)

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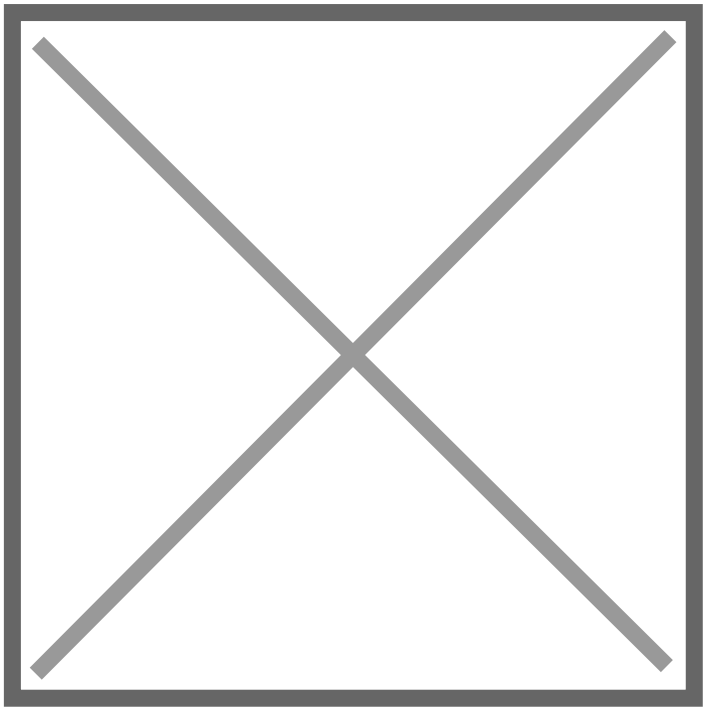
