



# **NEW MARKERS AND THE METHOD OF DETERMINING THE RISK OF NON-SMALL CELL LUNG CANCER DISTANT RECURRENCE FOR PATIENTS IN STAGE I-III A**

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## ***Product description***

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Lung cancer, mainly the non-small cell type, is the most frequently diagnosed malignant tumour, which constitutes approximately 20% of all cancer-related deaths in Europe. Available data are alarming and indicate that despite advancements in surgery, chemotherapy and radiotherapy, seven out of eight patients die within five years from the diagnosis. Increasing of efficiency of lung cancer treatment demands searching for more and more effective diagnostic methods, which enable personalisation of therapy for a given patient. From a clinician's point of view, having access to a tool, which enables estimation of the risk of disease recurrence after tumour removal, is of great importance. Results of surgical treatment of lung cancer are in specific cases difficult to predict. The proposed invention consists of new molecular markers, enabling division of patients who suffer from non-small cell lung cancer in stage I-III A into two groups: patients who have low risk of recurrence of tumour after a surgery, and those with high risk of cancer recurrence after exclusive surgical treatment.

## ***Key words***

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non-small cell lung cancer, genetic marker, microRNA

## ***Legal status of the product***

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– Polish Patent Office:

PL 212748 B “The method of determining the risk of non-small cell lung cancer distant recurrence in patients in stage I-III A of advancement, who are surgically treated” – submitted to Polish Patent Office on 30.07.2009, the decision on granting patent from 18.06.2012 – Medical University of Gdańsk and the authors of the invention are entitled to this patent.

Submitted patent application (2011) – Medical University of Gdańsk and the authors of the invention are entitled to this patent.

Submitted patent application (2014) – Medical University of Gdańsk and the authors of the invention are entitled to this patent.

– European Patent Office:

Submitted European patent application (2010), countries covered by the invention's protection: UK, DE, FR – Medical University of Gdańsk and the authors of the invention are entitled to this patent.

## ***The aim of the offer***

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The subject of the offer are new markers, as well as a method of determining the risk of distant recurrence (metastases) of non-small cell lung cancer in patients in stage I-III A of cancer advancement, who were subjected to radical lung parenchyma resection.

### ***Foregoing funding of studies on the product***

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NCN Grant (NN403210139) entitled: Predictive Meaning of miRNA Expression in Early Non-small Cell Lung Cancer.

### ***Analysis of competition on the market***

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There are several solutions available on the market, used in diagnosis of lung cancer, for instance *GENSIGNIA™ MSC LUNG CANCER TEST*, which is based on analysis of microRNA isolated from plasma, *MI-LUNG™*, which is applied in order to accurately distinguish four main histological subtypes of lung cancer, *Oncotype SEQ Liquid Select*, used for identifying and assessing of genomic changes in tumours of patients suffering from non-small cell lung cancer in stage IIIB or IV.

American companies *Rosetta Genomics* and *GENSIGNIA™* deal with elaborations of diagnostic tests towards lung cancer subtypes.

### ***Advantages of the product***

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Nowadays, personalised medicine is developing fast, particularly within the scope of oncology. Identification of molecular markers and their proper analysis, which goes beyond typical diagnostic tests, facilitates the assessment of recurrence risk of cancer. The potential of implementation seems to be high, due to the fact that the test is conducted on easily accessible histopathological material (frozen tissue, preserved in formalin and submerged in paraffin wax), and its gaining does not influence the method of surgical treatment of patients. Moreover, the analysis of microRNA expression profile can be conducted with the use of various techniques of molecular biology (Real-Time PCR, microarrays, sequencing). The proposed solution can ensure a rational selection of a therapy for groups of patients, depending on their dissemination risk