



# echino design

*Intersection between  
design, art and science*

## Selected Projects

# Selected projects realized by Designers, Scientists and Artists.

## SPILLO: THE MICROCOSM OF FANTASY



A modular/decomposable pavilion designed for creative, laboratory and educational activities for children inspired by the symmetry and modularity of the echinoid case.



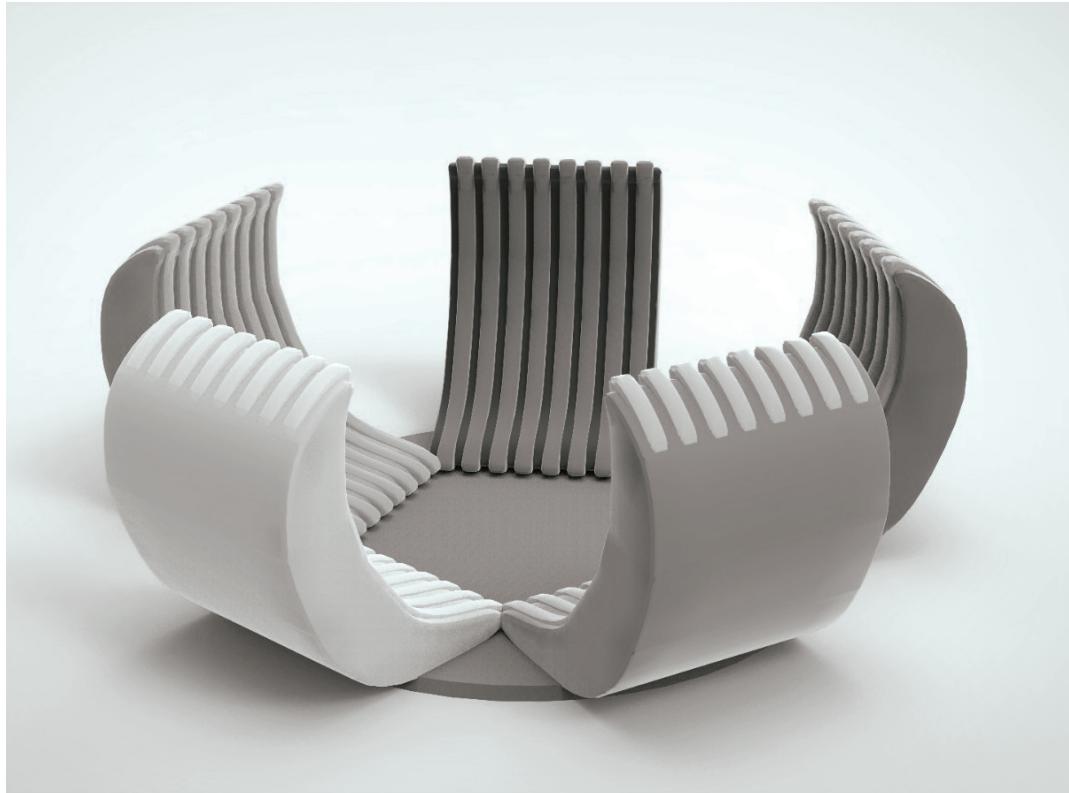
INSPIRATION:  
Test.

MATERIALS:  
Plywood and beech  
plywood covering.

TECHNOLOGY:  
Wood carving and  
assembly.

AUTHOR:  
Caterina Francolini  
Bianchi.  
*Professor, "Leonardo da Vinci" Highschool.*

*Bergamo, Italy.*



**Modular children's chair inspired by the aristotle lantern.** Structure formed by five removable seats in polyurethane foam resting on a wooden top. The whole structure can be turned upside down to function as a table.

**INSPIRATION:**  
Aristotle's Lantern.  
**MATERIALS:**  
Polyurethane foam.  
**TECHNOLOGY:**  
3D Printing.

**AUTHORS:**  
Melania Spatresano,  
Raffaela Cozzolino,  
Daria Cermola,  
Enya De Rosa,  
Margot Tura.  
*Students, University of Campania "Luigi Vanvitelli" and University of Milan.*

*Aversa-Milan, Italy.*



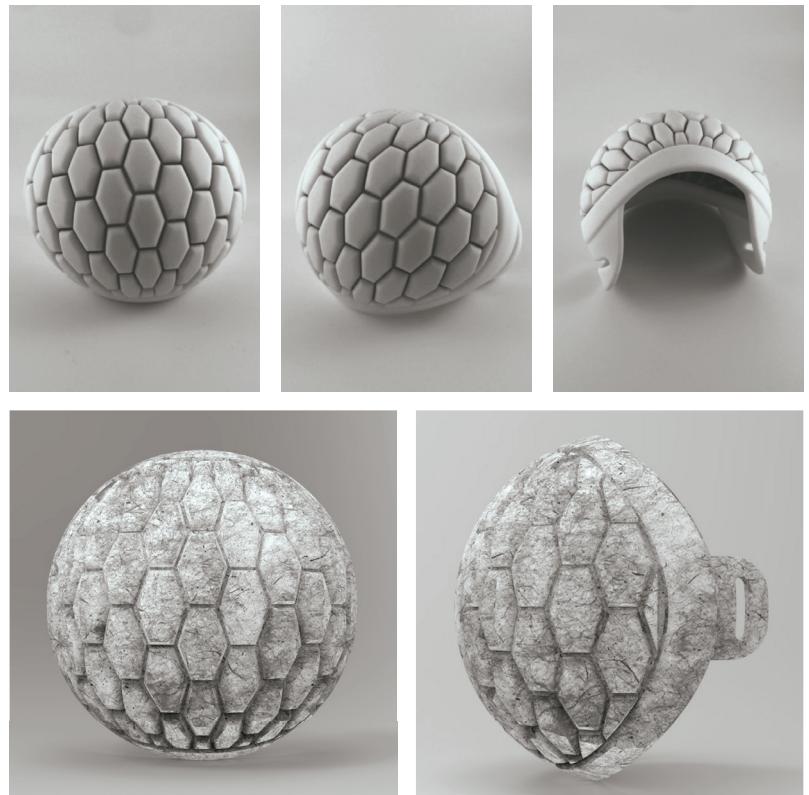
**Analog-digital library inspired by the internal structure of echinoid spines.**