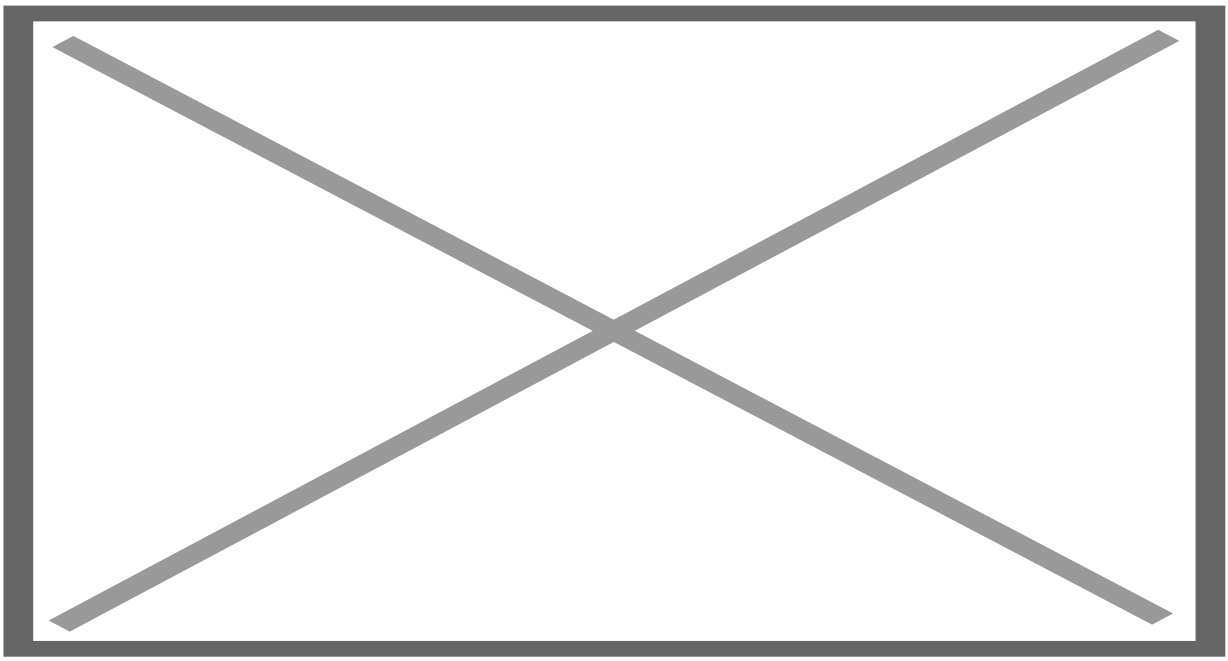
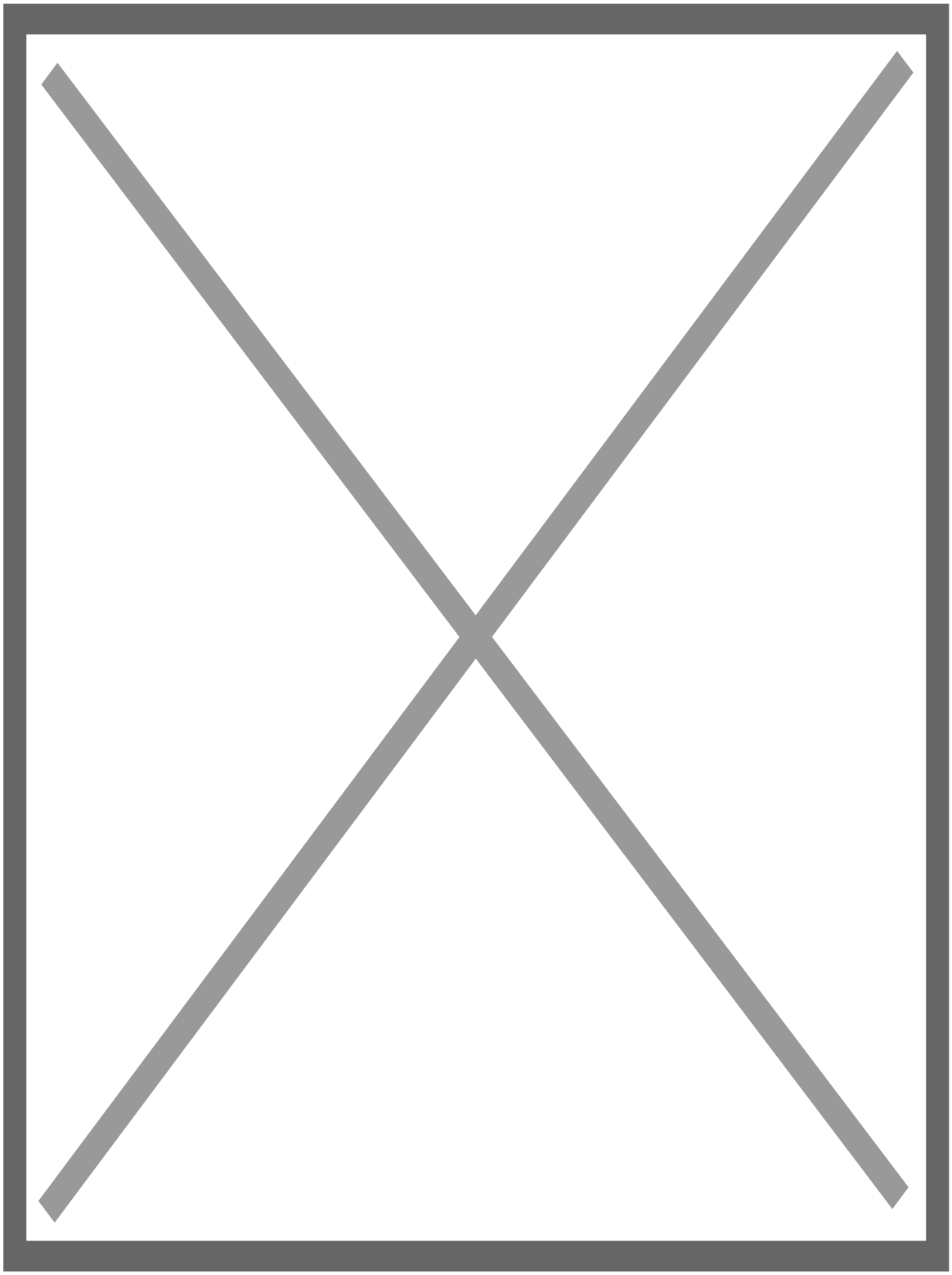
