Profile Status: Published

Technology Offer

Technology for determining physicochemical properties of nanomaterials is offered under commercial or license agreement

Summary

An award-winning technology for determining physicochemical properties (morphology) of nanomaterials by using gaseous phases of a defined chemical potential was developed by a team of scientists from Poland. The invention is offered to chemical companies producing and/or using crystalline, amorphous or multimodal catalytic agents and/or nanomaterials. The scientists are interested in selling (commercial agreement) or licencing the technology.

Creation Date	08 August 2018
Last Update	22 August 2018
Expiration Date	23 August 2019
Reference	TOPL20180808001
Public Link	https://een.ec.europa.eu/tools/services/PRO/Profile/Detail/9293963f-d434-4e75-8e01-20a43021fd7d

Details

Description

A team of scientists from a Polish university that specialises in nanomaterials and catalytic processes has developed a technology for determining physicochemical properties of nanomaterials (their morphology) through programmed chemical phase transformations. The invention allows one to analyse and identify: phase composition, crystallites size, shape and distribution, lattice strain and constant of nanomaterials. It was developed in order to remedy inefficiencies of available solutions, namely: temperature-programmed methods are time- and resource consuming, and results of the microscopic analysis are partial (e.g. lack of data on a shape of nanocrystallites) and may not be representative for the whole structure of a nanomaterial. The scientists already won an award for their technology in a conference dedicated to innovations.

The offered technology involves the treatment of nanomaterials with a gaseous phase of a defined chemical potential and then measuring ensuing changes in a solid phase. Nanomaterials react in a characteristic manner to nitriding, oxidation and carburization. Therefore, by applying programmed, controlled changes to a concentration of reagent gases, new equilibria or quasi-equilibria are generated. Then, chemical changes in a solid phase resulting from these reactions are measured using known methods, such as thermogravimetry, reagent consumption, radiography, spectrometry (mass, raman or mössbauer), or electric conduction. Finally, these measurements combined and compared with parameters (results)

characteristic for applied method (i.e. for chemical potential of used gaseous phase) indicate morphology of analysed nanomaterial, its internal structure.

Offered technology may be implemented in the chemical industry, particularly in the production of catalysts and/or nanomaterials. Special qualities of materials build of nanoparticles (e.g. superelasticity, better resistance, creep strength, etc.) are contingent upon their internal structure (morphology of a material). Because the technology identifies this structure, it allows for validation and selection of nanomaterials that in further processing and production of finished goods will render only desired effects.

The scientists are looking for partners from the chemical sector that would like to further develop and introduce the technology onto the market. Therefore cooperation in a form of commercial agreement with technical assistance or license agreement is offered. In both cases, a partner will be responsible for implementing the technology into his production process. The scientist will lend his expertise in adapting and introducing the technology.

Advantages and Innovations

So far no other scientist or company has developed a technology for using gaseous phases and chemical reactions to identify physicochemical properties (morphology) of nanomaterials. The advantages of this innovation are:

• a multitude of generated and gathered data - a much wider range of information compared to other methods;
• accuracy and precision of measurements that makes analysis comprehensive and gives reliable results;
• reduction of costs and economy of time due to the adopted holistic approach;
• variety of nanomaterials that can be analysed (crystallite, amorphous, and/or multimodal).

Stage of Development

Under development/lab tested

IPR Status

Patents granted

Comment Regarding IPR status

Polish patent has been granted.

Profile Origin

National or Regional R&D programme

Keywords

Technology

02007015	Properties of Materials, Corrosion/Degradation
02007024	Nanomaterials

Market

08001016	Commodity chemicals and polymers
08001017	Industrial chemicals
08001019	Speciality/performance chemicals

08001020	Electronic chemicals
08001022	Agricultural chemicals

Network Contact

Issuing Partner

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Open for EOI : Yes

Dissemination

Relevant Sector Groups

Bio Chem Tech

Client

Type and Size of Organisation Behind the Profile

University

Year Established

1946

Already Engaged in Trans-National Cooperation

Yes

Languages Spoken

English
Polish

Client Country

Poland

Partner Sought

Type and Role of Partner Sought

Both, commercial and license agreement:
- Type of Partner Sought: chemical companies.
- Role of Partner Sought: a buyer of the technology should be ready to further develop and implement it. Partner licencing the technology is expected to introduce it onto the market. If needed the researchers are ready to provide expertise essential for the technology transfer.