**INSPIRATION:**  
Spines.  
**AUTHOR:**  
Camilla Amato.  
*Designer, University of Campania "Luigi Vanvitelli".*

**MATERIALS:**  
Wood/stainless steel.  
**TECHNOLOGY:**  
Micropunched sheet metal folding, wood carving, assembly.

## DEFEST



Knee protector inspired by the sea urchin's test, with shock dissipation system based on the tessellation, or subdivision, into rigid modules on flexible material.

### INSPIRATION:

Test.

### MATERIALS:

PLA, hemp fibers.

### TECHNOLOGY:

3D Printing.

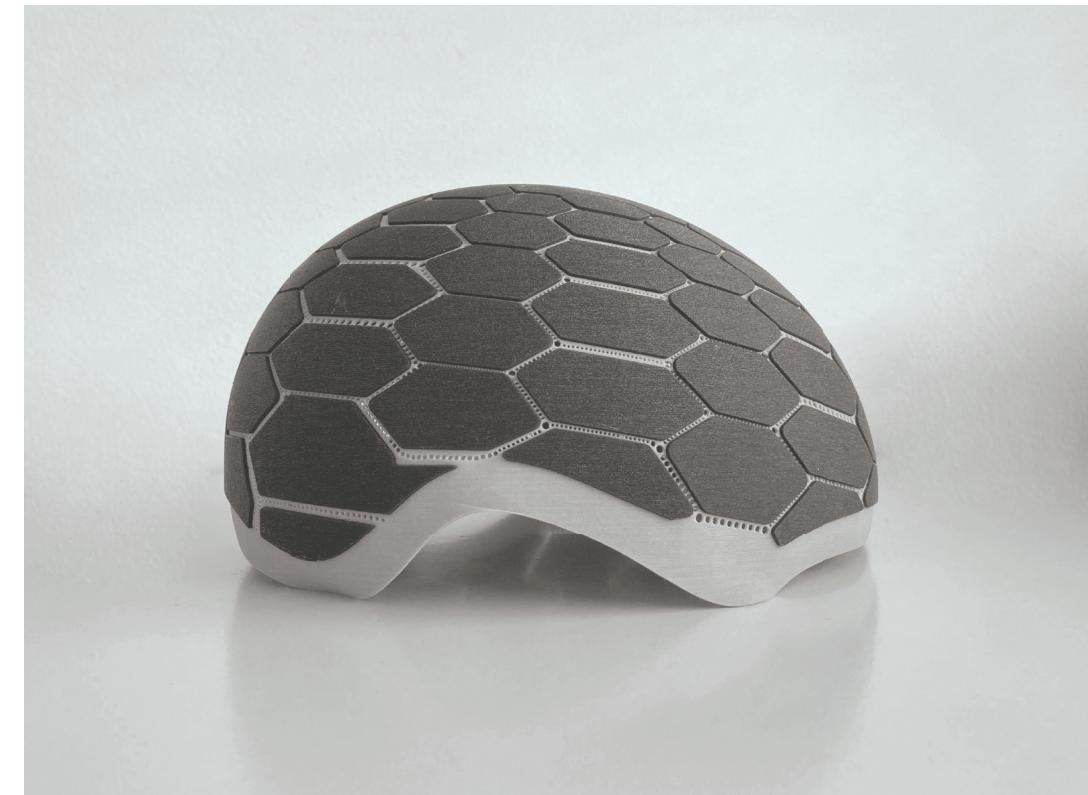
### AUTHORS:

Terry Celentano.  
*University of Campania  
"Luigi Vanvitelli"*,

*with the support of:*  
Carla Langella,  
Gabriele Pontillo,  
Valentina Perricone.

*Aversa, Italy.*

## CASCO



Helmet inspired by the tessellated system of the sea urchin's test. The structure composed of rigid modules on flexible material allows greater resistance to impact.

### INSPIRATION:

Test.

### MATERIALS:

Resin.

### TECHNOLOGY:

3D Printing.

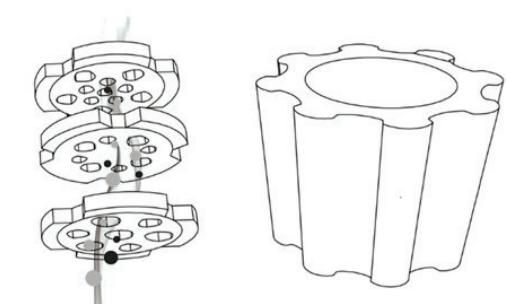
### AUTHORS:

Giorgio Carotenuto,  
Vincenzo Giorgione,  
Natalia Janquin,  
Alessia Masiello,  
Mario Matarazzo.  
*Università di Campania  
"Luigi Vanvitelli"*,

*with the support of:*  
Carla Langella,  
Gabriele Pontillo,  
Valentina Perricone.

