

Programa Cooperación Farma-Biotech

Jornada IV: Ámbitos terapéuticos relacionados con respiratorio, dermatología, nefrología, inflamación e infección

***NIT-zipper[®], a nanometric systems
multifunctionalization strategy for drug deliver***



Madrid, 12 July 2011

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Content

1. The Company

2. The Product

- a) Nanotherapy: state of the art.
- b) Multifunctionalization: state of the art
- c) Innovative mechanisms of action
- d) Differential features facing the market
- e) Current status of development
- f) IPR protection
- g) Pitfalls & Risks to be considered

3. Availability for cooperation

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THE COMPANY

Vision / Mission

Vision:

A world leader in **Functionalization** and **Characterization** of **nanometric systems**.

Mission:

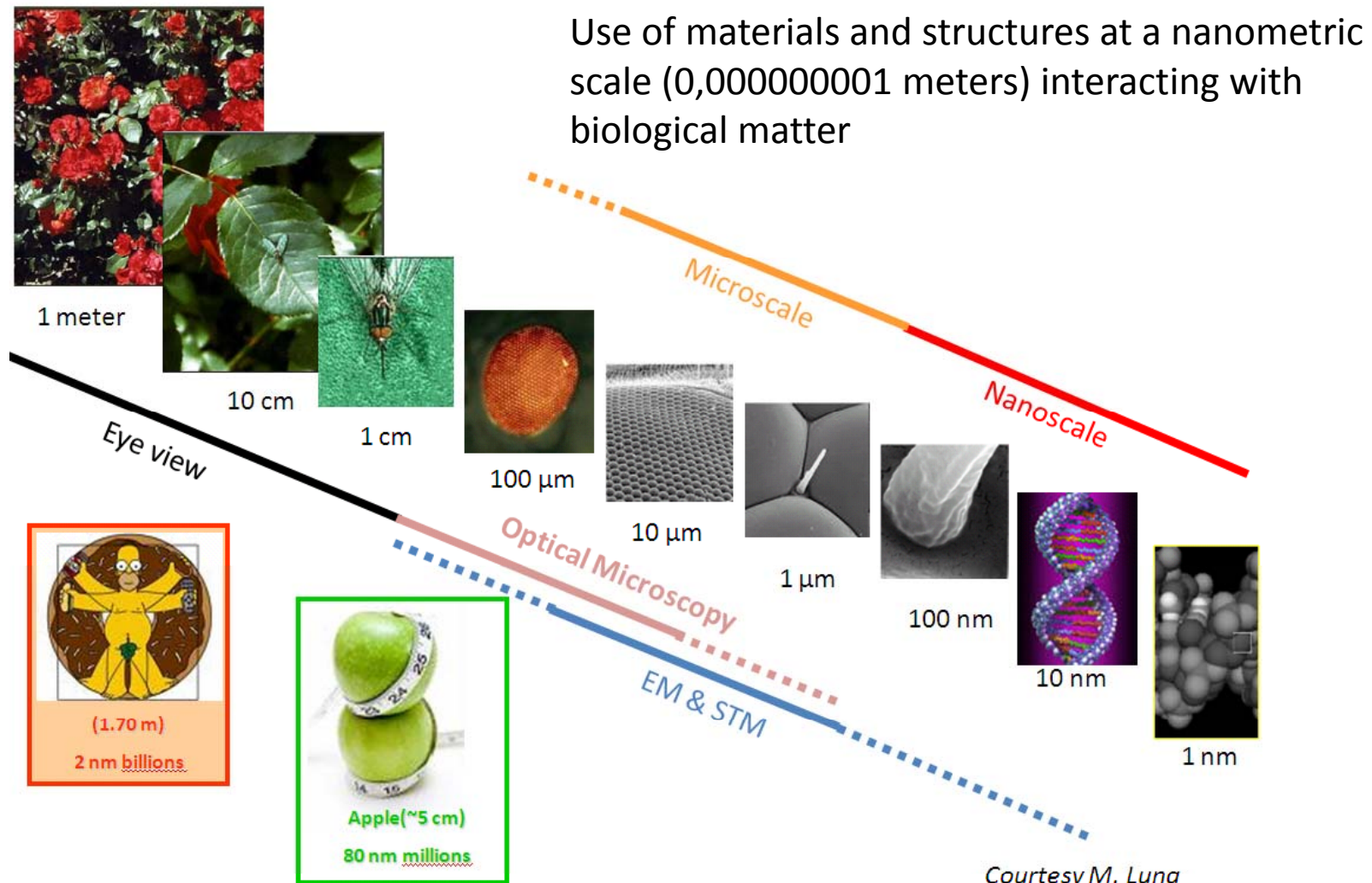
Our commitment consists in offering products and services, integrally covering the characterization and functionalization nanoparticles market, within the **Biotechnology** and **Health** sectors.



