MSCA

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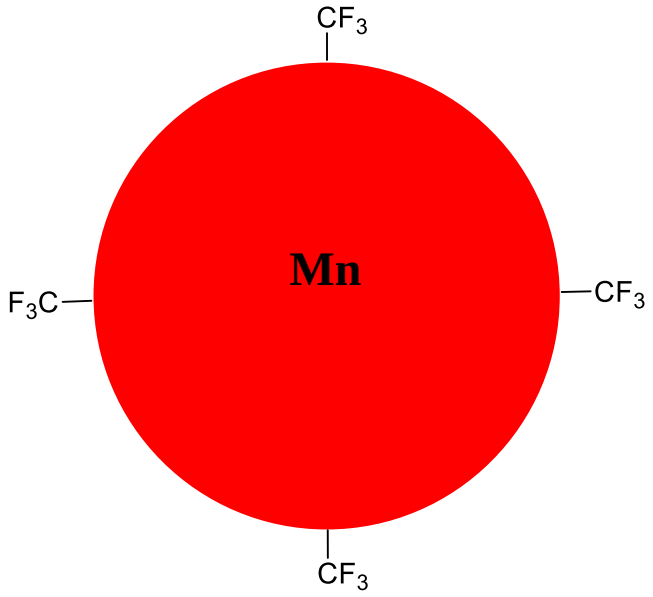
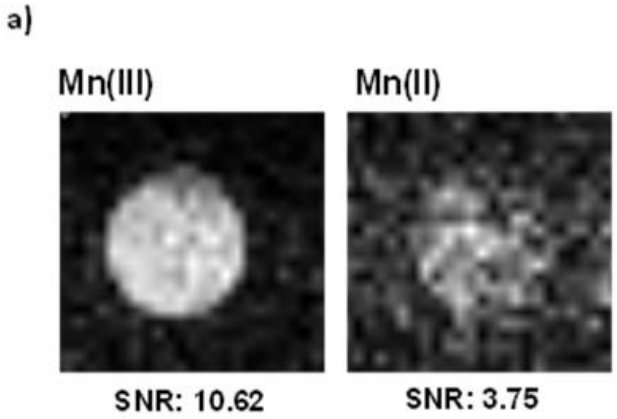
2022. 10. 01. – 2024. 09. 30.

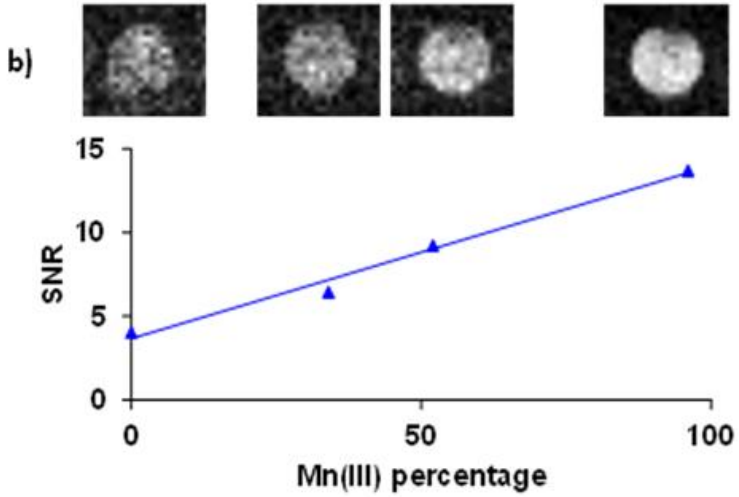
Paramágneses fémiont (Mn és Fe) és Fluort tartalmazó komplexek fejlesztése



Cél:

- Stabil és inert komplexek előállítása
- Fluor (^{19}F) tartalom növelése / vízoldhatóság
- ^{19}F/fémion távolság hangolása
- Cytotoxicitás
- Sejtjelölés (őssejt, T sejt)
- Jelölt sejt követése élő szervezetben MRI-vel





