



# Periklis Paganos

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**Date of birth:** 08/01/1992 | **Nationality:** Greek | **Gender:** Male | (+39) 3348119091 |

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<http://www.szn.it/index.php/en/staff/list-of-personnel/600-paganos-periklis/1298-paganos-periklis>

## ● WORK EXPERIENCE

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01/04/2021 – CURRENT – Napels, Italy

**POSTDOCTORAL FELLOW** – ARNONE LAB-STAZIONE ZOOLOGICA ANTON DOHRN

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01/02/2018 – 28/06/2021 – Naples, Italy

**PHD STUDENT** – STAZIONE ZOOLOGICA ANTON DOHRN

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Thesis title:

Cell Type Diversity During Sea Urchin Development: A Single Cell Approach to Reveal Different Neuronal Types and Their Evolution

My PhD project involved unravelling the cell type diversity of the sea urchin embryo and larva at a single cell resolution. To this end, single cell RNA sequencing (scRNA-seq) was used as a tool to recognize the major cell types in place during the late embryonic and early larval development of the sea urchin *Strongylocentrus purpuratus*. Extensive computational analysis (e.g. R Studio, Seurat package) paired with molecular biology techniques (e.g. WMISH, FISH, IHC) allowed the identification and thorough characterization of the single cell predicted cell types of all developmental stages analyzed. This project led to the identification of novel cell types, new neuronal populations and of cell types with evolutionary conserved gene regulatory wirings.

Project's duration: 36 months

15/01/2018 – 15/01/2021 – Naples, Italy

**EARLY STAGE RESEARCHER (ESR)** – EVOCELL- ITN MARIE SKŁODOWSKA CURIE NETWORK

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Project title:

Cell Type Diversity During Sea Urchin Development: A Single Cell Approach to Reveal Different Neuronal Types and Their Evolution

Tasks achieved:

- Dissociation and cell capture protocols
- Single-cell transcriptomes for different developmental and life cycle stages from diverse organisms
- Single-cell transcriptomes of larval, juvenile and adult stages for diverse organisms
- Single-cell transcriptomes of differentiating neuron populations
- Improved single-cell RNA seq methods

Project's duration: 36 months

17/02/2020 – 06/03/2020 – Heidelberg, Germany

**VISITING PREDOCTORAL FELLOW** – EMBL, UNIT OF DEVELOPMENTAL BIOLOGY, ARENDT GROUP

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06/05/2019 – 19/05/2019 – Heidelberg, Germany

**VISITING PREDOCTORAL FELLOW** – EMBL, UNIT OF DEVELOPMENTAL BIOLOGY, ARENDT GROUP

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14/10/2015 – 02/11/2017 – Patras, Greece

**MSC STUDENT** – UNIVERSITY OF PATRAS, SCHOOL OF NATURAL SCIENCES, DEPARTMENT OF BIOLOGY

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Thesis title:

Study of the transcription factor *Coup-TF* in the specification of the embryonic ectoderm in the sea urchin *Paracentrotus lividus*

The goal of my work was to examine *in vivo* and *in vitro*, the signaling pathways and transcription factors that repress Coup-TF's expression in the dorsal ectoderm of the developing embryo and its embryonic role in the domains it is expressed. During this project I became familiar with Molecular and Developmental Biology techniques such as, gene cloning, *in vitro* RNA and protein synthesis, *in situ* hybridization, *in vitro* fertilization, culture of sea urchin embryos, microinjections into eggs, immunofluorescence and confocal microscopy. As far as Coup-TF's role is concerned, we have found that maternal Coup-TF is essential for the organogenesis along both animal/ vegetal and ventral/ dorsal axes of the embryo and for the normal dorsoventral ectoderm specification. Moreover we found that BMP2/4 signaling restricts Coup-TF's expression in the ventral ectoderm by activating specific repressors in the dorsal ectoderm.