*Aversa, Italy.*

## PURA



Nasal filter inspired by the micro-suture of spines and the organized pore pattern that retains dust, pollen and other allergens.

INSPIRATION:  
Spines and  
microstructure.

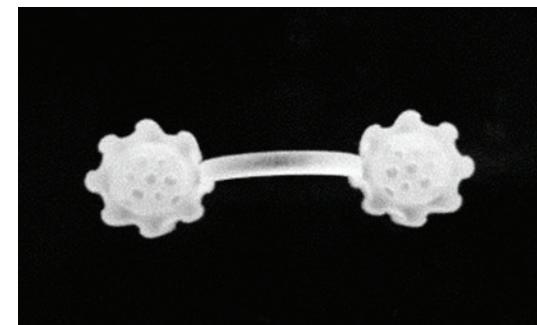
MATERIALS:  
Transparent PLA.

TECHNOLOGY:  
3D Printing.

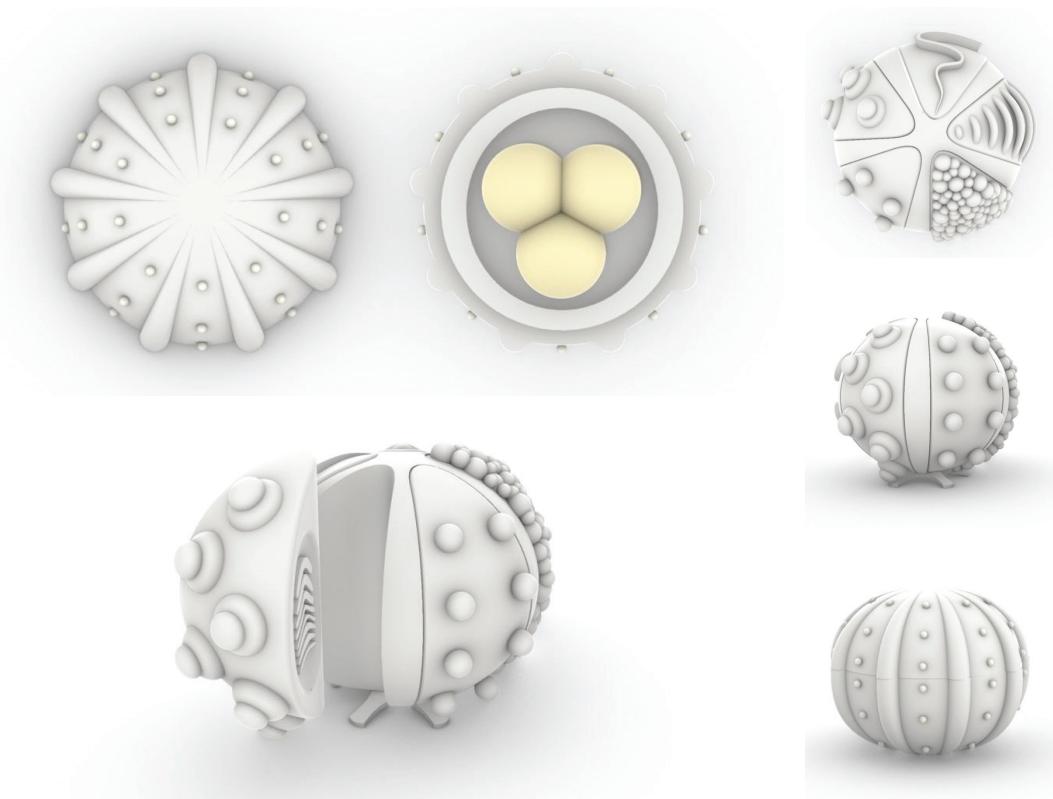
AUTHORS:  
Valeria Campaniello.  
*University of Campania*  
*"Luigi Vanvitelli"*,

*with the support of:*  
Carla Langella,  
Gabriele Pontillo,  
Valentina Perricone.

*Aversa, Italy*



## URCARE



The URCARE project is a system of accessories bio-inspired by the morphology of echinoids (sea urchins), developed to practice therapeutic massage techniques whose purpose is to alleviate temporomandibular joint disorders, i.e.

INSPIRATION:  
Morphology of  
echinoids.

MATERIALS:  
TPU.

TECHNOLOGY:  
3D Printing.

AUTHORS:  
Simone Martucci,  
Alessia Schettino,  
Lucio Junior Prisco,  
Maria Saputo.  
*University of Campania*  
*"Luigi Vanvitelli"*,

*with the support of:*  
Carla Langella,  
Gabriele Pontillo,  
Valentina Perricone.

*and the Medical Contribution of*  
Francesca Lenci.

*Aversa, Italy*

## EQUINOXADREZ



Chess set inspired by echinoid shapes with biophilic and echinoid awareness purposes.

INSPIRATION:  
Test and appendices.

MATERIALS:  
Transparent PLA.

TECHNOLOGY:  
3D Printing.

