TRACEABILITY IN EXTERNAL QUALITY ASSESSMENT

HOW WE ENSURE TRACEABILITY IN EQA AND STRESS ITS IMPORTANCE TO USERS

PROGBA (BUENOS AIRES EXTERNAL QUALITY ASSESSMENT SCHEME)
CEMIC UNIVERSITY HOSPITAL
BUENOS AIRES - ARGENTINA

SILVIA QUIROGA (PROGBA)

BUENOS AIRES EXTERNAL QUALITY ASSESSMENT SCHEME

- EQAS services since 1979
- EQA scheme accreditation ISO/IEC 17043:2010, since 2011
- Sample preparation certification, ISO 9001:2008 since 2008
- Home made freeze-dried samples from human origin
- 840 participants from Argentina, Colombia, Ecuador, Perú, Chile, Belgium, Uruguay, Spain, El Salvador, Guatemala, Bolivia
- ProgBA was supported at its beginning by the Special Programme in Human Reproduction from World Health Organisation (WHO – HRP) and the International Atomic Energy Agency (IAEA) through Arcal VIII Project.
- Now supported by CEMIC and participants´fee.

BUENOS AIRES
EXTERNAL QUALITY ASSESSMENT SCHEME

EQAS services

- Courses, seminars and workshops in Latin American countries *(Argentina, Mexico, Brazil, Peru, Paraguay and Uruguay)*
- Training of fellows from peer hospitals

HOME MADE SAMPLES OF HUMAN ORIGIN

BUENOS AIRES EXTERNAL QUALITY ASSESSMENT SCHEME
98 ANALYTES UNDER SCOPE OF ACCREDITATION ISO IEC 17043:2010

- **Immunoassays:** Growth, Thyroid, Reproductive, Steroid Hormones. Tumor Markers