Project's duration: 24 months

01/10/2011 – 25/09/2015 – Patras, Greece

**BSC STUDENT** – UNIVERSITY OF PATRAS, SCHOOL OF NATURAL SCIENCES, DEPARTMENT OF BIOLOGY

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Thesis title:

hCoup-TFII's Role in Human Endothelial Cells

The aim of my work was to verify whether knockdown of hCoup-TF II, via specific siRNA, had an impact on the migratory ability and proliferation of the endothelial cells. At that time I became familiar with the isolation of HUVEC (Human Umbilical Vein Endothelial Cells), cell culture techniques, protein isolation and western blots. Boyden chamber and wound healing assays of control and hCoup-TF II knockdown HUVECs, were performed before and after stimulation with the angiogenic growth factor VEGF. My results suggest that hCoup-TF II is highly important for HUVEC's normal migration and proliferation *in vitro*, as its knockdown compromised those processes.

Project's duration: 12 months

## ● EDUCATION AND TRAINING

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01/02/2018 – 28/06/2021 – Villa Comunale, Naples, Italy

**PHD** – Stazione Zoologica Anton Dohrn-Open University

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Thesis title:

Cell Type Diversity During Sea Urchin Development: A Single Cell Approach to Reveal Different Neuronal types and Their Evolution

Date of thesis submission: 24/02/21

Expected date of thesis defense: 30/03/21

### **Field(s) of study**

- Developmental Biology
- Evolutionary Biology
- Molecular Biology

EQF level 8

14/10/2015 – 02/11/2017 – University campus, Rio, Patras, Greece

**MSC** – University of Patras, School of Biological Sciences, Department of Biology

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Thesis title:

Study of the transcription factor *Coup-TF* in the specification of the embryonic ectoderm in the sea urchin *Paracentrotus lividus*.

### **Field(s) of study**

- Biological Technology

9.82/10 (Honors) | EQF level 7

Thesis title:  
hCoup-TFII's Role in Human Endothelial Cells

**Field(s) of study**

◦ Biology

8.19/10 (Very Good) | EQF level 6

● **LANGUAGE SKILLS**

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**Mother tongue(s):** GREEK

**Other language(s):**

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
<b>ENGLISH</b>	C2	C2	C1	C1	C1
<b>GERMAN</b>	B1	B1	B1	B1	A2
<b>ITALIAN</b>	B1	B1	A2	A2	A2

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

● **DIGITAL SKILLS**

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SELF-ASSESSMENT

**Proficient user**

problems solving | Organizational and planning skills | Decision-making | Motivated | Good listener and communicator | Team-work oriented

**Independent user**

safety | Content creation

● **PUBLICATIONS**

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**New neuronal subtypes with a "pre-pancreatic" signature in the sea urchin *Strongylocentrotus purpuratus***

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Perillo M., Paganos P., Mattiello T., Cocurullo M., Oliveri P., Arnone M.I.  
<https://doi.org/10.3389/fendo.2018.00650> – 2018  
Frontiers in Endocrinology

**Comparative neurobiology of biogenic amines in animal models in deuterostomes**

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D'Aniello E., Paganos P., Anishchenko E., D'Aniello S., Arnone M.I.  
<https://doi.org/10.3389/fevo.2020.587036> – 2020  
Review in Frontiers in Ecology and Evolution

**Developmental toxicity of plastic leachates on the sea urchin *Paracentrotus lividus***

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Rendell-Bhatti F., Paganos P. et al.  
<https://doi.org/10.1016/j.envpol.2020.115744> – 2020  
Environmental Pollution

## Methodology for Whole Mount and Fluorescent RNA In Situ Hybridization in Echinoderms: Single, Double, and Beyond

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Perillo M., Paganos P., Spurrell M., Arnone M.I., Wessel M.G.