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THE COMPANY

Nanobiotechnology



Courtesy M. Luna

Programa Cooperación Farma-Biotech

THE COMPANY

About us

Managing Team



Rubén Santos Martínez de Laguna – General Manager

Industrial Engineer (U. Zaragoza), MBA (ICAI-ICADE). Experience with the Biotechnology sector for more than 15 years, occupying different managing and business development positions.



Christian Sánchez Espinel - Technical Manager

With training in Biological Science and Laboratory Technician. Brings 5 years of researching experience in nanobiomedicine.

Scientific Board



Dr Africa Gonzalez



Dr M. Ricardo Ibarra



Dr Jesús M. de la Fuente



Dr Valeria Grazú

CINBIO

ARAGÓN NANOSCIENCE INSTITUTE

Experience > 20 years

>400 Articles, 20 Patents

Multidisciplinary



UNIVERSIDADE
DE VIGO



UNIVERSIDAD DE
ZARAGOZA

CataloniaBio
Associació catalana d'empreses de biotecnologia



MEDICAMENTOS INNOVADORES
Plataforma Tecnológica Española

nanoimmunotech
global solutions
in nanobiotechnology

farmaindustria

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THE COMPANY

Portfolio

1. Services portfolio.

2. PRODUCTLINE based on **NIT-ZIPPER® TECHNOLOGY**.

3. Continuous Pipeline: New project development and licencing.
Preferential agreement with Research Groups.



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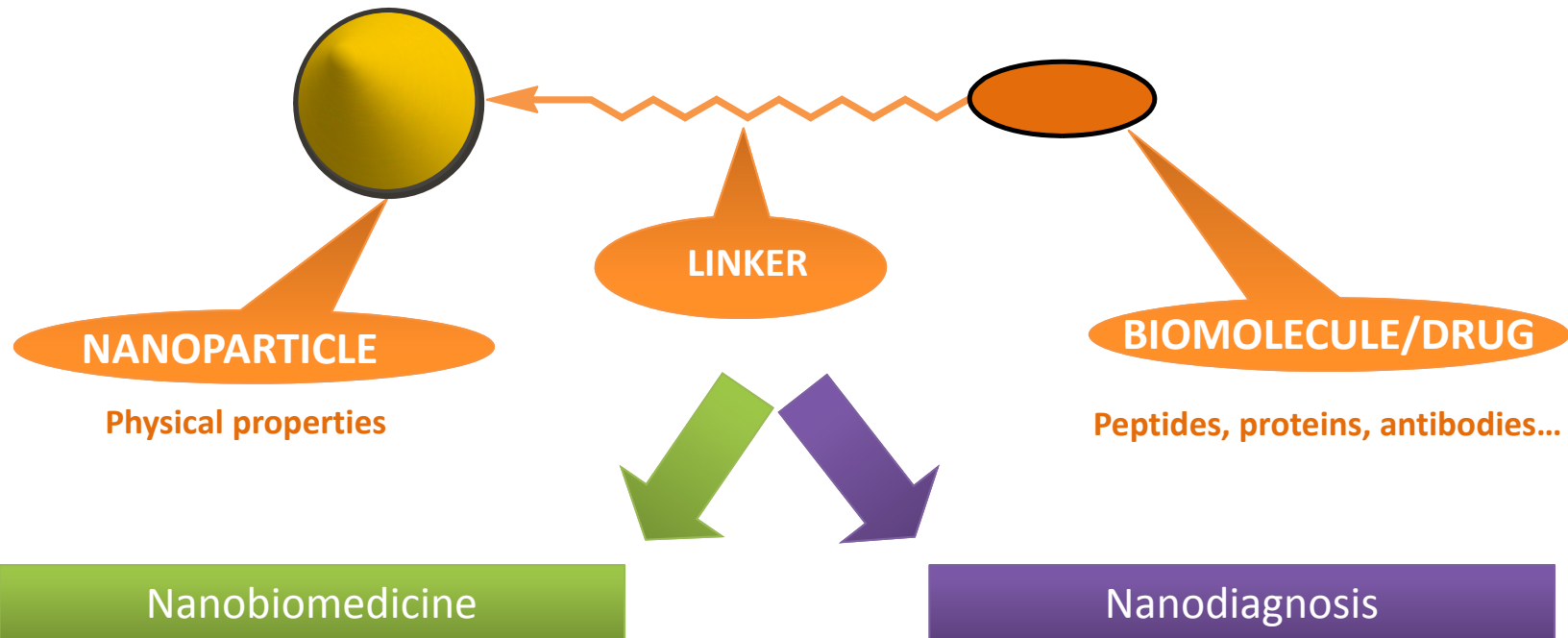
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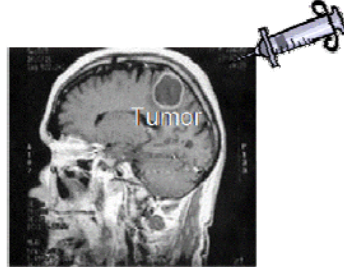
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THE PRODUCT

