CALL FOR PHD POSITIONS – 34 cycle
PHD PROGRAMME IN MOLECULAR MEDICINE

PhD Programme Coordinator
Prof. Franco Novelli

Department
Molecular Biotecnology and Heath Science

PhD Programme Length
4 years

PhD web site
http://dott-mm.campusnet.unito.it/cgi-bin/home.pl

Course start date
1 October 2018

Departments involved in PhD programme
Department of Molecular Biotecnology and Heath Sciences, Department of Surgical Sciences, Department of Oncology, Department of Clinical and Biological Sciences, Department of Chemistry, Department of Sciences of Public Health and Pediatrics.

Positions offered by the PhD Programme
n. 7 positions with scholarship, of which n. 2 reserved to candidates with international qualifications
of which:
- 7 scholarship funded by the University
n. 2 positions without financial support

Titles of Research Projects / Research Fields
The list of research projects is available at the end of this PhD Programme’s annex. This list may be updated until Call’s deadline.

Calendar of entrance examinations

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1 All additional scholarships and apprenticeship contracts (Legislative Decree no. 81/2015 art.45), which may become available after the publication of this Call, will be announced on the University websites http://www.unito.it/ricerca/fare-ricerca-unito/dottorati-di-ricerca e http://en.unito.it/research/phd/phd-programmes until Call’s deadline.
The calendar with information on dates and venues of entrance examinations shall be published on the websites: http://www.unito.it/ricerca/fare-ricerca-unito/dottorati-di-ricerca and http://en.unito.it/research/phd/phd-programmes starting from 21st March 2018.

Useful information for applicants
Application fee: €50.00 for each application submitted. Candidates with international qualifications are exempted from paying the application fee.
Application fee deadline: 6th April 2018 (mandatory deadline) Candidates who do not pay the application fee within the deadline will be excluded from the competition.

CALL FOR NON-RESERVED (ORDINARY) POSITIONS

Admission procedure for non-reserved (ordinary) positions

Assessment of qualifications, written examination and interview

Qualifications to be uploaded in the on-line application

- Application form (duly signed and including identification document/passport)
- For International qualifications: submit on-line documentation as specified in Art. 4 of this Call
- For applicants under condition: certificate or self-certification with a complete list of academic transcripts concerning the Laurea Triennale /1st cycle degree and Laurea Magistrale /2nd cycle degree with marks, weighted average and credits. For applicants applying under condition, please also check Art. 5 of the Call.
- Thesis Abstract
- Publications
- Research Project (The research project is not to be uploaded in the on-line application for the call for ordinary positions, as it is not subject to assessment.)

Assessment criteria (for non-reserved positions)

<table>
<thead>
<tr>
<th>Assessment of qualifications:</th>
<th>maximum score 100 points</th>
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</thead>
<tbody>
<tr>
<td>Final grade of Laurea/ second cycle degree (or list of examinations taken during the Laurea Magistrale/2nd cycle degree and Laurea Triennale/ 1st cycle degree for candidates applying under condition)</td>
<td>maximum score 20 points</td>
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<tr>
<td>110L  5 points</td>
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<tr>
<td>110 4 points</td>
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<tr>
<td>Da 106 a 109 3 points</td>
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<tr>
<td>Da 103 a 105 2 points</td>
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<tr>
<td>Da 100 a 102 1 point</td>
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<tr>
<td>&lt; 100 0 points</td>
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</table>
In absence of the final grade, the weighted average of the exams completed in the Laurea Magistrale/2nd cycle degree and Laurea Triennale/1st cycle Degree will be evaluated:

- 30    5 points
- 28-29 4 points
- 27    3 points
- 26    2 points
- 24-25 1 point
- <24   0 points

If the decimal part is ≥ 5, the average is rounded up, otherwise it is rounded down.

<table>
<thead>
<tr>
<th>Thesis abstract of Master Degree</th>
<th>maximum score 8 points</th>
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</thead>
<tbody>
<tr>
<td>Publications and other scientific qualifications (up to 7 points)</td>
<td>maximum score 7 points</td>
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</table>

**Publications**

- Publications will be assessed only if relevant to one of the research fields of the Programme and if their scientific dimension is recognised; not yet published papers will not be evaluated, as well as non-published Master Thesis or other non-published papers;

- If meeting the above mentioned requirements, publications will be evaluated as follows:
  - Publications with Impact Factor: up to 2 points each
  - Publications without Impact Factor or chapter of book/monography: up to 1 point each
  - Abstract or publications about conference papers: up to 0.2 points each
**Other qualifications**

Titles or traineeships relating to merely professional skills will not be evaluated.

