

Innovation in Health



UK-Spain Bilateral Seminar



09
02
18

Roundtable: *Models of Innovation in Health in Valencia*

Mr. Ángel Alberich-Bayarri, PhD
CEO at QUIBIM
Researcher at GIBI2³⁰, IIS La Fe

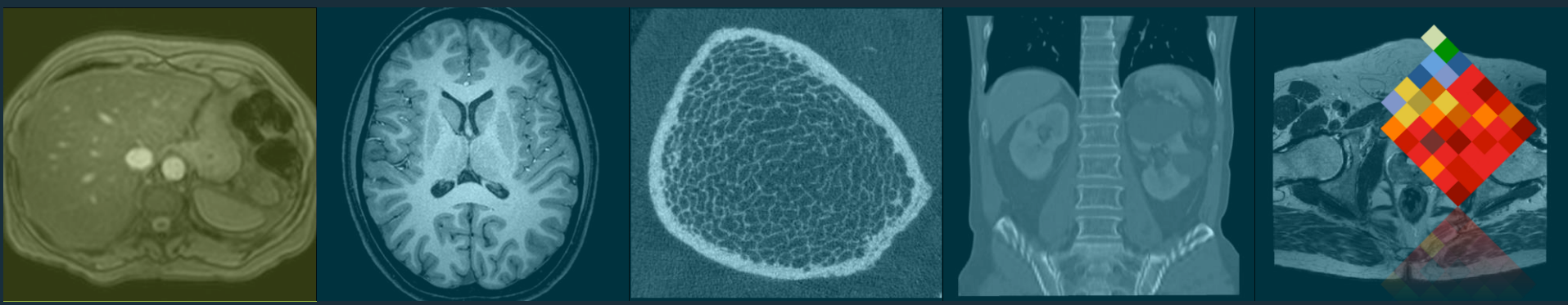
angel@quibim.com



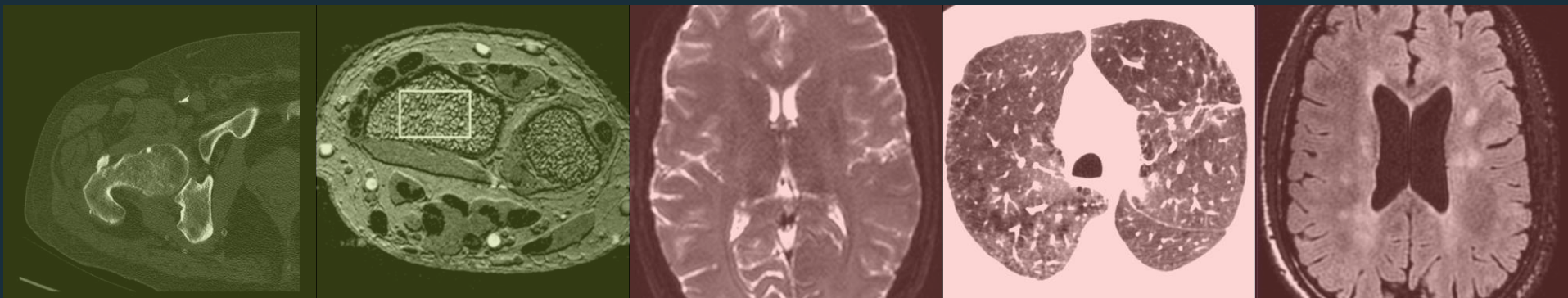
@aalberich



DISEASE vs. THE EYE



THE NEED: MEASUREMENTS





quibim



QUIBIM provides a **software platform** and an **efficient service** of **Imaging Biomarkers quantification** and **structured reporting**.

IMAGING BIOMARKER:

