International Workshop on Molecular Epidemiology and Evolutionary Genetics of Pathogenic Microorganisms

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This international workshop was held under the auspices of CDC (Centers for Disease Control and Prevention), ORSTROM (The French national agency for scientific research in developing countries) and CNRS (The French national agency for basic research) and co-sponsored by a number of other French and American institutions. The three day meeting attracted over 400 participants from a variety of backgrounds. Among the speakers were parasitologists, virologists, bacteriologists and mycologists from both medical and veterinary fields as well as an agricultural scientist. This diversity reflects a common interest in the use and development of similar tools for the characterization of pathogenic microorganisms and genetic studies on their evolution, emergence and dispersal.

The emergence of new infectious disease threats has lead to the development of strategic plans by several countries for their surveillance and combat. This workshop showed how the integration of laboratory science and epidemiology could be used in the detection of these pathogens and in the investigation of the factors which influence their emergence.

The opening session was occupied by several speakers who gave an overview of the threat posed by emerging and re-emerging pathogens. The sharp increase in the incidence of many infectious diseases has shaken the previously held assumption that these diseases were under control. This increase occurring both in the developing and developed world reflects the diverse causes of this phenomenon. Among these causes are an increase in trade and travel, misuse of antimicrobial drugs and the deterioration in the social and public health infrastructures. To these problems has been added the emergence of new human pathogens and the continued evolution of already recognized microorganisms. A call was also made for a unified approach to the evolutionary genetics of microorganisms.

Other sessions dealt with specific examples of molecular epidemiological approaches in the fields of parasitic, fungal, bacterial and viral diseases. The principal molecular tools involved in these investigations were multilocus enzyme electrophoresis (MLEE), restriction fragment length polymorphisms (RFLP), random amplification of polymorphic DNA (RAPD) and pulse field gel electrophoresis (PFGE). However other techniques were also presented such as the use of pyrolysis mass spectrometry (PYMS) in hospital infections caused by fungus and single strand conformation polymophism (SSCP). The examples given demonstrated how the use of these molecular methods could resolve both traditional epidemiological questions and provide tools to tackle new problems which in the past had remained unresolved.

The final day was given to parallel sessions on tools in molecular epidemiology, definition of strains, tropical parasites, insect vectors and emerging, opportunistic and concomitant infections. Again different examples were given on how molecular tools are allowing surveillance organizations to respond quickly to the challenge of new and resurgent pathogens.

The wide range of the international participation in the poster sessions that were also held during the workshop testified to the popularity of the meeting. The organizers, Michel Tibayrenc from ORSTOM and Altaf Lal from CDC are to be congratulated on producing such an interesting and useful workshop. A similar meeting is to be organized in May 1997 in Montpellier.

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