If completed, the following will be evaluated:

- Second/additional Master degree: 1 point
- Courses at least 5 days long: 0.5 points
- Italian specialising master 1\textsuperscript{st} and 2\textsuperscript{nd} level degree if relevant: 1 point
- PhD: 2 points
- *Diploma di scuola di specializzazione* (equivalent to Italian specialising school diploma): 2 points
- Scholarships / research grants / any other grant for attendance at Health Science Specialisation Schools: 1 point per year of attendance

<table>
<thead>
<tr>
<th>Minimum threshold for admission to the written examination</th>
<th>10 points</th>
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<tbody>
<tr>
<td>Written examination</td>
<td>Maximum score: 40 points</td>
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<tr>
<td>Minimum threshold for admission to the interview</td>
<td>20 points</td>
</tr>
<tr>
<td>Interview</td>
<td>Maximum score: 40 points</td>
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<tr>
<td>Minimum threshold for passing the interview</td>
<td>20 points</td>
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</tbody>
</table>

**Further information on examinations:**

In the **written examination** candidates will have to analyse a scientific article about any of the subject areas covered by the research projects offered by the PhD Programme. They will also have to outline aims, scientific methods, results and conclusions.

The **interview** will cover the qualifications and the publications of the candidates, their professional and studiorum curriculum, according to Europass CV template, and their scientific and cultural interests; it must assess the basic knowledge of the subject needed to successfully attend the programme. The Examination Board will focus on:
- The level of knowledge of the subject and how the candidate is able to summarise it;
- The knowledge of the research subject that the candidate chooses from those offered by
the PhD Programme;
- The originality of the research proposal, considering also its interdisciplinarity.

Knowledge of the **English** language is **compulsory**.

Applicants may, on request, take the examinations in English.

The **interview**, on request of the candidate and duly authorised by the examining board, may be taken via Skype (art. 8 of the Call).

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**CALL FOR POSITIONS RESERVED TO APPLICANTS WITH INTERNATIONAL QUALIFICATIONS**

**Admission procedure for positions reserved to applicants with international qualifications**

**Assessment of qualifications and research project**

**Qualifications to be uploaded in the on-line application**

- Application form *(duly signed and including identification document/passport)*
- For international qualifications: submit on-line documentation as specified in Art. 4 of this Call. For applicants applying under condition please check Art. 5
- Thesis Abstract
- Publications
- Research project (max 4000 words, bibliography included) written in English by the candidate choosing a title within those offered by the PhD Programme.

**Assessment criteria for positions reserved to applicants with international qualifications**

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Maximum Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curriculum studiorum and vitae</td>
<td>5 points</td>
</tr>
<tr>
<td>Thesis abstract</td>
<td>10 points</td>
</tr>
<tr>
<td>Publications and other scientific qualifications</td>
<td>25 points</td>
</tr>
</tbody>
</table>

**Publications**

- Publications will be assessed only if relevant to one of the research fields of the Programme and if their scientific dimension is recognised; not yet published papers will not be evaluated, as well as non-published Master Thesis or other non-published papers;
- If meeting the above mentioned
requirements, publications will be evaluated as follows:

- Publications with Impact Factor: up to 2 points each
- Publications without Impact Factor or chapter of book/monography: up to 1 point each
- Abstract or publications about conference proceedings: up to 0.2 points each

**Other qualifications**

Titles or traineeships relating to merely professional skills will not be evaluated.

If completed, the following will be evaluated:

- Second/additional Master degree: 1 point
- Courses at least 5 days long: 0.5 points
- Italian specialising master 1st and 2nd level degree if relevant: 1 point
- PhD: 2 points
- *Diploma di scuola di specializzazione* (pertinent Italian specialising school diploma): 2 points
- Scholarships / research grants / any other grants for attendance at Health Science Specialisation Schools: 1 point per year of attendance

<table>
<thead>
<tr>
<th>Research project</th>
<th>maximum score 60 points</th>
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<tbody>
<tr>
<td>Minimum threshold for admission</td>
<td>60 points</td>
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</tbody>
</table>

**Further information on reserved positions**

The *research project* (max 4000 words, bibliography included) written in English, must be carried out by the candidates choosing a title from those offered by the PhD Programme.
The examining board will evaluate the scientific dimension of the project, its feasibility related to the length of the PhD, the target setting, the scientific impact of outcomes.

Courses are partially (95%) taught in foreign languages.

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Titoli progetti di ricerca
Dottorato di in Medicina Molecolare

Titles of research projects
PhD Programme in Molecular Medicine

1. Bersagliamento immuno-mediato di xCT, il sistema antiporto cistina/glutammato: un modo per aggredire il tumore al seno da diverse angolazioni. / Immune-targeting of the cystine/glutamate antiporter xCT: Tackling breast cancer from different angles. (Supervisore: Prof.ssa F. Cavallo)

2. Valutazione dell'efficacia di un vaccino a DNA chimerico contro CSPG4 per il trattamento del melanoma maligno e dell'osteosarcoma. / Evaluation of the efficacy of a chimeric CSPG4 DNA vaccine for the treatment of malignant melanoma and osteosarcoma. (Supervisore: Prof.ssa F. Cavallo)

3. Analisi di microRNAs nella progressione del tumore al seno e del melanoma. / microRNA analysis during breast cancer and melanoma progression. (Supervisore: Prof.ssa D. Taverna)

