

# **WHO Biological Reference Standards** *In vitro* diagnostic devices

## **- Summary of the 2<sup>nd</sup> Meeting of the WHO CC -**

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# Biological Standardization (\*)

## Constitutional responsibility

- ❑ WHO is mandated by its Member States to "*...develop, establish and promote international standards for biological products.*"
  
- ❑ In practice, biological products cover
  - » Vaccines
  - » Blood and blood products
  - » *In vitro* biological diagnostic devices
  - » Other biological products

(\*) Expert Committee for Biological Standardization



# WHO Biological Reference Standards

- ❑ Recommendations for the preparation, characterization and establishment of international and other biological reference standards (revised 2004): Annex 2, WHO TRS, No 932, 2005.
- ❑ Report of the WHO Consultation on Global Measurement Standards and their use in the *in vitro* biological diagnostic field. WHO Geneva, June 2004:  
[www.who.int/bloodproducts/ivd/infectious\\_markers](http://www.who.int/bloodproducts/ivd/infectious_markers)



# WHO Biological Reference Preparations ([www.who.int/bloodproducts](http://www.who.int/bloodproducts)\*)

- ❑ **Nucleic Acid Technology:**
  - HBV/HCV/HIV/Parvovirus/HAV (IS)
  - HIV genotype reference panel
  
- ❑ **Immunoassays:**
  - HBsAg; Anti-HBs; Anti-HBc
  - HIV p24 antigen
  - Anti-HIV subtype reference panel
  
- ❑ **vCJD reference materials**
- ❑ **Blood grouping reagents**
- ❑ **Platelets immunology**
- ❑ **Blood Coagulation disorders**



World Health Organization



World Health  
Organization

(\*) WHO Catalogue of Biological Reference Preparations

4 | Blood Products & related Biologicals: SoGAT, 28 May 09

# WHO IVD Standardization

## 2<sup>nd</sup> WHO CC\* Meeting: 17-19 February 2009

- ❑ Follow-up from the WHO CC Meeting in 2007
- ❑ Coordinate needs/priorities with WHO programs
- ❑ Discuss priority projects: WHO Biological Reference Preparations to optimally support global public health
- ❑ Update the strategic plan established in 2007
- ❑ Strengthen collaboration (WHO CC-Network model)

\*WHO CCs for Biological Standards & Standardization: CBER/FDA, USA; NIBSC, UK; PEI, Germany



# Priority Projects – Parasites

Preparation	Proposed Standard	Coordinator	Next steps & Decisions
Anti- <i>T. cruzi</i> antibody panel	Reference preparations under development	S. Rijpkema; A. Luquetti; M. Otani, C. Guzman-Bracho	Characterization of the candidate materials in process: Mexico ( <i>T. cruzi</i> I) and Brazil ( <i>T. cruzi</i> II). Collaborative Study 2010 <a href="http://www.who.int/bloodproducts/ref_materials/WHO_Report_1st_Chagas_BRP_consultation_7-2007_final.pdf">http://www.who.int/bloodproducts/ref_materials/WHO_Report_1st_Chagas_BRP_consultation_7-2007_final.pdf</a>
Anti- <i>Plasmodium spec.</i>	New Ref. Panel (new proposal)	S. Kumar, CBER P. Corran, NIBSC	Reference panel ( <i>falciparum</i> , <i>malariae</i> , <i>vivax</i> ) to validate blood donor screening assays (aiming to detect multi-species infections)
Anti- <i>Toxoplasma</i> (IgM)	Replacement of current IS (TOXM)	S. Rijpkema, NIBSC	Current standard does not distinguish between IgG and IgM. Influence on the IU values. Effort to make an IgM-purified material



# Priority Projects – HIV

Preparation	Proposed Standard	Coordinator	Next steps & Decisions
HIV-1 RNA genotype panel	2 <sup>nd</sup> Ref Panel; under development	H. Holmes, NIBSC/ I. Hewlett, CBER	Major pandemic strains (A, C), unusual subtypes (G, H, J, K, group O) and wider range of CRFs; max. 12 panel members; heat inactivation; lyophilization; collaborative study in process; report to ECBS 2010
HIV-2 RNA	1 <sup>st</sup> IS, Proposal for establishment at ECBS 2009	C. Morris, H. Holmes, NIBSC; I. Hewlett, CBER	Collaborative study completed; Report to ECBS 2009



# Priority Projects – Hepatitis viruses

Preparation	Proposed Standard	Coordinator	Next steps & Decisions
HBV genotype panel: NAT tests	Reference Panel, proposed for establishment	M. Chudy, PEI M. Nübling, PEI	NAT panel: 15 member; genotypes A-G; collaborative study in process; report to ECBS 2009
HBV genotype panel: HBsAg tests	Reference Panel under development	M. Chudy, PEI M. Nübling, PEI	HBsAg panel: 15 member; genotypes A-H; pilot study (Iyo); collaborative study 2009/2010
HCV core Ag	New proposal for development to ECBS 2009	PEI	Two candidate materials available; genotype 1 and 3 preparations (first one to calibrate in IU, the other show commutability)





# Priority Projects – Parvovirus and Dengue

Preparation	Proposed Standard	Coordinator	Next steps & Decisions
B19V DNA genotype panel	Reference Panel, proposed for establishment	P. Minor, NIBSC S. Baylis, PEI Mei-ying Yu, CBER	Four-member panel: genotypes 1, 2, 3 and negative plasma pool; collaborative study completed (33 labs); report to ECBS 2009
DENV RNA	DENV 1-4 NAT Ref Panel;  New proposal for development to ECBS 2009	M. Rios, CBER	Selection of candidate materials: access to viral isolates acquired from infected humans;



# Priority Projects – Herpes viruses

Preparation	Proposed Standard	Coordinator	Next steps & Decisions
CMV DNA	1 <sup>st</sup> IS: proposed study report ECBS 2010	J. Fryer, NIBSC	CMV strain Merlin propagated in cell culture; collaborative study will evaluate the material in parallel with strain AD169 and purified Merlin DNA;
EBV DNA	1 <sup>st</sup> IS: proposed study report ECBS 2010	J. Fryer, NIBSC	EBV strain B95-8 propagated in cell culture; collaborative study in parallel with two other EBV-positive cells;



## Other projects discussed (further consultation or information needed)

- Anti-HTLV-1/2 antibody panel
- Anti-HHV-8 antibodies and HHV-8 DNA
- Anti-CMV antibody standards (IgG, IgM)
- Blood-borne bacteria reference panel
- FLAVI, ARTHROPOD-BORNE HEMORRHAGIC VIRUSES:  
WNV RNA panel; Anti-DENV (IgM); Chikungunya virus; Japanese  
Encephalitis
- HEPATITIS VIRUSES: HDV RNA; HEV RNA; Anti-HCV mono-specific  
antibodies
- PARASITES: Anti-*T. brucei* spec. (African trypanosomiasis); Anti-Babesia  
spec. antibody panel;
- POLYOMA/PAPLILLOMA VIRUSES: BK DNA and JC DNA
- TSE BLOOD REFERENCE MATERIALS



# WHO Biological Reference Preparations WHO Catalogue

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Web site address:

<http://www.who.int/bloodproducts>

