Estefano Matías **Muñoz Moya**

PH.D. BIOMECHANICS STUDENT • EARLY STAGE RESEARCHER • DISC4ALL ITN MARIE SKŁODOWSKA-CURIE ACTIONS

estefano.munoz@usach.cl | estefano23.github.io | 0000-0001-5222-4071 | Estefano-Munoz-Moya | estefano23 | estefano-munoz-moya

Presentation

Ph.D. student in the Disc4All MSCA-ITN as an early stage researcher (ESR), and Master's degree in Mechanical Engineering. Researchers in biomechanics and biomaterials focused on experimental and numerical work, numerical methods, solid mechanics, finite element method, and continuum mechanics. Responsible, proactive, with excellent learning capacity, empathetic with others, tolerant to failure, and work under pressure.

Education

Universitat Pompeu Fabra (UPF) — *Barcelona, Spain*

DOCTORAL DEGREE | IN PROGRESS — *Oct. 2021 - **PRESENT***

- Ph.D. Information and Communication Technologies.

Universidad de Santiago de Chile (USACH) — *Santiago, Chile*

MASTER DEGREE | AWARDED | **GPA: 6.9/7.0** | **HIGHEST DISTINCTION** — *2018 - 2020*

- M.Sc. Mechanical Engineering | Diploma Link

BACHELOR DEGREE | AWARDED | **GPA: 6.2/7.0** — *2013 - 2021*

- Professional Degree Civil Mechanical Engineering | Diploma Link
- B.Sc. Mechanical Engineering | Diploma Link

Work Experience

Universitat Pompeu Fabra (UPF) | Disc4All Project (Disc4All) — *Barcelona, Spain*

EARLY STAGE RESEARCHER (ESR) | DISC4ALL MSCA-2020-ITN-ETN GA: 955735 | PH. D. JÉRÔME NOAILLY — *Oct. 2021 - **PRESENT***

- Project: *Training network to advance integrated computational simulations in translational medicine, applied to intervertebral disc degeneration.*
- Numerical computational research on intervertebral discs under disc degeneration.

Universidad de Santiago de Chile (USACH), Departamento de Ingeniería Mecánica (DIMEC) — *Santiago, Chile*

PART-TIME TEACHER: *Engineering Drawing* | THEORY. — *Apr. 2021 - Aug. 2021*

PART-TIME TEACHER: *Strength of Materials* | LABORATORY. — *Apr. 2021 - Aug. 2021*

PART-TIME TEACHER: *Introduction to Mechanical Engineering* | THEORY. — *Apr. 2021 - Aug. 2021*

PART-TIME TEACHER: *Computational Mechanical Design* | THEORY. — *Oct. 2020 - Mar. 2021*

PART-TIME TEACHER: *Engineering Drawing* | LABORATORY. — *Oct. 2020 - Mar. 2021*

Universidad Santo Tomás (UST) | Centre for Climate Change Research and Innovation (CiiCC) — *Santiago, Chile*

RESEARCH ASSISTANT | PROJECT PIA-ANID ANILLO ACT 172037 | PH. D. NELSON A. LAGOS — *Oct. 2018 - Jun. 2021*

- Project: *Interacting structure and function of ecological, mechanical and mineralogical properties of marine calcifiers: Shell carbonates as sources of bio-inspiration (Carbo-Nat-Lab).*
- Experimental and numerical computational research on the shell skeleton structure from the Chilean coast, subject to climate change scenarios.

Universidad de Santiago de Chile (USACH) | Lab. de Biomecáncia y Biomateriales (BioMatLab) — *Santiago, Chile*

RESEARCH ASSISTANT | PROJECT FONDECYT 1170608F | PH. D. CLAUDIO M. GARCÍA-HERRERA | PH. D. DIEGO J. CELENTANO — *Oct. 2018 - Jun. 2021*

- Project: *Biomechanical Behaviour of Arteries from Chronic Hypoxic Animals: Experiments, Modelling, Numerical Simulation and Validation.*
- Biomechanical characterization of arteries to observe adverse effects, such as hypoxia suffered by Chilean mining workers. In collaboration with the veterinary medical center of the University of Chile.

