

RF 88090

#13

3rd Annual Meeting

INTER-OFFICE CORRESPONDENCE

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DATE: March 8, 1989

TO: Workshop Chairman

SUBJECT: Suggested discussion topics during the Workshops

*at 3rd Annual Meeting
Columbia, Missouri*

The workshops are scheduled for the following purposes:

1) To provide participating scientists and advisors with an opportunity to discuss research objectives they consider important, and to facilitate formation of collaborative arrangements for pursuing such research.

2) To advise the Foundation concerning future directions of the program, including research and training activities that should be added, expanded, contracted, etc. In this regard, attached are some of the issues we would like to see your group address.

We would appreciate your keeping brief notes which can be shared with us.

Suggested Topics for Workshop Discussion

Anther Culture and Other Tissue Culture Applications

1. Is it fair to say that anther culture is now a well established and widely used tool in rice breeding? If yes, does anything need to be done to improve the use of anther culture in breeding programs? If no, what is the problem, and can further research help?
2. Is there consensus concerning the usefulness of somaclonal variation? What, if any, further research needs to be conducted to refine the technique or determine its usefulness?
3. What is the status of embryo rescue techniques for use in wide hybridization and rice breeding? What, if any, further research is needed to refine the technique?
4. Are there other tissue culture techniques that should be applied or investigated as part of the program?

Suggested Topics for Workshop Discussion

Genetic Maps and Markers

1. Now that an RFLP map of rice is available, what is needed to facilitate its transfer to and use in breeding programs?
2. Should there be a network of scientists working on tagging genes of agronomic importance? If yes, who should coordinate the network? Who should be in it?
3. Where should the more fundamental work on the RFLP map go from here? Is it likely that it can be used as a tool for physically locating and cloning genes? What further research is needed to accomplish this and is it worth doing?
4. Considerable work is underway on species-specific probes. Has it generated useful results? When will it and when do we have enough? Should some of this work be redirected along other lines?

Suggested Topics for Workshop Discussion

Protoplasts and Transformation Techniques

1. Rice plants have now been regenerated from protoplasts of Japonica and Indica lines. Are the efficiencies adequate? What further research is needed on regeneration?
2. Transgenic rice plants have been produced via protoplast uptake of DNA and regeneration of plants from protoplasts. Are these techniques good enough to begin introducing potentially useful foreign genes into rice? If yes, what needs to be done to accomplish this? What are the drawbacks of these transformation systems?
3. What other research should be pursued on the use of protoplast regeneration techniques for rice improvement?
4. Considerable effort and funding has been committed to development of Agrobacterium mediated techniques for genetic transformation of cereals including rice. What is the status of this work? Since protoplast techniques work, is it worth pursuing it further?
5. Same as above for microinjection techniques.

Suggested Topics for Workshop Discussion

Disease Resistance and Host Pathogen Interactions

1. What are the important needs and opportunities where biotechnology can contribute to enhanced disease resistance in rice, which are not now being pursued?
2. Is the work on race specific probes proceeding satisfactorily? Is it generating useful results? When do we have enough?
3. Is research on the host pathogen interactions and defense mechanisms providing results which can be used to enhance disease resistance in rice?
4. Anti-fungal and anti-microbial proteins (e.g., chitinase, glucanase) have been identified in non-rice systems. Should we be trying to put genes for these proteins into rice?

Suggested Topics for Workshop Discussion

Identifying and Characterizing Genes for Rice Improvement

1. Is the approach of introducing viral genes to instill resistance to virus infection proving to be successful? Relevant research is underway or planned for tungro virus, ragged stunt virus, yellow streak virus and hoja blanca virus. Are there other major viral diseases of rice which should be addressed?
2. What, in addition to work on B.t., should we be supporting with regard to genes for insect resistance? Are there research groups we should try to bring into the program?
3. What other kinds of potentially "worthy" genes are people working on that we should consider? Anything relevant to weed control? Anything for increased yield?
4. What is the status of transposon tagging as a technique for cloning useful plant genes?
5. What is the status of chromosome walking as a technique for cloning useful plant genes?

Suggested Topics for Workshop Discussion

Socioeconomic and Regulatory Issues

1. What is the most effective way to help biological scientists determine priorities for their biotechnology work?
2. Biotechnologists have results that are highly promising for the genetic control of rice viruses. What would be the likely consequences of such technologies?
3. Do we now have enough knowledge about the likely impact of productivity gains in rice to determine which rice ecology will increase its comparative advantage over time?
4. Is more research needed to adequately project rice supply and demand for the important rice countries?
5. Who are the most important groups/individuals in each country that need to be involved in discussions of research regulations and release of GEOs?