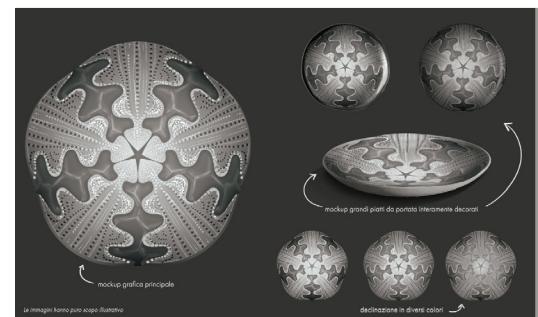
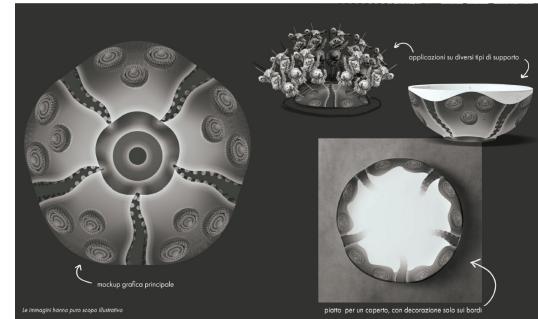
AUTHORS:  
Theska Laila,  
Marcelo Vicente.  
*Designers, Federal University of Pernambuco.*

*Recife, Brasil.*

## ECHI



Tableware set for catering and daily use inspired by the interspecific variability of shapes, colors and patterns of echinods. The aim is to bring attention to the product of the Italian seas and support the project RICCIcliamo.



INSPIRATION:  
Shapes, colors, and interspecific patterns of the test.

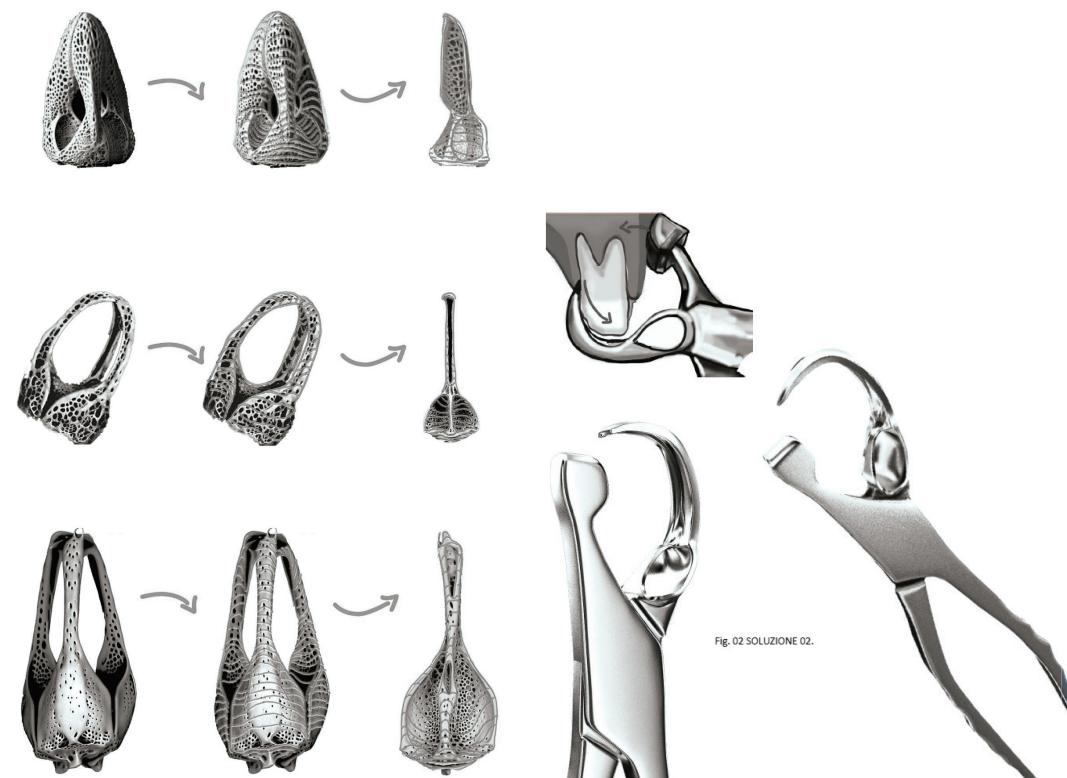
MATERIALS:  
Ceramics.

TECHNOLOGY:  
Mixed Crafts.

AUTHORS:  
Francesca Serafini,  
Valentina Picili.

*Milan, Italy.*

## FORCEPS



Dental extraction forceps  
inspired by the shape-function  
of pedicellaria.

INSPIRATION:  
Pedicellarie.  
MATERIALS:  
Steel.  
TECHNOLOGY:  
3D Printing.

AUTHOR:  
Antonio Roberto.  
*Professor and Designer,  
Federal University of  
Pernambuco.*  
TECHNOLOGY:  
*Recife, Barisl.*

## ACHINÒS



Gripper designed to facilitate  
the harvesting of fruit products,  
characterized by an optimized  
system of grasping the fruit and  
cutting the stem inspired by  
Aristotle's lantern.

INSPIRATION:  
Aristotle's lantern.  
MATERIALS:  
ABS, TPU/TPE/Soft PLA,  
aluminum, steel.  
TECHNOLOGY:  
3D Printing, moulding.

