

## Methodology

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## Methodology

In order to maintain objectivity and avoid biases in ranking the institutes, CyberMedia Research decided to base 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.

Both CyberMedia Research team and BioSpectrum team worked together on this study. While CyberMedia Research team worked on conceptualizing the study, designing the questionnaire and analyzing the data for ranking of the institutes, BioSpectrum team decided on the institutes to be invited for participation in the study, co-ordination with the biotech institutes for collection, sufficiency, adequacy and consistency of the data shared by them.

### Step - I: Identification of Parameters for Ranking of the Institutes

During the last year study, 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 fifteen experts. From the discussion it had emerged that Faculty, Industry Interaction, 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

Structured questionnaire was used to take opinion of thirty experts on relative importance of the four parameters prior to last year study. Their opinion was taken in to consideration for deciding on weights to be assigned to each parameter. The following means emerged based on data received from experts:

Faculty and infrastructure had 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 of Biotech institutes by the BioSpectrum team. BioSpectrum received responses from 47 institutes/ colleges/ departments. BioSpectrum scrutinized and validated the responses given by these institutes for accuracy, consistency and sufficiency of the data. The validated responses were sent to CyberMedia Research. CyberMedia Research organized data entry, analysis of the data and ranking of the institutes.

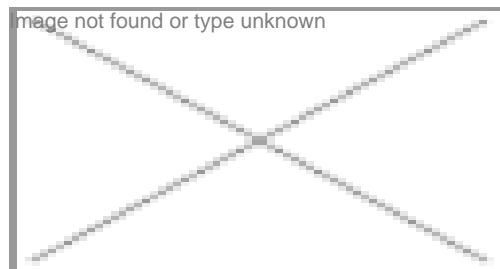
The research team spent considerable amount of time accurately analyzing the filled in data for each institute:

- 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. For example, Faculty score of an institute would be composed of faculty per student, qualification of faculty members, qualification of faculty members, research article contribution of the faculty to national and international journals, patents filed and granted. Infrastructure score would be similarly composed of capital expenditure on lab and equipment, 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 then 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.

Parameter	Weights
Faculty	32
Infrastructure	32
Placement	20
Industry interaction	16

### Sub Parameters

#### Faculty



- Faculty per student
- Faculty qualification
- Faculty experience
- Publications by the faculty in national and international journals at different points of time
- Patents filed/granted both national and international at different points of time

#### Infrastructure

- Expenditure on Library
- Expenditure on lab equipment at different points of time
- PC per student (dedicated for biotech students)

#### Industry Interaction

- Products developed by the institute in production
- Projects sponsored to an institute from industry and government sources
- Royalty inflow at different times

#### Placements

- Visits of companies for campus recruitment
- Job offers during campus placement
- No. of students placed against needed
- No. of job offers against needed
- Salary offered during the campus placement