

Meetings

Arabidopsis Research

The increasing interest in *Arabidopsis thaliana* as a model plant for research in developmental physiology and genetics was reflected in the discussions during the first international symposium on *Arabidopsis* research held in Göttingen, Germany, 21–24 April 1965. This small, cruciferous plant is especially suited for experimentation. It can grow in varied habitats, requires little space, reproduces rapidly, and produces abundant seeds. It also has clear phenotypic marker genes and a low number of chromosomes. The rapid progress of *Arabidopsis* research was summarized in the opening addresses by F. Laibach, the discoverer of this “botanical *Drosophila*,” and by E. Reinholz.

In a session on taxonomy and variation Berger reported on taxonomic confusion within *Arabidopsis* and related genera. She compared various taxonomic systems in the older and the more recent literature. In order to clarify these relations, which up to now are based on morphological differences only, the stress was laid on attempts to reveal genetic connections by means of interspecific hybridizations. Some experiments of this kind were successful after application of embryo-culture techniques (Kribben). Insufficient seed production occurring frequently in autotetra- and hexaploids of *Arabidopsis* was attributed to reduced fertilization, faulty development of the embryo sac, and embryonic lethality, respectively (Bouharmont). The ecotypic variability of *Arabidopsis* in different localities was demonstrated in particular by the different vernalization requirement of various natural races (Ratcliffe and Cctl).

The problem of vernalization was treated from a physiological and genetic point of view. Some new experimental results were given by Napp-Zinn, sustaining his earlier theory of vernalization response by interaction of thermolabile and thermostable prod-

ucts. Two complementary major genes, distinguishing the two natural races Dijon and Limburg-2, were described by Van der Veen as the genetic background for late flowering. Opposite correlations between flowering time and some morphological characters, such as the number of inflorescent shoots, were established in early and late flowering races, respectively (Barthelmess).

The present knowledge on linkage between many morphological and developmental markers was summarized by McKelvie. Additional data were given by Rédei. The five linkage groups corresponding to the chromosome number of $n = 5$ have not yet been fully established. Between some genes of the fourth linkage group of Rédei, the first certain proof of mitotic recombination in higher plants was shown (Hirono and Rédei). An unusual segregation of mutation induced by x-ray was explained by Rédei on the basis of preferential chromosome segregation during the two meiotic divisions or by postreductional selection of secondary sporocytes or basal megaspores developed from twin megaspore mother cells. Some new aspects on the constitution of the extrachromosomal “plastom” were noted by Röbbelen on the basis of an experimental proof of backmutation and induction of plastom mutations.

Mutant analysis was discussed by Jacobs. By isolation and characterization of nutritional mutants in sterile culture he obtained various forms which required amino acids, thiamine, uracil, and nicotinic acid, respectively, for normal growth. The thiamine biosynthesis was studied by Feenstra. He used 45 mutants which can be supplemented by the pyrimidine (19), or thiazole moiety (12), or by the whole vitamin molecule (14).

Reports on mutants with deficiencies in leaf-pigment were presented. Studying the influence of various external factors such as light intensity and quality, or some metabolic inhibitors, Rédei observed the varying size of

white sectors on the leaves of a variegated mutant, thus demonstrating clearly the action of an unstable suppressor gene. With a chlorina mutant, Velesinsky and Röbbelen determined the relations between pigment content (in particular, the ratio of chlorophyll *a* to chlorophyll *b*) and the chloroplast fine structure. The possibilities of making use of chlorophyll mutants for electron microscopic studies on membrane differentiation in chloroplasts were exemplified by Röbbelen.