Antithyroid Antibodies – Bone markers - Proteins

- **Clinical chemistry**

Chemistry - Enzymes - Electrolytes

- **Serology**

Blood Transmitted Diseases –TORCH

- **Newborn screening**

Hypothyroidism and Metabolic Diseases

- **Glycated haemoglobin**

HbA1c

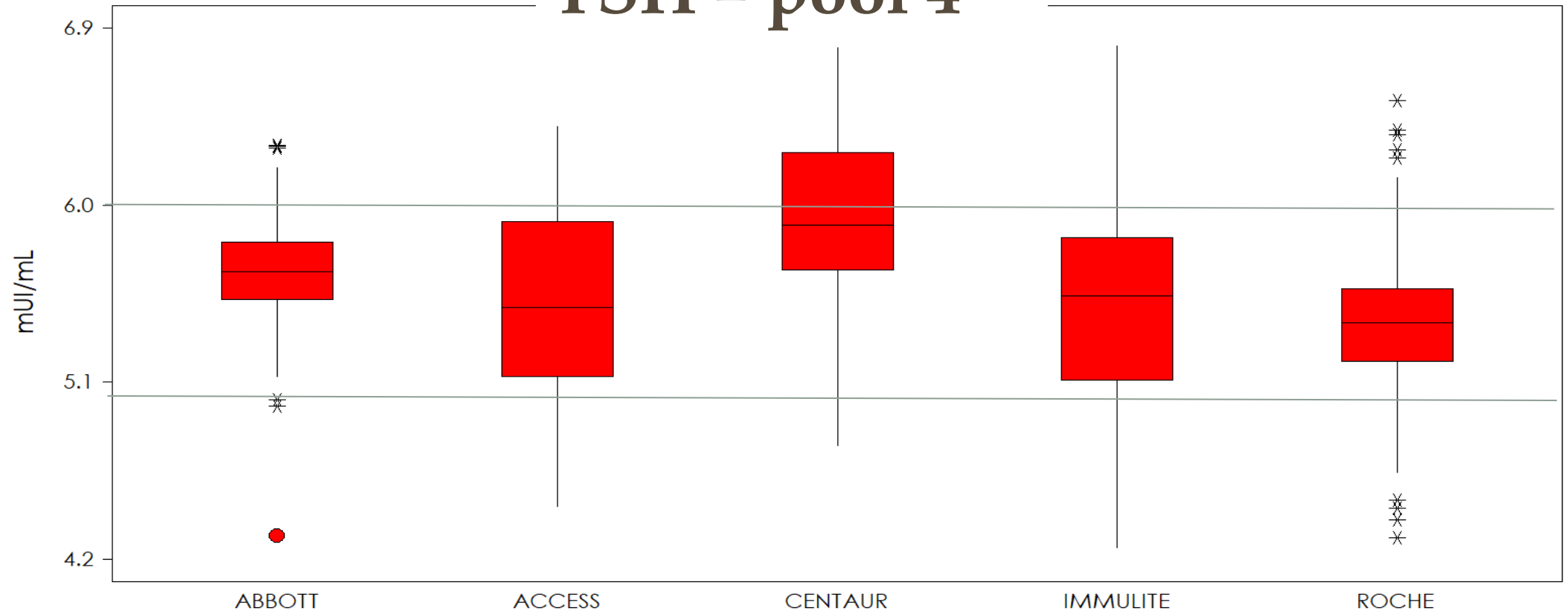
- **Coagulation**

In collaboration with ECAT foundation´s EQAS

HOW WE ENSURE TRACEABILITY

- THE TSH EXAMPLE
- THE PTH EXAMPLE

TSH – pool 4



	N	MEAN	CV %
ABBOTT	113	5,65	5,18
ACCESS	31	5,52	9,77
CENTAUR	59	5,93	7,37
IMMULITE	136	5,50	10,25
ROCHE	325	5,40	5,75
	664		

WHO2nd IRP (80/558)
In Human serum

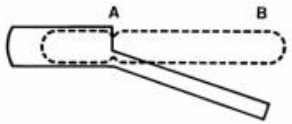
ProgBA round XXXI. Sept. 2017

81 / 565

Medicines & Healthcare products Regulatory Agency

NIBSC
Confidence in Biological Medicines

WHO International Standard
Thyroid Stimulating Hormone,
Classification in accordance with Directive 2000/54/EC, Regulation (EC) No 1272/2008: Not applicable or not classified**Human, for Immunoassay**
NIBSC code: 81/565
Instructions for use
(Version 6.0, Dated 08/04/2015)



Side view of ampoule opening device containing an ampoule positioned ready to open. 'A' is the score mark and 'B' the point of applied pressure.

1. **INTENDED USE**

7. **USE OF MATERIAL**

9. COLLABORATIVE STUDY

The candidate pituitary TSH preparation 81/565, along with other pituitary TSH preparations, was evaluated in an international collaborative study in which nine laboratories in six countries took part. Assays contributed were all immunoassays except for a single in vitro assay based on cAMP release from bovine thyroid membranes. The study was designed to:

- compare by immunoassay the ampouled preparations of TSH with local standards presently in use,
- confirm the calibration of the candidate preparation of TSH for use as a potential International Standard,
- confirm the activity of the candidate preparation relative to the original study preparations,
- assess the stability of the candidate preparation using thermally accelerated degradation samples,
- compare rDNA TSH and pituitary TSH in a variety of immunoassay systems.

9.1 Activity of ampoule contents

The main function of preparation 81/565 is to serve as a primary reference reagent against which secondary standards for immunoassay of TSH are calibrated. On the basis of the immunoassay results from the collaborative study, 81/565 was established by the ECBS of WHO as the 3rd International Standard for TSH, Human, for Immunoassay with a defined content of 11.5 mIU per ampoule. This preparation replaces the 2nd IRP for TSH, 80/558. All attempts have been made to ensure the continuity of the unit as evidenced by the results from the majority of assay systems in the study. However this cannot be guaranteed for all assay systems and recalibration may be necessary.

SO FOR TSH…

- Traceability is possible because:
  - All assays are calibrated against the same IRP (80/558)
  - The measurand is stable in serum, and keeps the main structure of the pituitary hormone, with which all antibodies are assumed to be raised.

