enterprise europe network

Partnering Opportunity

Profile Status: Published

Research & Development Request

H2020-FETOPEN-2018-2020: Basque research centre is looking for partners with expertise in the manufacture of membranes with nano-pores and/or interested in the application of a device for refolding proteins prone to aggregation.

Summary

A Basque research centre is working on an interdisciplinary project combining soft-matter physics and biology. This project aims at developing a new technology employing "soft nanopores" through which to refold proteins and disaggregate protein clusters. The center seeks companies interested in the application of the technology or in further developing their own soft-pore technology under a proposal for the H2020-FETOPEN-2018-2020 call.

Creation Date	15 November 2019
Last Update	15 November 2019
Expiration Date	13 April 2020
Reference	RDES20191111001
Public Link	https://een.ec.europa.eu/tools/services/PRO/Profile/Detail/554864c3-e0fb-4e7b-9d38-bf468dce5db6

Details

Description

Proper folding is essential for active proteins to exert their function in biological systems. Protein misfolding of recombinant proteins is one of the mayor bottlenecks in intensive, industrial scale production of therapeutic proteins. Misfolded proteins and their aggregates pose a problem both when present in the human body and after recombinant protein synthesis. Accumulation of misfolded proteins in the body is the basis of many diseases, such as Alzheimer's and Parkinson's diseases. They also limit the yields obtained from recombinant protein synthesis, and reduce the batch' purity. Thus, there is a need for protein purification, where these

malformed proteins and their aggregates are filtered from their properly folded counterparts.

Unfortunately, most nanoporous filtration methods clog easily, are not high-throughput, and require multi-parameter optimization for each specific protein. This makes protein purification difficult and cumbersome.The artificial chaperoning developed in this project will lay the foundation for a new technology employing"soft nanopores" through which to not only filter proteins but through with aggregated and misfolded proteins are deaggregated and unfolded to give proper folding a second chance. The pores are much larger than the size of the proteins, thereby avoiding clogging, and will require much lower pressure to operate. The interior of the soft nanopore is fitted with many polymer chains, these concentrate the friction on the solutes that breaks apart aggregates and unfolds misfolded proteins.

This technology allows proteins a second chance to refold properly upon exiting the soft nanopore. Unlike other chromatography based protein purification technologies which require several parameters such as buffer, chaotropic agent, protein concentration, etc. to be tuned to the specific protein, this technology requires none of this preliminary optimization since friction is used to unfold proteins. As such, this technology may provide superior adaptability and ease-of-use.

The research centre is looking for companies interested in the application of the technology to large scale protein expression, for instance, for pharmaceutical products. Moreover, the centre would be also interested in companies that have or want to further develop their soft-pore technology.

Official deadline for the call: May 13th, 2020
Deadline for expression of interest: April 13th, 2020
Anticipated duration of the project: 3 years

Advantages and Innovations

The technology under development will allow for protein refolding and dis-aggregation at small and large scale. Itt will also make possible to solubilize misfolded proteins for downstream applications such as assay development or structural studies by X-ray crystallography or nuclear magnetic resonance spectroscopy, in that way pushing the research of diseases like Alzheimer's and Parkinson's diseases.

Moreover, this technology will overcome the two biggest challenges that biopharmaceuticals are facing nowadays in the manufacturing of therapeutic proteins: the formation of aggregates and protein misfolding. These are significant issues that prevent a protein drug candidate from ever making it to the market.

Stage of Development

Proposal under development

IPR Status

Patent(s) applied for but not yet granted

Keywords

Technology

06002004	Protein Engineering
06004	Micro- and Nanotechnology related to Biological sciences
06006006	Biological Nanomaterials

Market

04007	Enzymology/Protein Engineering/Fermentation
04017	Micro- and Nanotechnology related to Biological sciences

NACE

Q.86.9.0	Other human health activities

Network Contact

Issuing Partner

ZACHODNIOPOMORSKI UNIWERSYTET TECHNOLOGICZNY W SZCZECINIE

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Open for EOI : Yes

Dissemination

Relevant Sector Groups

Bio Chem Tech
Materials
Nano- and Microtechnologies

Client

Type and Size of Organisation Behind the Profile

R&D Institution

Year Established

2006

Turnover

<1M

Already Engaged in Trans-National Cooperation

Yes

Languages Spoken

English
French
Spanish
Italian

Client Country

Spain

Partner Sought

Type and Role of Partner Sought

We are looking for biopharmaceutical or industrial companies capable of manufacturing membranes with nanopores or interested in the application of a device for refolding proteins prone to aggregation.

The role of the partner will be that of co-development within a technical cooperation. The Basque centre is interested in participating in the H2020-FETOPEN-2018-2020 grant application.

Type and Size of Partner Sought

SME 11-50,SME <10,>500 MNE,251-500,SME 51-250,>500

Type of Partnership Considered

Research cooperation agreement

Program - Call

Framework Program

H2020

Call title and identifier

H2020-FETOPEN-2018-2020

Submission and evaluation scheme

Multiple cut-off

Coordinator Required

No

Deadline for EOI

13 Apr 2020

Deadline of the Call

13 May 2020

Project Duration

156 week(s)

Project Title and Acronym

Artificial Chaperonin: design of a protein refolding nanomachine