[https://doi.org/10.1007/978-1-0716-0974-3\\_12](https://doi.org/10.1007/978-1-0716-0974-3_12) – 2021

Chapter 12 in Developmental Biology of the Sea Urchin and Other Marine Invertebrates

## Coup-TF: A maternal factor essential for differentiation along the embryonic axes in the sea urchin *Paracentrotus lividus*

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Tsironis I., Paganos P., Gouvi G., Tsimpos P., Stamopoulou A., Arnone M.I., Flytzanis C.N.

<https://doi.org/10.1016/j.ydbio.2020.12.012> – 2021

Developmental Biology

## Post-metamorphic skeletal growth in the sea urchin *Paracentrotus lividus* and implications for body plan evolution

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Thompson J.R., Paganos P., Benvenuto G., Arnone M.I., Oliveri P.

<https://doi.org/10.1186/s13227-021-00174-1> – 2021

EvoDevo

## Single cell RNA sequencing of the *Strongylocentrotus purpuratus* larva reveals the blueprint of major cell types and nervous system of a non-chordate deuterostome

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<https://doi.org/10.1101/2021.03.16.435574> – 2021

Paganos P., Voronov D., Musser J., Arendt D and Arnone M.I.

Biorxiv

## ORCID and Google Scholar links

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<https://orcid.org/0000-0001-9525-4625>

<https://scholar.google.com/citations?user=2EdXfrkAAAAJ&hl=en&oi=ao>

## ● HONOURS AND AWARDS

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2018

**Early-Stage Researcher (ESR) Marie Skłodowska Curie Fellowship – European Union Horizon 2020 research and innovation programme**

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Early-Stage Researcher (ESR) of the EvoCELL- ITN Marie Skłodowska Curie Network “Animal evolution from a cell type perspective: multidisciplinary training in single-cell genomics, evo-devo and in science outreach (funded from the European Union’s Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No. 766053).

## ● ORGANISATIONAL SKILLS

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Part of:

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- The organizing committee of the 12th Graduate Students meeting, Dept. of Biology, University of Patras
- The students' representative council (EvoCELL Marie Curie ITN)

## ● COMMUNICATION AND INTERPERSONAL SKILLS

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### Skills:

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- Good communication skills through presenting scientific research at national and international conferences.
- Good communication skills through presenting scientific research to non-scientists.
- Good contact skills through overseeing lab practicals and supervising student projects during my MSc, and PhD projects.

## ● JOB APPLIED FOR

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Research fellow

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## ● JOB-RELATED SKILLS

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■ Proficient with R Studio analysis

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■ Proficient at designing and carrying out biological experiments, particularly molecular biology assays.

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### **Strong lab skills:**

- Stereomicroscopy, light microscopy, electron microscopy & confocal microscopy
- DNA, RNA and Protein extraction
- HUVEC isolation from umbilical cord
- Cell culture protocols & assays
- Bradford assay, SDS-PAGE, Agarose gel electrophoresis
- Western blot analysis
- PCR, Reverse transcription PCR, Real time PCR
- Purification of nucleic acids
- Gene cloning
- Primer design
- *In vitro* transcription
- *In vitro* translation
- Fluorescent *in situ* hybridization
- Whole mount *in situ* hybridization
- Immunohistochemistry
- Echinoderm embryo handling and culture maintenance (sea urchin, sea star)
- Microinjections
- Preparation of NGS libraries such as RNA-seq and ScRNA-seq
- ScRNA-seq data analysis
- Preparation of various laboratory solutions & stains

## ● POSTER PRESENTATIONS AND TALKS

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02/11/2020 – 05/11/2020

**Cell type diversity during sea urchin development: A single cell approach to reveal different neuronal types and their evolution**

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Periklis Paganos and Maria Ina Arnone  
EvoCELL Graduate School III, virtual  
[Talk](#)

20/07/2020

**Neuroectodermal patterning during *S. purpuratus* development at a single cell resolution**

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Periklis Paganos and Maria Ina Arnone  
The First Virtual Echinoderm Network Meeting  
[Talk](#)