PTH

	PTH STANDARDS
ABBOTT	**79/500**
CENTAUR	**79/500** 73 % mean WHO standard recovery in the assay whole range
ROCHE	**95/646**
IMMULITE	**Assay is traceable to an internal standard manufactured using qualified materials and measurement procedures**
LIAISON	**standarized /calibrated with Bachem PTH**

Information provided by manufacturers inserts

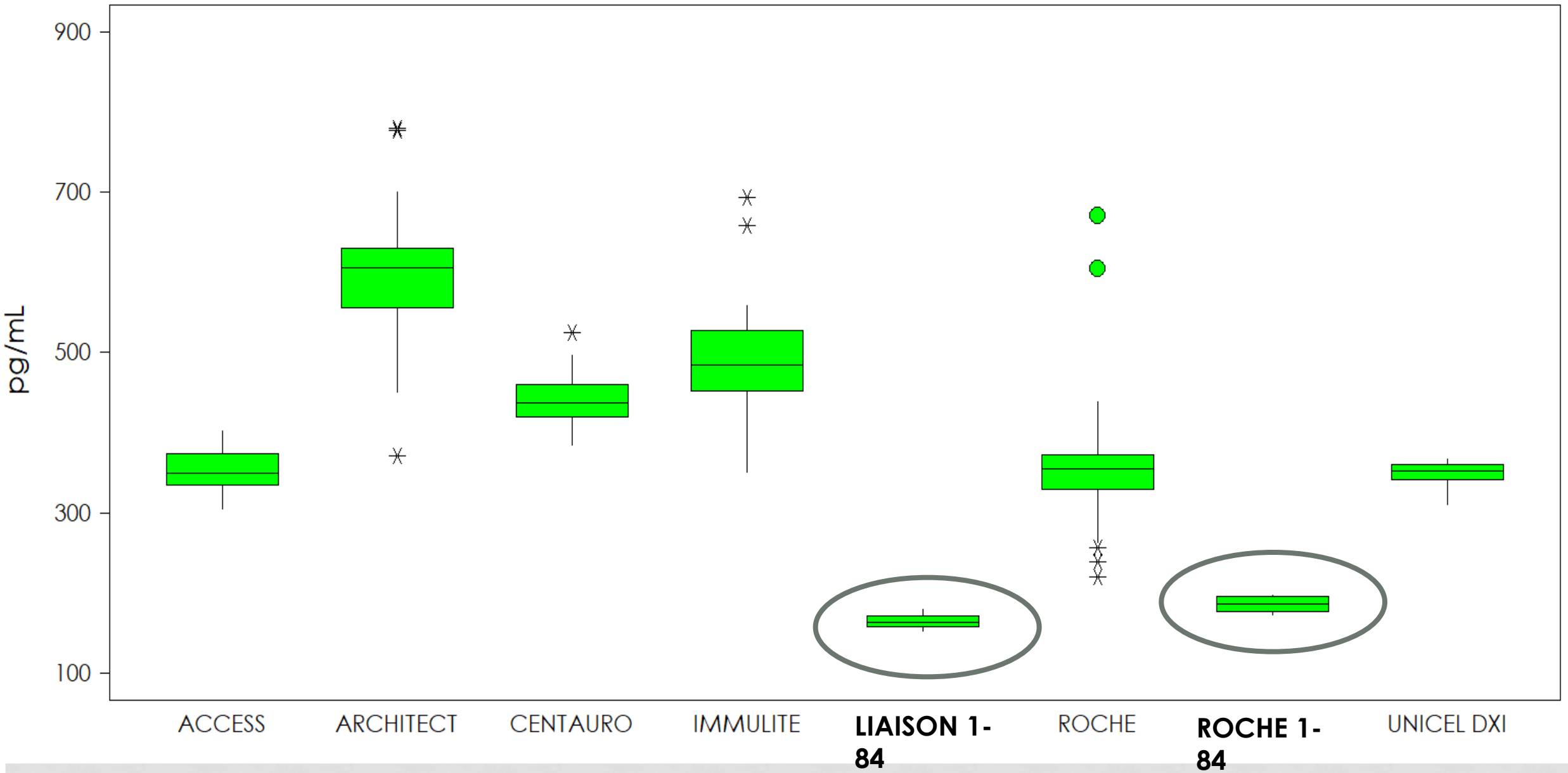
	ASSAY DESIGN INTACT PTH		
	CAPTURE Ab	SIGNAL Ab	hPTH CROSS REACTIVITY %
ABBOTT	No details provided		0 % to 1-34, 39-68, 53-84, 44-68, 39-84 fragments
CENTAUR Intact	Biotynilated goat polyclonal Ab PTH 39–84	Acridinium labelled goat polyclonal Ab PTH 1–34	0,74 % 1–34; 0,005 39–68; 0,024% 39–84; 0,007 44–68; 0,003% 53–84 fragments 0,0004 % Calcitonin
IMMULITE	murine monoclonal Ab PTH 44-84	goat polyclonal Ab PTH 1-34	ND: 1-34; 1-44; 44-68; 53-84; Calcitonin 48.3 % to 7-84 fragment
LIAISON N-TACT	Solid phase Ab PTH 39-84	Isoluminol Ab PTH 1-34	0.1% hPTH: 39-84; 53-84; 39-68; 44-68; 1-34; 13-34 fragments 52%: 7-84; 100%1-84 fragments
ROCHE	Biotinilated Ab PTH 1-37	Rutenium labeled Ab PTH 38-84 Reacts with 26-32 y 37-42 region epitopes	0 % to osteocalcin; 1-37 fragment, protein associated to PTH 1-86, Alcaline phosphatase bone-specífic, β-CrossLaps.