- **Hogyan induljunk el?**
    - **Fogadó intézmény/Témavezető (Fontos!!!!)**
    - **Téma**
        - **Újszerű, nagy érdeklődésre számot tartó**
        - **Bővebb mint a PhD alatt megszerzett tudás**
            - **Mi az amit te tudsz vinni**
            - **Mi az amit te tanulhatsz**

Associated with document Ref. Ares(2021)915736 - 02/02/2021

Proposal Evaluation Form

EUROPEAN COMMISSION

Horizon 2020 - Research and Innovation Framework Programme

Evaluation Summary Report

Call: H2020-MSCA-IF-2020
Type of action: MSCA-IF-EF-ST
Proposal number: 101029510
Proposal acronym: PARA-FLUOR
Duration (months): 24
Proposal title: Paramagnetic, fluorinated and water-soluble metal complexes for 19F MRI
Activity: ST-CHE

N.	Proposer name	Country	Total Cost	%	Grant Requested	%
1	CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE CNRS	FR	184,707.84	100.00%	184,707.84	100.00%
	Total:		184,707.84		184,707.84	

Abstract:
Summary: 19F MRI relies mainly on the use of fluorine-dense perfluorocarbon nanoemulsions. However, poor water solubility, limited stability, droplet heterogeneity, rigorous liver accumulation of the particles, as well as the relatively long fluorine relaxation times often limit their applicability. Fe(III) and Mn(II) have the most advantageous paramagnetic properties to shorten T1 relaxation time of 19F without strong line-broadening T2 effect, deleterious for 19F MRI detection. The combination of these paramagnetic metal ions with small molecular weight ligands containing maximized number of magnetically equivalent fluorine atoms is proposed here to circumvent the problems associated with perfluorocarbon nanoemulsions. We will create complexes that provide high thermodynamic stability and kinetic inertness important for safe biological application, good water solubility, as well as short 19F T1 relaxation time, allowing for fast MRI scans and high signal to noise ratio.
A series of open-chain and macrocyclic ligands will be synthetized and their Mn(II) and Fe(III) complexes characterized with respect to their application as 19F MRI agents (water solubility, thermodynamic and kinetic stability, 19F relaxation properties). Structural variations of the ligands will allow for optimizing the 19F-metal distance for optimized relaxation effect. For a proof of concept cell labelling study, we will choose dendritic cells (DC) and T lymphocytes (TL), two cell types frequently used for adoptive cell transfer strategies in oncology. Cytotoxicity and cell labelling capacity of the probes will be assessed and in vitro MRI phantom images will be acquired on cells labelled with the paramagnetic complexes.

Evaluation Summary Report

Evaluation Result

Total score: 86.60% (Threshold: 70/100.00)

Criterion 1 - Excellence

Score: **4.50** (Threshold: 0/5.00 , Weight: 50.00%)

Criterion 2 - Impact

Score: **4.40** (Threshold: 0/5.00 , Weight: 30.00%)

Criterion 3 - Implementation

Score: **3.80** (Threshold: 0/5.00 , Weight: 20.00%)

93 pont (12,44 %)

- **Gyengeségek**
  - **Tréningek**

  - **Újonnan elsajátított képességek hogyan segítik a jövőbeli karrieremet**

  - **Buktatók/Megoldások (Risk analysis and contingency plan)**

Proposal Evaluation Form

EUROPEAN COMMISSION

Horizon Europe Framework Programme (HORIZON)

Evaluation Summary Report - Postdoctoral Fellowships

Call: HORIZON-MSCA-2021-PF-01
Type of action: HORIZON-TMA-MSCA-PF-EF
Proposal number: 101065389
Proposal acronym: PARA-FLUOR
Duration (months): 24
Proposal title: Paramagnetic, fluorinated and water-soluble metal complexes for 19F MRI
Activity: EF-CHE