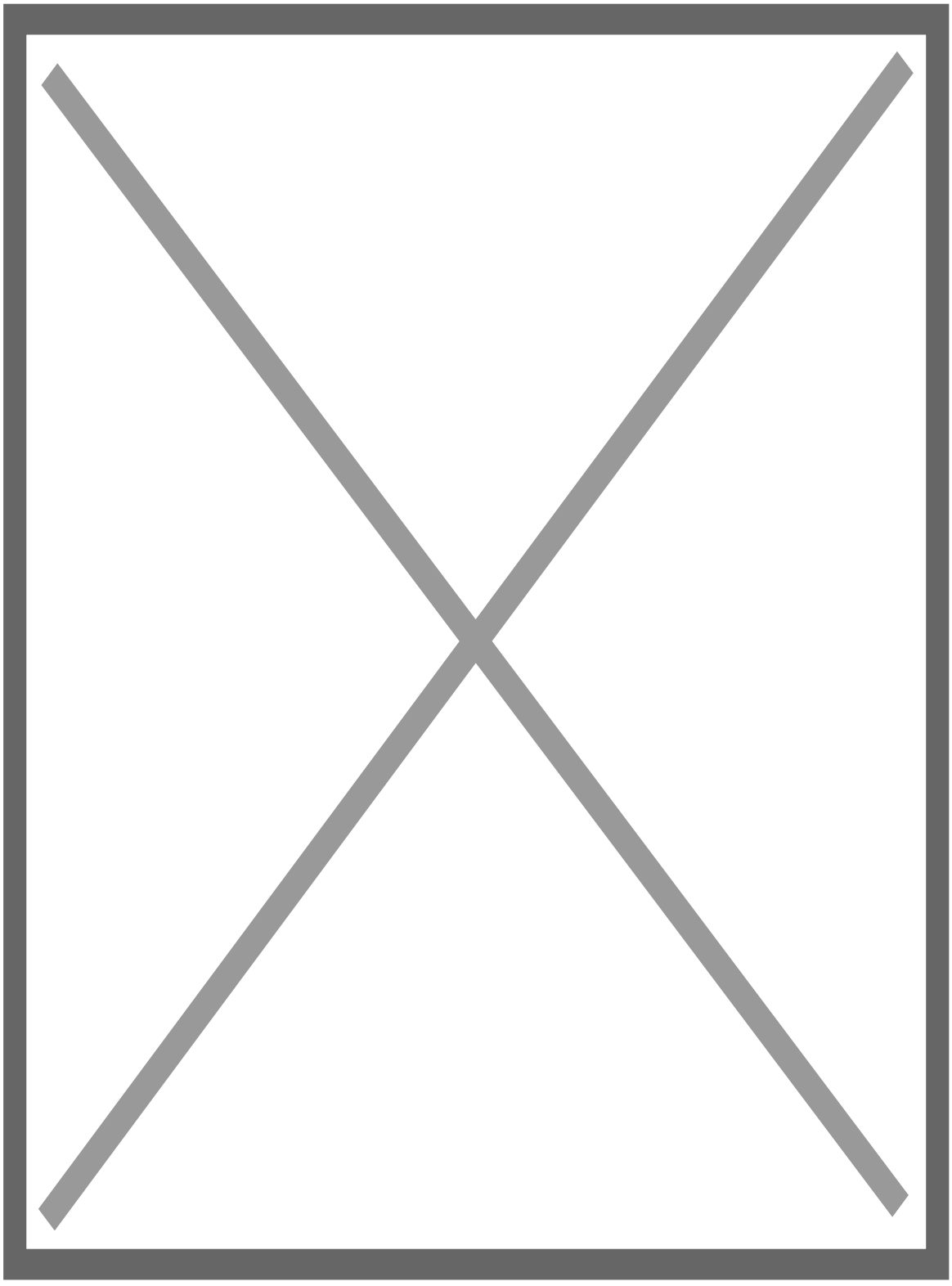
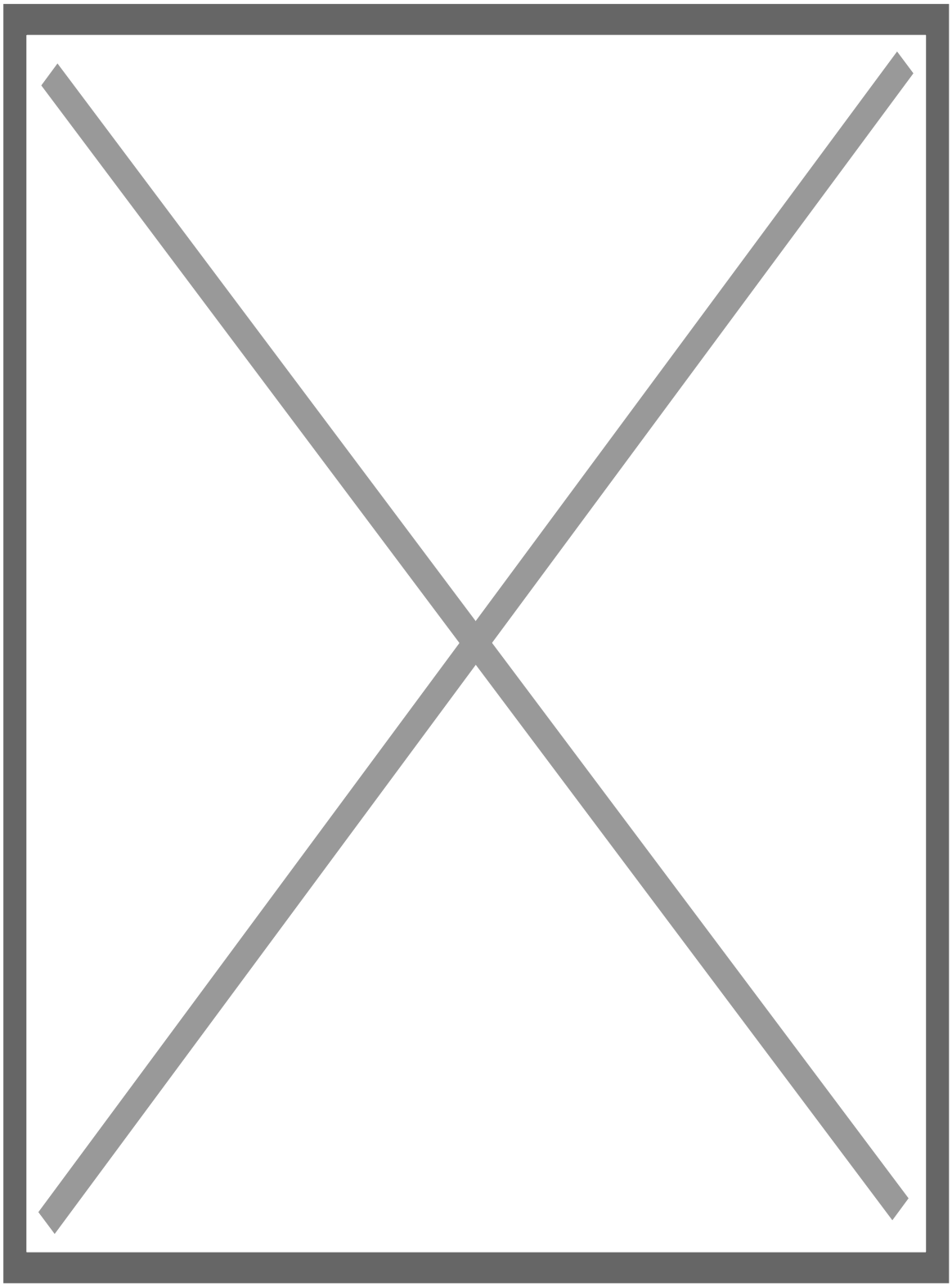