Nanotherapy: state of the art



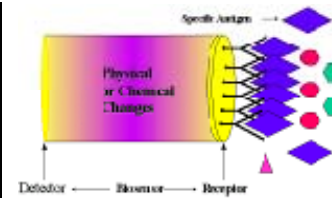
Targeted Drug delivery



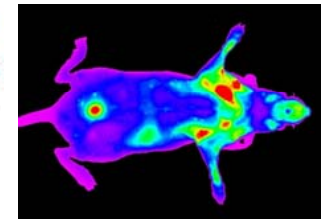
Hyperthermia



MRI



Biosensors



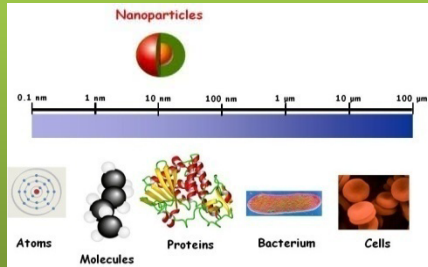
Fluorescence tomography

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THE PRODUCT

Nanotherapy: state of the art

Similar Size to Biomolecules



Physical Properties

Theranostic

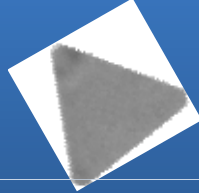


Novel Therapies



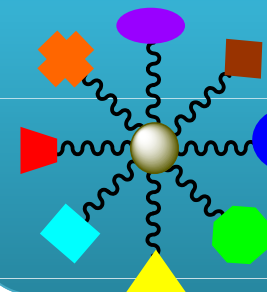
High Specific Surface:

↑ drug-loading capacity



NPs

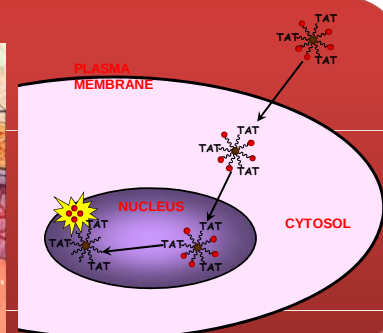
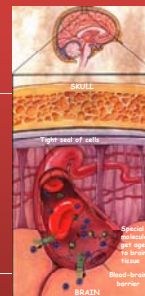
Multifunctional Platform



Rescue Failed Drugs

Crossing biological membranes

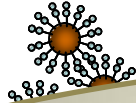
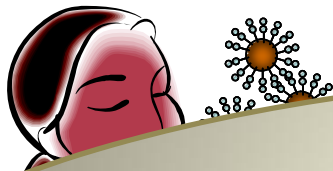
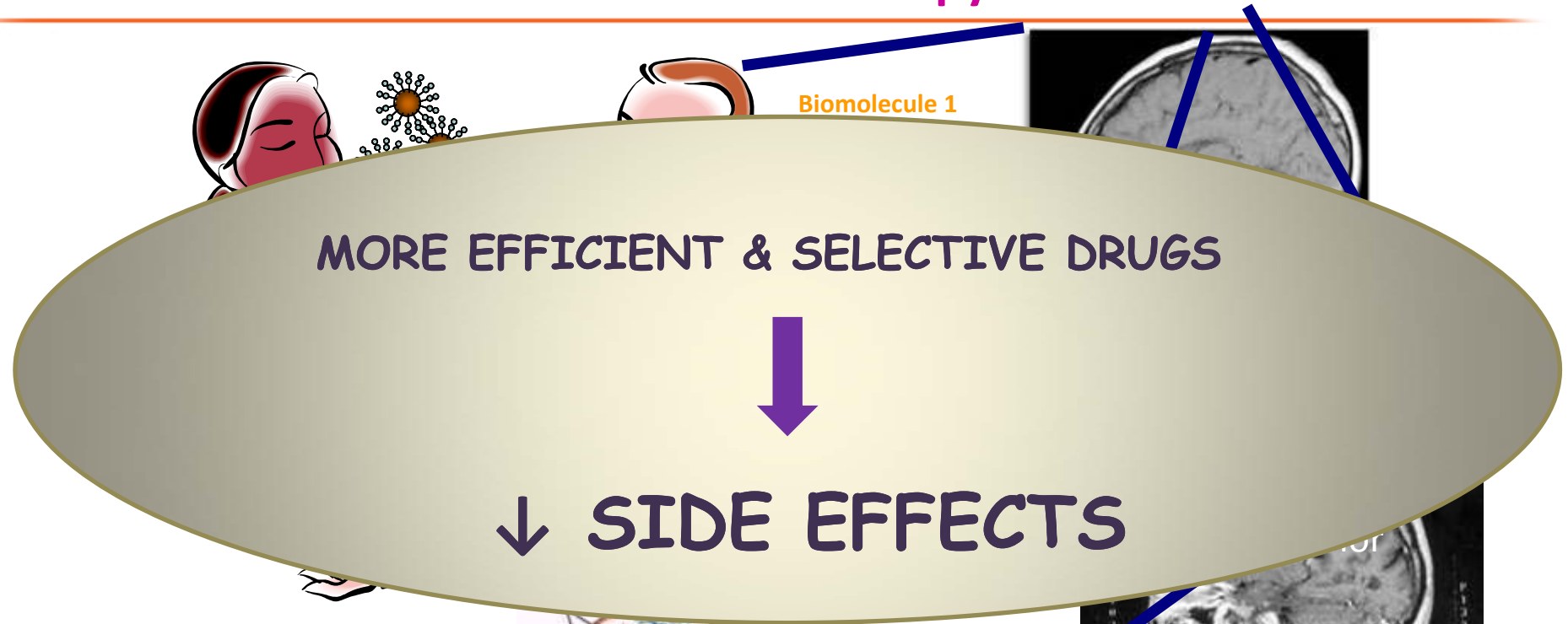
↑ solubility of drugs



