Part A. PERSONAL INFORMATION

CV date	29/11/2022

First and Family name	Juan Mora Macías

Researcher codes	Open Researcher and Contributor ID (ORCID**)	0000-0002-7997-9789
	SCOPUS Author ID (*)	56638610700
	WoS Researcher ID (*)	AAA-5559-2020

(*) Optional
(**) Mandatory

A.1. Current position

Name of University/Institution	University of Huelva
Department	Departamento de Ingeniería Minera, Mecánica, Energética y de la Construcción / Escuela Técnica Superior de Ingeniería

Current position	Profesor Titular de Universidad	From	03/12/2021
Key words	Biomechanics, mechanobiology, bone, finite element		

A.2. Education

PhD, Licensed, Graduate	University	Year
Bachelor in Mechanical Engineering	University of Seville	2011
Master in Mechanical Engineering Design	University of Seville	2012
PhD Mechanical Engineering	University of Seville	2016

A.3. General indicators of quality of scientific production *(see instructions)*

- Total citations: 205 (Google Scholar)
- Mean of citations in the last 5 years: cites/year: 35 (Google Scholar)
- h-Index: 8 (Google Scholar)
- Publications (JCR journal): Total: 18, 5 Q1, 8 Q2, 3 Q3 y 2 Q4
- Participation in 9 research projects (3 national and 6 regional)

Part B. CV SUMMARY *(max. 3500 characters, including spaces)*

I have studied Mechanical Engineering at the University of Seville obtaining 7.8/10 average score and the best final project award of the Official Association of Industrial Engineers (COIIAOC). Afterwards, at the same time, I started a Master in Mechanical Engineering Design and working at the Mechanical Engineering Department of the University of Seville as an engineer for the technical support of research projects. In the same department I started my PhD in 2012 with a FPU grant, under the supervision of Dr. Jaime Domínguez Abascal and Dr. Esther Reina Romo. I finished my PhD in 2016, the work was recognized with the extraordinary PhD award, an accessit to the best thesis award of the Mechanical Engineering Spanish Association in 2018 and the Manuel Gayan Buiza award in 2017. During the pre-doctoral and post-doctoral stages, I carried out research stays at different international centers: Northeastern University (US), University of Liege (Belgium) and Lisbon Instituto superior Tecnico (Portugal).

From the beginning of my PhD, I have worked mainly on the mechanical characterization of bone regeneration processes, in the field of biomechanics and mechanobiology, including experimental (*in vivo* and *ex vivo*) and numerical analysis. The work developed has been highly

interdisciplinary, involving different teams of engineers, veterinarians and doctors which have collaborated in 9 national and regional projects. The results generated are collected in 17 JCR publications and a patent. These outcomes may be classified in the following categories: development and analysis of medical devices and implants; experimental (*ex vivo* and *in vivo*) mechanical characterization of the distraction callus; and prediction of bone mechanical properties using numerical methods.

I am an Associate Professor at the University of Huelva since 2021. In the last years the lines of research started during the PhD have been consolidated. At the same time, new lines are being explored such as the application of multiscale and data driven techniques to experimental-computational mechanical characterization of bone tissue, with results published in the last years. Research continuity is guaranteed with the funding obtained in recent calls for national and regional projects. In two of the recently funded projects I am the principal investigator.

