

Biomaterials and Regenerative Medicine .

- Catheters Functionalization
- Drug delivery
- In vitro diagnostic
- Nanomaterials safety

Functional Food

EU Brokerage Event on Kets in Horizon 2020

Who we are:

TECNALIA

We are the leading private R+D+i entity in Spain and the fifth largest in Europe, with a **staff of over 1,500** and a annual turnover of approximately **140 million Euros**.

Spanish Sites:

- Euskadi
- Andalucia
- Madrid
- Aragón

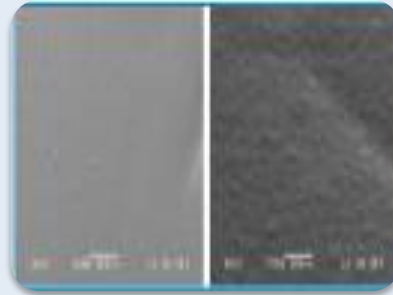
Germany (Tübingen and Munich), **Argentina** (Buenos Aires and Rosario), **Belgium** (Antwerp), **Brazil** (Río Grande do Sul, Brasilia DF, Paraná and Porto Alegre), **Bulgaria** (Sofía), **Chile** (Santiago), **China** (Hong Kong), **Colombia** (Bogota and Manizales-Caldas), **Korea** (Seoul), **Denmark** (Aalborg), **Ecuador** (Quito), **Spain** (Badajoz, Barcelona, Bilbao, Huelva, Madrid and San Sebastián), **Egypt** (Cairo), **U.S.A.** (West Virginia and Florida), **Finland** (Espoo), **France** (Montpellier, Anlet and Versailles), **Hungary** (Budapest), **Ireland** (Co. Galway), **Italy** (Pisa and Torino), **Panama** (Panama), **Peru** (Lima), **Portugal** (Amadora and Porto), **U.K.** (London and Witney, Oxfordshire), **Dominican Republic** (La Caleta Boca Chica), **Serbia** (Belgrade), **Uruguay** (Montevideo) and **Venezuela** (Mérida).

BIOMATERIALS: Present Developments: Proof of concepts

A-CATHETERS FUNCTIONALIZATION

PROPERTIES:

- ✓ Antimicrobial
 - ✓ Anticoagulant
 - ✓ Sensorized catheters
- } Dual



Technologies for Integrations of molecules :

- Surface immobilization
- Coatings (PVD)
- Hydrogel doped coatings

Applications:



Central venous catheters



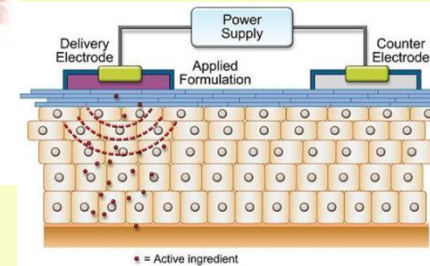
Cardiovascular catheters and pacemaker connectors

(Developed for industrial companies)

B-DRUG DELIVERY

✓ 1) By Skin:

Iontophoresis cost effective development
Expertise: Interface skin-path:



✓ 2) Nasal

Ex vivo model for evaluation of penetration

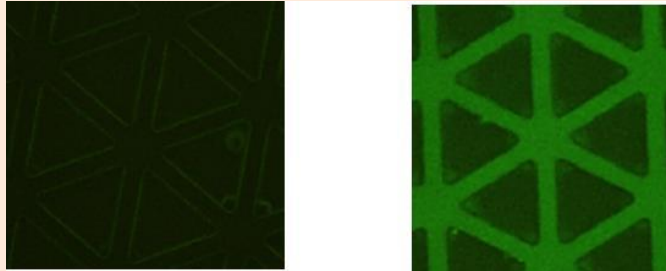
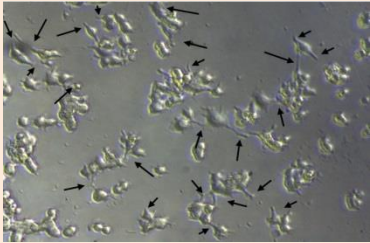
✓ 3) Inhalation to lungs

Formulation, encapsulation of active molecules

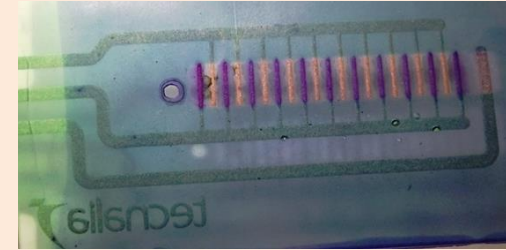
BIOMATERIALS: Present Developments: Proof of concepts

