TECHNOLOGY COMMERCIALIZATION OFFER

"The method for evaluation of endothelial function based on the measurement of changes in skin fluorescence induced by blood flow perturbation"
[FMSF - Flow Mediated Skin Fluorescence]

NAME OF ORDERING PARTY

Politechnika Łódzka, Uniwersytet Jagielloński

LEGAL STATUS OF THE TECHNOLOGY

- Technology is subject to the following patent applications:
  – J. Gębicki, A. Marcinek, S. Chłopicki, Sposób i układ do oceny funkcji śródbłonka naczyniowego. Polish patent application P-395074 filed 31.05.2011.
- J. Gębicki, A. Marcinek, S. Chłopicki, A method for evaluating vascular endothelium function and a system therefor. USPTO patent application (US) 61/491,543 filed 31.05.2011.
- J. Gębicki, A. Marcinek, S. Chłopicki, A method and a system for evaluating vascular endothelium function. WIPO Patent application (PCT) PCT/IB2012/052691 filed 30.05.2012.

European Patent Office (EPO) issued a notice of intention to grant for the patent:

- J. Gębicki, A. Marcinek, S. Chłopicki, A method and a system for evaluating vascular endothelium function. EPO patent application nr EP12727444.7 filed 19.12.2013, published 9.04.2014 with EP2713860.

The EPO patent will be validated in selected EU countries.

Patent procedure is continued (application examination phase) in most key markets worldwide: USA, Canada, Japan, Australia, China, Euroasia (including Russia), Brazil, Mexico, Ukraine.

- J. Gębicki, A. Marcinek, S. Chłopicki, A method and a system for evaluating vascular endothelium function. Mexican patent application MX/A/2013/01407 filed 29.11.2013.
- J. Gębicki, A. Marcinek, S. Chłopicki, A method and a system for evaluating vascular endothelium function. Brazil Brazylijskie patent application BR112013030604-1 filed 28.11.2013.
- J. Gębicki, A. Marcinek, S. Chłopicki, A method and a system for evaluating vascular endothelium function. Australian patent application 2012264244 filed 28.11.2013.
- J. Gębicki, A. Marcinek, S. Chłopicki, A method and a system for evaluating vascular endothelium function. Chinese patent application 201280025620.X filed 26.11.2013, published 5.02.2014 with no. CN10356139A
- J. Gębicki, A. Marcinek, S. Chłopicki, A method and a system for evaluating vascular endothelium function. Canadian patent application CA 2,837,534 filed 25.11.2013.
- J. Gębicki, A. Marcinek, S. Chłopicki, A method and a system for evaluating vascular endothelium function. Ukrainian patent application 201315619 filed 31.12.2013.
- J. Gębicki, A. Marcinek, S. Chłopicki, A method and a system for evaluating vascular endothelium function. Japan patent application JP 2014-518738A filed 29.11.2013, published 7.08.2014.
- J. Gębicki, A. Marcinek, S. Chłopicki, A method and a system for evaluating vascular endothelium function. Euroasian patent application 201391781 filed 25.12.2013.

TECHNOLOGY STAGE OF DEVELOPMENT

Working prototype of the device has been developed.

TECHNOLOGY DESCRIPTION

The vascular endothelium is a layer of cells lining the interior of blood vessels, including arteries and veins, regulating the function of the cardiovascular system and maintaining the vascular hemostasis. Healthy endothelium is essential for correct functioning of the cardiovascular system, while endothelial dysfunction leads to various pathologies (e.g. atherosclerosis or disease of arteries, hypertension etc.). Endothelial dysfunction is an important indicator for the physicians, allowing early diagnosis of the risk of cardiovascular diseases. A number of methods and devices for non-invasive in vivo assessment of vascular endothelium have been already developed. The most important of these relate to impaired ability of endothelial cells to the proper response to vasodilator stimuli (endothelial dysfunction of this type can be considered as a predictor of the development of undesirable cardiovascular events).