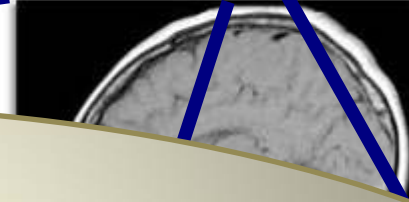
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THE PRODUCT

Nanotherapy: state of the art



Biomolecule 1



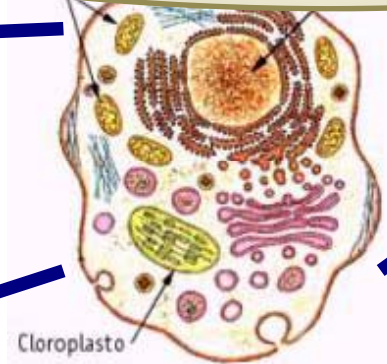
MORE EFFICIENT & SELECTIVE DRUGS



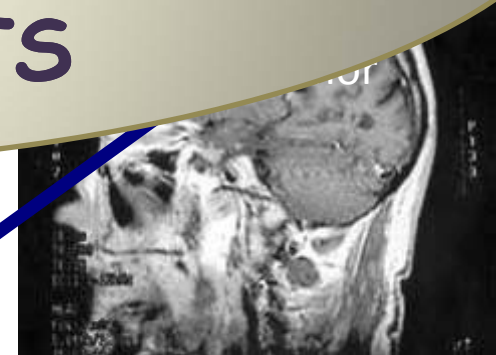
↓ SIDE EFFECTS



Biomolecule 5
(DNA intercalator)
!!!CELL DEATH!!!

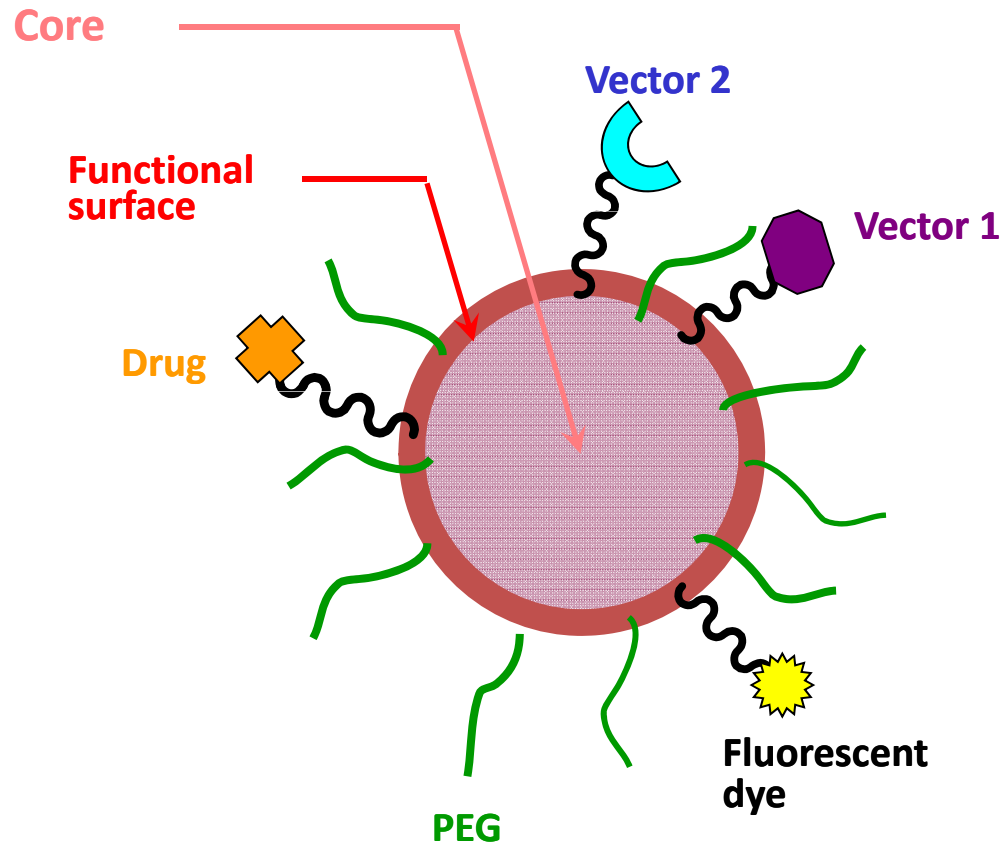


Biomolecule 4
(nuclear translocation)