N.	Proposer name	Country	Total Cost	%	Grant Requested	%
1	CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE CNRS	FR	211,754.88	100.00%	211,754.88	100.00%
	Total:		211,754.88		211,754.88	

Abstract:
19F MRI relies mainly on the use of fluorine-dense perfluorocarbon nanoemulsions. However, poor water solubility, limited stability, droplet heterogeneity, rigorous liver accumulation of the particles, as well as the relatively long fluorine relaxation times often limit their applicability. Fe(III) and Mn(II) have the most advantageous paramagnetic properties to shorten T1 relaxation time of 19F without strong line-broadening T2 effect, deleterious for 19F MRI detection. The combination of these paramagnetic metal ions with small molecular weight ligands containing maximized number of magnetically equivalent fluorine atoms is proposed here to circumvent the problems associated with perfluorocarbon nanoemulsions. We will create complexes that provide high thermodynamic stability and kinetic inertness important for safe biological application, good water solubility, as well as short 19F T1 relaxation time, allowing for fast MRI scans and high signal to noise ratio.
A series of open-chain and macrocyclic ligands will be synthetized and their Mn(II) and Fe(III) complexes characterized with respect to their application as 19F MRI agents (water solubility, thermodynamic and kinetic stability, 19F relaxation properties). Structural variations of the ligands will allow for optimizing the 19F-metal distance for optimized relaxation effect. For a proof of concept cell labelling study, we will choose dendritic cells (DC) and T lymphocytes (TL), two cell types frequently used for adoptive cell transfer strategies in oncology. Cytotoxicity and cell labelling capacity of the probes will be assessed and in vitro MRI phantom images will be acquired on cells labelled with the paramagnetic complexes.

Evaluation Summary Report

Evaluation Result

Total score: 92.40% (Threshold: 70/100.00)

Criterion 1 - Excellence

Score: **4.40** (Threshold: 0/5.00 , Weight: 50.00%)

Criterion 2 - Impact

Score: **5.00** (Threshold: 0/5.00 , Weight: 30.00%)

Criterion 3 - implementation

Score: **4.60** (Threshold: 0/5.00 , Weight: 20.00%)

92,8 pont (~14,5 %)

http://www.talkacademia.com/viewforum.php?f=2

- New post 2023 Marie Curie Postdoctoral Fellowship(HE-MSCA-PF-2023)

Marie Curie Individual Fellowship 2023 **facebook**

Excellence:

- Jelentős része a pályázatnak Max 10 oldal
- A kutatás háttere, miért jelentős a javasolt pályázat
- Rövid áttekintése a pályázatnak (koherens az Implementation résszel)
- Ha vannak eddigi eredmények (bizonyítva, hogy működik a javasolt kutatás)
- Témavezető és a magad bemutatása, Two ways transfer of knowledge
- Open Science

Impact:

- Hogyan segíti ez a jövőbeli karrieredet
- Hogyan tervezed megosztani az eredményeket különböző emberekkel
- Társadalmi, tudományos és gazdasági hatások

Implementation:

- A javasolt kutatás részletes kifejtése (táblázat)
- A fogadó intézmény felszereltsége

Months	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
WP1:																								
1.1			D																					
1.2			M	D																				
1.3							D																	
1.4								D							D									
WP2:																								
2.1							M			D														
2.2									D															
2.3										M		D												
WP3:																								
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3.2											M			D										
WP4:																								
4.1															M		D							
4.2															M			D						
4.3																				M	D			
WP5: Grant Management																								
5.1 Scientific checkpoints																								
5.2 Career development																								
5.3 Training																								
WP6: Disseminaton and Exploitation																								
6.1 Consideration of the intellectual product																								
6.2 Conferences																								
6.3 Publications																								
6.4 Knowledge transfer																								
6.5 General Public																								
6.6 High school students																								
				M: Milestone								**D**: Deliverable												

Zoltán Garda has received funding from the European Union's Horizon research and innovation programme under the Marie Skłodowska-Curie grant agreement No. 101065389.