Part C. RELEVANT MERITS *(sorted by typology)*

C.1. Publications *(including books, 10 most relevant publications)*

1. Blázquez-Carmona P, Mora-Macías J, Morgaz J, Fernández-Sarmiento JA, Domínguez J, Reina-Romo E (2020). Mechanobiology of Bone Consolidation During Distraction Osteogenesis: Bone Lengthening Vs. Bone Transport. Ann Biomed Eng. Vol 27. doi: 10.1007/s10439-020-02665-z.
2. Blázquez-Carmona P, Mora-Macías J, Sanz-Herrera JA, Morgaz J, Navarrete-Calvo R, Domínguez J, Reina-Romo E (2020). Mechanical Influence of Surrounding Soft Tissue on Bone Regeneration Processes: A Bone Lengthening Study. Ann Biomed Eng. Vol 17. doi: 10.1007/s10439-020-02592-z.
3. J Mora-Macías, J Ayensa-Jiménez, E Reina-Romo, MH Doweidar, J Domínguez, M Doblaré, JA Sanz-Herrera (2020). A Multiscale Data-Driven Approach for Bone Tissue Biomechanics. Comput Methods Appl Mech Eng. Vol 368, pp 113136
4. Sanz-Herrera JA, Mora-Macías J, Ayensa-Jiménez J, Reina-Romo E, Doweidar MH, Domínguez J, Doblaré M (2020). Data-Driven Computational Simulation in Bone Mechanics. Ann Biomed. Vol 17. doi: 10.1007/s10439-020-02550-9
5. Mora-Macías J, García-Florencio P, Pajares A, Miranda P, Domínguez J, Reina-Romo E (2020). Elastic Modulus of Woven Bone: Correlation with Evolution of Porosity and X-ray Greyscale. Ann Biomed Eng. Vol 9. doi: 10.1007/s10439-020-02529-6.
6. Mora-Macías J, Pajares A, Miranda P, Domínguez J, Reina-Romo E (2017). Mechanical Characterization via Nanoindentation of the Woven Bone Developed during Bone Transport. J Mech Behav Biomed Mater. Vol 74, pp. 236-244.
7. Mora-Macías J, Reina-Romo E, Domínguez J (2016). Model of the Distraction Callus Tissue Behavior during Bone Transport based in Experiments In Vivo. J Mech Behav Biomed Mater. Vol 61, pp 419-430.
8. López-Pliego EM, Giráldez-Sánchez MÁ, Mora-Macías J, Reina-Romo E, Domínguez J (2016). Histological Evolution of the Regenerate during Bone Transport: an Experimental Study in Sheep. Injury. Vol 47 Suppl 3, pp S7-S14.
9. Mora-Macías J, Reina-Romo E, López-Pliego M, Giráldez-Sánchez MA, Domínguez J (2015). In Vivo Mechanical Characterization of the Distraction Callus During Bone Consolidation. Ann Biomed Eng. Vol 43, pp 2663-74.
10. J. Mora-Macías, E. Reina-Romo, J. Morgaz, J. Domínguez (2015). In Vivo Gait Analysis during Bone Transport. Ann Biomed Eng. Vol 43, pp 2090-100.

C.2. Research projects

1. “El papel de la mecánica en la osteoporosis: un modelo de distracción osteogénica en ovejas ovariectomizadas” (PID2020-113790RB-I00). Funded by Ministerio de Ciencia e Innovación, 196.867€. From 01/09/2021 to 31/08/2024. **PI: Juan Mora Macías** / Esther Reina Romo.
2. “Estimulación electro-dinámica en huesos largos y su potencial en regeneración ósea” (UHU-202058). Funded by Junta de Andalucía, 39470€. From 01/01/2022 to 30/06/2023. **PI: Juan Mora Macías**.
3. “Modelización computacional del microentorno celular con aplicación a la evolución de tumores” (P20_01195). Funded by Junta de Andalucía, 76.000€. From 05/10/2021 to 31/12/2022. PI: José Antonio Sanz Herrera.
4. “Cinética y efectos de la biodegradación de materiales estructurales y mecánicos en medios contaminados por drenajes ácidos de mina”(6262020). Funded by Universidad de Huelva. From 25/07/2020 - 24/07/2021. PI: Aguasanta Miguel Sarmiento
5. “Ingeniería de Tejidos Para la Corrección de Grandes Defectos Óseos: Modelado *In Silico* e *In Vivo”* (US-1261691). Funded by Junta de Andalucía, 87.200€ From 01/01/2020 to 31/12/2021. PI: Esther Reina Romo/ José Antonio Sanz Herrera.
6. “Reparación de Grandes Defectos Óseos: Transporte Óseo Versus Andamiajes Bioimprimidos Paciente Personalizados” (DPI2017-82501-P). Funded by Ministerio de Economía y Competitividad, 123.420 €. From 01/01/2018 to 31/12/2020. PI: Esther Reina Romo.
7. “Modelos de Comportamiento del Tejido Óseo Inmaduro en el Callo de Distracción Ósea” (DPI2014-58233-P). Funded by Ministerio de Economía y competitividad, 169400 €. From: 01/01/2015 to 31/12/2017. PI: Esther Reina Romo/ Javier Martínez Reina.
8. “Diseño y Fabricación de Implantes Personalizados Biocompatibles, FABIMPER” (PI-0537-2013). Funded by Junta de Andalucía, 52464€. From 2013 to 2016. PI: Javier Márquez Rivas.
9. “Análisis Teórico y Experimental del Proceso de Consolidación y Remodelación Ósea en Fracturas de Huesos Largos” (P09-TEP-5195). Funded by Consejería de Innovación, Ciencia y empresa, Junta de Andalucía, 215938.68 €.. From 03/02/2010 to 03/02/2013. PI: Jaime Domínguez Abascal.