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THE PRODUCT Multifunctionalization: state of the art



MATERIAL

-) Novel physical properties
-) Size distribution

BIOACTIVITY

-) Biomolecules (orientation, activity, flexibility, presentation, number of biomolecules...)

STABILITY

-) Physiological conditions
-) Avoiding unspecific interactions
-) Avoiding RES
-) Non Toxic

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THE PRODUCT Multifunctionalization: state of the art

**GENERAL AND ONE-STEP METHODOLOGIES
FOR THE MULTIFUNCTIONALIZATION
OF NANOMATERIALS**



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THE PRODUCT Multifunctionalization: state of the art

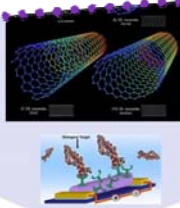
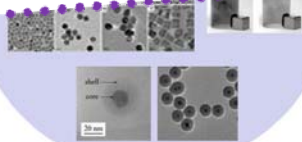
ALS

Au Nps



DIFFERENCES IN:

- Colloidal stability
- Size
- Surface area
- Density of chemical groups



Peptides

DIFFERENT BIOMOLECULES

DIFFERENCES IN:

- Size
- Composition
- 3D structure
- Active site location



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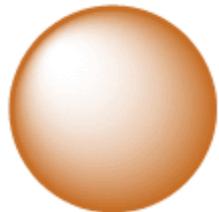
THE PRODUCT

Functionalization market

Functionalization at present

Nanoparticles

Biomolecules/Drugs



Monofunctionalization

New conjugations: RD project



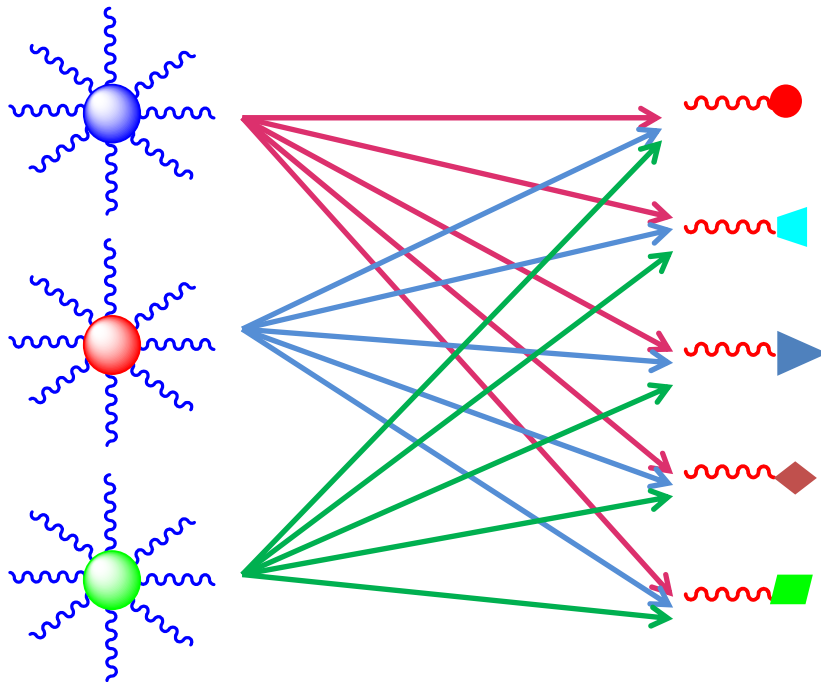
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THE PRODUCT

