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NATIONAL RESEARCH FOUNDATION PRIME MINISTER'S OFFICE SINGAPORE

MICROBES SANS FRONTIÈRES » A RESEARCH AGENDA FOR THE 21ST CENTURY

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The contemporary world of infectious diseases presents an increasingly complex mosaic of situations, hence an ever-growing challenge for global control. It associates:

- "Classical" infectious diseases, largely controlled in high-income regions, particularly by implementation of universal vaccination against communicable pediatric diseases, but still present in low to medium income regions, along with AIDS, malaria and tuberculosis, reflecting persistent inequity in access to prevention and care.

- "Reemerging classical" infectious diseases due to a combination of factors such as growing vaccine hesitancy and the worldwide extension of antimicrobial resistance - particularly prevalent in nosocomial pathogens - that threatens antibiotics if their global parsimonious use is not urgently implemented.

- "Newly emerging" infectious diseases, largely viral and zoonotic, a direct reflection of the "anthropocene" - the increased imprinting of *Homo sapiens* on the planet's ecosystems - and steadily-growing trade and mass-travel.

- Recently recognized "post-modern, non-communicable epidemics" reflecting - in part - a growing imbalance between *Homo sapiens* and his ailing microbiota (i.e. obesity, diabetes, asthma and allergy, inflammatory bowel diseases and colorectal cancer). Their incidence is sharply growing in economically-emerging regions. Asia is on the forefront of this global risk as it combines all the above situations.

"Microbes Sans Frontières" stresses the ongoing switch from the « historical » concept of host-pathogen interaction to a broader concept of host-microbes interactions in health and disease, a trend towards a personalized vision of host-microbes interaction encompassing host genetics, living habits, sociological determinants and environment.

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