C-IN VITRO DIAGNOSIS

1) Microstructures for controlled Neuronal growth for drug screening

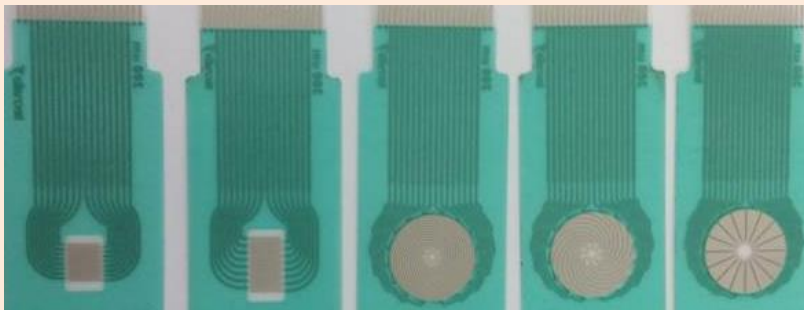


Biofunctionalización of microstructures

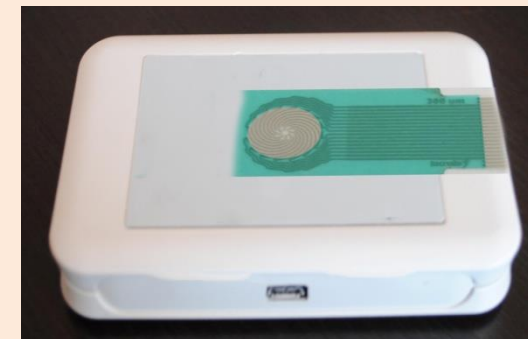


Selective functionalization by electrodeposition

2) Microfluidic device for monitoring the cells grow for neurotoxicology and neuropharmacy



Biofunctionalized Electrodes



Device for cells stimulation and monitoring

BIOMATERIALS: Present Developments: Proof of concepts

C-IN VITRO DIAGNOSIS

3) Immunosensors (lab on a chip, proteo chips, cell membrane chips)

Controlled chemical surface modification (Tecnalia's patent)

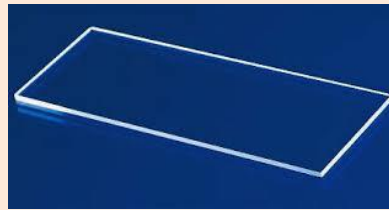
Advantages:

- ✓ Time stable
- ✓ Increase sensibility
- ✓ Maintain transparency of PS

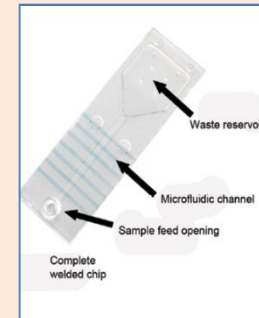
Placa multipocillo



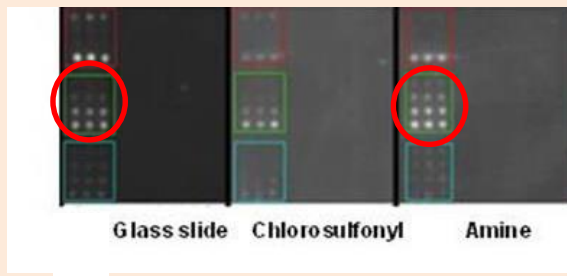
Portaobjetos



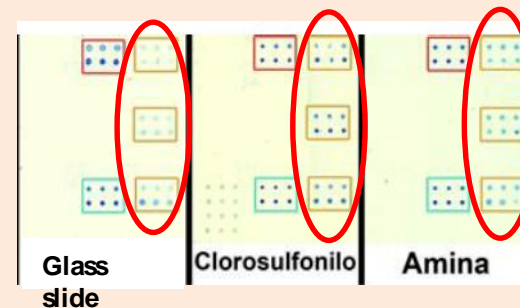
Lab on a Chip



PROTEO CHIP



CELL MEMBRANE CHIP



D-NANOSAFETY TESTS

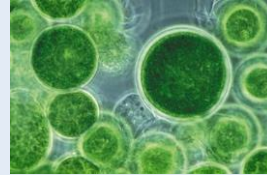
FOOD: Present Developments: Proof of concepts

SOURCES

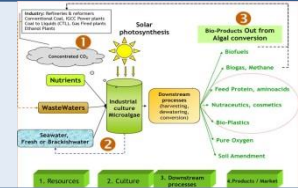
Agro-Subproducts:
Vegetales(broccoli, cauliflower,
onion....) and Fruits)



Micro-algaees or
natural plants



Bioconversion of solid waste
(municipal or not) for
marketable products



INGREDIENTS

PACKING (Natural
reinforced bio-films)



APPLICATIONS

Functional food (bread,
yogurt, milk...)



Nutraceuticals
(Extracts, para-
pharmacy)



Complementary Partners

- Potential end users
- Experts in regulatory aspects of food
- Marine biomass/Bio refineries
- Circular Economy

Adressed Topics / PARTNERS THAT WE ARE LOOKING FOR

NMBP2: Hubs for Safety testing of Medical Technologies	End users. Field : Development of sensors for early diagnosis
NMBP7: Hubs for Characterization	Expertise in computational methods for simulation
NMBP: 13: Risk Governance of nanotechnology	Expertise in regulation and nanosafety
NMBP 22: Ostearticular	Biotechnological, cell therapy expertise

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THANKS FOR ATTENTION

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