

## Zebrafish as an Animal Model for Albinism Disorders

Ana-Maria DANILA<sup>1</sup>, Afef BLAITI<sup>2</sup>, Alin CIOBICA<sup>1,3,4</sup>

<sup>1</sup> Department of Biology, Faculty of Biology, Alexandru Ioan Cuza University of Iasi, Bd. Carol I no. 20A, 700505 Iasi, Romania

<sup>2</sup> Faculty of Science, Carthage University, Zarzouna, Bizerte

<sup>3</sup> Academy of Romanian Scientists, Str. Ilfov no. 3, Sector 5, 050044 Bucharest, Romania

<sup>4</sup> Preclinical Department, Apollonia University, Păcurari Street 11, 700511 Iasi, Romania

Corresponding author: Blaiti Afef, Faculty of Science, Carthage University, Zarzouna, Bizerte

**Abstract.** *Zebrafish (Danio rerio) is a relevant model for studying many diseases, including the melanocyte-related disorders. In this review of melanocyte literature, we discuss current knowledge about different forms of albinism and the potential of the zebrafish model to find new mechanisms and treatments. Melanin is produced in a process called melanogenesis. This, if altered, leads to diseases such as albinism. Albinism causes an increased risk of skin cancer. Zebrafish are used to study pigment disorders, due to their high fecundity, visible development of melanin in melanophores (melanocytes in mammals) from 24 h post-fertilization, and preserved melanogenesis pathways. In this case, we looked for developmental pathways in zebrafish melanophores and mammalian melanocytes. In addition, we summarized advances in understanding pigment cell disease and evidence supporting the potent potential of using zebrafish to better understand the management of albinism.*

**Keywords:** Albinism, zebrafish, melanocytes, melanin.

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### Introduction

Melanin is a natural pigment, often black but also brown, yellow and red, it is a heterogeneous polymer of phenolic or indolic nature with different functions, structures and presentations. The main functions of melanin are camouflage, protection against ionising radiation, energy recovery and visual perception. Melanogenesis refers to the synthesis of melanin that takes place in the melanosome, it is synthesised by melanocytes, which are specialised dendritic cells from the neural crest, it gives rise to two types of melanin: brown black eumelanin and yellow-red pheomelanin [1.2.3].

Albinism is a genetic disorder characterised by hypopigmentation and ocular abnormalities and occurs in 3 forms: oculo-cutaneous, ocular and syndromic (Hermansky-Pudlak syndrome, Chediak-Higashi syndrome). [4]

The use of animal models is an advantage for the study of albinism, especially the zebrafish, because of its high fertility compared to other animals,