Secondary effects during mutagenesis were described by Reinholz and Müller. They mentioned malformations caused by x-rays and the chimerical structure of the treated plants. The incorporation of mutagenic chemicals into the sensitive sites within the cell nuclei was studied by use of tritiated DNA (Bonotto), and tritiated ethyl methanesulphonate (Wallis and Ahnström). By using thymidine base analogues Brown, Bhatia, and Smith were able to induce some lethals, flowering time variants, and so-called laggards. The mutagenic effects of alkylating agents, such as ethyl methanesulphonate and nitrosoamides, were discussed by Jacobs, Müller, and Gichner. Comparing the efficiency of various *N*-methyl- and *N*-ethyl-nitrosoamides the last author brought forward some data in favor of the diazoalkane hypothesis of their mode of action.

Suggestions on a uniform gene symbolization, terminology of chlorophyll mutants, the mapping of genes, and maintenance of stocks were made. The necessity of some kind of permanent coordination of *Arabidopsis* research, as it has been tried until now by the circular letter of “*Arabidopsis* Information Service” was emphasized. Interested persons who want the proceedings of this symposium, including the lectures and discussions, may contact me.

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Forthcoming Events

December

2–3. Northern Gulf Coordinating Council on **Wildlife Management and Mosquito Control**, mtg., New Orleans, La. (G. R. Hayes, Jr., P.O. Box 60630, New Orleans)

