



# POINT-OF-CARE TESTING (POCT) FOR VIRAL INFECTIONS IN THE DEVELOPING WORLD

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<http://www.icgeb.org/molecular-virology.html>

## The Laboratory of Molecular Virology @ICGEB (2013)

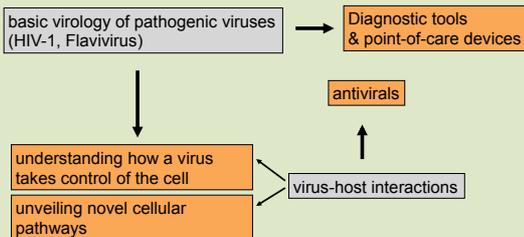
### ICGEB: an intergovernmental organization



Developing knowledge

**The Mandate of ICGEB**  
 To provide a Centre of excellence for research and training in genetic engineering and biotechnology addressed to developing countries and economies in transition.

### Virology @LMV ICGEB Trieste



**Current members:**  
 L. Gharu, Postdoc (India)  
 A. Albornoz, PhD (Argentina)  
 E. Cevik, PhD (Turkey)  
 T. Carletti, PhD (Italy)  
 M. Cesarec, PhD (Croatia)  
 N. Vidregar, guest scientist (Slovenia)  
 G. Corazza, graduate student (Italy)

**Funding:**  
 HFSP: Young Investigator Grant; EU: FP6 STREP; MIUR-FIRB, Italy; ISS-AIDS, Italy; Beneficentia Stiftung, Lichtenstein; Fondo TS, Italy; EU: MNT ERA FP7; MIUR, Italy.

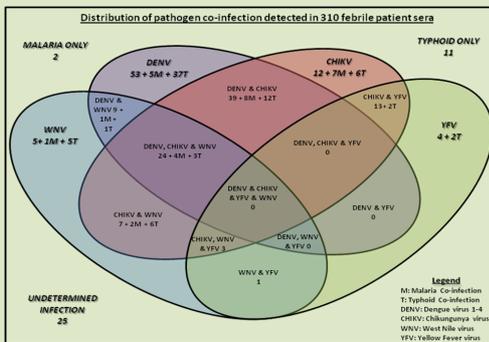
**ICGEB core facilities:**  
 Fluorescence microscopy and related techniques (<http://www.icgeb.org/fluorescence-microscopy.html>)  
 3 Biosafety level 3 laboratories (<http://www.icgeb.org/biosafety-level-3-laboratory-40b1341.html>)  
 Lentiviral Vectors facility

**The ICGEB Workshop on Human RNA Viruses:**  
 A bi-annually itinerating workshop: Trieste, Italy (2008); New Delhi, India (2010); Buenos Aires, Argentina (2012) & Istanbul 2014.  
<http://www.icgeb.org/turkey-workshop-on-human-rna-viruses-2014.html>

**Past members:**  
 A. Kuta (Universita Libre de Bruxelles, Belgium)  
 M. Bardina, (Lomonosov Moscow University, Russia)  
 L. Miorin (Mount Sinai School of Medicine, NY USA)  
 R. Eilersich (University of Trieste, I)  
 A. Shishova (Lomonosov Moscow University, Russia)  
 V. Altanasio (University of Perugia, I)  
 A. Knezovich (Ospedale Riuniti, Trieste, I)  
 D. Kleva (Laboratori Riuniti Srl, Trieste, I)  
 P. Maiuri (Curie, Paris, F)  
 G. Bartolomei (University of Zurich, CH)  
 I. Vacca (Novartis, Siena, I)  
 M. Dieudonné (Barcelona, ES)  
 J. Guerra (University of Geneva, CH)  
 C. Biancotto (IEO, Milan, I)  
 A. De Marco (EMBL, Heidelberg)  
 A. Nowordowska (ELETTRA, Trieste, I)  
 M.V. Falzacappa (IEO, Milan, I)  
 M. Baba (University of Maiduguri, Nigeria)  
 M. Tassarolo (Eurotech Spa, Amar, I)  
 M. Band (Plast Optica Spa, Amaro, I)  
 M. Dabrowski (A. Mickiewicz University, Poland)

### North-South collaborations in member countries

Establishment of a reference laboratory for Arbovirus infection surveillance with the WHO/ITD Laboratory, University of Maiduguri Teaching Hospital, Borno State, NIGERIA  
 Professor Marycelin M. Baba



**ACHIEVEMENTS**  
 - Implementation of virological assays (IgM/IgG ELISA, RT-PCR, PRNT);  
 - Exchange of knowhow and researchers;  
 - Survey of Arbovirus sero-prevalence in 310 suspected febrile Malaria and Typhoid patients in Nigeria;

**REFERENCES**  
 Baba, M et al. Evidence of arbovirus co-infection in suspected febrile malaria and typhoid patients in Nigeria. J Infect Dev Ctries 7, 51-9 (2013).  
 Baba, M et al. A survey for neutralizing antibodies to the three types of poliovirus among children in Maiduguri, Nigeria. J Med Virol 84, 691-6 (2012).

### POC testing for resource-limited settings

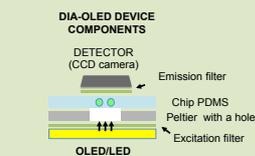
"Accurate diagnostics have the potential to affect health care decisions to a degree well out of proportion to their cost. It has been estimated that diagnostics account only 2% of the cost of health care, but affect 60-70% of treatment decisions. In resource-limited settings, the impact of diagnostic tests that can be provided at the immediate point-of-care (a point-of-care test, or POCT) is potentially even greater, because the alternative to a POCT may be no diagnostic support at all".

Bringing the lab to the patient: developing POC diagnostics for resource-limited settings. A report from the American Academy of Microbiology (2011).

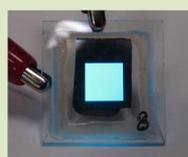


WHO criteria for the ideal diagnostic test ASSURED: Affordable, Sensitive, Specific, User-friendly, Rapid and Robust, Equipment-free (or minimal) and Deliverable to end users.  
[www.who.int](http://www.who.int) and Mabey et al. Diagnostics in the developing world. Nature Reviews in Microbiology (2004)

### Prototype OLED-based portable device for (real-time) PCR

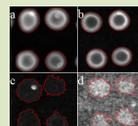
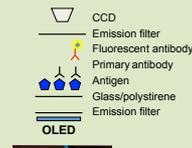


DIA-OLED PROJECT

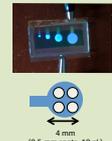


National R&D project financed by Regione Friuli Venezia Giulia (art. 12, DM 593/2000, € 1.788.540) in collaboration with Plast-Optica Spa, Eurotech Spa, Euroclone Spa, Alphagenics Srl and University of Trieste.

### High sensitivity OLED-based bio-chip for protein micro-array fluorescence detection



OLED CHIP PROJECT



International R&D Project financed by FP7 ERA NET (€500,000) in collaboration with OREL (Slovenia), Cosylab (Slovenia), Laplace-CNRS (France), LED Engineering (France).

**REFERENCES**  
 Marcello A et al. A deep-blue OLED-based biochip for protein microarray fluorescence detection. Biosensors & Bioelectronics 46C, 44-47 (2013).