

O. GARCIA¹, A. RADA-TARIFA², E. LAFUENTE-ALVAREZ², J.E. GONZALEZ-MESA¹, T. MANDINA¹, G. MUÑOZ-VELASTEGUI³, Y.ASTUDILLO-SILVA³, N. MONJAGATA⁴, S. AGUILAR-CORONEL⁴, AND A. FALCON DE VARGAS⁵

¹Centro de Protección e Higiene de las Radiaciones. La Habana, Cuba.

²Instituto de Genética, Facultad de Medicina, La Paz, Bolivia;

³Hospital "Carlos Andrade Marín", Quito, Ecuador;

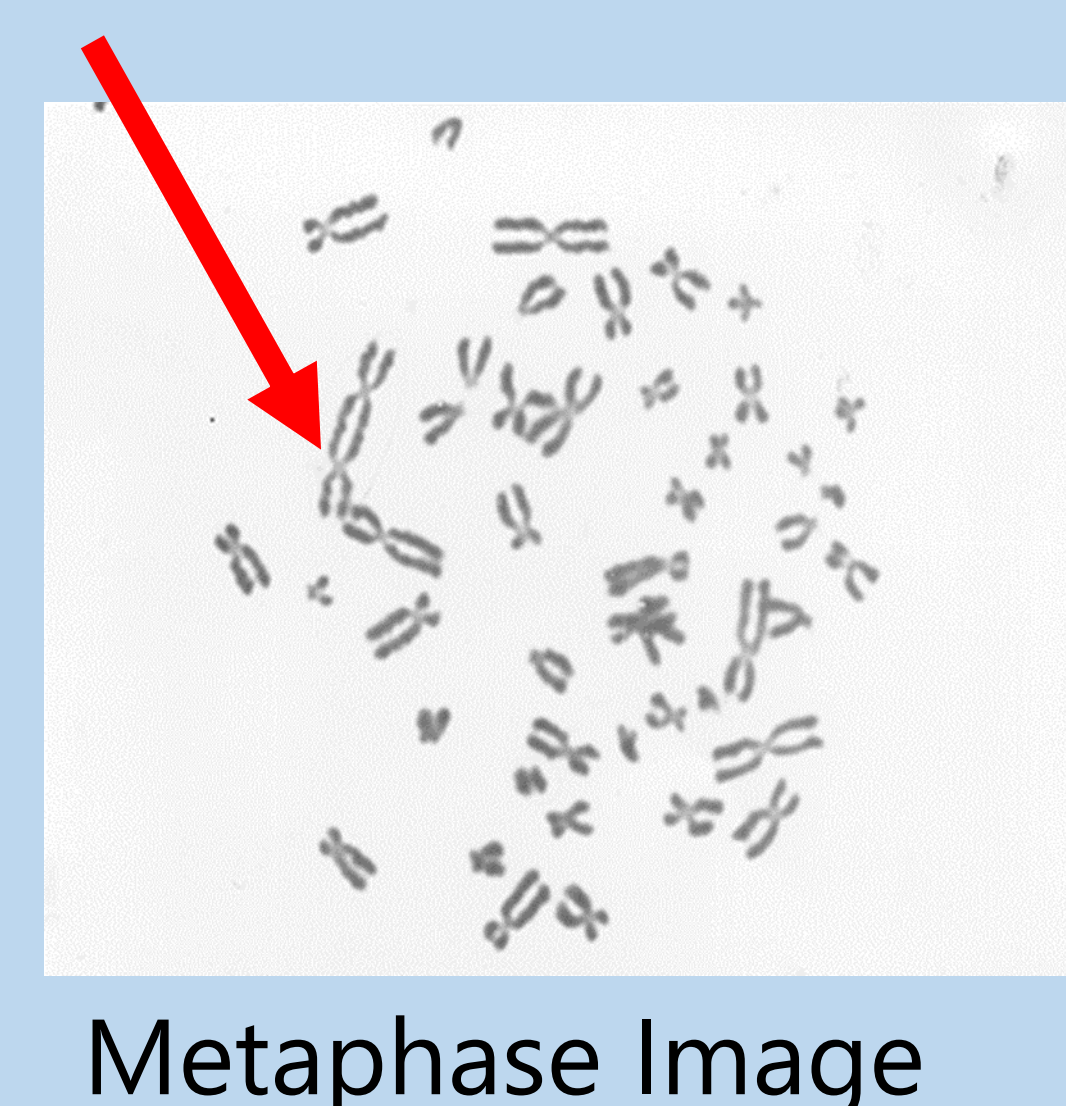
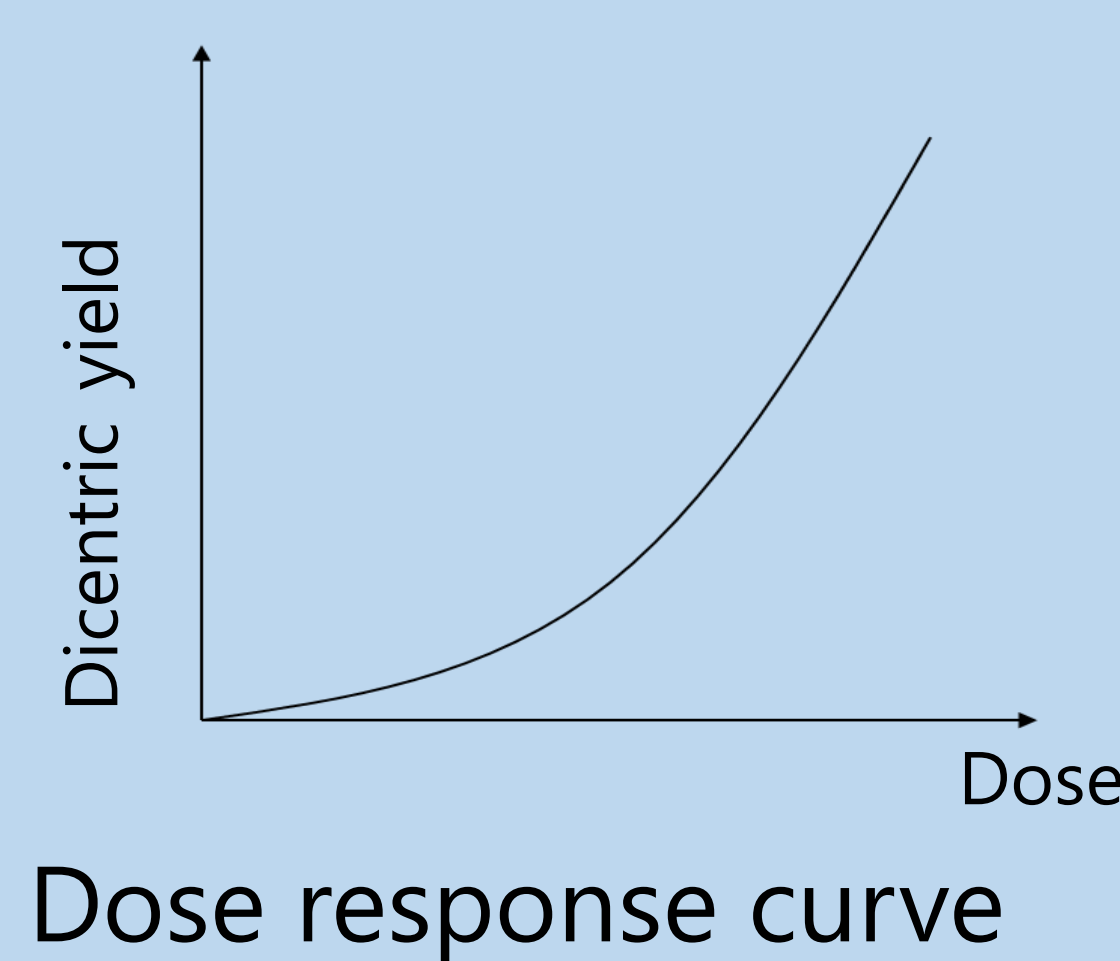
⁴Instituto de Investigaciones en Ciencias de la Salud, Asunción, Paraguay;