AUTHOR:  
Claudio Catalano.  
*Student, University of  
Campania "Luigi Vanvitelli".  
Aversa, Italy.*

## JEWELS

### SEA URCHIN'S JEWELS LINE



Jewels elaborated in collaboration with the IED of Milan, in partnership with Swarovski, inspired by sea urchin's test.

#### INSPIRATION:

Test.

#### MATERIALS:

Echinoid's skeleton,  
Swarovski crystals  
and metal.

#### TECHNOLOGY:

Craftwork.

#### AUTHORS:

Lina Al-Jazzar,  
Chiara Scarpitti.  
*University of Campania  
"Luigi Vanvitelli"*.

*Aversa, Italy*.



Jewels inspired by echinoid's test.

INSPIRATION:  
Test.

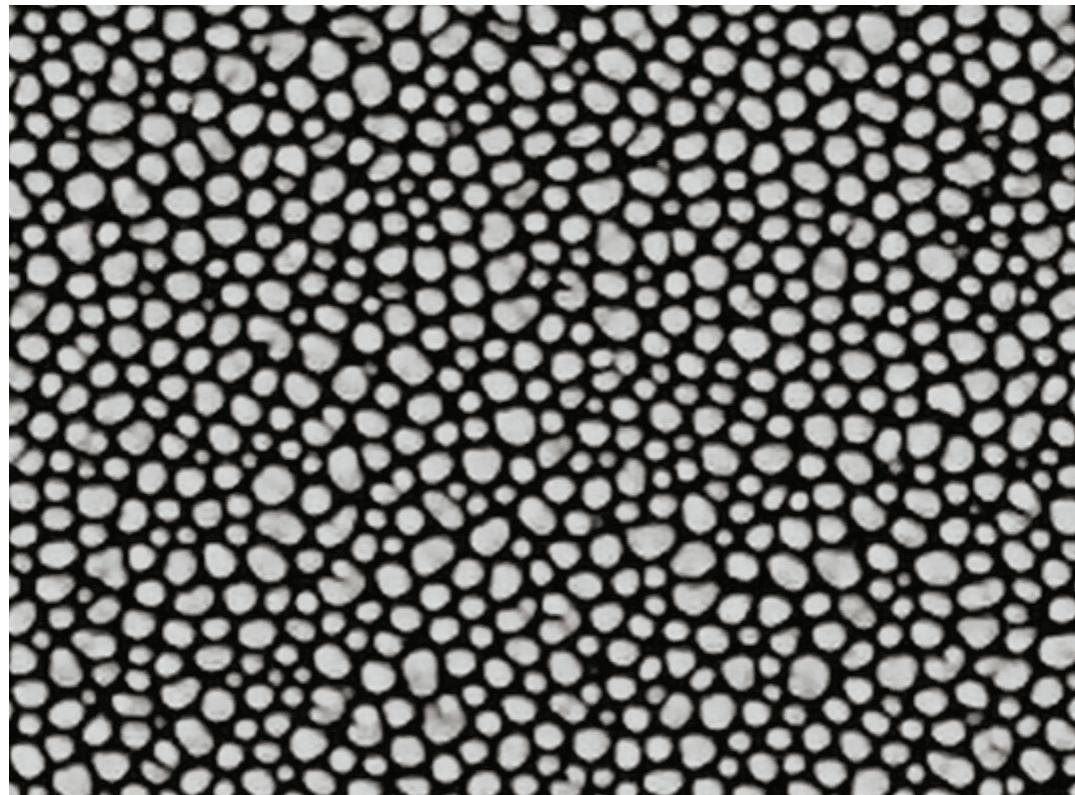
MATERIALS:  
Gold, Silver.

TECHNOLOGY:  
Coating.



AUTHOR:  
Carolina Nicolella.  
*Naples, Italy*.