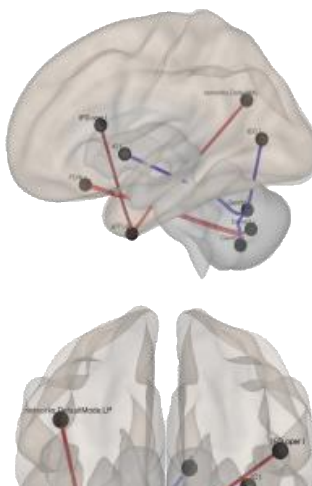
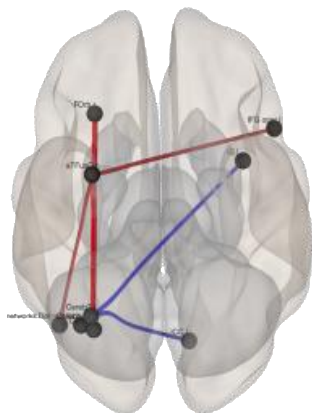
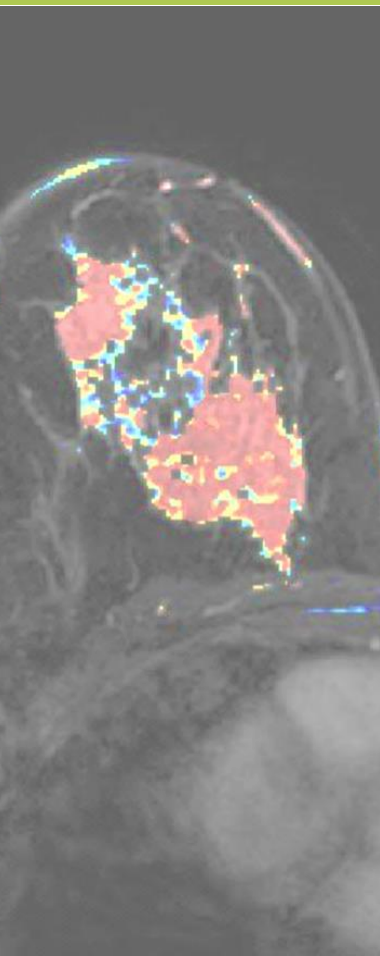
Parameter obtained **computationally** from **medical images** which represents and **quantifies** a tissue property (structural, functional or biological)

to **measure** is to **know**

ONCOLOGY

Solid tumours, hematology

• • • • •
Diffusion (IVIM, DKI),
Pharmacokinetics, Bone
Marrow Infiltration, Multi-
Parametric Analysis



NEURO

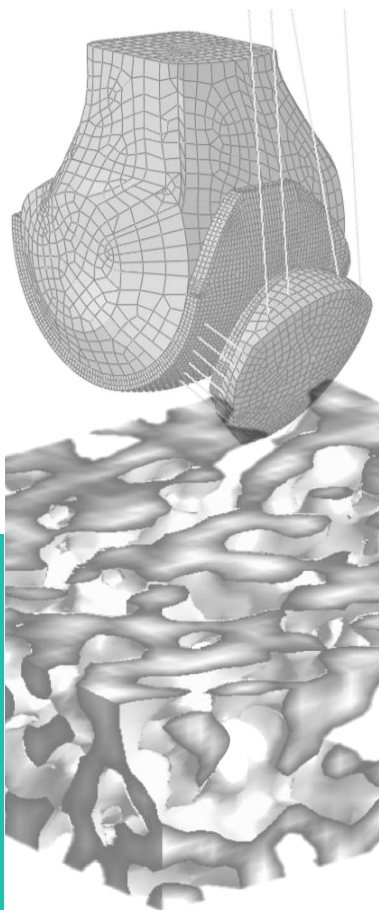
Alzheimer, ALS, MS, Stroke

• • • • •
Volumetry, cortical
thickness, lesions
segmentation, iron
quantification,
tractography

MSK

Osteoarthritis &
Osteoporosis

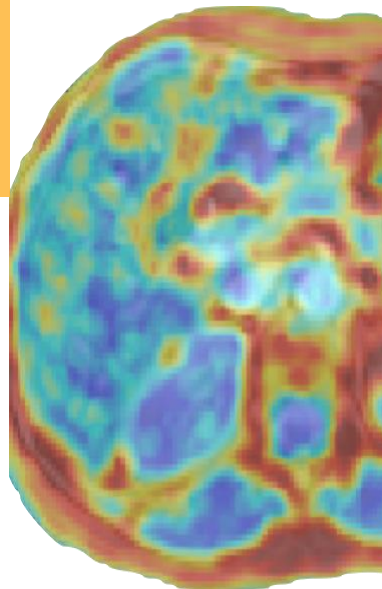
• • • • •
Trabecular morphology,
fractal irregularity,
anisotropy, mechanical
resistance & elasticity



LIVER

Steatohepatitis, fibrosis,
hemochromatosis

• • • • •
Fat fraction
quantification, iron
concentration, Diffusion-
IVIM



LUNG

COPD

• • • • •
Lung & lobes volumes,
emphysema
percentage, bronchia
wall, trachea wall

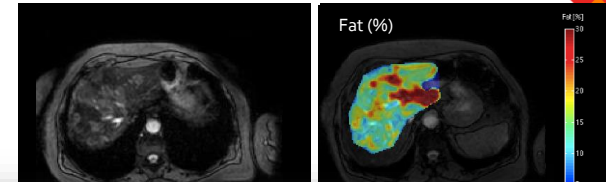


Success story

Virtual Biopsy in
Non-alcoholic
(NASH)

