

HORIZON
2020

Profiling gene expression in *Hydra vulgaris* following Gold Nanoparticle-mediated hyperthermia

Fact Sheet

Project Information

HyHeat

Grant agreement ID: 660228

[Project website](#) 

DOI

[10.3030/660228](https://doi.org/10.3030/660228) 

Project closed

EC signature date

31 March 2015

Start date

1 September 2015

End date

31 August 2017

Funded under

EXCELLENT SCIENCE - Marie Skłodowska-Curie Actions

Total cost

€ 180 277,20

EU contribution

€ 180 277,20

Coordinated by

CONSIGLIO NAZIONALE DELLE RICERCHE



Objective

Hyperthermia (HT) is currently used as a non-invasive technique for cancer therapy, whereby biological tissues are exposed to higher than normal temperatures, for selective ablation of tumoral cells. However, the molecular mechanisms underlying the in vivo cellular responses to heat stress remain unclear to date. The overall aim of the HyHeat project is to use an invertebrate model to screen the heating capabilities of different gold nanoparticles (AuNPs) in vivo, with the grand aim of understanding

the cellular responses to heat stress and therefore taking the first steps towards improving nanoparticle (NP) mediated HT efficacy for therapeutic purposes. To this end, plasmonic AuNPs with photothermal capabilities will be surface engineered and supplied to living Hydra by soaking. Upon laser irradiation of the animal, cellular and molecular expression will be profiled to monitor the overall response to NP-mediated HT. A simple invertebrate organism will be used, in line with European strategies aimed to reduce vertebrate experimentation. Once a panel of upregulated genes have been identified, the research will be conducted in mice analyzing those genes found deregulated in Hydra with the final aim to identify genetic markers of HT treatment and speed up the entry of this therapy into clinics. HyHeat is a multidisciplinary project that take advantage of the Fellow's Dr. Maria Moros knowledge in the synthesis and functionalization of NPs, and the expertise of the host group supervisor (Dr. C. Tortiglione, Istituto di Cibernetica "Eduardo Caianiello" (ICIB), National Research Council (CNR), Italy) in molecular biology using invertebrate models. This project will offer the applicant the possibility to work in a top European institution who pioneered the use of Hydra to test bioactivity and toxicity of NPs, and to develop new skills and knowledge necessary for the progress of her scientific career towards an independent position.

Fields of science (EuroSciVoc)

[natural sciences](#) > [physical sciences](#) > [optics](#) > [microscopy](#) > **[electron microscopy](#)**

[natural sciences](#) > [chemical sciences](#) > [organic chemistry](#) > **[aliphatic compounds](#)**

[natural sciences](#) > [physical sciences](#) > [optics](#) > **[laser physics](#)**

[natural sciences](#) > [physical sciences](#) > [acoustics](#) > **[ultrasound](#)**

[natural sciences](#) > [biological sciences](#) > **[molecular biology](#)**



Programme(s)

[H2020-EU.1.3. - EXCELLENT SCIENCE - Marie Skłodowska-Curie Actions](#)

MAIN PROGRAMME

[H2020-EU.1.3.2. - Nurturing excellence by means of cross-border and cross-sector mobility](#)

Topic(s)

[MSCA-IF-2014-EF - Marie Skłodowska-Curie Individual Fellowships \(IF-EF\)](#)

Call for proposal

[H2020-MSCA-IF-2014](#)

[See other projects for this call](#)

Funding Scheme

[MSCA-IF-EF-ST - Standard EF](#)

Coordinator



CONSIGLIO NAZIONALE DELLE RICERCHE

Net EU contribution

€ 180 277,20

Total cost

€ 180 277,20

Address

PIAZZALE ALDO MORO 7

00185 Roma

 **Italy** 

Region

Centro (IT) > Lazio > Roma

Activity type

Research Organisations

Links

[Contact the organisation](#)  [Website](#) 

[Participation in EU R&I programmes](#) 

[HORIZON collaboration network](#) 

Last update: 6 September 2024

Permalink: <https://cordis.europa.eu/project/id/660228>

European Union, 2025