## ECHINO-PATTERNS

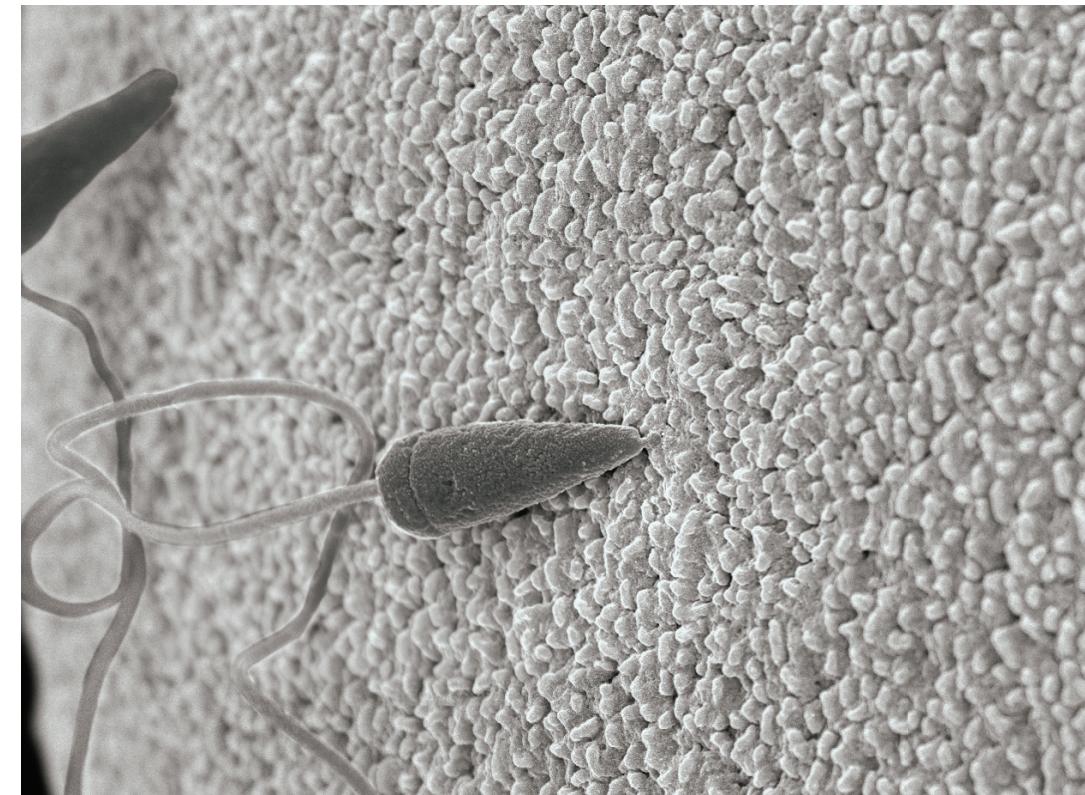


Self-organizing textures based on sea urchin's microstructure produced with artificial neural networks.

INSPIRATION:  
Test microstructure.  
TECHNOLOGY:  
Scanning Electron Microscope, Artificial Neural Nets.

AUTHOR:  
Mainak.  
*Kollam, India.*

## FECONDATION

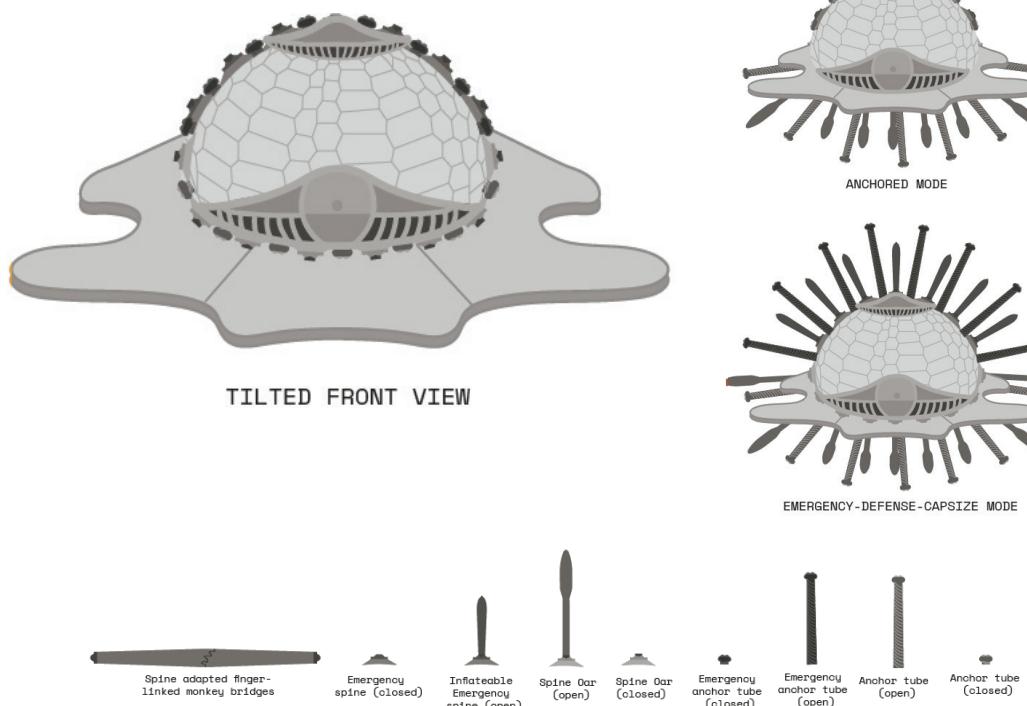


Scanning Electron Microscope image sequence, capturing the moment of fertilization and fusion of the spermatozoon in the sea urchin's egg.

INSPIRATION:  
Fertilization of sea urchins.  
TECHNOLOGY:  
Scanning Electron Microscope.

AUTHOR:  
Luigia Santella.  
*Zoological Station Anton Dohrn.*  
*Naples, Italy.*