Universidad de Santiago de Chile (USACH), Departamento de Ingeniería Mecánica (DIMEC) — *Santiago, Chile*

TEACHING ASSISTANCE: *Introduction to Mechanical Engineering*. — *Mar. 2020 - Sep. 2020*

TEACHING ASSISTANCE: *Strength of Materials*. — *Mar. 2019 - Aug. 2019*

TEACHING ASSISTANCE: *Applied Mathematics*. — *Aug. 2018 - Aug. 2019*

TEACHING ASSISTANCE: *Thermal Systems (Thermodynamics II)*. — *Jul. 2017 - Jan. 2019*

- Teaching assistance and development of educational guides/tests and resources.

Publications | estefano23.github.io/publications.html

PUBLISHED | FRONTIERS: CELL AND DEVELOPMENTAL BIOLOGY | DOI 10.3389/FCELL.2022.924692 — ***Co-Author*** | *2022*

- Immuno-Modulatory Effects of Intervertebral Disc Cells.

PUBLISHED | SCIENTIFIC REPORTS | DOI 10.1038/S41598-021-04414-1 — ***First Author*** | *2022*

- Evaluation of remodeling and geometry on the biomechanical properties of nacreous bivalve shells.

Published | Frontiers: Bioengineering and Biotechnology | DOI 10.3389/fbioe.2021.813537 — ***Second Author*** | *2022*

- Biomechanical Characterization of Scallop Shells Exposed to Ocean Acidification and Warming.

In Progress — ***First Author*** | *2022*

- Towards a repository of patient-specific intervertebral disc finite element models

In Progress — ***First Author*** | *2022*

- Mussel shells under predation attacks : biomechanical characterization and numerical simulations using finite element analysis

Conferences estefano23.github.io/work.html#conferences

VPHi Conference (VPHi 2022), Universidade do Porto. — *UPORTO, Porto, Portugal*

International | Poster Presentation | Certificate Link | Poster Link — *Sep. 2022*

- TOWARDS A REPOSITORY OF PATIENT-SPECIFIC INTERVERTEBRAL DISC FINITE ELEMENT MODELS.

27° Congress of the European Society of Biomechanics (ESB 2022), Universidade do Porto. — *UPORTO, Porto, Portugal*

International | Speaker Presentation | Certificate Link | Podium Certificate Link — *Jun. 2022*

- TOWARDS A REPOSITORY OF PATIENT-SPECIFIC INTERVERTEBRAL DISC FINITE ELEMENT MODELS.

6th Barcelona VPH Summer School (VPH SC 2022), Universitat Pompeu Fabra. — *UPF, Barcelona, Spain*

International | Poster Presentation | Certificate Link | Poster Link — *May. 2022*

- TOWARDS A REPOSITORY OF PATIENT-SPECIFIC INTERVERTEBRAL DISC FINITE ELEMENT MODELS.

IX International Conference on Computational Bioengineering (ICCB 2022), ULisboa. — *ULisboa, Lisboa, Portugal*

International | Speaker Presentation | Certificate Link — *Apr. 2022*

- TOWARDS A REPOSITORY OF PATIENT-SPECIFIC INTERVERTEBRAL DISC FINITE ELEMENT MODELS.

X Capítulo Español: Sociedad Europea de Biomecánica (ESB-ESP 2022), Universidad de Granada. — *UGR, Granada, Spain*

Spain | Speaker Presentation | Certificate Link — *Oct. 2021*

- COMPORTAMIENTO BIOMECÁNICO DE LAS CONCHAS DE LOS MEJILLONES: DEGRADACIÓN DURANTE LA REMODELACIÓN DE LAS PROPIEDADES MECÁNICAS Y SISTEMA DE DEFENSA.