4. Meccanismi molecolari coinvolti nei processi neurodegenerativi. / Molecular mechanisms of neurodegeneration. (Supervisore: F. Altruda)

5. Meccanismi molecolari di controllo della proliferazione, sopravvivenza e differenziamento cellulare in condizioni fisiologiche e patologiche. / Molecular mechanisms of cell proliferation, survival and differentiation in physiologic and pathologic conditions. (Supervisore: F. Altruda)

6. Analisi del ruolo di STAT3 nel Reticolo Endoplasmatico. / Analysis of the role of STAT3 in the Endoplasmic Reticulum. (Supervisore: V.Poli)
7. Eventi funzionali e meccanismi molecolari controllati da piattaforme di segnalazione nella progressione del tumore mammario. / Functional events and molecular mechanisms controlled by signaling platforms in breast cancer progression. (Supervisore: P. De Filippi)

8. Analisi delle dinamiche cellulari sotto pressione terapeutica nei tumori colorrettali. / Exploring cancer cell dynamics under therapeutic pressure in colorectal tumors. (Supervisore: A. Bertotti)


10. Screening genetici mirati all'identificazione di interazioni di letalità sintetica in neoplasie umane. / Exploiting synthetic lethality in human malignancies. (Supervisore: R. Piva)

11. Sviluppo, caratterizzazione e funzionalizzazione di nanotrasportatori innovativi e non convenzionali per il rilascio di farmaci antimicrobici, antinfiammatori e antitumorali. / Development, characterisation, and functionalisation of innovative and nonconventional nanocarriers for the delivery of antimicrobial, antiinflammatory, and antitumoral drugs. (Supervisore: G. Giribaldi)

12. Studio degli effetti di nanogocce ossigenate in modelli preclinici di ferite croniche a complessità crescente in vitro e in vivo. / Study of the effects of oxygen-loaded nanodroplets in preclinical models of chronic wounds with increasing complexity degree in vitro and in vivo. (Supervisore: G. Giribaldi)

13. Caratterizzazione molecolare dei tumori neuroendocrini ben e moderatamente differenziati: dall'identificazione di sottotipi molecolari all'individuazione di possibili target terapeutici. / Molecular characterization of well- and moderately differentiated neuroendocrine tumors: from identification of molecular subtypes to the identification of possible therapeutic targets. (Supervisore: M. Di Maio)

14. Ruolo dell'angiogenesi nelle neoplasie neuroendocrine: studio del signaling pathway HIF-1α/VEGF, identificazione di fattori predittivi e prognostici. / Role of angiogenesis in neuroendocrine tumors: investigation of pathway HIF-1α/VEGF, identification of predictive and prognostic factors. (Supervisore: M. Di Maio)

15. Studio dell'eterogeneità molecolare tra tumore primitivo e metastasi a distanza: implicazioni terapeutiche. / Study of the molecular heterogeneity between primary tumor and metastases: therapeutic implications. (Supervisore: M. Di Maio)
   (Supervisore: R. Taulli)


18. Meccanismi di protezione contro il danno cellulare indotto dal glutammato. / Protective mechanisms against glutamate-induced cell damage. (Supervisore: T. Crepaldi)

19. L'epigenoma come bersaglio terapeutico del mesotelioma pleurico maligno. / Targeting the epigenome in malignantpleuralmesothelioma. (Supervisore: F.Di Nicolantonio)

20. L'enzima peptidil arginina deiminasi di tipo 2 come nuovo bersaglio terapeutico per lo sviluppo di inibitori della replicazione del Citomegalovirus umano. / Citrullination:: Targeting peptidyl arginine deiminase 2 to inhibit human Cytomegalovirus replication. (Supervisore: S.G. Landolfo)

21. Controllo dell'attività dei substrati di mTORC2 da parte di HECT E3 Ubiquitina ligasi in cellule di Dictyostelium e di mammifero. / Control of the mTORC2 substrates activity by the HERC E3 Ubiquitin ligases in Dictyostelium and mammalian cells. (Supervisore: E. Bracco)

22. Metodi non invasivi per il monitoraggio della malattia minima residua nei disordini linfoproliferativi. / Non invasive diagnostic tools for minimar residual disease monitoring in linfoproliferative disorders. (Supervisore: S.Ferrero)

23. Analisi del ruolo delle proteine chaperone nella progressione tumorale. / Analysis of the role of chaperone proteins in tumor progression. (Supervisore: M. Brancaccio)

24. Immune suppressive mechanisms induced by tumor microenvironment in monoclonal gammopathies / Meccanismi di immunosoppressione indotti dal microambiente tumorale nelle gammopatie monoclonali (Supervisore: Prof. Massimo Massaia)

25. Relazione tra senescenza e sistema immunitario nei tumori /Relationship between senescence and immune system in cancer.(Supervisore Prof. F. Novelli)

26. Meccanismi molecolari che regolano l'interazione tra microambiente e tumore / Molecular mechanisms regulating microenvironment and tumor interaction (Supervisore: Prof.ssa S. Giordano)