



PhD in FISICA / PHYSICS - 40th cycle

THEMATIC Research Field: NANO-BIO-PHOTOTRANSDUCERS

Monthly net income of PhDscholarship (max 36 months)

€ 1400.0

In case of a change of the welfare rates during the three-year period, the amount could be modified.

Context of the research activity

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| Motivation and objectives of the research in this field | <p>Many degenerative neuromuscular diseases cannot be treated pharmacological but do respond to direct cell stimulation. This is traditionally achieved by using implanted metal electrodes that have a number of drawbacks. Here we propose to develop a technological platform for achieving functional optical stimulation in which light deliver energy and information to the issue.</p> |
| Methods and techniques that will be developed and used to carry out the research | <p>New molecular based phototranducers that can be administered to living cells will be designed and studied by using a variety of characterization techniques that include a full spectrum of optical methods such as absorption, emission, time resolved spectroscopy, and microscopy. Test in vitro will be carried out applying electrophysiological methods on cell lines, bacteria and tissues.</p> |
| Educational objectives | <ul style="list-style-type: none"> - Plan and manage a research program - Mastering spectroscopy techniques, both steady state and time resolved - Mastering optical microscopy and electrophysiology techniques - Understanding the physics of the abiotic/biotic interface |
| Job opportunities | <ul style="list-style-type: none"> - R&D industrial departments - Teaching STEM courses - High Tech industry - Bio-tech start ups |
| Composition of the research group | <p>1 Full Professors 1 Associated Professors</p> |



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|---------------------------------------|---|
| | 1 Associated Professors 6 Assistant Professors 5 PhD Students |
| Name of the research directors | Guglielmo Lanzani |

| Contacts |
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| <p>https://nel.iit.it/</p> <p><i>Research director: guglielmo.lanzani@iit.it</i></p> <p><i>silvia.matti@iit.it</i></p> |

| Additional support - Financial aid per PhD student per year (gross amount) | | | |
|--|-------------------------|-------------------------|-------------------------|
| Housing - Foreign Students | 1st year | 2nd year | 3rd year |
| | 1000.0 € per student | 1000.0 € per student | 1000.0 € per student |
| max number of financial aid available: 1, given in order of merit (only for students with scholarship).. | | | |
| Housing - Out-of-town residents (more than 80Km out of Milano) | 1st year | 2nd year | 3rd year |
| | 1000.0 € per student | 1000.0 € per student | 1000.0 € per student |
| max number of financial aid available: 1, given in order of merit (only for students with scholarship).. | | | |

| Scholarship Increase for a period abroad | |
|---|---------|
| Amount monthly | 700.0 € |
| By number of months | 6 |

| Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information |
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| <p>Educational activities: Educational activities (purchase of study books and material, funding for participation to courses, summer schools, workshops and conferences). Financial aid per PhD student per 3 years: max 5.707,20 euros per student.</p> <p>Teaching assistantship: There are various forms of financial aid for activities of support to the teaching practice. The PhD student is encouraged to take part in these activities, within the limits allowed by the regulations.</p> <p>Computer and desk availability: shared use computer and desk</p> |