

Part A. PERSONAL INFORMATION		CV date	05/04/2022
First and Family name	María Esther Reina Romo		
Social Security, Passport, ID number		Age	
Researcher codes	Open Researcher and Contributor ID (ORCID**)		
	SCOPUS Author ID (*)		
	WoS Researcher ID (*)		

(*) *Optional*

(**) *Mandatory*

A.1. Current position

Name of University/Institution	University of Seville		
Department	Departamento de Ingeniería Mecánica y de Fabricación /Escuela Técnica Superior de Ingeniería		
Address and Country	Camino de los Descubrimientos s/n. 41092 Sevilla. Spain		
Phone number	E-mail		
Current position	Full professor	From	27/07/2021
Key words	Biomechanics, mechanobiology, bone, finite element		

A.2. Education

PhD, Licensed, Graduate	University	Year
Mechanical Engineer	University of Seville	2005
PhD Mechanical Engineer	University of Seville	2010

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

- Total citations: 629 (Google Scholar), 290 (Researcher ID)
- Citations in the last 5 years: 386 (Google Scholar)
- h-Index: 14 (Google Scholar), 11 (Researcher ID)
- Publications (JCR journal): Total: 36, Q1: 17, Q2: 13; 6 international book chapters.
- Principal investigator of 5 research projects (4 national y 1 regional)
- Number of research "sexenios"/date of last "sexenio": 2 / 31-12-2018
- Number of PhD thesis supervised: 2 (and currently supervising 3 PhD theses)

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

I have studied Mechanical Engineering at the University of Seville obtaining the third best academic record of the XXXIV promotion. After finishing my studies in 2005, I started my PhD under the supervision of Dr. Jaime Domínguez Abascal (University of Seville) and Dr. José Manuel García Aznar (University of Zaragoza). During this pre-doctoral stage, I spent 1 year at the Institute of Engineering Research of Aragon and 3 months at the University College of London. I finished my PhD in 2010, obtaining the extraordinary PhD award from the University and the award for the best doctoral thesis from the Seville City Council.

I have worked mainly on the development of mathematical models and computational implementation of bone regeneration processes in the field of biomechanics and mechanobiology. I have also been involved in the *in vivo* characterization of such processes through experiments in sheep. The results of these works are collected in more than 30 JCR publications and a patent. So far, I have supervised 2 doctoral theses, one of which has received the extraordinary doctoral award. I have also been principal investigator of 4 research projects (national and regional plan) and a member of the research team of 5 research projects in different fields.

All these contributions have been recognized with different awards and distinctions such as the national research award Juan Carlos Simó 2017 or the Royal Academy of Sciences Seville 2015, among others.



I am associate professor of Mechanical Engineering since 2017 and a visiting professor at the Universities of Colorado (2011) and Liège (2018). I have given invited lectures at the Instituto Superior Técnico in Lisbon (2012), University College of London (2009) and at the University of Seville (2016, 2017).

Part C. RELEVANT MERITS (sorted by typology)

C.1. Publications (10 most relevant publications)