XL Congreso de Ciencias del Mar, Universidad de Magallanes, SCHCM. — *UMAG, Magallanes, Chile, Virtual*

Chile | Speaker Presentation | Certificate Link — *May. 2021*

- COMPORTAMIENTO MECÁNICO SIMÉTRICO DE LA RESISTENCIA DE LAS CONCHAS DEL MEJILLÓN *PERUMYTILUS PURPURATUS*.

11° World Biomaterials Congress (WBC 2020), University of Glasgow, IUSBSE. — *Glas, Glasgow, Scotland, Virtual*

International | Poster Presentation | Certificate Link | Poster Link — *Dec. 2020*

- MECHANICAL BEHAVIOR SYMMETRY OF MUSSEL SHELLS AND NUMERICAL METHOD FOR BIOMATERIAL ORTHOTROPY DIRECTIONS.

2° Congreso de Estudiantes de Postgrado USACH (USACH 2020), Universidad de Santiago de Chile. — *USACH, Santiago, Chile, Virtual*

Chile | Speaker Presentation | Certificate Link — *Nov. 2020*

- *PERUMYTILUS PURPURATUS*: SIMETRÍA DE VALVAS Y CARACTERIZACIÓN DE DIRECCIÓN ORTÓTROPA.

Congreso Chileno de Biomecánica y Biomateriales (CBIO 2020), Universidad de Santiago de Chile. — *USACH, Santiago, Chile, Virtual*

Chile | Speaker Presentation | Organizer | Certificate Link — *Oct. 2020*

- *PERUMYTILUS PURPURATUS*: SIMETRÍA DE VALVAS Y CARACTERIZACIÓN DE DIRECCIÓN ORTÓTROPA.

Congreso Internacional de Metalurgia y Materiales (CONAMET 2019), Universidad Austral de Chile. — *UACH, Valdivia, Chile*

International | Speaker Presentation | Certificate Link — *Nov. 2019*

- ANÁLISIS DE LA RESPUESTA BIOMECÁNICA DE *PERUMYTILUS PURPURATUS* ANTE ESCENARIOS DE CAMBIO CLIMÁTICO.

1° Congreso de Estudiantes de Postgrado USACH (USACH 2019), Universidad de Santiago de Chile. — *USACH, Santiago, Chile*

Chile | Speaker Presentation | Certificate Link — *Aug. 2019*

- MODELOS CONSTITUTIVOS DE CRECIMIENTO APLICADOS A LA CONCHA DEL *PERUMYTILUS PURPURATUS*.

25° Congress of the European Society of Biomechanics (ESB 2019), TU Wien. — *TU Wien, Vienna, Austria*

International | 2 Speaker Presentations | Certificate Link — *Jul. 2019*

- BIOMECHANICAL BEHAVIOUR ON SHELL CHARACTERISTICS (*PERUMYTILUS PURPURATUS*) ALONG THE CHILEAN COAST.
- NUMERICAL ANALYSIS OF THE BIOMECHANICAL RESPONSE OF OYSTER SHELLS SUBJECTED TO CLIMATE CHANGE SCENARIOS.

Courses

5th VPH Summer School: *Stratification of patients with complex phenotypes* — *Universitat Pompeu Fabra, Virtual*

Training program | Student | Certificate Link — *Jun. 2021*

- Transversal training of *in silico* medicine. Dictated by BCN MedTech, Virtual Physiological Human Institute (VPHi), and QUAES Foundation.

Structure, form, and function of calcifying organisms *CIMARQ UNAB, Valparaíso, Chile*

Postgraduate course | Student | Certificate Link *Nov. 2018*

- Dictated by the academics Ph. D. Antonio Checa (Universidad de Granada, Spain) and Ph. D. Fabio Labra (Universidad Santo Tomás, Chile).

Memberships

Virtual Physiological Human institute (VPHi) *Europe*

Student Member | Certificate Link *Sep. 2022 - **PRESENT***

- Membership UPF

European Society of Biomechanics (ESB) *Europe*

Student Member | Certificate Link *Jul. 2020 - **PRESENT***

- Membership ID: 3263

STEM Preeschoolar USACH-DIMEC (Science, Technology, Engineering, and Mathematics) *Santiago, Chile*

Member | Certificate Link *Oct. 2019 - **PRESENT***

- Scientific popularization for preschool children with a gender perspective.

