

# Israel Reyes Molina

BSc. in Nuclear Physics

## Personal Details

-  August 14th, 1988
-  59 D'Strampes Street, Santos Suarez , 10 de Octubre , Havana, Cuba
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## Summary

Nuclear physicist with 7+ years of experience in MRI research ,data acquisition, and data analysis. Driven by challenges and possessing a strong foundation in mathematics and physics, I'm expanding my expertise into data science and programming. Passionate about continuous learning and contributing to innovative solutions.

## Skills

-  MRI Quality Control
-  Neuroimaging Analysis
-  Quantitative MRI
-  Machine Learning and Deep Learning
-  Survival Analysis
-  Data Wrangling
-  Data Visualization

## Software

-  Python
-  R
-  SQL
-  LaTex
-  Git/GitHub
-  Visual Studio Code
-  Markdown

## Education

- 2018–2019 **Postgraduate Degree in Neuroscience**, Cuban Centre for Neuroscience, Havana
- 2007–2012 **Bachelor's Degree in Nuclear Physics**, Applied Science and technology Institute, Faculty of Nuclear Physics, Havana  
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## Work Experience

- 2025–2025 **Visiting Researcher, VUB Brussels University**  
✓ Received specialized training in survival analysis methods and time-to-event data handling
- 2021–Present **2nd Level Neurotechnologist, Cuban Centre for Neurosciences**  
✓ Design MRI protocols for several clinical trials  
✓ Implement MR software solutions for MRI biomarkers calculation  
✓ Participate in FONCI Project: Standardization of protocols for the study of aging related diseases with high field MRI
- 2014–2021 **Science and Technology Specialist, Cuban Centre for Neurosciences**  
✓ Developed KRelax software for MRI relaxometry of contrast agents  
✓ Trained CECMED staff in quality assurance procedures in MRI scanners  
✓ Participated in FONCI Project: Modification of clinical MRI and design of devices for small animals study  
✓ Developed a quantitative methodology for quality assurance in MRI scanners  
✓ Coauthored the Quality Control Manual for high field MRI scanners  
✓ Carried out preclinical studies of novel contrast agents in transgenic mice  
✓ Characterized novel MRI contrast agents candidates through MRI relaxometry
- 2012–2014 **Scientific Reserve, Cuban Centre for Neurosciences**  
✓ Coordinated commissioning tests of Siemens MAGNETOM Allegra 3T MRI scanner of Cuban Centre for Neurosciences
- 2019–2019 **Visiting Researcher, Montreal Neurological Institute-Hospital**  
✓ Supervised proof of concept of MRI contrast agent based on iron oxide nanoparticles for early detection of Alzheimer's disease.

## Postgraduate Courses

- 2025 **Advanced AI and Deep Learning Course for Magnetic Resonance Image Processing, Cuban Neuroscience Center**
- 2023 **Writing in the Sciences, Coursera (Stanford University)**
- 2023 **Introducción a Data Science: Programación Estadística con R, Coursera (Universidad Nacional Autónoma de México)**
- 2023 **MRI Fundamentals, Coursera (Korea Advanced Institute of Science and Technology)**
- 2023 **English for Career Development, Coursera (University of Pennsylvania)**
- 2023 **Machine Learning, Coursera (Stanford University)**
- 2023 **Introduction to Statistics, Coursera (Stanford University)**
- 2022 **Topics on Magnetic Resonance Imaging Hardware, Cuban Centre for Neurosciences**
- 2020 **Production Economics, CUJAE**
- 2020 **Production Management, CUJAE**
- 2019 **Four Corners 4 English Language Advanced Course, Oriente University- Cuban Centre for Neurosciences**
- 2017 **Syngo MRE11 Training Course, CIMEQ Hospital**

- 2016 **Nuclear Magnetic Resonance Methods**, *University of Havana*  
2016 **Hands on course on fMRI analysis using SPM**, *IPO Congress*  
2016 **Medical Imaging Technology**, *CUJAE*  
2015 **Nuclear techniques applied to the study of cultural assets**, *Higher Institute of Applied Technologies and Sciences (InsTec)*  
2014 **Advanced Statistic**, *Cuban Neuroscience Center*  
2014 **Syngo VA35A Training Course**, *SIEMENS-CNEURO*  
2013 **Digital Signal Processing**, *Cuban Neuroscience Center*  
2013 **Basic Statistic**, *Cuban Neuroscience Center*  
2013 **Introduction to Neuroscience**, *Cuban Neuroscience Center*  
2013 **Introduction to MATLAB programming**, *Cuban Neuroscience Center*