## ECHINO FLOATING

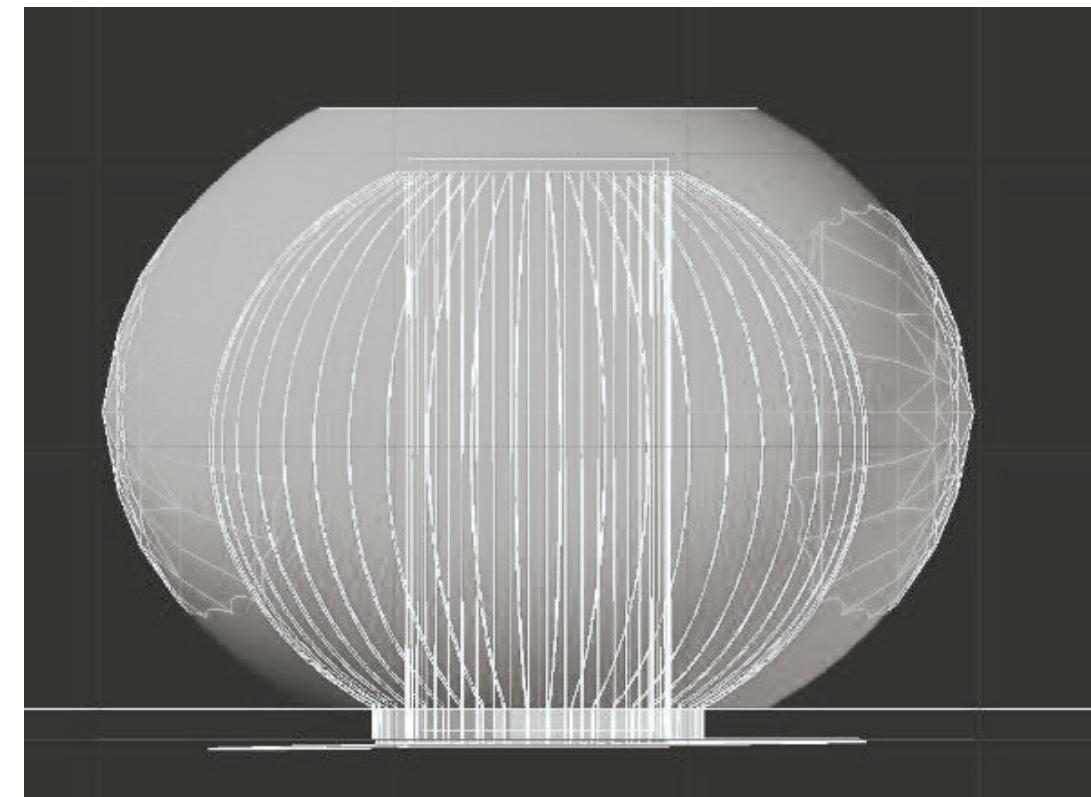


House/Floating modular lamp inspired by the echinoid's test and appendices.  
Futuristic vision of floating house and customizable floating lamp.

**INSPIRATION:**  
Test and appendices.  
**MATERIALS:**  
PLA/treated wood.  
**TECHNOLOGY:**  
3D Printing and carving.

**AUTHOR:**  
Kassandra Huynh.  
*Berlin, Germany.*

## AQI-NOS



Device inspired by the test and sensory system of echinoids, that integrates prototype sensors to report the concentration of different pollutants in the air such as carbon dioxide, volatile chemical compounds, oxidizing and reducing compounds, environmental temperature and humidity.

**INSPIRATION:**  
Test, sensory system.  
**MATERIALS:**  
Transparent PLA,  
ENEA gas sensors.  
**TECHNOLOGY:**  
3D Printing.

**AUTHOR:**  
Monica Massera.  
*Aversa, Italy.*

## CURLY LAMP



Customizable lamp bio-inspired by the generative geometries of echinoids. The diffuser is made of sheets of paper made with interchangeable craft technique, and can acquire different morphological configurations thanks to the presence of rails at the base of the lamp. The paper includes post-production waste of natural origin including echinoid's dust.

**INSPIRATION:**  
Sea uschin's materials and generative geometries of echinoids.

**MATERIALS:**  
Handmade paper, natural wastes and wood.

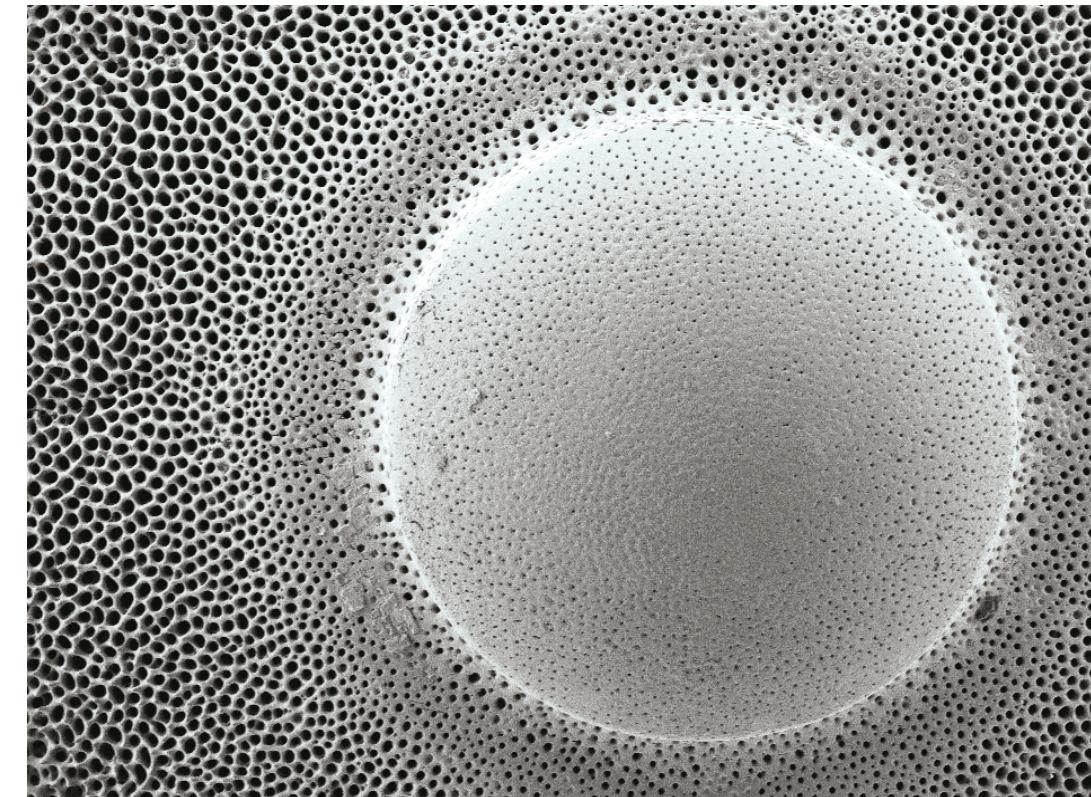
**TECHNOLOGY:**  
Wood engraving, engraving with numerical control machine, sieve with paper pulp and waste of natural materials.