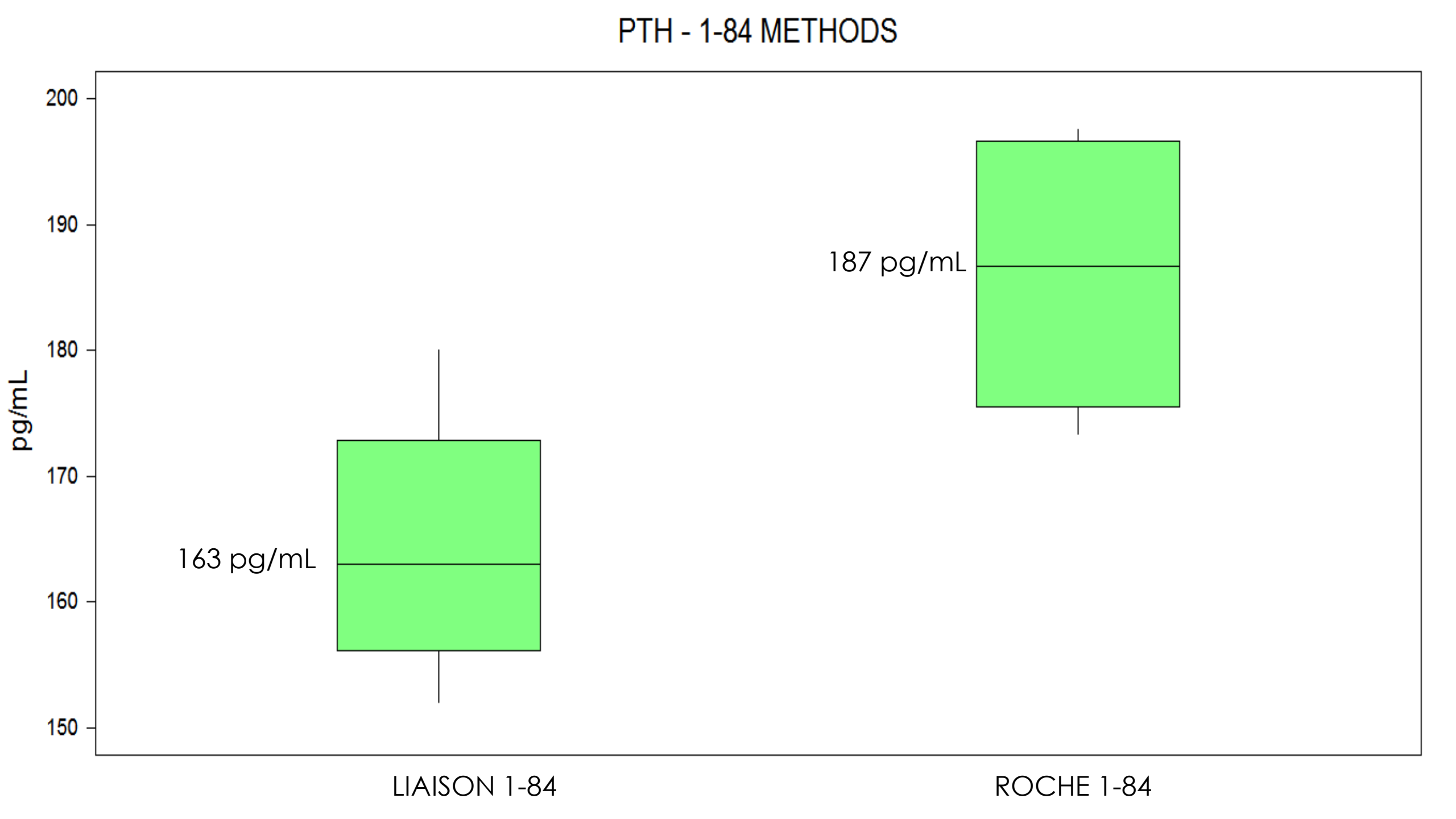
Information provided by manufacturers inserts