C.3. Patents

Pardo Pardo, C., Ordoñez Fernández A, Valverde Pérez I, Pardo Prieto SI, Mora Macías J, Reina-Romo E, Domínguez J. Dispositivo de control de flujo de sangre en un vaso sanguíneo. Universidad de Sevilla / Servicio Andaluz de Salud. Codes: P201630066 (20/01/2016), PCT/ES2017/070031 (19/01/2017)

C.4 Research stays abroad

- Mechanical Engineering Department, Instituto Superior Técnico, University of Lisbon (Portugal), from 06/07/2017 to 06/08/2017.
- Biomechanics Research Unit, University of Liege (Belgium), from 15/09/2015 to 30/09/2015
- Department of Mechanical and Industrial Engineering, Northeastern University (Boston, US), from 19/06/2014 to 19/09/2014

C.5. Congress contributions

Author or coauthor of works presented in congress: 6 in international congress and 17 in national congress. Congresses and meetings in which the works were presented:

- “Congress of the European Society of Biomechanics”
- “World Congress of Biomechanics”

- "Reunión del Capítulo Español de la Sociedad Europea de Biomecánica"
- "Congreso Anual de la Sociedad Española de Ingeniería Biomédica"
- "Congreso del Grupo Español de Fractura"
- "Congreso Nacional de la Sociedad Española de Cardiología Pediátrica y Cardiopatías Congénitas"

C.6. Evaluation and committees

Anonymous reviewer of international journals JCR (6 most relevant included): Biomechanics and Modeling in Mechanobiology, International Journal for Numerical Methods in Biomedical Engineering, Medical Engineering & Physics, Sensors, Plos One, Applied Sciences.

C.7. Prizes and distinctions

The following recognitions were received:

- Accessit to the best thesis award of the Mechanical Engineering Spanish Association, 2018
- Manuel Gayan Buiza research award, Sevilla, 2017
- Extraordinary PhD award, Universidad de Sevilla, 2016
- Member of the team of two business projects based on research technology ("Mecanobiomodelos 3D" and "Skin 3D") awarded by the University of Seville in 2015 and 2016 at the "X and XI Consurso de Ideas de Negocio de la Universidad de Sevilla"
- Best poster award in the "XI Congreso Nacional de la Sociedad Española de Cardiología Pediátrica y Cardiopatías Congénitas", Valladolid, 2016
- One of the best works awards in the "IV Reunión del Capítulo Español de la Sociedad Europea de Biomecánica", Madrid, 2015
- One of the best works awards in the "III Reunión del Capítulo Español de la Sociedad Europea de Biomecánica", Barcelona, 2013
- One of the best works awards in the "II Reunión del Capítulo Español de la Sociedad Europea de Biomecánica", Sevilla, 2012

C.8. Specialized research training

- Course: "Bone Cells and Tissue Mechanics". International Centre for Mechanical Sciences, Udine, Italia, 2013
- Course "Biomechanics Summer Course, Basic Biomechanics and Biomechanical Methods for Experimental Research of the Musculoskeletal System", Ulm University, Germany, 2012
- Course: "Materiomics: Mechanics of Biological Materials and Structures". International Centre for Mechanical Sciences, Udine, Italia, 2012

C.9. Research events management

Member of the organization committee of the following events:

- 23 Congress of the European Society of Biomechanics, Sevilla, 2017
- II Reunión del Capítulo Español de la Sociedad Europea de Biomecánica, Sevilla, 2012