Type and Size of Partner Sought

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

Type of Partnership Considered

License agreement
Commercial agreement with technical assistance

Profile Status: Published

Technology Offer

UK-based SME offer novel small molecule for treatment of fibrosis caused by inflammatory bowel disease

Summary

A UK-based SME has developed a novel small molecule shown to be able to prevent and reverse fibrosis caused by inflammatory bowel disease.This potent activity is combined with a good safety profile with no adverse effects shown in animal models tested. The SME is offering this small molecule to other pharmaceutical companies for further development and commercialisation. It is expected that the partnership will take the form of a licensing agreement or a technical cooperation

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Last Update	14 May 2018
Expiration Date	15 May 2019
Reference	TOUK20180413002
Public Link	https://een.ec.europa.eu/tools/services/PRO/Profile/Detail/8ffa20da-089e-49f1-ad11-de4b4eb0a028

Details

Description

Patients with inflammatory bowel disease (IBD) are at high risk of developing fibrosis that can cause narrowing and obstruction of the bowel. This occurs in 30-40% of patients within 10 years of their diagnosis and of these 80% require surgery but recurrence occurs in 70% of cases. Methods of preventing and treating this fibrosis are therefore needed.

A UK-based SME has developed a novel small molecule that has activity against ROCK 1 and 2 (Rho-associated coiled-coil-containing protein kinase), which are proteins involved in multiple aspects of the process of fibrosis. This novel small molecule has been shown to be potent and selective against its targets, with enantiomers having similar biological properties. This activity has been shown to prevent and even reverse fibrotic phenotypes in cell culture systems and mouse models. This is combined with a good safety profile with no adverse effects seen in animal models.

The SME is offering this novel small molecule to other companies operating in the pharmaceutical space. In particular those with an interest in fibrosis and fibrotic diseases. The molecule will be provided for further development and commercialisation with the partnership envisaged as a licensing agreement or a technical cooperation depending on circumstances.

Advantages and Innovations

The SMEs novel small molecule has the following advantages:

Potent and selective activity against ROCK 1/2 - efficacy is in the low nano-molar range.

Prevents and even reverses fibrotic changes, demonstrated both in vitro and in vivo.

Good safety profile in animal models.

Limited systemic exposure even at doses significantly above therapeutic levels with significant drug concentrations remaining in colon tissue 24 hours after oral dosing.

Stage of Development

Under development/lab tested

IPR Status

Patents granted

Profile Origin

Private (in-house) research

Keywords

Technology

06001012	Medical Research
06001015	Pharmaceutical Products / Drugs
06002002	Cellular and Molecular Biology

Market

05003005	Drug delivery and other equipment
05007002	Pharmaceuticals/fine chemicals

NACE

M.72.1.1	Research and experimental development on biotechnology
M.72.1.9	Other research and experimental development on natural sciences and engineering
Q.86.9.0	Other human health activities

Network Contact

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Open for EOI : Yes

Dissemination

Relevant Sector Groups
Bio Chem Tech

Client

Type and Size of Organisation Behind the Profile
Industry SME 11-49

Year Established
0

Already Engaged in Trans-National Cooperation
Yes

Languages Spoken
English

Client Country
United Kingdom

Partner Sought

Type and Role of Partner Sought
The SME is looking to partner with other companies in the pharmaceutical sector and in particular those with interests in fibrosis and fibrotic diseases.

The SME will provide the novel small molecule to a partner for further development and ultimately commercialisation. It is expected that the partnership will take the form of a licensing agreement, although technical cooperations will be considered if the situation warrants it.

Type of Partnership Considered
License agreement
Technical cooperation agreement

Profile Status: Published

Technology Offer

Small molecules for selective elimination of contaminating pluripotent stem cells from cultures of their differentiated derivatives

Summary

A German university offers a new method for selective chemical ablation of undifferentiated cells in pluripotent stem cell-derived populations. It works with small molecules that are toxic against pluripotent stem cells but not toxic to differentiated cells of interest. Applications are in cardiac regenerative medicine. In vitro results are available. Industrial licensees are sought.

