

**CENTRE FOR SCIENCE AND TECHNOLOGY OF THE NON-ALIGNED
AND OTHER DEVELOPING COUNTRIES
(NAM S&T CENTRE)**

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**INTERNATIONAL WORKSHOP
ON
MODERN AND EMERGING TREND
IN VACCINE DEVELOPMENT**

**ABUJA, NIGERIA
22-24 MAY, 2018**

BRIEF REPORT

Vaccine, a biological preparation from living organisms, is one of most widely practiced life saving medical interventions to reduce disease and death from infectious diseases. There are 5 main types of vaccines - attenuated (live), inactivated, toxoid, subunit and conjugate - which are administered by injection, oral or intranasal routes for either preventing the disease (prophylactic vaccine) or for its treatment (therapeutic vaccine). Though the earlier period witnessed the development of vaccinology in purely empirical fashion, with the advent of molecular microbiology, molecular genetics and molecular immunology and introduction of novel processing techniques, the production of the state-of-the-art vaccines against numerous infections of public health importance, viz. diarrhoeal, respiratory, bacterial, parasitic, sexually transmitted, vector-borne viral, zoonotic etc and against viral cancer has gained momentum through research and development efforts. However, even though the technologies today can provide adequate tools to detect, control and prevent emerging infections, the developing countries are mostly still suffering from a variety of infectious diseases for which either the vaccines do not exist or need further R&D, requiring global and continued efforts and collaboration and coordination among regulatory agencies as well as sustainable economic system to support such initiatives. Moreover, a large number of developing countries, particularly in the African continent, are seriously lacking in indigenous production and manufacture of vaccines and have to essentially depend on their import.

With the above issues in view, the Centre for Science & Technology of the Non-Aligned and Other Developing Countries (NAM S&T Centre) organised an International Workshop on 'Modern and Emerging Trend in Vaccine Development' in collaboration with the National Biotechnology Development Agency (NABDA), Nigeria during 22-24 May 2018.

The Inaugural Session commenced with a welcome note by Mrs. Ndefo Ifeoma C., AD Info. / Head of Communication & Protocol Unit, NABDA followed by the remarks of Mrs. Comfort Achiatar, Ag. Director, Admin & Finance, NABDA. Prof. Dr. Arun P. Kulshreshtha, Director General, NAM S&T Centre in his remarks presented the genesis of the event touching upon the basic issues related to Vaccine Development and also gave a brief description of the activities of

the NAM S&T Centre. Other dignitaries who spoke during the Inaugural Session were: Mrs. Boma Otobo, Deputy Program Manager, NERICC, National Primary Health Care Development Agency (NPHCDA), Abuja; Prof. H. Mairo Inuwa, Department of Biochemistry, Ahmadu Bello University, Zaria; and Dr. Ibeh Bartholomew, Ag. Head / Director, Medical Biotechnology, NABDA, Abuja. The Vote of Thanks was delivered by Prof Oyekanmi Nash, Director / Head of Department of Genetics, Genomics and Bioinformatics, NABDA, Abuja.

The Workshop was attended by 89 scientists, researchers and policy makers of 17 countries, including 18 from Egypt, India, Indonesia, Kenya, Malaysia, Myanmar, Nepal, Pakistan, Palestine, Peru, Philippines, Russia, South Africa, Sri Lanka, Vietnam and Zambia and 63 from the host country, Nigeria.