Case #1

Patient: Histologic steatosis grade 1, iron grade 2



Abdominal
Radiology

Springer Science+Business Media New York 2017

Abdom Radiol (2017)
DOI: 10.1007/s00261-017-1048-0

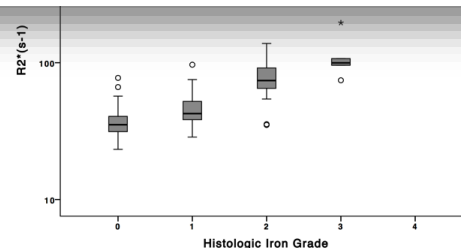
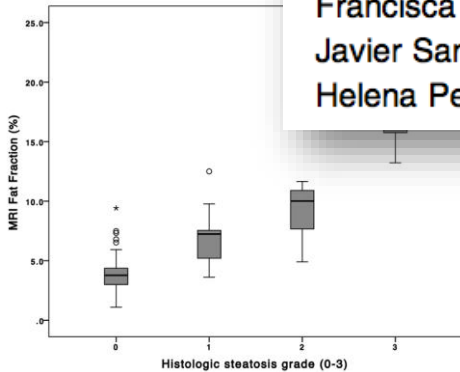
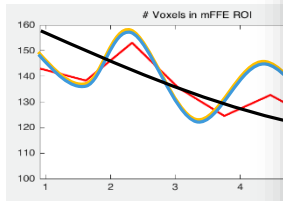


Accurate simultaneous quantification of liver steatosis and iron overload in diffuse liver diseases with MRI

Manuela França¹, Ángel Alberich-Bayarri², Luis Martí-Bonmatí², Pedro Oliveira^{3,4},
Francisca Emanuel Costa⁵, Graça Porto^{6,7,8}, José Ramón Vizcaíno⁵,
Javier Sanchez Gonzalez⁹, Eduardo Ribeiro¹, João Oliveira¹,
Helena Pesseguero Miranda^{4,10}

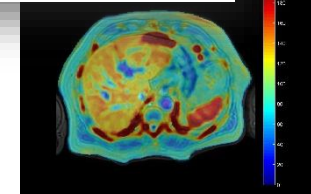
$$|S(TE)| = \sqrt{S_w^2 e^{-R2_w^* TE^2}}$$

Water



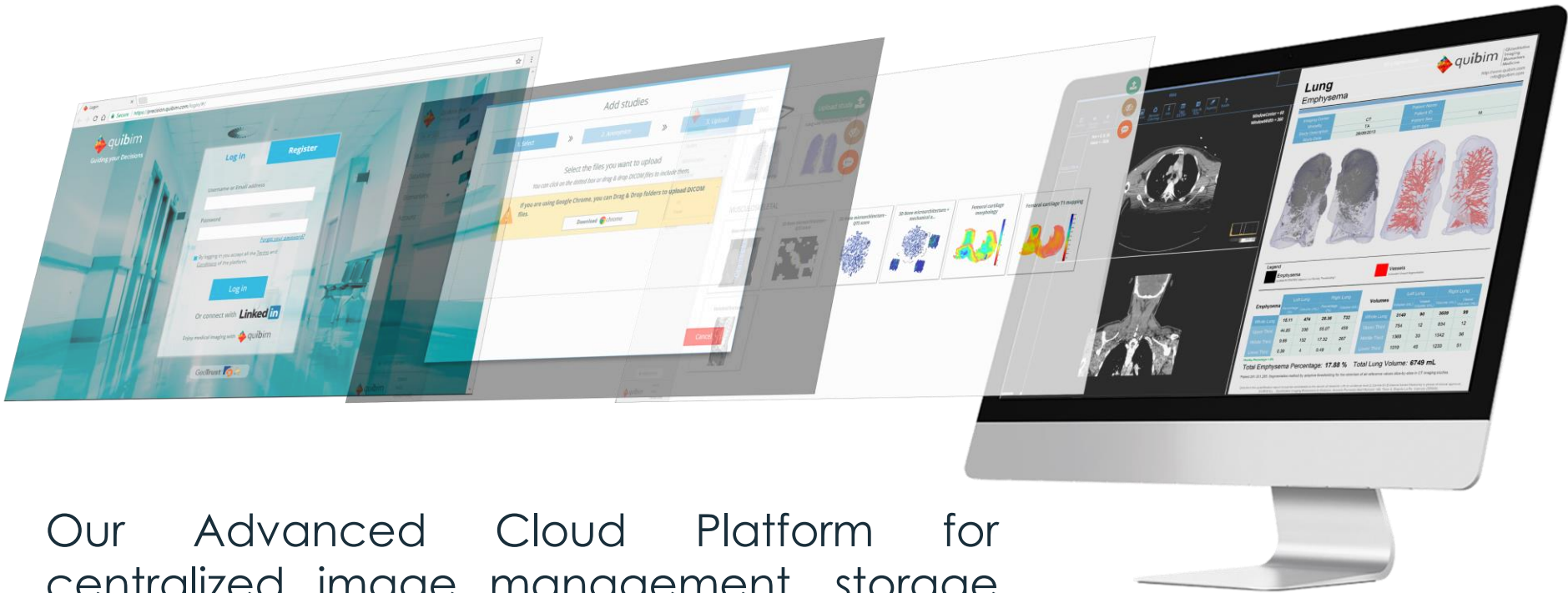
QUANTIFICATION:

PDFF = 11 %
Fe = 40.8 µmol/g



Cases provided by: Dra. Manuela França, Centro Hospitalar do Porto.

Models of Innovation



Our Advanced Cloud Platform for centralized image management, storage and quantitative analysis.

Models of Innovation



QUIBIM Care

**Innovative Medical Doctors and
Researchers**



QUIBIM Trials

**Principal Investigators, CRO's
and Pharma companies**

Models of Innovation



NEURO

quibim

QUantitative Imaging Biomarkers Medicine

LUNG

quibim

QUantitative Imaging Biomarkers Medicine

BONE

quibim

QUantitative Imaging Biomarkers Medicine

LIVER

quibim

QUantitative Imaging Biomarkers Medicine

ONCO

quibim

QUantitative Imaging Biomarkers Medicine

Brain Volumetry

Imaging Center: ERESKANE
Modality: MR
Study Description: RM11
Study Date: 14/07/2015

Brain Parenchyma Fraction (%)	78.46
Absolute Volume (ml)	
Gray Matter	604.53
White Matter	405.27
CSF	310.75
Absolute Volume (ml)	
Right	
Hippocampus	3.30
Frontal	42.18
Amygdala	1.05
Temporal	44.99
Prenatal	5.83
Cerebellum	40.77

Data from this quantification report should be considered as the results of research with an evidence level 2 (Centre for Evidence Based Medicine) in phase of clinical approval. QUIBM S.L. - Quantitative Imaging Biomarkers in Medicine.

Lung Emphysema

Imaging Center: PICTUR
Modality: CT
Study Description: Thorax/JIC_THOR
Study Date: 28/03/2018

Legend
Emphysema (Lambert-Beer) (Lambert Beer Density Threshold)

Emphysema %	Left Lung	Right
Total Lung	0.55	
Upper Third	0.67	
Middle Third	0.44	
Lower Third	0.59	

Total Lung: 1.03 %

*Valid: 201.331.290. Segmentation method by adaptive filter.
Data from this quantification report should be considered as the results of research with an evidence level 2 (Centre for Evidence Based Medicine) in phase of clinical approval. QUIBM S.L. - Quantitative Imaging Biomarkers in Medicine.

Vertebral Column Bone Assessment

Imaging Center: CR
Modality: CT
Study Description: RI COLUMNA
Study Date: 20160210

VERTIBRAE ASSESSMENT	MEAN	STD. DEV.	ENTROPY	COEFF.
15	3331.90	542.13	6.66	
14	3854.00	317.33	6.43	
13	3216.30	303.39	6.55	
12	3255.21	187.82	6.42	
11	3033.25	179.48	6.51	
10	1607.40	263.30	6.37	
09	1277.20	522.52	6.12	
08	1421.40	341.64	6.35	
07	1462.82	232.79	6.23	
06	1441.31	242.31	6.09	
05	1719.27	170.83	6.44	
04	2047.30	221.26	6.43	
03	2388.00	170.28	6.71	
02	2625.17	183.17	6.32	

*Threshold for Fracture detection that is (Non-Pathological Fractures)
Data from this quantification report should be considered as the results of research with an evidence level 2 (Centre for Evidence Based Medicine) in phase of clinical approval. QUIBM S.L. - Quantitative Imaging Biomarkers in Medicine.

Body Liver Fat & Iron

Imaging Center: MR
Modality: MR
Study Description: For & R2* Iron Maps
Study Date: 20160210

ROI Analysis

Mean	
Std	
Median	
p25	
p75	

Mean	Hz
Std	mg/g dry liver
Median	Hz
p25	mg/g dry liver
p75	mg/g dry liver

Data from this quantification report should be considered as the results of research with an evidence level 2 (Centre for Evidence Based Medicine) in phase of clinical approval. QUIBM S.L. - Quantitative Imaging Biomarkers in Medicine.