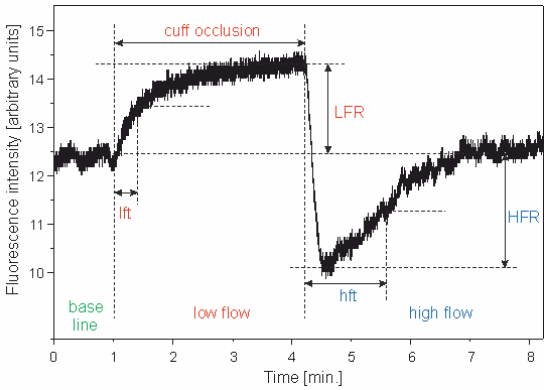
Existing methods:

FMD (Flow Mediated Dilation) - "gold standard" among existing methods; ultrasound measurement of changes in brachial artery diameter following reactive hyperemia (lock release of blood flow induced by a cuff sphygmomanometer); measurement complicated, depending on the operator, the result difficult to normalize, poor time resolution;
LDF (Laser Doppler Flowmetry) - measuring of changes in blood flow in response to reactive hyperemia; poor reproducibility, sensitivity to artifacts; measurement only during diastole (HFR); good time resolution;
PAT (Peripheral Arterial Tonometry) - measurement of blood pressure in the finger (pulse wave amplitude) in response to reactive hyperemia. Simple measurement, zero-one result (no time evolution, not-normalized response), result inconclusive to interpret, measuring only during diastole (HFR); in selected diseases correlated with FMD;

Offered technology - Flow Mediated Skin Fluorescence (FMSF) method:

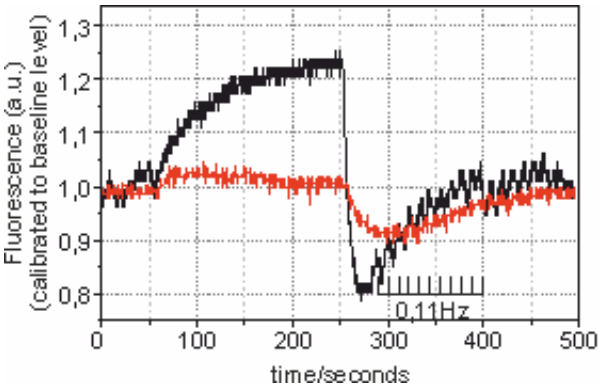
FMSF method meets the demand for a simple, fast, inexpensive, non-invasive test for the assessment of endothelial function that is reliable, easy to carry, and thus it is possible to apply for a large population of patients, e.g. for the purpose of screening and monitoring the patient's response to treatment. It allows the assessment of both systole (LFR) and diastole of blood vessels (HFR), and also allows to track the kinetics of changes in response to reactive hyperemia.
FMSF method allows the detection of vascular endothelial dysfunction at an early stage of the disorder to identify patients for preventive or therapeutic intervention, or to more accurate and more complex diagnostic tests.
FMSF method allows to monitor the healing process, to observe the influence of drugs on the vascular condition, or the influence of exercise training on overall health.
FMSF method has already acquired intellectual property protection in the EU (decision of the intention to grant a patent - European patent application EP12727444.7); the patent procedure in other largest markets worldwide is ongoing.

Prototype device



Low Flow Response (LFR)

High Flow Response (HFR)



Healthy volunteer

A patient with a disease

PREPARING TENDER

Basic requirements:

1. The tender should be prepared in Polish or English according to the tender form (Appendix 1),
2. The tender should be signed by an authorized person,
3. Full names or stamps with name shall be provided with signatures of authorized person(s),
4. Any amendments in the tender must be deleted and initialed by the person authorized to sign the offer along with the date,
5. Bidder shall bear all costs associated with the preparation and submission of the offer, regardless of the outcome of the proceedings,
6. Each bidder may submit only one tender,
7. The validity of the tender cannot be shorter than 30 days.

DEADLINE AND PLACE OF TENDER

The tender should be submitted in intact, sealed envelope at the office of
Centrum Transferu Technologii Politechniki Łódzkiej.
ul. Ks. Skorupki 6/8, 90-924 Łódź, Room No. 10, in person, by mail or courier.

Tenders must be submitted by 12 of May 2015 until 16:00 (CET).

As the date of tender will be considered the date of receipt by the office of CTT PŁ Sp. z o.o.

Appendix 1

TENDER FORM

Name and address of the Bidder:

……..

……..

person authorized to contact in relation with the submitted tender (name, position):

……..

Phone:..... Fax:……. E-mail:…….

To:

Centrum Transferu Technologii Politechniki Łódzkiej Sp. z o.o.
ul. Ks. Skorupki 6/8, 90-924 Łódź
NIP 727-27-48-041 REGON 100710721

Referring to technology commercialization offer entitled **"Method of evaluating the endothelial function based on the measurement of changes in skin fluorescence induced by blood flow disorders"** we offer to purchase the technology for the amount of

net: ..... PLN (say: .... Polish zlotys)

Additional information/remarks:

……
……..……
……..

Tender valid…….. days.

....

Place, date **stamp and signature of authorized person**