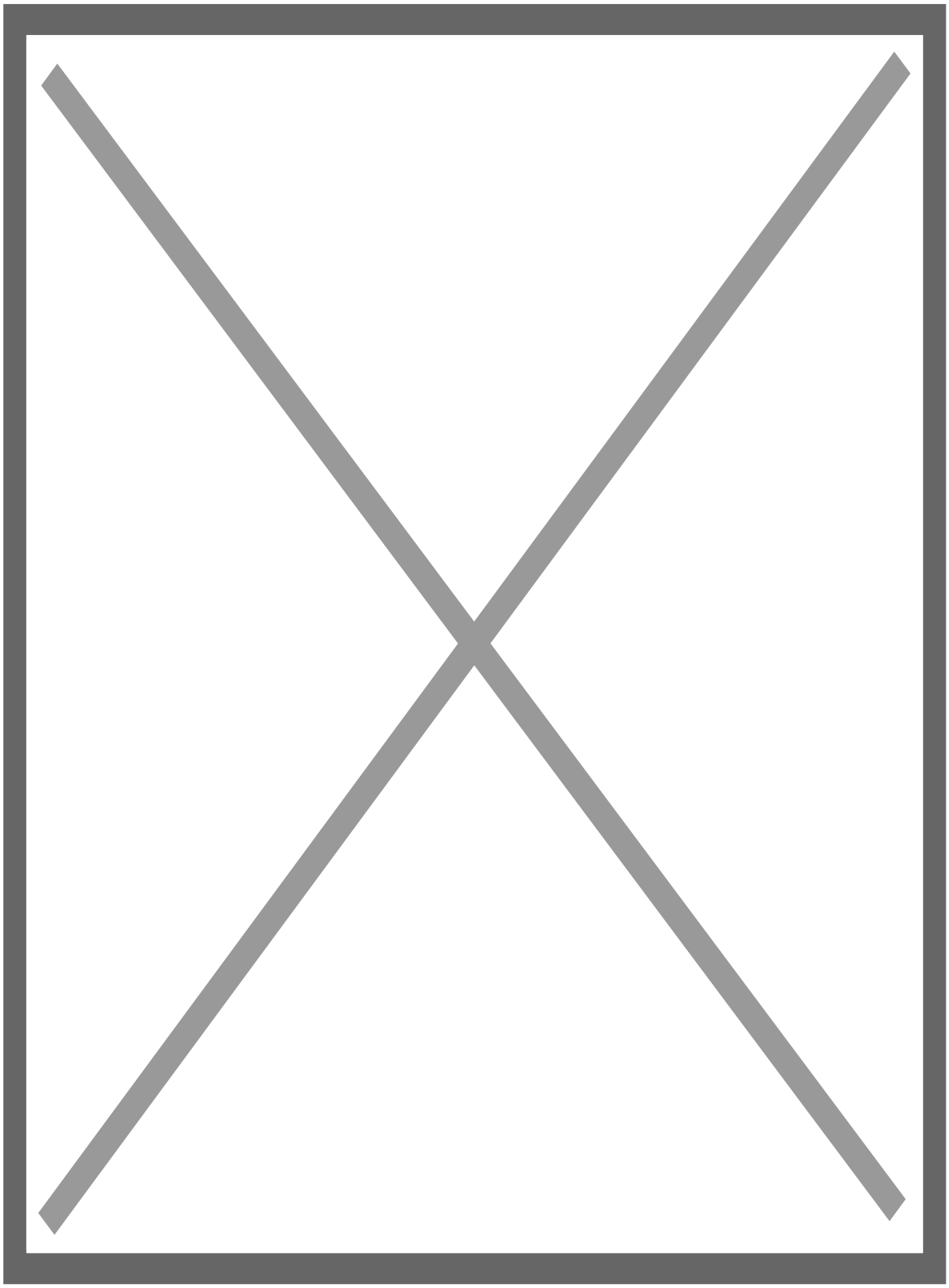


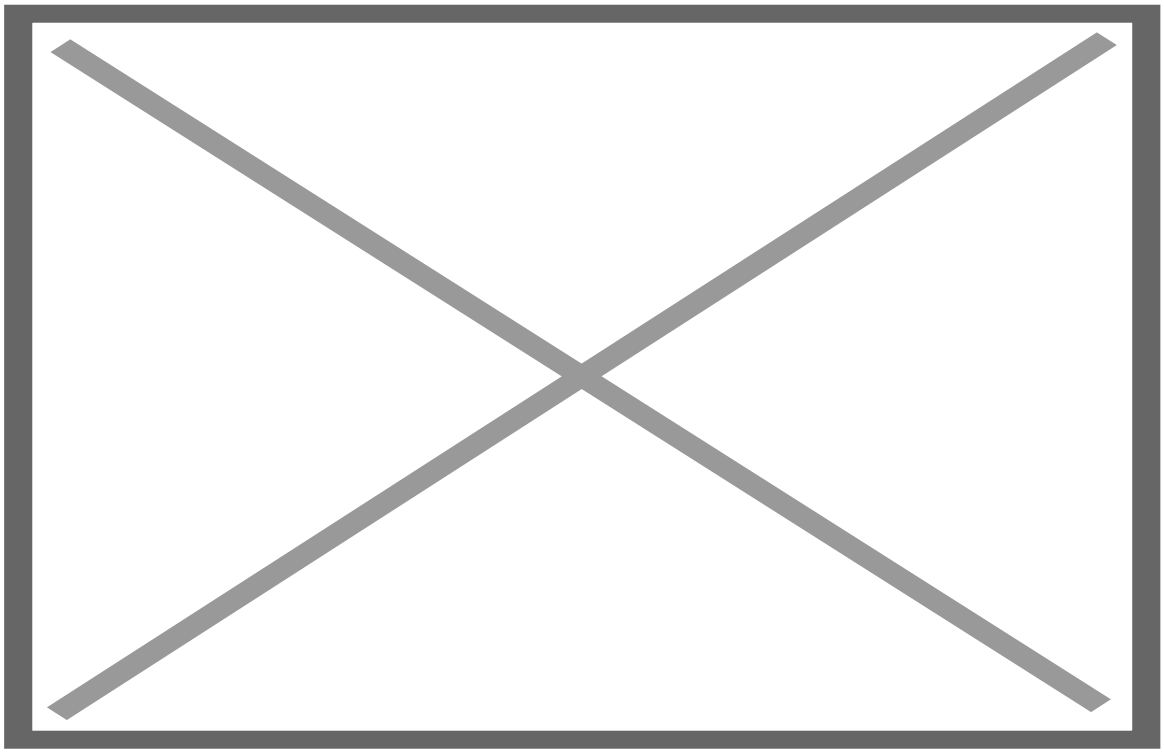
Sastra University, Tamil Nadu, emerges as the top ranked private biotech institution in the country for the 2006-07 academic year. It is followed by SRM University, Chennai, Jaypee University of Information Technology, Solan, Jaypee Instiute of Information Technology, Noida, and Amity Institute of Biotechnology, Amity University, Noida. Sastra University which participated for the first time in the survey has been the top scorer on the infrastructure score.