	ASSAY DESIGN 1-84 PTH		
	CAPTURE Ab	**SIGNAL Ab**	**hPTH CROSS REACTIVITY %**
LIAISON 1-84	Solid phase purified polyclonal goat antibodies for capture with C-terminal specificity	Isoluminol detection with extreme N-terminal specificity	0% cross reactivity to 7-84 ; 1-34; 13-34; 39-68 ; 44-68; 39-84; 53-84
ROCHE 1-84	Biotinilated Monoclonal Ab Reacts N-terminal 1-37	Rutenium labeled Monoclonal Ab Reacts C-terminal 38-84	≤ 0.1 %: Osteocalcina, β-CrossLaps and Alcaline phosphatase bone-specífic ≤ 0.1 %: PTH 1-34, PTH 7-84 by epitope analysis no cross reactivity with N-terminal PTH related peptide, PTH-Rp in the N-terminal fragment

Information provided by manufacturers inserts

PTH - METHODS DISTRIBUTION




PTH - 1-84 METHODS
200
190
180
170
160
150
pg/mL
163 pg/mL
187 pg/mL
LIAISON 1-84
ROCHE 1-84

SO FOR PTH…

- Traceability is difficult to demonstrate because:
  - Reagents are calibrated against different preparations, not all of them certified standards
  - Antibodies in the immunoassays designs recognize different fragments, active or not
  - EQAS show method differences

STRESS ITS IMPORTANCE TO USERS

TRACEABILITY, PRESENTATIONS IN CONGRESSES AND WORKSHOPS

- **IX Congreso Argentino de Calidad en el Laboratorio Clínico CALILAB. Symposium Traceability in Clinical Chemistry. November 30th, 2016**
  - **The JCTLM: Its implication on patient safety by improving laboratory results. Silvia Quiroga. Marta Torres**

- **XXIII Congreso Latinoamericano de Bioquímica Clínica 2017 (COLABIOCLI). Symposium: Trazabilidad en el laboratorio clínico: qué es y cuál es su importancia. On behalf of JCTLM. Punta del Este, Uruguay September 14 th, 2017**
  - **Biological Standardization in Laboratory Medicine: Influencing Quality of the Patient care. Jean-Claude Forest**
  - **Traceability and Harmonization: a powerful tool for laboratory results trueness. Marta Torres**
  - **Traceability in Clinical Laboratory: what each laboratorist should know. Silvia Quiroga**

Information provided by manufacturers inserts

WORKSHOP FINAL REPORT XXXI

Workshop Final Report XXXI Round EQAS ProgBA participants, Buenos Aires November 24th , 2017

TRACEABILITY, COLLABORATION IN

Clin Chem Lab Med. 2017 Jul 26;55(8):1100-1108. Traceability in laboratory medicine: a global driver for accurate results for patient care. Beastall GH, Brouwer N, Quiroga S, Myers GL; prepared on behalf of the Joint Committee for Traceability in Laboratory Medicine.

Spanish translation , Marta Torres and Silvia Quiroga

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