

heme groups in cytochrome *bd* in contrast to cytochrome *c* oxidase where, upon reaction of Compound O with NO, transient reduction of heme *a* has been detected. Whether the electron density is shifted from NO to the heme *d* iron $\text{Fe}_d^{3+} - \text{NO} \rightarrow \text{Fe}_d^{2+} - \text{NO}^+$ is not clear and requires additional studies.

Interaction of NO with cytochrome *bd* Compound O is much slower than that for cytochrome *c* oxidase ($1.4\text{--}1.8 \times 10^2 \text{ M}^{-1}\text{s}^{-1}$ versus $2 \times 10^5 \text{ M}^{-1}\text{s}^{-1}$ at 20°C). Moreover, for cytochrome *bd*, there seems to be a simple NO binding to ferric heme *d*, whereas in the case of cytochrome *c* oxidase, there is a real redox reaction that involves donation of a single electron from NO to the enzyme, most prob-

ably via a redox-active copper ion (CuB), leading to oxidation of NO into nitrite. In the latter case, redistribution of this electron between the redox cofactors according to their midpoint redox potentials is observed.

The present study allows us to conclude that in the terminal respiratory oxidases, CuB is necessary to catalyze the reaction of NO with Compound O, but it is not needed or even involved in the reaction of NO with Compound F, in contrast to previous suggestions.

These results are in agreement with the proposal that the expression of *bd*-type rather than heme-copper oxidases could enhance resistance to nitrosative stress thus promoting the virulence.

Conference Report

7th Annual Meeting of the Italian Society of Virology

In June 2007, the 7th National Congress of Italian Society of Virology was held in the beautiful historic city of Orvieto, Italy. Approximately 170 scientists attended the meeting with invited and selected lecturers covering the following topics: medical virology and antiviral therapy; viral biotechnologies and gene therapy; viral oncogenesis and vaccines; emerging and zoonotic viral infections; general virology and viral genetics; and virus host interactions and pathogenesis. A special emphasis was placed on human papilloma-virus infection and prevention as well as development of guidelines for the preemptive (presymptomatic) therapy of human cytomegalovirus infections in transplant recipients. The final programme and the abstract book can be found on the website (www.siv-virologia.it or www.infectagentscancer.com).

In a special lecture dedicated to G.B. Rossi, F. Belardelli (Rome, Italy) revisited 50 years of interferon (IFN) research history. Belardelli reviewed the increasing knowledge regarding the type I (alpha and beta) and type II (gamma) IFNs and their multiple activities on cell growth, differentiation and immune response. He also pointed out how viruses have evolved several mechanisms to escape the direct effect of IFN and immune responses. In addition, several studies suggest an impairment of IFN production and/or response in cancer patients. The characterization of the molecular mechanism of IFN involvement in immune evasion could provide new concepts for immunotherapy protocols. IFNs are important as a link to innate and adaptive immunity and act as a powerful vaccine adjuvant on dendritic cells. Detailed knowledge on the IFN system in patients with cancer and hepatitis C (HCV) -infection would be instrumental in selecting categories of patients responding to IFN therapy.

H. Wolf (Regensburg, Germany) described new strategies in vaccine development based on the HIV experience. Research networks in the European Community have been created to develop vaccine strategies starting from molecular epidemiology and leading to the evaluation of vaccine candidates in primates and humans. He focused on the EUROVAC-cluster and INCO-programme showing how different antigen presentation systems were developed, particularly those based on DNA-plasmids and vaccinia-virus vectors. Preliminary results suggest that a combination of DNA prime and vaccinia-vector boost gives best results. Further studies are needed to optimize the vaccine protocols.

M. Puoti (Brescia, Italy) highlighted different antiviral strategies, describing their mechanisms of action and the clinical efficacy. In particular, he focused on hepatitis B virus (HBV), HCV and HIV infection therapy, discussing what should be taken into account for choosing the most effective therapeutic regimen. He stressed that the development of new drugs is mainly possible through the knowledge of the viral replication cycle, which enables identification of potential targets for therapies.

At this meeting, SIV formed an expert panel to review the existing data on HPV vaccines and develop recommendations specifically on the prevention of cervical cancer and precancerous lesions. K. Soldan (London, UK) overviewed HPV biology and pathogenesis underlying some aspects related to the potential impact of vaccines. L. Banks (Trieste, Italy) described the molecular characterization of the interaction of HPV E6 with the Discs Large Tumor Suppressor and the difference between low- or high-risk HPVs. R. Kirnbauer (Vienna, Austria) discussed HPV vaccine development, based on the virus-like particles (VLP) containing the L1 major

capsid protein, and progress toward a 'pan-HPV' vaccine containing the minor L2 capsid protein that displays cross-neutralizing epitopes. F. Scaglione (Milan, Italy) and H. Deckx (Belgium) described the formulation of and the studies on two prophylactic vaccines, Gardasil and Cervarix, respectively, capable of protecting humans against both persistent HPV infection and cervical intraepithelial neoplasia. A. Venuti (Rome, Italy) called for the development of new HPV therapies, through a new generation of drugs and vaccines, such as DNA and plant-derived vaccines.

G. Gerna (Pavia, Italy) presented clinical trials designed to develop guidelines for the management of HCMV infection in transplant recipients and in pregnancy. Based on these studies and other literature reports, he proposed using DNAemia instead of antigenemia as a parameter for starting the preemptive therapies in both solid and haematopoietic transplants. In this regard, different cut-off values should be adopted. Additionally, he presented preliminary data about the possibility of valuating a combination of virological and immunological information for the more effective monitoring of HCMV infection.

A. Carducci (Pisa, Italy) discussed the virological monitoring of environmental matrices and food

and their importance for the risk assessment. She underlined the difficulties in the detection of virus in environmental samples because their highly variable composition often complicates detection. In addition, viruses appear to be extremely dilute and concomitant human and animal contamination is frequently encountered. F. Mutinelli (Padua, Italy) discussed lyssaviruses, which are carried by the European bat and related to classical rabies virus, as emerging zoonosis and highlighted the importance of surveillance. Human exposure through bites should be blocked immediately with rabies post-exposure treatment. Commercial rabies vaccines induce antibodies that should cross-neutralize and cross-protect against at least some of the lyssavirus genotypes. Indeed, bat handlers should be vaccinated to reduce the risk of infection.

In addition to the plenary lectures, 50 posters and 34 selected oral presentations were presented. During the congress three young scientists were given awards for the best posters; ten travel grants for the 3rd European Congress of Virology in Nürnberg, Germany were sponsored by consum.it (MPS Group). The next SIV meeting is scheduled to take place again in Orvieto, Italy, in autumn 2008, and the preliminary programme will be published on the SIV website.

Young scientists with the best posters were awarded 'Eurovirology' travel grants.