Creation Date	27 February 2018
Last Update	01 March 2018
Expiration Date	02 March 2019
Reference	TODE20180227001
Public Link	https://een.ec.europa.eu/tools/services/PRO/Profile/Detail/912e47ad-cc72-41a3-b903-fd839c7e272b

Details

Description

The generation of cardiomyocytes (CMs) from pluripotent stem cells (PSCs) holds great promise for cardiac regenerative medicine. Of particular interest are CMs derived from induced pluripotent stem cells (iPSCs) because they can be obtained by converting autologous somatic cells into an early embryonic PSC-like state, thus circumventing ethical concerns related to the use of embryonic stem cells (ESCs).

However, a fundamental obstacle in the use of induced pluripotent stem cell-derived cardiomyocytes (iPSC-CMs) are contaminating undifferentiated PSCs that remain in the population of differentiated cells which carry the risk of tumour formation. This problem is due to an incomplete in vitro differentiation of PSCs to CMs. While genetic manipulations are effective in removal of contaminating PSCs they raise safety concerns. PSC ablation by immunologic targeting is safe but less efficient because single-cell dissociation is required.

A German university now offers a most promising strategy: the selective chemical ablation of undifferentiated cells in PSC-derived populations using small molecules which are not toxic to differentiated cells of interest. The diamines of the general formula (see figure), particularly salicylic diamines, are capable of selectively eliminating PSCs from their differentiated derivatives. The diamines exhibit high cytotoxicity to murine and human PSCs but not to CMs derived from these. They are suitable for the elimination of PSCs from differentiating derivatives that contain CMs, either in unpurified or pre-purified form.

First in vitro results with murine and human cells are available. The university offers licensing agreements to pharmaceutical industry. This would include further co-development.

Advantages and Innovations

This invention presents a new route to cardiomyocytes. It distinguishes itself from other approaches by the fact that the compounds are toxic against PSCs but not against differentiated derivatives. The PSC-specific cytotoxic activity is furthermore significantly higher than in known small molecules.

Advantages are that the compounds are readily available and that they can be used in tissue repair.

Stage of Development

Under development/lab tested

Comments Regarding Stage of Development

First in vitro results

IPR Status

Patent(s) applied for but not yet granted

Comment Regarding IPR status

European patent applied

Profile Origin

Private (in-house) research

Keywords

Technology

03004007	Pharmaceutics
06001011	Heart and blood circulation illnesses
06001019	Stem cell Technologies
06002002	Cellular and Molecular Biology
06002005	Genetic Engineering

Market

04006	Cellular and Molecular Biology
05005010	Cardiology
05007002	Pharmaceuticals/fine chemicals

Network Contact

Issuing Partner

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Open for EOI : Yes

Dissemination

Relevant Sector Groups

Bio Chem Tech

Client

Type and Size of Organisation Behind the Profile

University

Year Established

0

Already Engaged in Trans-National Cooperation

Yes

Languages Spoken

English
German

Client Country

Germany

Partner Sought

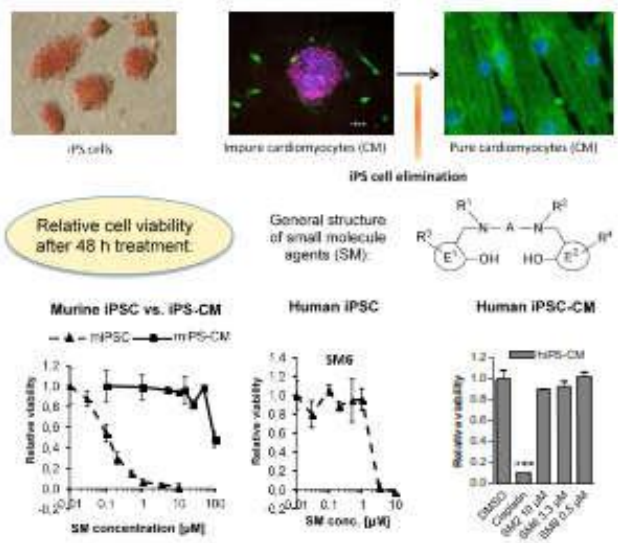
Type and Role of Partner Sought

The university offers access to rights for commercial use as well as the opportunity for further co-development within a license agreement to companies from the pharmaceutical and medical sector.

Type of Partnership Considered

License agreement

Attachments



Generation of pure CMs by effective iPSC elimination upon treatment with small molecule agents ("SM").