09/07/2020 – 15/07/2020

**Chromatin accessibility and single cell transcriptomics expand the gene regulatory network of sea urchin gut development**

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Danila Voronov, Periklis Paganos, Marta S. Magri, Jose Luis Gómez-Skarmeta, Detlev Arendt and Maria I. Arnone  
Society for Developmental Biology 79th Annual Meeting Online  
[Poster presentation](#)

12/02/2020 – 13/02/2020

**Neuronal Diversity in the Sea Urchin Larva: A Single Cell Approach to Shed Light to Different Neuronal Types and their Evolution**

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Periklis Paganos and Maria Ina Arnone  
EvoCELL Graduate School II  
Jardin BioPark, Paris, France  
[Talk](#)

13/12/2019

**The Strongylocentrotus purpuratus early pluteus larva at a single cell resolution: Cell types & neuronal identity**

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Periklis Paganos Maria Ina Arnone  
London Echinoderm Meeting  
Queen Mary University of London, London, UK  
[Talk](#)

11/10/2019 – 13/10/2019

**The Strongylocentrotus purpuratus early pluteus larva at a single cell resolution: Cell types neuronal identity**

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Periklis Paganos and Maria Ina Arnone  
EDEN meeting  
Procida, Naples, Italy  
[Talk](#)

15/05/2019 – 18/05/2019

**Neuronal Diversity in the Sea Urchin Larva at a Single Cell Resolution**

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Periklis Paganos, Danila Voronov, Jacob Musser, Detlev Arendt and Maria I. Arnone  
EMBO | EMBL Symposium: The identity and Evolution of Cell Types  
Heidelberg, Germany  
[Talk](#)

09/04/2019 – 12/04/2019

**Neuronal Diversity in the Sea Urchin Larva: A Single Cell Approach to Shed Light to Different Neuronal Types and their Evolution**

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Periklis Paganos and Maria Ina Arnone  
EvoCELL Graduate School I  
Naples, Italy  
[Talk](#)

13/12/2018

**Understanding the Cell Diversity of the Sea Urchin Larva: Emphasis on the Nervous System & Novel Neuronal Subtypes**

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Periklis Paganos and Maria Ina Arnone  
8th Annual Meeting of the Neapolitan Brain Group  
Naples, Italy  
[Poster presentation](#)

10/11/2018

**Understanding the Cell Diversity of the Sea Urchin Larva: Emphasis on the Nervous System & Novel Neuronal Subtypes**

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Periklis Paganos and Maria Ina Arnone  
EDEN meeting  
Gibilmana, Cefalu, Italy  
[Talk](#)

17/10/2018 – 21/10/2018

**The regulation and evolution of the neuropeptide expressing pancreatic and photoreceptor cells of the sea urchin larva**

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Periklis Paganos and Maria Ina Arnone  
The International Conference for the Developmental Biology of the Sea Urchin and Other Marine Invertebrates  
Marine Biological Laboratory, Woods Hole MA, USA  
[Talk](#)

17/10/2018 – 21/10/2018

**Investigating the role of neuropeptides in the development of the sea urchin *Strongylocentrotus purpuratus***

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Natalie J. Wood, Maria Cocurullo, Periklis Paganos, Maria Ina Arnone, Maurice R Elphick and Paola Oliveri  
The International Conference for the Developmental Biology of the Sea Urchin and Other Marine Invertebrates  
Marine Biological Laboratory, Woods Hole MA, USA  
[Talk](#)

26/06/2018 – 29/06/2018

**The neuropeptidergic system of the sea urchin larva: insight into the evolutionary origins of pancreatic and photoreceptor cell types**

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Periklis Paganos and Maria Ina Arnone  
EURO EVO DEVO- 7th Meeting of the European Society for Evolutionary Developmental Biology  
Galway, Ireland  
[Poster presentation](#)