- 2-3. Society of **Plastics Engineers**, regional technical conf., Newark, N.J. (SPE, 65 Prospect St., Stamford, Conn. 06902)
- 3-5. Academy of **Psychoanalysis**, mid-winter meeting, New York, N.Y. (H. Davidman, 125 E. 65 St., New York)
- 3-5. American **Psychoanalytic Assoc.**, fall meeting, New York, N.Y. (APA, 1 E. 57 St., New York 10022)
- 3-4. **Macromolecular Metabolism**, symp., New York, N.Y. (New York Heart Assoc., 10 Columbus Circle, New York 10019)
5. American Acad. of **Dental Medicine**, mid-winter annual meeting, New York, N.Y. (S. Conrad, 133-28 228th St., Laurelton, N.Y. 11413)
- 5-9. American Inst. of **Chemical Engineers**, Philadelphia, Pa. (AIChE, 345 E. 47 St., New York 10017)
- 5-11. American **Rheumatism Assoc.**, Congr., Mar del Plata, Argentina. (G. Speyer, 10 Columbus Circle, New York)
6. **Food Law Inst. and Food and Drug Administration**, joint educational conf., Washington, D.C. (FDA, Washington, D.C.)
- 6-7. Medical and Social Aspects of **Migration**, Ciba Foundation guest symp., London, England. (Ciba, 41 Portland Pl., London, W.1)
- 6-8. **Transmission of Viruses by the Water Route**, symp., Cincinnati, Ohio. (G. Berg, U.S. Public Health Service, 4676 Columbia Parkway, Cincinnati 45226)
- 6-10. **Space Communication**, Paris, France. (UNESCO, Pl. de Fontenoy, Paris)
- 6-10. Practices in the Treatment of Low and Intermediate Level **Radioactive Wastes**, symp., Vienna, Austria. (Intern. Atomic Energy Agency, Kärtner Ring 11, Vienna 1)
- 6-10. Structure and Function of the **Nucleolus**, symp., Montevideo, Uruguay. (F. A. Saez, Instituto de Investigaciones de Ciencias Biológicas, avda. Italia 3318, Montevideo)
- 6-12. **Hydraulics and Fluid Mechanics**, 2nd Australasian conf., Auckland, New Zealand. (A. J. Raudkivi, Univ. of Auckland, School of Engineering, Ardmore College Post Office, Auckland)
- 7-10. American Soc. of **Agricultural Engineers**, winter meeting, Chicago, Ill. (J. L. Butt, P.O. Box 229, St. Joseph, Mich.)
- 8-10. **Coccidioidomycosis**, 2nd natl. symp., Phoenix, Ariz. (Arizona Tuberculosis and Health Assoc., 733 W. McDowell Rd., Phoenix 85007)
- 8-10. Changing Concepts of **Human Habitation**, symp., Roorkee, India. (D. Mohan, Central Building Research Inst., Roorkee)
- 8-10. New Concepts in **Gynecological Oncology**, symp., Hahnemann Medical College and Hospital, Philadelphia, Pa. (Miss S. Rosen, Hahnemann Medical College and Hospital, 230 N. Broad St., Philadelphia 19102)
- 8-15. American Acad. of **Optometry**, Chicago, Ill. (C. C. Koch, 1506 Foshay Tower, Minneapolis, Minn.)
- 9-10. **Ciba Foundation** guest meeting European Pancreatic Club. London, England. (H. T. Howat, 41 Portland Pl., London, W.1)
- 12-14. **Lymphatic System**, intern. conf., New Orleans, La. (H. S. Mayerson, Dept. of Physiology, School of Medicine, Tulane Univ., New Orleans 70112)
- 13-15. **Aerothermochemistry of Turbulent Flows**, conf., American Inst. of Aeronautics and Astronautics, San Diego, Calif. (H. Yoshihara, Space Sciences Laboratory, Mail Zone, 596-00, General Dynamics/Astronautics, Kearny Villa Rd., San Diego)
- 13-15. European **Biological Editors**, Paris, France. (D. S. Ferner, Dept. of Biology, Univ. of Washington, Seattle)
- 13-15. Radiological Protection in the **Industrial Use of Radioisotopes**, intern. conf., Paris, France. (J. Pradel, 66 rue Augustin Dumont, Malakoff, Seine, France)
- 13-18. **Engineering and Technological Sciences**, conf., Bangkok, Thailand. (P. Purachatra, Assoc. of Southeast Asian Insts. of Higher Learning, Chulalongkorn Univ., Race Course Rd., Bangkok)
- 15-18. **Microbiology**, 1st Central American Congr., Univ. of Costa Rica, San José. (F. Montero-Gei, School of Microbiology, Univ. of Costa Rica, Apartado 2157, San José)
- 16-17. **Computers and Scanning**, New Orleans, La. (S. Crain, University College, Tulane Univ., New Orleans 70118)
- 19-21. Middle East **Neurological Soc.**, Jerusalem, Jordan. (F. S. Haddad, Orient Hospital, Beirut, Lebanon)
- 19-23. Indian **Statistical Inst.**, Malleswaram, Bangalore. (S. R. Ranganathan, Indian Statistical Inst., Documentation Research and Training Centre, 112 Cross Rd. 11, Malleswaram)