**AUTHORS:**  
Valentina Golia,  
Annachiara Fabozzi,  
Mario Mazzocca,  
Giuseppe Vivaccia.

*University of Campania "Luigi Vanvitelli".*

*Aversa, Italy.*

## ECHINO LAYERS



Installation of textile experimentation with bio-inspired craft techniques.

**INSPIRATION:**  
Test, Patterns.

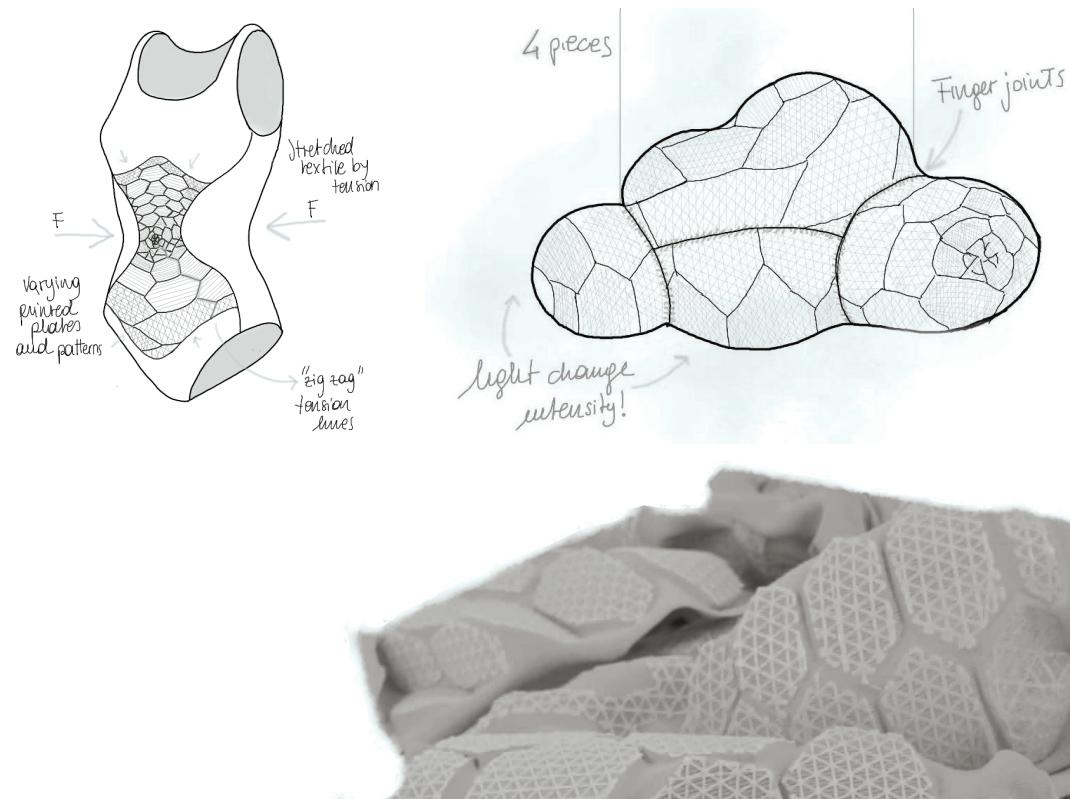
**MATERIALS:**  
Silk, cotton, polyester, iron.

**TECHNOLOGY:**  
Handmade serigraphy, shibori, batik, laser cutting, 3D textures.

**AUTHORS:**  
Annalia De Falco,  
Massimo Parisi.  
*University of Campania "Luigi Vanvitelli".*

*Aversa, Italy.*

## EVOLVING ECHINOIDS



Elaboration of 3D programmable and customizable fabrics inspired by the Echinoid's theca, functional details and macro-, meso- and microstructural variability with dual application:  
1) lamp and 2) costume/course.

INSPIRATION:  
Test.  
MATERIALS:  
Fabric, PLA.  
TECHNOLOGY:  
"programmable prestressed textiles" (PPT), 3D Printing.

AUTHORS:  
Eugenio Canepone,  
Carmen Rotondi.  
*Product designer e Ph.D., University of Rome "La Sapienza". Rome, Italy.*

## RICCICLIAMO



A project to reuse sea urchin's food waste from a circular economy perspective with applications ranging from regenerative medicine to farming and aquaculture.

INSPIRATION:  
Test.  
MATERIALS:  
Urchin's skeletons.  
TECNOLOGIA:  
Collagen extraction, calcium-rich flour processing.

AUTHOR:  
Michela Sugni.  
*University of Milan. Milan, Italy.*

## **EXHIBITION CURED BY**

**Carla Langella  
Valentina Perricone  
Gabriele Pontillo  
Roberta Angari**

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# EchinoDesign

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Università  
degli Studi  
della Campania  
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