10/11/2017 – 12/11/2017

**Coup-TF is essential for the dorsoventral ectoderm specification**

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Periklis Paganos, Ioannis Tsironis, Georgia Gouvi, Panagiotis Tsibos, Anna Mathioudaki, Theodora Papadopoulou, Giolanta Liona, Fotini Papaleonidopoulou and Constantin N. Flytzanis  
68th Congress of Hellenic Society of Biochemistry and Molecular Biology  
Athens, Greece  
[Talk](#)

25/11/2016 – 27/11/2016

**BMP2/4 signaling prevents expression of PICoup-TF in the dorsal ectoderm of the sea urchin *Paracentrotus lividus***

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Periklis A. Paganos, Andriana I. Stamopoulou and Constantin N. Flytzanis  
67th Congress of Hellenic Society of Biochemistry and Molecular Biology  
Ioannina, Greece  
[Talk](#)

29/08/2016 – 31/08/2016

**hCoup-TF II's Role in Human Endothelial Cells**

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Artemis Michail, Periklis Paganos, Stavros Topouzis, Constantin Flytzanis  
17th Medicinal Chemistry Conference  
Spetses, Greece  
[Talk](#)

## ● COURSES

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### **Marine Biotechnology (Curr. MBMBRT)**

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09/12/2020-10/12/2020  
Stazione Zoologica Anton Dohrn, Naples, Italy

### **Biodiversity**

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30/11/2020- 04/12/2020  
Stazione Zoologica Anton Dohrn, Naples, Italy

### **Statistics**

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13/10/2020- 14/10/2020, 16/10/2020- 19/10/2020  
Stazione Zoologica Anton Dohrn, Naples, Italy

### **Additional Skills – Science Communication**

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15/09/2020- 16/09/2020  
Stazione Zoologica Anton Dohrn, Naples, Italy

### **Career Development**

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14/01/2020  
Stazione Zoologica Anton Dohrn, Naples, Italy

### **Protein Function and Evolution**

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05/12/2019, 09/12/2019- 10/12/2019  
Stazione Zoologica Anton Dohrn, Naples, Italy

### **Evo-Devo**

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01/04/2019- 04/12/2019, 09/04/2019, 11/04/2019- 12/04/2019, 04/09/2019  
Stazione Zoologica Anton Dohrn, Naples, Italy

### **Grant Proposal Writing**

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17/10/2019  
Stazione Zoologica Anton Dohrn, Naples, Italy

### **Basic Course in Bioinformatics**

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15/07/2019- 18/07/2019  
Stazione Zoologica Anton Dohrn, Naples, Italy

### **Practical course on Evolutionary Biology & Data Analysis**

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03/06/2019- 14/06/2019  
"Institut de la Mer de Villefranche" (IMEV) CNRS/Sorbonne University, Villefranche sur Mer, France



## Presenting with Zen

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19/06/2018, 06/07/2018

Stazione Zoologica Anton Dohrn, Naples, Italy

## Use of Live Animals for Scientific Purposes: Animal Welfare, Requirements and Management

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28/05/2018- 29/05/2018

Stazione Zoologica Anton Dohrn, Naples, Italy

## Immersion in Molecular Biology

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09/04/2018- 13/04/2018, 24/04/2018

Stazione Zoologica Anton Dohrn, Naples, Italy

## ● AUTO-CERTIFICATION

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I am aware of the provisions of articles 46 et seq. of the D.P.R. December 28th 2000 n. 445, on the penal liability which may arise in case of falsehood in acts and false declarations, as well as with the provisions of art. 75 of the D.P.R. December 28th 2000 n. 445, on the decay of benefits that may result from the provision issued on the basis of untruthful declarations, pursuant to and for the purposes of the aforementioned decree D.P.R. n. 445/2000 art 46, I **declare** under my own personal responsibility, that the information included in my Curriculum vitae is legitimate.

Consent is given to whom may need to use the personal details as with the provisions of the law 196/2003 and s.m.i.

**Date:** 13/03/21

**Signature:**

**Periklis Paganos**