- 20-21. **Molecular Transport and Rate Phenomena**, 32nd annual chemical engineering symp., Stanford Univ., Stanford, Calif. (A. Acrivos, Dept. of Chemical Engineering, Stanford Univ., Stanford, Calif.)
- 20-21. **Nuclear Medicine**, 2nd natl. Congr., Tel Aviv, Israel. (P. Czerniak, Israel Atomic Commission, Soreq Nuclear Research Center, Doar Yavne)
- 20-22. British **Biophysical Soc.**, 20th winter meeting, London, England. (R. E. Burge, Physics Dept., Queen Elizabeth College, Campden Hill Rd., London W.8)
- 20-22. American **Physical Soc.**, Los Angeles, Calif. (W. Whaling, California Inst. of Technology, Pasadena 91109)
- 26-31. American Assoc. for the **Advancement of Science**, annual, Berkeley, Calif. (R. L. Taylor, AAAS, 1515 Massachusetts Ave., NW, Washington, D.C.)
- 27-29. Academy of **Management**, New York, N.Y. (P. P. LeBreton, College of Business Administration, Univ. of Washington, Seattle)
- 27-30. **Differential Equations and Dynamical Systems**. Univ. of Puerto Rico, Mayaguez. (Center for Dynamical Systems, Brown Univ., Providence, R.I.)
- 27-30. **Phi Delta Kappa**, Professional Education Fraternity, Univ. of Oklahoma, Norman. (M. Bemis, Phi Delta Kappa, 8th and Union, Bloomington, Ind. 47402)
- 28-30. Indian **Medical Assoc.**, 41st conf., Baroda (Gujarat). (Indian Medical Assoc. House, Indraprastha Marg., New Delhi 1)
- 29-4. **Pugwash Conf. on Science and World Affairs**, Addis Ababa, Ethiopia. (J. Rotblat, Pugwash Continuing Committee, 8 Asmara Rd., London, N.W.2, England)
- 4-7. **Solid State Physics**, conf., Manchester College of Science and Technology, Manchester, England. (S. F. Edwards, Dept. of Physics, Victoria Univ. of Manchester, Manchester 13)
- 5-8. National Soc. of **Professional Engineers**, winter mtg., Bal Harbour, Fla. (NSPE, 2029 K St., NW, Washington, D.C. 20006)
- 6-7. Society for **General Microbiology**, 45th general mtg., London, England. (P. H. Clarke, Biochemistry Dept., University College, Gower St., London, W.C.1, England)
- 6-10. International Council of **Scientific Unions**, 11th general assembly, Bombay, India. (Intern. Council of Scientific Unions, Via Sebenico 2, Rome, Italy)
- 7-8. **Surgical Research Soc.**, winter mtg., London, England. (A. P. M. Forrest, Cardiff Royal Infirmary, Newport Rd., Cardiff, Wales)
- 10-13. **Radioactive Isotopes in Clinical Medicine and Research**, 7th intern. symp., Bad Gastein, Austria. (R. Hofer, Second Medical Univ. Clinic, Garnisonsgasse 13, Vienna 9)
- 11-12. Man's Extension into the **Sea**, symp. on SEALAB II, Washington, D.C. (T. Evans, Conference Management Organizer, Colonial Bldg., 105 N. Virginia Ave., Falls Church, Va. 22046)
- 12-14. **Medicinal and Aromatic Plants in India**, symp., Central Indian Medicinal Plants Organization, Lucknow, India. (S. C. Datta, CIMPO, 4 Sapru Marg, Lucknow)
- 12-20. International **Fertility Assoc.**, Latin American mtg., Acapulco, Mexico. (M. Roland, 109-23 71st St., Forest Hills, N.Y. 11375)
- 13-16. Indian Institute of **Metals**, 19th annual mtg., Hyderabad. (The Institute, 31 Chowringhee Road, Calcutta 16)
- 16-21. American **Chemical Soc.**, winter mtg., Phoenix, Ariz. (ACS, 1155 16th St., NW, Washington, D.C. 20036)
- 17-19. **Labelled Proteins in Tracer Studies**, conf., Pisa, Italy. (Euratom, Labelled Compounds Div., 51-53, rue Beliard, Brussels, Belgium)
- 19-21. **Instrumentation for the Process Industries**, Texas A&M symp., College Station. (P. T. Eubank, Dept. of Chemical Engineering, Texas A&M Univ., College Station)
- 20-21. Anharmonic **Phonon Interactions in Solids**, Princeton Univ., Princeton, N.J. (W. B. Daniels, Dept. of Solid State Sciences, Princeton Univ., N.J.)
- 20-22. Regulation of **Antibody Response**, intern. symp., Toronto, Ont., Canada. (B. Cinader, Subdivision of Immunochemistry, Univ. of Toronto, Toronto, Ont.)
- 20-22. **Diabetes in the Tropics**, world Congr., Bombay, India. (Organizing Secretary, Diabetic Assoc. of India, Maneckji Wadia Bldg., Mahatma Gandhi Rd., Bombay 1)
- 20-22. **Symmetry Principles at High Energy**, conf., Univ. of Miami, Coral Gables, Fla. (D. R. Lehman, Air Force Office of Scientific Research, Tempo D, 4th and Independence Ave., SW, Washington, D.C.)