The foreign participants were from **Egypt** [Prof. Dr. Mahmoud Mohamed Bahgat Riad Abdelmotelb, Professor, National Research Centre of Egypt, Egyptian Academy of Scientific Research and Technology (ASRT), Cairo]; **India** [Prof. Harish Padh, Former Vice Chancellor in Sardar Patel University and Professor Emeritus in Gujarat National Law University, Ahmedabad and Dr. Anmol Chandele, Group Leader, ICGEB-Emory Vaccine Program, International Centre for Genetic Engineering and Biotechnology (ICGEB), New Delhi]; **Indonesia** [Dr. Dodi Safari, Head of Molecular Bacteriology Unit, Eijkman Institute for Molecular Biology, Jakarta]; **Kenya** [Mr. Mwai Ngibuini, Biochemical Engineer and Head of Sub-Saharan Africa, BioProcessing, Life Science at Merck Group]; **Malaysia** [Dr. Adiratna Binti Mat Ripen, Head of Primary Immunodeficiency Unit, Institute for Medical Research, Ministry of Health, Kuala Lumpur]; **Myanmar** [Dr. Kyaw Phone Zaw, Principal Scientist, National Analytical Laboratory, Department of Research and Innovation, Yangon]; **Nepal** [Dr. Bol Raj Acharya, Senior Veterinary Officer, Department of Livestock Services, Ministry of Agriculture, Land Management and Co-operatives, Rabies Vaccine Production Laboratory, Veterinary Complex, Kathmandu]; **Pakistan** [Dr. Aftab Ahmad Chattha, President, National Academy of Young Scientists, University of the Punjab, Lahore]; **Palestine** [Dr. Daa O. H. Hjaija, Director, Department of Communicable Disease, Ministry of Health, Ramallah, West Bank]; **Peru** [Mrs. Maria Giuliana, Research Student, The University of Queensland, School of Chemistry and Molecular Biosciences, Brisbane City, Australia]; **Philippines** [Dr. Nina Gonzales Gloriani, Professor, University of the Philippines Manila, Philippine General Hospital, Manila]; **Russia** [Mr. Dmitry Krivtsov, Diplomat, CBD, Abuja]; **South Africa** [Mr. Patrick Vincent Tippoo, Head, Science and Innovation, The Biovac Institute, Pinelands]; **Sri Lanka** [Ms. Athapaththu Mudiyansele Maheshi Harendra Athapaththu, Research Scientist, Industrial Technology Institute (ITI), Colombo and Dr. Darshana Wickramasinghe, Consultant Microbiologist, General Hospital, Ampara]; **Vietnam** [Dr. Le Thi Quynh Mai, Vice Director, National Institute of Hygiene and Epidemiology, Hanoi]; and **Zambia** [Mr. Songolo Mwikisa Walubita, Research Scientist, Central Veterinary Research Institute, Chilanga]. The NAM S&T Centre was represented by its Director General, Prof. Arun P. Kulshreshtha; and Ms. Meenu Galyan, Research Associate.

The overall programme of the Workshop was conducted in six technical sessions which are summarized as below:

Technical Session I was chaired by Prof. Harish Padh from India and had five presentations namely, ‘Development of Synthetic Carbohydrate Vaccine against Pneumococcal Infection’ by Dr. Dodi Safari [Indonesia]; ‘Pathogen and Host Enzymes as Potential Targets to intervene with Parasitic and Viral Infections’ by Prof. Dr. Mahmoud Mohamed Bahgat Riad Abdelmotelb

[Egypt]; ‘Vaccine, An Effective Tool For Prevention of Lassa Fever’ by Prof. Ogonnaya Ogbu [Nigeria]; ‘Emerging Fowl Pox Challenges due to Effective Control of Newcastle Disease in Village Chickens using NDV I-2 in Zambia - A Field Experience’ by Mr. Songolo Mwikisa Walubita [Zambia]; and ‘Creating Highly Innovative Vaccines Protecting Life’ by Dr. Emmanuel Oluwadare Balogun [Nigeria].

Technical Session II was chaired by Dr. Nina Gonzales Gloriani from the Philippines and Co chaired by Prof. Ogonnaya Ogbu from Nigeria and had three presentations namely, ‘Comparative Studies on The Immunogenicity of Two Newcastle Disease Vaccines Modified With Two Different Thermostabilising Agents’ By Prof. Adebayo, Isaac A [Nigeria]; ‘The Production and Use of Cell Culture Rabies Vaccine in Nepal’ by Dr. Bol Raj Acharya [Nepal]; and ‘Bioinformatics-based Analysis to identifying Putative Therapeutic Vaccine Candidates in *Plasmodium vivax*’ by Dr. Abraham Isah [Nigeria].

Technical Session III was chaired by Dr. Adiratna Binti Mat Ripen from Malaysia and had two presentations namely, ‘Cloning, Overexpression and Purification of Hepatitis B Surface Antigen Protein preS in *E.coli* and preS and Core-preS Chimeric Protein in Yeast (*P.pastoris*) for Vaccine Development’ by Dr. Aftab Ahmad Chattha [Pakistan]; ‘Development of Grain Adapted Pelleted Feed Vaccine for the Control of Newcastle Disease in Village Scavenging Poultry’ by Dr. Anthony Nwachinaemelu Egbuji [Nigeria].

Technical Session IV was chaired by Dr. Le Thi Quynh Mai from Vietnam and Co chaired by Prof. Adebayo Isaac A from Nigeria and had five presentations namely, ‘Development of Whole Inactivated Monovalent and Bivalent Vaccines for Leptospirosis Applicable in the Philippine Setting’ by Dr. Nina Gonzales Gloriani [Philippines]; ‘Building Local Vaccine Manufacturing Facility in Nigeria: Innovative Biotech Approach’ by Dr. Simon Agwale [Nigeria]; ‘Ten Years of Clinical Research in Novel Investigational Vaccines in Latin America and The Caribbean Countries’ by Mrs. Maria Giuliana [Peru]; ‘Local Manufacture of Vaccines, Challenges and Opportunities’ by Mr. Mwai Ngibuini; and ‘Mumps Outbreak among School Students of Hebron District in Palestine May 2015’ by Dr. Daa O. H. Hjaija [Palestine]