NIT-zipper®

Nanoparticles

Biomolecules/Drugs



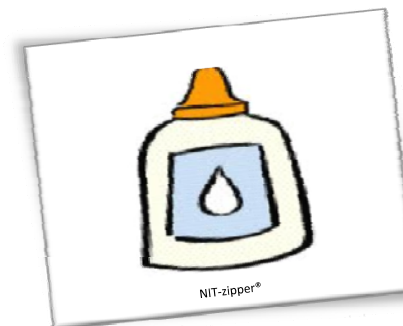
NIT-zipper® STRATEGY

Any NP with any biomolecule/drug

Immediate

Multifunctionalization

Patented



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THE PRODUCT

Innovative mechanism of action

**UNIVERSAL STRATEGY: MULTIFUNCTIONAL
NANOMATERIALS production**

1st nanomaterials functionalization KIT at the market

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THE PRODUCT

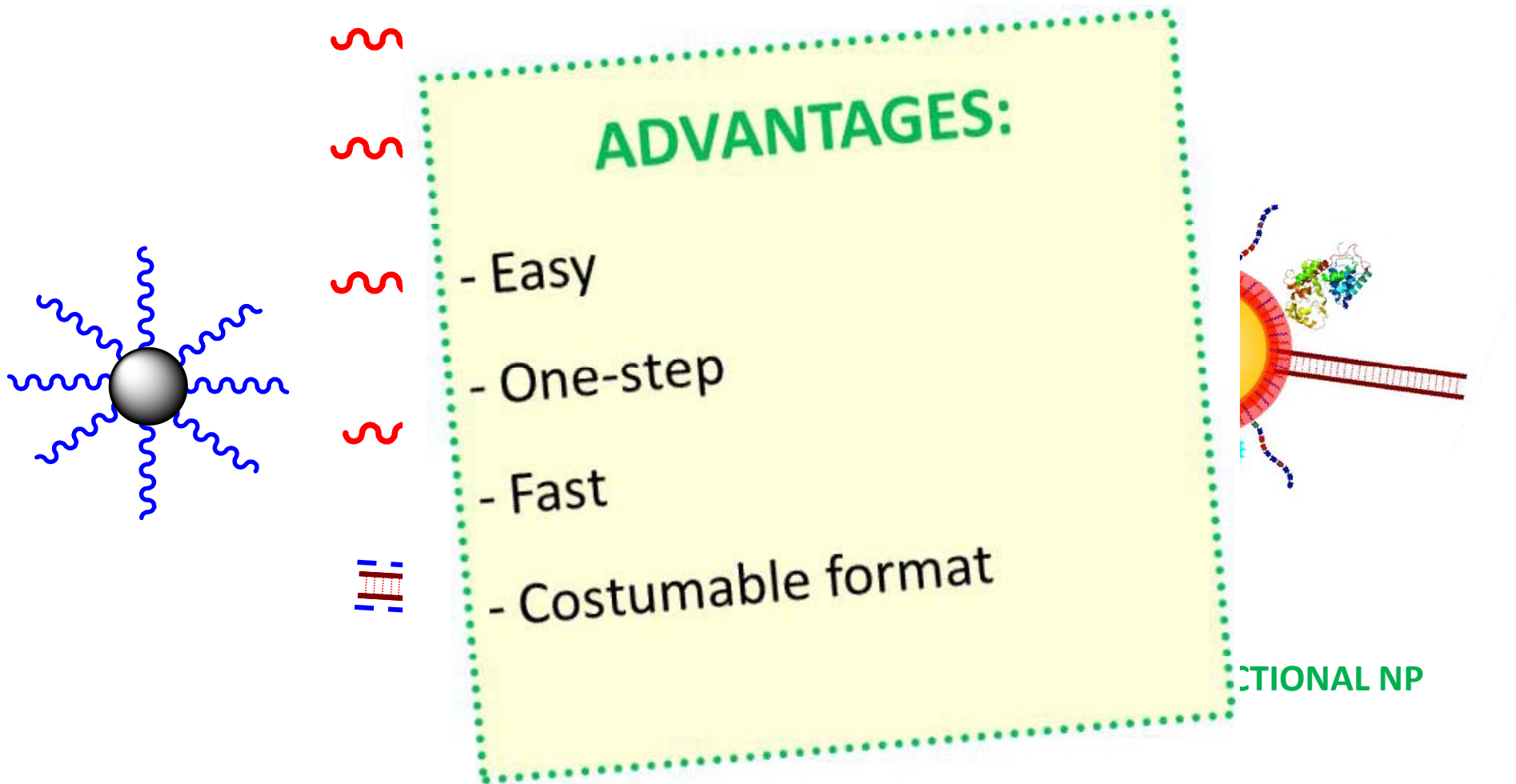
Innovative mechanism of action

TRADIIONAL STRATEGY



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THE PRODUCT Multifunctional NPs: New generation of drugs

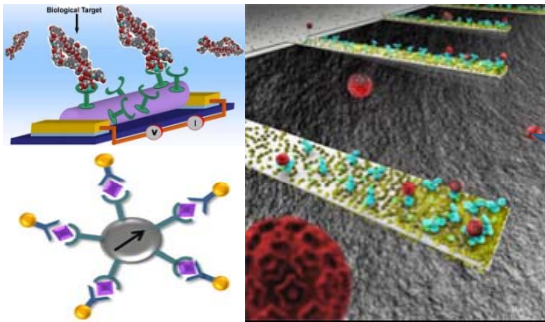


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THE PRODUCT Multifunctional NPs: New generation of drugs

MONO-FUNCTIONALIZATION

In vitro diagnosis



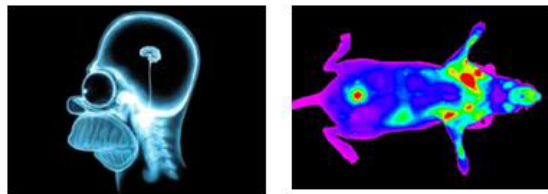
MULTI-FUNCTIONALIZATION

In vivo targeted therapy



UNLIMITED
APPLICABILITY

In vivo targeted imaging agents



MRI Fluorescent tomography

Theragnostic agents



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3. Availability for cooperation

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THE PRODUCT

Differential features

Multifunctionalization

Universality: Any material / any biomolecule / drug

Low cost

Immediacy(closer deadlines)

Wide range of applications: drug delivery, targeting, biosensors...

