

# 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 (CiCC)

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 Biomecánica 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.

### BBVA Bank

Santiago, Chile

PROFESSIONAL PRACTICE IN THE FIELD OF TRIBOLOGICAL MAINTENANCE.

Jan. 2017 - Feb. 2017

- Maintenance of buildings and power generators of the bank.

## Publications | Published / Accepted / Under Review / In Progress

PUBLISHED | SCIENTIFIC REPORTS | DOI [10.1038/s41598-021-04414-1](https://doi.org/10.1038/s41598-021-04414-1)

First Author | 2022

- **Estefano Muñoz-Moya**, Claudio M. García-Herrera, Nelson A. Lagos, Aldo Abarca-Ortega, Antonio G. Checa, Elizabeth M. Harper. Evaluation of remodeling and geometry on the biomechanical properties of nacreous bivalve shells.

PUBLISHED | FRONTIERS | DOI [10.3389/fbioe.2021.813537](https://doi.org/10.3389/fbioe.2021.813537)

Second Author | 2022

- Aldo Abarca-Ortega, **Estefano Muñoz-Moya**, Matías Pacheco-Alarcón, Claudio M. García-Herrera, Diego J. Celentano, Nelson A. Lagos, Marco A. Lardies. Biomechanical Characterization of Scallop Shells Exposed to Ocean Acidification and Warming.

IN PROGRESS

First Author | 2022

- **Estefano Muñoz-Moya**, Matías Pacheco-Alarcón, Claudio M. García-Herrera, Aldo Abarca-Ortega, Nelson A. Lagos, Antonio G. Checa. Mussel shells under predation attacks: biomechanical characterization and numerical simulations using finite element analysis

## Conferences

**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 *PERUMYTIUS 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

- *PERUMYTIUS 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

- *PERUMYTIUS 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 *PERUMYTIUS 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 *PERUMYTIUS 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 (*PERUMYTIUS 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

**European Society of Biomechanics (ESB)**

Europe

STUDENT MEMBER | [CERTIFICATE LINK](#)

Jul. 2020 - PRESENT

- Membership ID: 3263

**STEM Preeschooler USACH-DIMEC (Science, Technology, Engineering, and Mathematics)**

Santiago, Chile

MEMBER | [CERTIFICATE LINK](#)

Oct. 2019 - PRESENT

- Scientific popularization for preschool children with a gender perspective.

## 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 | Age: 26 years old
- Birth place: Santiago, RM, Republic of Chile
- email: [estefano.munoz@usach.cl](mailto:estefano.munoz@usach.cl)
- Languages: Native Spanish | Advanced English

#### PROGRAMMING LANGUAGES AND SOFTWARE USAGE

- Programming languages: : 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. 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](mailto:claudio.garcia@usach.cl)

**Ph. D. Nelson A. Lagos** | [ResearchGate Link](#), Director of the Centre for Climate Change Research and Innovation (CiiCC), Associated Professor, and Researcher - Santo Tomás University (UST).  
email: [nlagoss@santotomas.cl](mailto: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](mailto:dcelentano@ing.puc.cl)