Body Diffusion Weighted Imaging IVIM

Imaging Center: MR
Modality: MR
Study Description: BODY/BRZUCH
Study Date: 2015/04/20

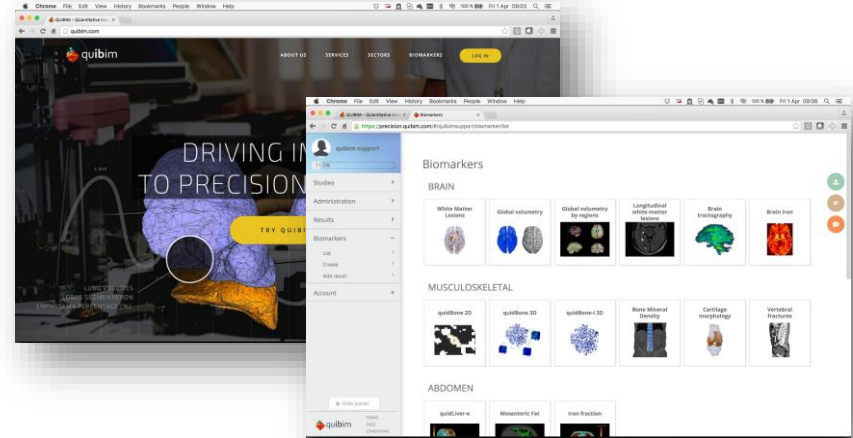
Patient Name: JHtoBD8/
Patient ID: M
Patient Sex: M
Birthdate: JHtoBD8/

ADC [mm²/s]	Mean ± Std	Median	p25	p75
ADC [mm²/s]	2.43e-03 ± 7.83e-04	2.99e-03	1.95e-03	3.00e-03
D [µm²]	1.29e-03 ± 5.88e-04	1.31e-03	9.70e-04	1.66e-03
D2 [µm²]	4.78e-02 ± 4.00e-02	3.33e-02	1.07e-02	9.99e-02
f (%)	0.33 ± 0.21	0.31	0.18	0.50

Data from this quantification report should be considered as the results of research with an evidence level 2 (Centre for Evidence Based Medicine) in phase of clinical approval. QUIBM S.L. - Quantitative Imaging Biomarkers in Medicine. Audea Fernando Alon Martínez 100, Torre A, Depozi La Pa, Valencia (SPAIN).

Quantitative Structured Reports:
From images to data

Models of Innovation



Local

Cloud

Basic license + modules

Pay per analysis

Achievements



2012 - 2013

- › QUIBIM is founded by Angel Alberich-Bayarri and Luis Marfí-Bonmati, K.O.L.'s in image processing and radiology
- › First customers



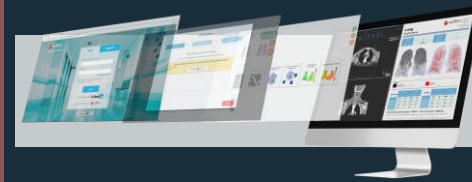
2014

- › First international customer (US)
- › Development of new algorithms
- › Patent application (lung emphysema)
- › Development of the business model
- › Spin-off company of IIS La Fe



2015

- › LANZADERA acceleration program by Juan Roig
- › Development of the new QUIBIM platforms (MINION & MASTER)
- › Customers retention
- › Marketing & sales strategy



2016

- › QUIBIM Precision® platform v1.0 released
- › Booth at ECR
- › New customers
- › Seed round



2017

- › Growth and consolidation
- › 1.25M€ SME Instrument
- › ECR & RSNA booth
- › Filed v2.3 CE mark certification
- › Filed v2.3 FDA 510k certification



2018

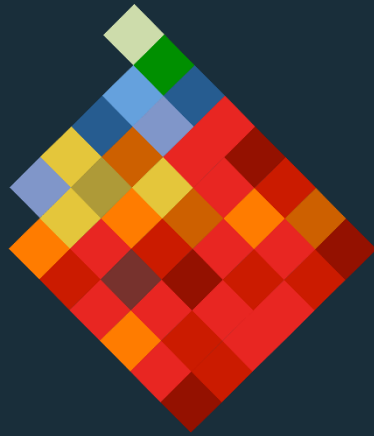
- › Partnerships with big players
- › ECR & RSNA booth (Machine Learning SC)
- › Medical Device certified
- › Series A for product improvement and sales

Future Challenges



ANALYTICS





be
qUantitative
ibim

Ángel Alberich-Bayarri

CEO at QUIBIM

Researcher at GIBI2³⁰, IIS La Fe

angel@quibim.com



@aalberich