Technical Session V was chaired by Prof. Dr. Mahmoud Mohamed Bahgat Riad Abdelmotelb from Egypt and along with Dr Mustaphata B. Abubakar from Nigeria and had four presentations namely, ‘Establishing Vaccine Development and Manufacturing Capacity in Africa; The Biovac Institute: Plans, Progress and Perspectives’ by Mr. Patrick Vincent Tippoo [South Africa]; ‘Vaccines and Vaccination: Current Status and Future Challenges for India’ by Prof. Harish Padh [India]; ‘Development of a DNA rabies Vaccine for Dogs’ by Ms. Athapaththu Mudiyansele M H Athapaththu [Sri Lanka]; and ‘Recombinant DNA Techniques as a Tool for Development of Potential Avian Influenza Subtype H5N1 Vaccine Candidate accompanying Diagnostics Kit in Eukaryotic Expression Host System’ by Dr. Mustapha Bala Abubakar [Nigeria].

Technical Session VI was chaired by Dr. Daa O. H. Hjaija from Palestine and had eight presentations namely, ‘Measles Out Breaking 2013 Sri Lanka; Lessons learnt for Global Measles Elimination Programme’ by Dr. Darshana Wickramasinghe [Sri Lanka]; ‘Understanding Human Immunology of Infectious Diseases for Vaccine Design, Testing and Evaluation’ by Dr. Anmol Chandele [India]; ‘Vaccine Development and Immunization Scheme in Myanmar’ by Dr. Kyaw Phone Zaw [Myanmar]; ‘The Demand on Technology Innovation for Vaccine Research and Production in Vietnam’ by Dr. Le Thi Quynh Mai [Vietnam]; ‘Vaccine Development against Leptospirosis – Malaysia Scenario’ by Dr. Adiratna Binti Mat Ripen [Malaysia];

‘Characterization of Foot-and-Mouth Disease Virus Isolates Candidate Strains For Polyvalent Vaccine Development In Nigeria’ by Dr. Ularamu Hussaini Gulak [Nigeria]; ‘Humanized Mouse as An Appropriate Model for Accelerated Global HIV Research and vaccine Development: Current Trend’ by Dr. Ibeh Bartholomew [Nigeria]; and ‘Efficacy of Some Commercial Anti-Rabies Vaccines In Taraba State, Nigeria’ by Dr. Woziri, Abubakar Ojone [Nigeria].

A Welcome Dinner was hosted by Dr. Ibeh Bartholomew in the evening of the Day 2 – 23rd May.

The Concluding Session was presided over by Dr. Ibeh Bartholomew of NABDA, in which a presentation was made by Dr. Alexander Ochem, Consultant, African Vaccine Manufacturing Initiative (AVMI) in South Africa. Prof. Dr. Arun P. Kulshreshtha, Director General, NAM S&T Centre initiated the discussion on a draft Abuja Resolution on ‘Modern and Emerging Trend in Vaccine Development’ and invited comments/inputs from the participants which were appropriately incorporated in the draft after elaborate deliberations. The finalised Resolution was then adopted by the participants during this Session.

It was also mentioned in the Abuja Resolution that the National Biotechnology Development Agency (NABDA) of the Federal Ministry of Science and Technology, Nigeria was desirous to collaborate with the NAM S&T Centre by initiating a joint NABDA-NAM S&T fellowship scheme in the area of Vaccine Development. Further, Prof. Dr. Mahmoud Mohamed Bahgat Riad Abdelmotelb, the participant from Egypt also proposed to co-operate with the NAM S&T Centre by in principle instituting a joint fellowship scheme in the areas of DNA Vaccine Development. These proposals were greatly applauded by the workshop participants.

The Participation Certificates were individually distributed among the Workshop participants. The Concluding Remarks were made by Mrs. Comfort Achiatar, Ag. Director Admin & Finance, NABDA. Vote of Thanks on behalf of the participants was given by Prof. Dr. Mahmoud Mohamed Bahgat Riad Abdelmotelb from Egypt and Prof. Harish Padh from India, both expressing gratitude to the organisers for the successful and fruitful organisation of the Workshop and for excellent hospitality and arrangements made for the delegates. It was unanimously hoped that more similar events will be held in future with a focus on Vaccine Development.

On the last day after conclusion of the Workshop, the foreign participants were taken for a city tour.

Five senior foreign experts [Prof. Harish Padh from India, Dr. Aftab Ahmad Chattha from Pakistan, Dr. Nina Gonzales Gloriani from Philippines, Prof. Dr. Mahmoud Mohamed Bahgat Riad Abdelmotelb from Egypt and Dr. Bol Raj Acharya from Nepal] were requested by NABDA to stay back in Abuja for some more days after the completion of the Workshop for in-depth interaction with the Nigerian researchers on formulating strategies for the capacity building on vaccine technologies in Nigeria; planning the ways and means to handle the tropical infections and reemerging diseases; and providing them hands-on training in various areas of vaccine development.