⁵Hospital Vargas de Caracas, Caracas, Venezuela)

Gold Standard – Dicentric Assay (DCA)- Dose estimation using dicentric chromosomes

Essential steps of DCA

- 1- *In vitro* irradiation of human lymphocytes
- 2-Culture of the lymphocytes up to the metaphase stage
- 3-Scoring of dicentric chromosomes
- 4-Dose response curve elaboration
- 5-Dose estimation in case of accidents using calibration curve



Needs: Bolivia, Paraguay, Ecuador and Venezuela interested in DCA but limitations for steps 1,3,4 and 5 of the DCA . Two participants per country in the training.

Tool: BioDoseNet image repository (BIR). 25,000 images of metaphase cells captured from slides prepared for DCA after different radiation exposure conditions [1]

Plan: Three workshops and several virtual sessions. **Phases:**1- introduction to dicentric scoring, 2- dose response curve construction 3- dose assessment exercise.(November 2016-October 2018)

Training

Phase	Modules of the BIR used	Activities	Expected Output
1	MULTIBIODOSE "picture book" 46 images	Workshop Lectures Group and individual Scoring Group discussion	1-Correct identification of dicentric chromosomes
	First and Second BioDoseNet trial exercise (20 and 50 images)		
2	Dose Response Calibration Curve and nine blinded samples (23 000 images)	Independent scoring at home Workshop Group discussion	2-Ready to use calibration curve
3			3-Satisfactory estimation of dose

A dose response curve was generated by each lab.[2]

Doses in blind samples satisfactory estimated as in traditional intercomparison exercise [2]

The utility of web based scoring for the DCA community was confirmed

The BIR is excellent training tool for the DCA



La Paz Bolivia 2016

The Training

Implemented by Cuba with IAEA support and BfS (Germany) collaboration

Planned by the Latin American Biological Dosimetry Network (LBDNet)



[1]-Romm H, et al. Radiat Prot Dosimetry. (2016)172(1-3):192-200
[2]-Garcia O, et al. International Journal of Radiation Biology,(2019)95(12) 1659-1667