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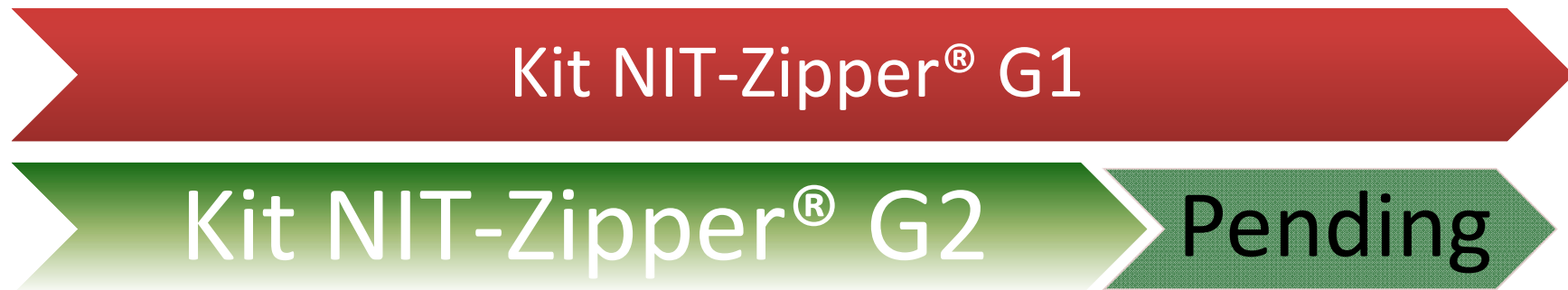
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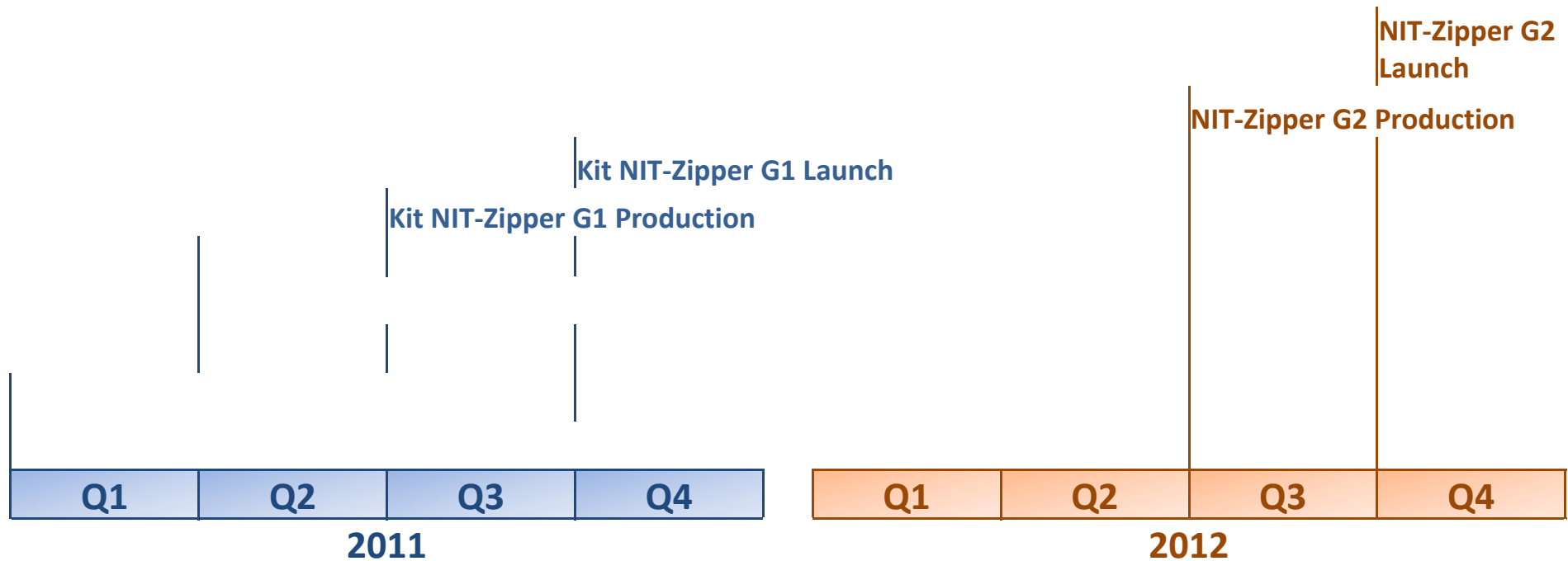
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THE PRODUCT Current status of development



