

Title of the Project: **Creation of Experts' Directory of Life Sciences in India**

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### **Executive Summary**

❖ The Idea behind the need to develop a Life science directory/database was to collect the information about the researcher as well as experts belonging to the Subject of Life Sciences within the Country, which can be utilized varyingly to bring strong collaboration within the students, researchers and Scientists for the up gradation of the subject, which can be also utilized for nomination, Selection of Expert by UPSC, MPSC, PSC of various states, Staff Selection Commission, UGC, funding agencies and others.

❖ A Directory of Experts has been created to facilitate the users for collaboration between the researchers of other universities/Institutions working in the common area of interest, which can be further utilized for multiple purposes e.g. exchanging learning materials, guidelines to students and even it can be utilized by the Government and others for varied form of purposes.

❖ Also a complete database of 4643 life scientist giving all their details has been created in the form of search engine, so that the same can be placed on the website of DST.

❖ The present Directory consists details like Name, Gender, Contact information, Telephone numbers (Landline / Mobile), Date of Birth, Highest Qualification, Email Address, website, Experience, Research information, Major field of study along with the information with respect to Ph.D. students produced and ongoing and their publications etc.

❖ A definition of an expert has been outlined as, a faculty or a research person of an organization who fulfils any three conditions out of the following:

1. Ph.D. with minimum 5 years Teaching / Research experience.
2. Minimum 10 years of Teaching / Research experience.
3. Minimum 5 Publications in a Journal of good repute.
4. Minimum 3 Students Guided for Ph. D. thesis.
5. Minimum 2 Books written.

- ❖ There are total 2936 Experts working in various subjects of life sciences, as per the responses received by us. Their brief needed information is presented here as well as the detail information is available in the form of search engine.
- ❖ Maximum 559 Experts are working in the subject Botany and minimum, 180 in Biotechnology. Whereas 556, 211 and 200 experts are working in Zoology, Biochemistry and Microbiology respectively.
- ❖ The average number of Ph. D students guided by experts is 6.2 and similarly the average projects completed and Books published by an expert are 4.2 and 3.7 respectively.
- ❖ There are total 117 experts who have obtained total 336 patents of their research. The average Patent obtained by an expert is 0.11.
- ❖ The total number of papers published by the respondent experts in the International and National Journals are 41275 and 78585 respectively. The average publications of papers in International and National Journals are 16.8 and 28.6 respectively.
- ❖ The ten Most popular areas of research are as Biochemistry, Biodiversity, Environmental Science, Molecular Biology, Ecology, Entomology, Toxicology, Plant Pathology, Genetics & Plant Breeding and Plant Physiology.
- ❖ The ten least popular, observed area of research are Environmental Modelling, Nephrology, Paleobiology, Dermatology, Paleogeography, Urology, Applied Health Science, Forensic Science, Paleontology and Prawn culture.
- ❖ The percentage of experts, who have changed their profession during their career is 3.4 i.e. 84 out of 2446 experts provided this information and out of these, the maximum experts i.e. 22.6% have shifted from industry to teaching. This change of profession has occurred mostly due to reason of Job satisfaction, followed by Family reasons and the least number of experts have changed their profession due to financial reason.
- ❖ The experts for taking Views and Opinions were selected in the proportion of total number of experts in each zone, dividing India in six zones. Their views and opinions on different aspects of the subject Life Sciences have been asked using a simple questionnaire.
- ❖ About 69% of the experts feel that Life Science is Popular among the students and rest of the experts are of the opinion that Life Science is not so popular among the students.
- ❖ It is observed that defect in the curriculum, no drive in teaching, no incentives for the students; lack of target oriented programs has created less attraction for the subject.

- ❖ Regarding the Shortcomings of the existing course, majority (i.e. 88 %) of the experts felt that it is not up to the mark and there is a need to revamp it. The course does not include the new technologies developed in other sciences. It is neither self employment oriented nor fit for industrial need and/or Job oriented. Most of the life sciences courses are not framed on need basis.
- ❖ Current curriculum of most of Universities are neither interdisciplinary nor having projects. Industries and NGOs are neither involved in teaching nor in designing the curriculum.
- ❖ To popularize the life sciences, the curriculum must be framed as per the job requirements, acquainted with the job potentials, skilled based learning and more emphasis must be on learning by experiments.
- ❖ Frequent visits and contact with reputed Institutes / Universities, National laboratories, National Research Centre's of Life Sciences for the students, Rewards for best project, best scientific publication, encouragement of young scientist awards, Popular series of lectures on topics in life Science by renowned/leading scientist for students. Arranging training courses/workshops for free interaction with scientists are some other important methods for popularizing life sciences.
- ❖ The existing course needs lot of up gradation, Recent information must be included in the syllabi keeping in view of the applied aspect, University-Industry meeting should be arranged from job point of view, Courses/ curriculum be drafted by the eminent professors in their respective fields, one member should be from national institutes / Private companies to formulate the syllabus are some suggestions and modifications.
- ❖ Six months research/industrial dissertation/training must be incorporated. More emphasis on courses in Molecular biology, Biodiversity and Biotechnology. Introduction of courses on industrial application of biology, food processing, oenology, floriculture and horticulture should be done with more emphasis on practical applicability of the courses with more parts of techniques/tools/applications.
- ❖ Liberal budget, flexibility in curriculum and fully equipped laboratories in biology are the need of the hour. Credit based system similar to the one operating in agricultural universities should be introduced.
- ❖ Intake of students should be as per availability of infrastructure and facility so that practical training is feasible with hands on experiences in training on experiments. Bright students be identified and should be supported in every way throughout their career.
- ❖ It is also recommended to award interdisciplinary degree and link life sciences to the subjects like Medical Sciences, Engineering Sciences and Agricultural Sciences which can prove to be more useful to the society.

- ❖ Project work must be the part of curriculum and 60% have replied that the type of project should be related to industry as well as applied, so as to generate skilled professionals. Project should be practical based, has been opined by 47% experts.
  
- ❖ Association with industries should be developed by inviting members from Industries in the Board of studies. R & D managers of Biotech and Pharmaceutical companies should be made part of curriculum making committees so that the requirements of these industries will be known and curriculum can be molded accordingly. Research in basic life science must be tested for its applicability. Designing experiments which is related to pilot scale industrial processes. Industry should initiate for sponsoring students. Joint study by both academicians and Industrialists after identifying the problems of industries.
  
- ❖ Training for self employment like Pisces culture, prawn culture, sericulture, flowering, aromatic and medicinal plant cultivation and export, hybrid animals and plants medical inventions, pharmaceutical industries, piggery, poultry etc.
  
- ❖ There must be interaction of industry/NGOs with teachers and students periodically, the curriculum should be framed in consultation with NGOs. Experts have also expressed that the members of NGOs be involved for teaching and research in the department. Some projects can be under taken by the University in collaboration with NGOs.