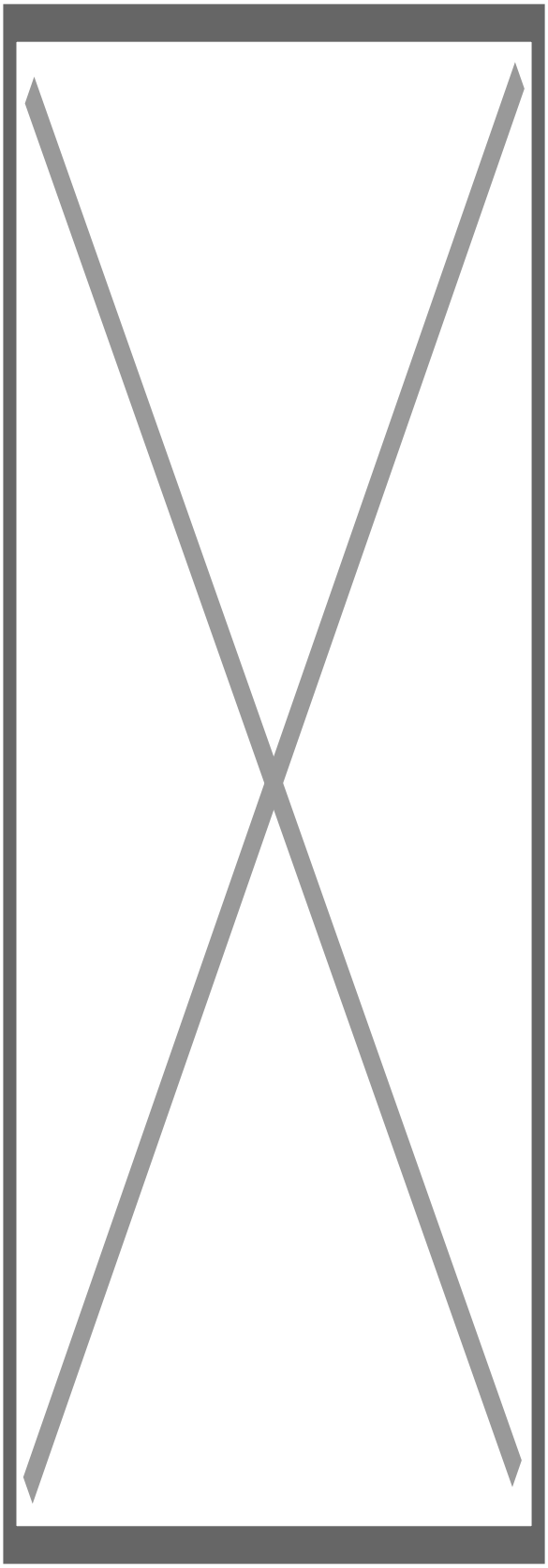






BioSpectrum Biotech Schools Survey 2008 (Part-2)

Methodology



The fourth BioSpectrum Top Biotech Schools study includes information pertaining to BTech, Masters and PhD courses but not of BSc courses. This study was conducted during November-December 2007. To maintain objectivity and avoid biases in ranking the institutes, BioSpectrum based its methodology on measurable and quantifiable data. As a result, the research team did not seek perceptions and opinions of stakeholders such as students or industry to rank the institutes. The

BioSpectrum team sent questionnaires to over 200 public and private institutes and followed up with them. We received over 30 questionnaires from the private institutes and an equal number from the private institutes.

Step - I: Identification of parameters for ranking of the institutes

Like the previous years' studies, the parameters suitable for ranking of the institutes were identified in consultation with experts from the industry, education and R&D. Suitability of a parameter was decided after telephonic discussion with 15 experts. From the discussion it emerged that faculty, industry interface, infrastructure and placements were the most important parameters on which the institutes should be ranked. These parameters have been used for ranking of the institutes this year as well.

Step - II: Importance ranking of the parameters

A structured questionnaire was used to take the opinion of 15 experts on relative importance of the four parameters prior to the study. Their opinion was taken into consideration to decide on weights to be assigned to each parameter.

The following means emerged based on data received from experts:

Faculty and infrastructure emerged as the two most important parameters ahead of placement and industry interaction. These two parameters get nearly two third importance in the overall ranking. In the present study also these weights have been applied to parameter scores of an institute to arrive at the final score.

Step - III: Data collection, analysis and ranking of the institutes

A pre-tested structured questionnaire was sent to directors/principals/deans of biotech institutes by the BioSpectrum team. BioSpectrum scrutinized and validated the responses given by the institutes for accuracy, consistency and sufficiency of the data, data entry, analysis of the data and ranking of the institutes.

The research team spent considerable amount of time accurately analyzing the filled in data for each institute. For each institute, a score was arrived at for each parameter. For a particular parameter, the score was a composition of each of the sub-parameters.

- Faculty score of an institute would be composed of faculty per student, qualification of faculty members, research articles published, contribution of the faculty to national and international journals, patents filed and granted.

- Infrastructure score would be similarly composed of capital expenditure on lab equipment and consumables, expenditure on books and journals, and availability of dedicated and shared PCs per student. Similar scores were arrived at for industry interaction and placement using sub-parameters.