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THE PRODUCT Current status of development



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IPR protection

G1 “Soportes Biofuncionalizados Covalentemente”
(Patente P200931092) (PCT/ES2010/070794)

G2 “Multifuncionalización de Soportes”
(Patente P201130713)

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Pitfalls&Risks

✓ NOT WORKING TECHNOLOGY

NO

✓ FUNDING

NO

✓ QUALIFIED TEAM

NO

✓ PRODUCTION

* ACTUAL GRAM SCALE

* *INDUSTRIAL PRODUCTION*
AT THE END OF THE PROJECT

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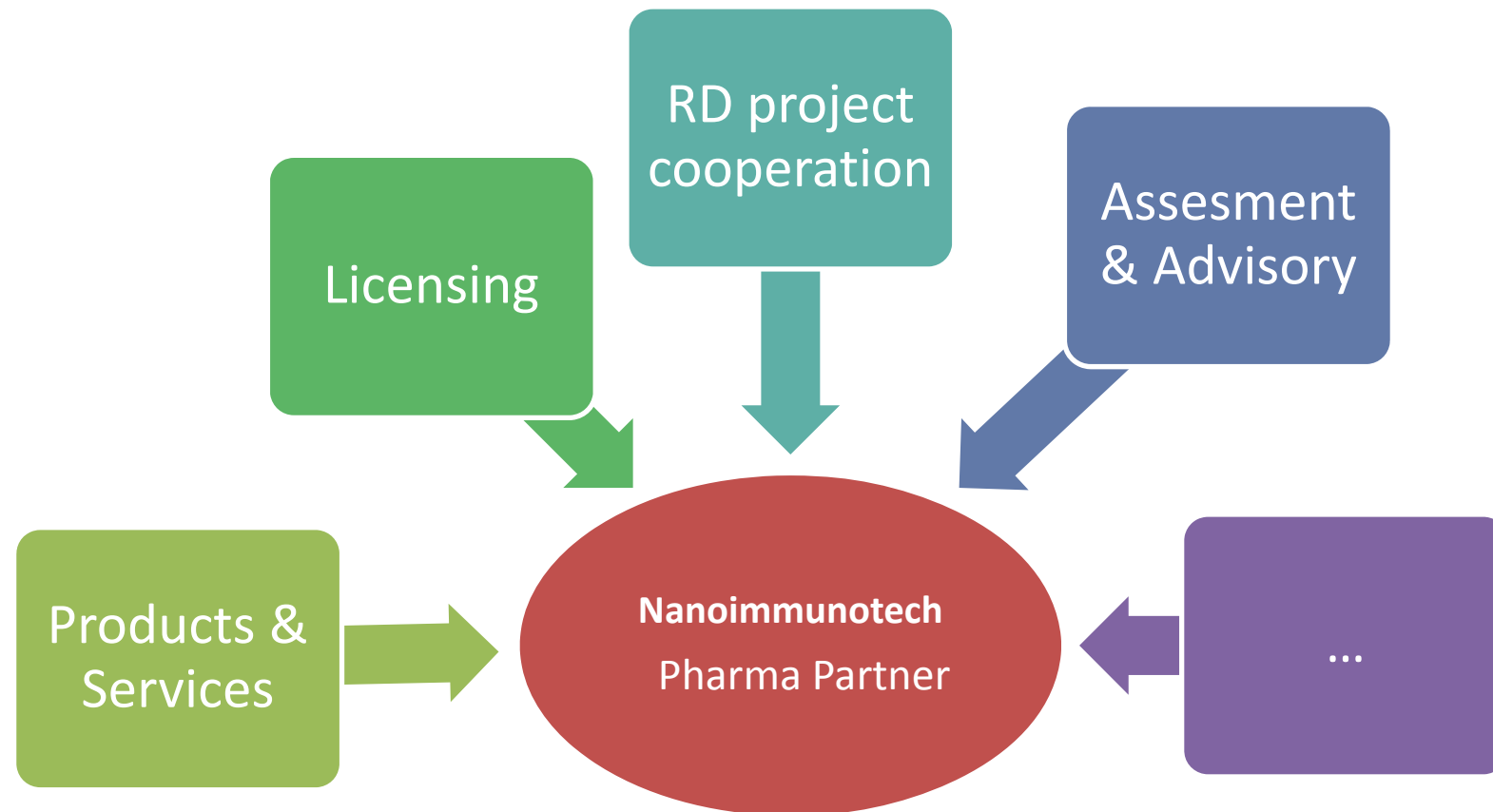
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AVAILABILITY FOR COOPERATION





Dr Valeria Grazu
Scientific advisor

www.nanoimmunotech.es