1. P. Blázquez-Carmona, J. Mora-Macías, J.A. Sanz-Herrera, J. Morgaz, R. Navarrete-Calvo, J. Domínguez, E. Reina-Romo (2020). Mechanical Influence of Surrounding Soft Tissue on Bone Regeneration Processes: A Bone Lengthening Study. *Ann Biomed Eng.* doi: 10.1007/s10439-020-02592-z.
2. P. Blázquez-Carmona, J. Mora-Macías, J. Morgaz, J.A. Fernández-Sarmiento, J. Domínguez, E. Reina-Romo (2020). Mechanobiology of bone consolidation during distraction osteogenesis: bone lengthening versus bone transport. *Ann Biomed Eng.* doi: 10.1007/s10439-020-02665-z.
3. J. Mora-Macías, P. García-Florencio, A. Pajares, P. Miranda, J. Domínguez, E. Reina-Romo (2020). Elastic Modulus of Woven Bone: Correlation with Evolution of Porosity and X-ray Greyscale. *Annals of Biomedical Engineering.* doi: 10.1007/s10439-020-02529-6.
4. J.A. Sanz-Herrera, E. Reina-Romo, A.R. Boccaccini (2018). In silico design of magnesium implants: Macroscopic modeling. *J Mech Behav Biomed Mater.* Vol 79, pp 181-188.
5. López-Pliego, E M; Mora-Macías, J; Giráldez-Sánchez MA; Domínguez, J; Reina-Romo, E (2018). Histological study of the docking site after bone transport. Temporal evolution in a sheep model. *Injury.* Vol 49, pp 1987-1992.
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.* *J Mech Behav Biomed Mater.* Vol 74, pp. 236-244.
7. 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.
8. E. Reina-Romo, M.J. Gómez-Benito, J. Domínguez, F. Niemeyer, T. Wehner, U. Simon, L.E. Claes. (2011). Effect of the fixator stiffness on the young regenerate bone after bone transport: computational approach. *Journal of Biomechanics.* Vol. 44, pp. 917-923.
9. E. Reina-Romo, J.A. Sanz-Herrera. (2011). Multiscale simulation of particle-reinforced elastic-plastic adhesives at small strains. *Comput. Methods Appl. Mech. Engrg.* Vol. 200, pp. 2211-2222.
10. E. Reina-Romo, M.J. Gómez-Benito, J.M. García-Aznar, J. Domínguez, M. Doblaré. (2010). Growth mixture model of distraction osteogenesis: effect of pre-traction stresses. *Biomechanics and Modeling in Mechanobiology.* Vol. 9, pp. 103-115

C.2. Research projects (as principal investigator)

1. *Title:* El papel de la mecánica en la osteoporosis: un modelo de distracción osteogénica en ovejas ovariectomizadas
Reference: PID2020-113790RB-I00
Funding agency: Ministerio de Economía y competitividad.
Duration: 01/09/2021-31/08/2024.
Amount: 196867 € plus a PhD grant for 4 years
2. *Title:* Ingeniería de Tejidos Para la Corrección de Grandes Defectos Óseos: Modelado In Silico e In Vivo
Reference: US-1261691
Funding agency: Proyectos I+D+i FEDER Andalucía 2014-2020
Duration: 01/01/2020-31/12/2021.
Amount: 87.200€.

3. **Title:** Reparación de Grandes Defectos Óseos: Transporte Óseo Versus Andamiajes Bioimprimidos Paciente Personalizados
Reference: DPI2017-82501-P
Funding agency: Ministerio de Economía y competitividad.
Duration: 01/01/2018-31/12/2020.
Amount: 123420 € plus a PhD grant for 4 years
4. **Title:** Modelos de Comportamiento del Tejido Óseo Inmaduro en el Callo de Distracción Ósea
Reference: PI2014-58233-P
Funding agency: Ministerio de Economía y competitividad.
Duration: 01/01/2015-31/12/2017.
Amount: 169400 € plus a PhD grant for 4 years
5. **Title:** Diseño, Construcción y Validación de Plataforma Biomimética para la Evaluación y Optimización de Constructos de Ingeniería Tisular para Reparación de Cartílago Articular
Reference: DPI2010-20399-C04-02.
Funding agency: Ministerio de Ciencia e Innovación. Plan Nacional del 2010.
Duration: 01/01/2011-31/12/2013.