Awards

6th Barcelona VPH Summer School (VPH SC 2022), Universitat Pompeu Fabra (UPF). *Barcelona, Spain*

Best HandsOn | Certificate Link *May. 2022*

- HandsOn: Surrogate modeling of IVD simulation under physiological sports loading conditions.

European Union to study in Universitat Pompeu Fabra (UPF). *Barcelona, Spain*

Scholarship | Certificate Link *Oct. 2013 - 2021*

- Full Ph.D. scholarship. EARLY STAGE RESEARCHER DISC4ALL ITN MARIE SKŁODOWSKA-CURIE ACTIONS

Government of Chile to study in University of Santiago de Chile (USACH). *Santiago, Chile*

Scholarship | Certificate Link *Oct. 2018 - 2020*

- Full Master scholarship. BECA ARANCEL

Government of Chile to study in University of Santiago de Chile (USACH). *Santiago, Chile*

Scholarship | Certificate Link *Oct. 2013 - 2021*

- Full Undergraduate scholarship. BECA BICENTENARIO

Science Popularization

Science Festival - *Festival de la Ciencia (FECI of PAR Explora RM Sur Poniente)*, Universidad de Chile *UCHILE, Virtual*

Expert scientific collaborator | Certificate Link *Nov. 2020*

- Science experiments for children.

Science Festival - *10° Feria Científica USACH*, Universidad de Santiago de Chile *USACH, Santiago, Chile*

Expert scientific collaborator | Certificate Link *Oct. 2019*

- Exhibition of biomechanical tests for children.

Exhibition - *Mollusca, espiral del cambio* - CiiCC, Museo de Historia Natural de Valparaíso (MHNV) *MHNV, Valparaíso, Chile*

Expert scientific collaborator | Certificate Link *Oct. 2019*

- Exhibition of the consequences of climate change in the oceans.

Exhibition - *XII Fiesta de la ciencia y la tecnología (PAR Explora RM Sur Oriente)*, Universidad de Chile *PARQUEMET, Santiago, Chile*

Expert scientific collaborator | Certificate Link *Oct. 2018*

- Exhibition of the mechanical properties of the mollusk shells subject to climate change scenarios.

About me

Full name: Estefano Matías Muñoz Moya

Basic Information

- Birth: 23th of September of 1994 | Santiago, RM, Republic of Chile | Age: 26 years old
- email: estefano.munoz.moya@gmail.com
- Lenguages: Native Spanish | Advanced English

Programming lenguages and Software usage

- Programming lenguages: : Fortran | Python | Matlab/Octave | C/C++ | HTML |
- Software usage: In-House FEM Softwares | AutoCAD | Solidworks | Ansys | Inventor | Mathcad | Fusion360 | SAM | Latex | Arduino | Ubuntu | EDEM | GiD | InVesalius | Office (Word, PowerPoint, Excel, Project) |

References

Ph. D. Jérôme Noailly | ResearchGate Link, Principal investigator, ESR supervision, and project coordinator of Disc4All - Universitat Pompeu Fabra (UPF).
email: jerome.noailly@upf.edu

Ph. D. Claudio M. García-Herrera | ResearchGate Link, Director of the Mechanical Engineering Department, Associated Professor, and Researcher - University of Santiago de Chile (USACH).
email: claudio.garcia@usach.cl

Ph. D. Nelson A. Lagos | ResearchGate Link, Director of the Centre for Climate Change Research and Innovation (Ci*i*CC), Associated Professor, and Researcher - Santo Tomás University (UST).
email: nlagoss@santotomas.cl

Ph. D. Diego J. Celentano | ResearchGate Link, Full Professor and Researcher of Mechanical and Metallurgical Engineering Department, Pontifical Catholic University of Chile (PUC Chile).
email: dcelentano@ing.puc.cl