- Appropriate and largely consistent weights were used for sub-parameters wherever necessary. To give an example, faculty members with PhDs and above were given a higher weight than non-PhDs to arrive at the qualification score. Similarly, publications in international journals were given a higher weight than publications in national journals.

- More recent publishing of papers, or more recent patents filed/ granted have been given higher weights during analysis.

- Sub-parameter scores were indexed with hundred points being granted to the institute with highest score for a particular sub-parameter. Indexed scores were than added up for each institute to arrive at the total score for a particular parameter. Scores were then averaged on hundred.

- Each of the parameters (faculty, infrastructure, industry interaction, and placements) was further weighed as per weights provided by experts to arrive at the total score of an institute.

- The institutes were then ranked as per this score on an overall basis.

- The ranking was done separately for public and private institutes.

School of Chemical and Biotechnology, Sastra University, Thanjavur, which is the top ranked institute in the list of private BT schools in 2008, was established in 1994.

It offers undergraduate programs in bioengineering, bioinformatics, biotechnology and chemical engineering and postgraduate programs in bioinformatics, chemical engineering and industrial biotechnology, besides PhD programs. The institute has also started medical and nanotechnology programs. The department has a total of 91 faculty members and on an average has 39 publications in national journals and 115 publications in international journals between 2003-07.

"The excellent infrastructure coupled with an industry-oriented curriculum and expert faculty is reflected in the research output in the form of patents and publications and success rates of the students" says Dr Swaminathan. The placement record of the students is greater than 90 percent and many students are pursuing research in premier research institutions across the world.

The department has externally funded research projects worth Rs 1,212.12 lakh from the government in various areas of biotechnology and industry sponsored projects worth Rs 75 lakh.

The department of biotechnology, SRM University, Chennai, has fared very high on the industry interaction score (Rank 2). The school offers BTech biotechnology, PG in biotechnology and PhD programs. The full time faculty strength of the department is 76 and 28 faculty members have over five years of experience and are PhDs.

The institute had a total cash inflow of Rs 1.82 lakh from royalties for the year 2006-07. The department has 17 independent laboratories, equipped with state-of-the-art equipment for microbiology and immunology, biochemistry, molecular biology, and genetic engineering, plant cell and tissue culture, animal cell culture, bioprocess technology and downstream processing.

The Department works with other departments, national and international industries and R&D institutions to develop expertise in molecular biology, metabolic engineering, protein engineering, immunology, biotransformations, biodegradation, plant biotechnology, animal biotechnology, marine biotechnology, enzyme technology, bioseparations, biosensors, bioprocess engineering, pharmaceutical biotechnology and many other fields.

The Department has a record of sorts when it comes to linking up with the industry; in terms of student projects and training with highly recognized institutes/industries like Biocon, Shantha Biotechnics, Reliance Life Sciences, Central Leather Research Institute, Cancer Research Institute, Tuberculosis Research Center, Dr Reddy's Lab and many others.

The department of biotechnology and bioinformatics of Jaypee University of Information Technology, Solan, was established in 2002 and it has been offering UG and PG degrees such as BTech in biotechnology and in bioinformatics, MTech dual degree in biotechnology and PhD in biotechnology and bioinformatics. The institute figures within the top two ranks on the industry interaction (Rank 1) and infrastructure (Rank 2) scores. The department has six specialized laboratories--proteomics lab, genomic technologies lab, plant biotechnology, microbial biotechnology, animal cell culture, and environmental biotech lab.

The faculty is guiding 15 SRFs/JRFs for PhD degrees in Biotechnology and Bioinformatics. The Department has externally funded research projects worth Rs 2 crore from the DST, DBT, and DRDO on various aspects of biotechnology and bioinformatics. The Department has organized two AICTE sponsored workshops for dissemination of biotechnological and

bioinformatics skills to the students and researchers in India.

Jaypee Institute of Information Technology, Noida, is the fourth-ranked institute based on this year's survey. The institute offers an undergraduate BTech program in biotechnology, BTech-MTech dual degree and PhD in biotechnology. The biotechnology laboratory designed by Canadian architect Arcorp has a laboratory space of 9,000 sft. The institute has labs for biochemistry, animal tissue culture, plant tissue culture, microbiology and instrumentation.

The institute's Learning Resource Centre (LRC) has around 24,050 volumes of books and more than 4,000 e-journals. The LRC is a member of Indian National Digital Library in Engineering, Sciences and Technology and All India Council of Technical Education (INDEST- AICTE) and has been subscribing IEEE, ACM, Springer Link and LNCS digital libraries. The department has 15 full time faculty members and on an average has 41 national publications and 81 international publications. The department has three Indian patents to its credit. The department has made an investment of Rs 121 lakh on books, journals, lab equipment and consumables for the year 2006-07. It ranked third on the industry-interaction score too.

