

# New Panel of Biomarkers Discriminating the Amelanotic versus Melanotic Melanoma that Defines Diagnostic Criteria for Melanoma Evaluation †

Ioana V. Militaru <sup>1</sup>, Cristian V.A. Munteanu <sup>2</sup>, Alina Adriana Rus <sup>1</sup>, Stefana M Petrescu <sup>1,\*</sup>

<sup>1</sup> Department of Molecular Cell Biology, Institute of Biochemistry of the Romanian Academy, Bucharest, Romania

<sup>2</sup> Department of Bioinformatics and Structural Biochemistry, Institute of Biochemistry, Romanian Academy, Bucharest, Romania

\* Correspondence: [stefana.petrescu@biochim.ro](mailto:stefana.petrescu@biochim.ro) (S.M.P.);

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**Abstract:** Cutaneous melanoma is an aggressive type of skin cancer, counting tens of thousands of deaths yearly. Its increased metastatic potential is supported by genetic mutations and microenvironmental alterations within the tumor, making this type of cancer one of the deadliest. Pigmented melanomas can be recognized due to their high melanin content, as opposed to amelanotic melanomas that lack pigmentation and are usually diagnosed in more advanced stages. This study aimed to find the distinctive proteomic features of metastatic amelanotic melanomas with high migratory capacity to facilitate the early diagnosis of these tumors. Using mass spectrometry-based proteomics, we developed a method that allows the label-free quantification of proteins identified by LC-MS/MS. Analyzing the proteome of highly pigmented versus completely amelanotic melanoma cells isolated from the lymph nodes of patients, we established a panel of biomarkers specific for aggressive non-pigmented melanomas. These new biomarkers have been further validated in three datasets from public databases of patient cohorts. The study reveals that proteomics, with its bioinformatic databases, is a significant methodology for discriminating metastatic melanoma subtypes and opens the way for new diagnostic criteria in melanoma.

**Keywords:** melanoma biomarkers; mass spectrometry; proteomics; melanoma diagnostic; melanoma prognostic.

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## Conflicts of Interest

The authors declare no conflict of interest.