## **Scientific Events**

- 2025 **First National Hackathon: Revolucionando por la ciencia**, *Havana, Cuba*  
2023 **Quantitative Magnetic Resonance Imaging Conference Validation of quantitative MRI techniques in neurodegeneration**, *Online*  
2023 **Russia and Cuba together for the benefit of Health**, *Moscow, Russia*  
2023 **Mecanismos de neuro-degeneracion en la Enfermedad de Alzheimer**, *Havana, Cuba*  
2022 **Saint-Petersburg State University 19-th International School-Conference Spinus Magnetic resonance and its applications**, *Online*  
2022 **Neurotechnology applications on aging-related disorders**, *Havana, Cuba*  
2022 **Quantitative Magnetic Resonance Imaging Conference Applications in Neurodegeneration**, *Online*  
2021 **CNEURO Annual Scientific Forum**, *Havana, Cuba*  
2020 **23rd Chemistry Conference**, *Online*  
2019 **First Pulse Sequence Standardization Workshop**, *Havana, Cuba*  
2019 **VI BioCubaFarma Technological Innovation Forum**, *Havana, Cuba*  
2019 **CNEURO Annual Scientific Forum**, *Havana, Cuba*  
2018 **V BioCubaFarma Innovation Forum**, *Havana, Cuba*  
2018 **CNEURO Annual Scientific Seminar**, *Havana, Cuba*  
2018 **Neurotechnology applications on aging-related disorders**, *Havana, Cuba*  
2017 **IV BioCubaFarma Science and Technology Forum**, *Havana, Cuba*  
2017 **CNEURO Annual Scientific Seminar**, *Havana, Cuba*  
2017 **Latin-American Symposium on Nuclear Physics and Applications & Workshops on Nuclear Physics and Nuclear Related Techniques (LASNPA & WONP-NURT)**, *Havana, Cuba*  
2016 **18th IOP World Congress**, *Havana, Cuba*  
2016 **CNEURO Annual Scientific Seminar**, *Havana, Cuba*

## **Publications and Patents**

- ✓ Reyes Molina, I., Hernandez Rodriguez, A.J., Cabal Mirabal, C.A. et al. ***Semi-automated methodology for determination of contrast agent relaxivity using MRI.*** Res. Biomed. Eng. (2023). <https://doi.org/10.1007/s42600-023-00309-4>
- ✓ Guerrero-Porras, Gabriel Rafael, Alicia M. Diaz-Garcia, Evelio R. Gonzalez-Dalmau, Armando J. Hernandez-Rodriguez, Israel Reyes-Molina, Alexis Musacchio-Lasa, Luis A. Espinosa-Rodriguez, Chryslaine Rodriguez-Tanty, and Marquiza Sablon-Carrazana ***Gadolinium (III) Oxide Nanoparticles Conjugated with Amylovis with Applications in the Early Detection of Alzheimer's Disease. Part II.*** DOI link <https://dx.doi.org/10.2139/ssrn.4063647>
- ✓ Alicia Marcelina Diaz Garcia, Armando A. Paneque Quevedo, Claudia Iriarte Mesa, Evelio Gonzalez Dalmau, Israel Reyes Molina, Armando J. Hernandez Rodriguez, Marquiza Sablon Carrazana, Chryslaine Rodriguez Tanty, Suchitil Marrero Rivera, Samila Leon Chaviano, Alberto Bencomo Martinez, Roberto Menendez Soto del Valle ***Metal oxide nanoparticles conjugated with naphtalene derivatives as contrast agents for the detection of beta-amyloid plaque by magnetic resonance images.*** Patent: WO 2020/094161 A1
- ✓ Dominique Piche, Isabella Tavernaro, Jana Fledderman, Juan G. Lozano, Aakash Varambhia, Mahon L. Maguire, Markus Koch, Tomofumi Ukai, Armando Jose Hernandez Rodriguez, Lewis Jones, Frank Dillon, Israel Reyes Molina, Evelio R. Gonzalez Dalmau, Toru Maekawa, Peter Nellist, Annette Kraegeloh, and Nicole Grobert: ***Targeted MRI contrast enhancement with extraordinarily small CoFe<sub>2</sub>O<sub>4</sub> nanoparticles.*** ACS Applied Materials & Interfaces, 11(7), 6724-6740. DOI link <https://doi.org/10.1021/acsmami.8b17162>

## Awards

- 2019 **Outstanding Award**, *Methodology for the magnetic characterization of MRI contrast agents and the calculation of nanoparticle concentrations*, VI Branch Forum of Technological Innovation of BioCubaFarma, Cuba
- 2018 **Relevant Award**, *Generalization of methodology and quantitative quality control procedures for Magnetic Resonance Imaging equipment*, V BioCubaFarma Innovation Forum, Cuba

## Language Proficiency

**Spanish** Native

**English** Proficient

**French** Basic