The Amity Institute of Biotechnology (AIB), located in Noida, is the fifth-ranked institute. Established in August 2001, AIB provides a range of courses in the biotech arena like BTech Biotechnology, BTech Bioinformatics, Integrated MTech Biotechnology, Integrated MSc Biotechnology, PG Diploma in Bioinformatics, MBA Biotechnology, MSc Biotechnology and MSc Bioinformatics courses.

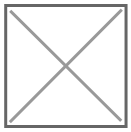
AIB has good infrastructure in terms of laboratories for plant and animal tissue culture, microbiology, central instrumentation facility, computational biology, biochemical techniques and molecular biology. Its investment on books, journals, equipment and reagents is close to Rs 240 lakh for the year 2006-07 and AIB is the top institute on the faculty score. It has 103 faculty members.The institute also has a strategic collaboration in the area of business incubation with Embreonix at University of Abertay, Dundee, Scotland for contract research and subsequent commercialization activities in biotechnology.

Bangalore-based The Oxford College of Science is ranked sixth in this year's survey of the private institutes. The department of biotechnology at Oxford is headed by Dr Vedamurthy and offers BSc, MSc and MPhil in biotechnology. The courses are affiliated to Bangalore University and recognized by the Government of Karnataka. The course provides comprehensive training in application of biotechnological skills to produce goods and services required by the society and industry. The department has 10 labs dedicated to the biotech students. It is top ranked institute on the placement score. "Out of 40 students, 37 have got placements. We spent close to Rs 82.25 lakh on lab equipment, consumables, and books in 2006-07," said Prof. Veda Murthy of the institute. The institute also figures among the top five (Rank 4) on the infrastructure score and the highest in placement.

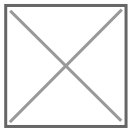
The department of biotechnology, RV College of Engineering, Bangalore, established in 2003 offers BE in biotechnology as an interdisciplinary course. The department moved into a new building in 2005. The department, which has faculty strength of nine, is headed by Prof. Pushpa Agrawal. RV College ranks second on the faculty score. Though the institute is not on the top in terms of the qualification and experience indices, RV College score high on the patents and publication matrix. Its infrastructure facilities are spread over an area of 2,044 sft and the institute has 12 labs dedicated to biotech students. The total intake for this course is 58. The department has a total value of Rs 18 lakh from industry sponsored projects and Rs 30 lakh from government sponsored projects.

Shoolini Institute of Life Sciences and Business Management (SILB) has been established under the aegis of a non-profitable organization, Foundation for Life Sciences and Business Management, and affiliated to HP University, Shimla. The institute has one international patent to its credit. The faculty of the institute is internationally renowned with vast experience in formulating and handling biotechnology related national and international projects, under the overall guidance of Prof. PK Khosla, former vice chancellor, HPAU, Palampur and ex-advisor, biotechnology, Government of Himachal Pradesh.

SILB has several collaborations with the industry and academics like the Seoul National University, South Korea, for promoting outsource of biotechnology related research and business. SILB has been accorded recognition as research organization by DSIRO. The department has Rs 30 lakh worth of sponsored projects from the industry and the government. Special emphasis is laid on the career development of the students and its students have found jobs in the industry, research and academics.



Rajkot-based Shri M&N Virani Science College, through its department of biotechnology, has been offering biotechnology courses the UG level since 1999. It is believed to be the only college in Gujarat that has been awarded UGC assistance for MSc biotechnology under the Xth Innovative Teaching and Research Program scheme in interdisciplinary and emerging areas in June 2004. The department is run by Shri M&N Virani Science College and is managed by Sarvodaya Kelavani Samaj (SKS). The department has 27 full time faculty and 19 of them are PhDs. M&N Virani Science College has nine well-equipped labs. The departmental library expenditure is nearly Rs 3 lakh per annum. "The post graduate students of the department have found placements in companies like Cipla, Intas Pharmaceuticals, and Reliance Life Sciences," said Dr Shivani Patel, HOD. The institute ranks fourth on the placement score.



PES Institute of Technology, Bangalore, started its BE in biotechnology course in 2002. The department of biotechnology at PES is headed by Dr Maulishree Agrahari and is in TechPark building of PESIT. "The faculty at the department are qualified and experienced with most of them having publications in both national and international journals" said Dr Maulishree Agrahari. It has 14 faculty members. The institute has government sponsored projects worth Rs 40 lakh in hand. It ranked second on the placement score and sixth on the industry interaction measure.

"We at PES had set ourselves the target of being one of the top ten BT schools in India, a year ago. Knowing that we have achieved our target is a proud moment for us," commented Dr Maulishree Agrahari.