C.3. Contracts, technological or transfer merits

1. Realización de ensayos de calificación y revisión de cálculos mecánicos. Abengoa S.A. Carlos Navarro Pintado (Universidad de Sevilla). 2019-2020. 72600 EUR. Research member.
2. Realización de ensayos de calificación sobre flexibles. Abengoa S.A. Carlos Navarro Pintado (Universidad de Sevilla). 2019-2020. 9650 EUR. Research member.
3. 2ª Ampliación del Proyecto Análisis del diseño mecánico, elaboración del diseño estructural, análisis dinámico y asesoramiento en la construcción y pruebas del sistema procesador de bioetanol. Hynergreen Technologies S.A. Dominguez-Abascal, Jaime (Universidad de Sevilla). 2011-2013. 144 000 EUR. Research member.
4. Ampliación del Proyecto Análisis del diseño mecánico, elaboración del diseño estructural, análisis dinámico y asesoramiento en la construcción y pruebas del sistema procesador de bioetanol. Hynergreen Technologies S.A. Dominguez-Abascal, Jaime (Universidad de Sevilla). 2010-2011. Research member.
5. Análisis del diseño mecánico, elaboración del diseño estructural, análisis dinámico y asesoramiento en la construcción y pruebas del sistema procesador de bioetanol. Hynergreen Technologies S.A. Dominguez-Abascal, Jaime (Universidad de Sevilla). 2009-2010. 169 000 EUR. Research member.

C.4 Work supervision

PhD supervision

- **Author:** Juan Mora Macías. **Title:** "Biomechanics of bone transport: *in vivo*, *ex vivo* and numerical characterization", 2016. Extraordinary PhD award.
- **Author:** Macarena López Pliego. **Title:** "Osteogénesis por distracción con mantenimiento de la actividad motriz: estudio histológico de la estructura del callo y el docking site", 2016.

Supervision of 15 master theses.

C.5. Patents

Pardo Pardo, C., Ordoñez Fernandez 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. 2017-01-19. Universidad de Sevilla.



C.6 Research stays abroad

1. Visiting associate professor. Biomechanics and Computational Tissue Engineering. Department of Aerospace and Mechanical Engineering. University of Liege (Belgium). March-August 2018 (6 months).
2. Post-Doc College of Engineering and Applied Sciences, University of Colorado at Boulder, Boulder CO, USA. Jul-2011 to Ago-2011.

C.7. Prizes and distinctions

1. Young research award Juan Carlos Simo 2017. Sociedad Española Métodos Numéricos en Ingeniería (SEMNI).
2. Young research award Real Academia Sevilla Ciencias - Real Maestranza de Caballería Sevilla 2015.
3. Best doctoral thesis award from the Seville City Council, 2010.
4. Doctoral extraordinary award. Universidad de Seville 2010.
5. FPU fellowship. Ministerio de Educación. España 2006.

C.8. Evaluation and committees

1. Anonymous reviewer of international journals JCR:
 - Acta Biomaterialia
 - Journal of Biomechanics
 - Biomechanics and Modeling in Mechanobiology
 - Medical Engineering and Physics
 - Applied Sciences
 - Sensors
 - Bioactive Materials
 - Journal of Biomedical Materials Research, Part A
 - Molecular Biology Reports
 - Case Reports for Orthopaedics
 - Part H: Journal of Engineering in Medicine
 - Mathematical problems in Engineering
 - Plos One
 - Computer Methods and Programs in Biomedicine
 - Craniomaxillofacial Trauma and Reconstruction
 - Journal of Visualized Experiments
2. Reviewer of research projects ANEP (more than 40 projects evaluations). 2010-present.
3. Training activities: Biomechanics summer course UNIA (2019, 2020)
4. Member of the program evaluation committee Ramón y Cajal. Área de Producción Industrial, Ingeniería Civil e Ingenierías para la Sociedad. 2020
5. Member of the program evaluation committee "Comisiones Científico Técnicas de Evaluación de las Convocatorias de Proyectos de I+D de Retos y Excelencia del año 2018". Área de Producción Industrial, Ingeniería Civil e Ingenierías para la Sociedad. 2019.
6. Member of the organizer committee of the international conference ESB (European Society of Biomechanics). 2017; ISDMM (International Symposium on defect and Material Mechanics) 2011.
7. Member of PhD evaluation committee (Belgium, Spain)
8. Member of the evaluation committee of teaching positions: "contratado doctor" professor, associate professor.