



UNIVERSITÀ DEGLI STUDI DI TORINO

ANNEX 4

CALL FOR PHD POSITIONS – 35 cycle

PHD PROGRAMME IN COMPLEX SYSTEMS FOR LIFE SCIENCES

PhD Programme Coordinator	Prof. Michele De Bortoli
Department	Clinical and Biological Sciences
PhD Programme Length	3 years
PhD web site	http://dott-scsv.campusnet.unito.it
Course start date	1 st November 2019
Departments involved in PhD programme	Department of Physics, Department of Oncology, Department of Life Science and Systems Biology, Department of Clinical and Biological Science, Department of Computer Science, Department of Molecular Biotechnology and Health Science, Department of Pharmaceutical Science and Technology, Department of Clinical Science, Department of Neuroscience "Rita Levi Montalcini", Department of Mathematics "Giuseppe Peano", Polytechnics of Turin
Notes on the PhD programme	Courses are entirely in English. In order to be admitted to the final exam to obtain the PhD title, the Student must publish at least 1 paper as main Author.

Positions offered¹	
n. 7 positions with scholarship, including n. 1 position reserved to candidates with international qualifications	of which: - n. 6 scholarships funded by the University; - n. 1 scholarship funded by Dipartimento di Fisica (excellence Department project)
n. 2 positions without financial support	

¹ All additional scholarships and apprenticeship contracts (Art. 45 D.lgs 81/2015), 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> and <http://en.unito.it/research/phd/phd-programmes> until Call's deadline.



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Titles of Research Projects / Research Fields

The list of research projects is available at the end of this sheet. This list may be updated until Call's deadline.

Calendar of entrance examinations

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 **9th April 2019**.

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: 16th April 2019 (mandatory deadline) Candidates who do not pay the application fee within the deadline will be excluded from the competition.

CALL FOR NON RESERVED POSITIONS	
Admission procedure for non-reserved positions	
Assessment of qualifications, research project and interview.	
Qualifications to be uploaded in the on-line application	
• Application form (duly signed and including identification document/passport) • For applicants with international qualifications: submit on-line documentation as specified in Art. 4 of this Call; • For applicants under condition: provision of Bachelor's degree grade, certificate or self-certification with a complete list of academic transcripts concerning the 1st cycle degree (Laurea Triennale) and 2nd cycle degree (Laurea Magistrale) with marks, weighted average and credits. For applicants applying under condition, please also check Art. 5 of the Call. • Thesis Abstract • Research project (max 2,000 words, bibliography included) written by the candidate, about one of the subjects proposed by the PhD programme. • Publications (max 2) • Letters of reference signed by professors or qualified researchers (as specified on art. 5 of this Call)	
Assessment criteria (for non-reserved positions)	maximum score 100 points
Assessment of qualifications:	maximum score 25 points
Bachelor / First-level degree: 30%	maximum score 10 points
Final grade of Master / 2 nd -level degree (or weighted average of grades obtained, for candidates applying under condition) 70%	
110-110L 10 points	
from 107 to 109 8 points	



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from 104 to 106 6 points from 100 to 103 3 points =< to 99 1 point	
Abstract or summary of the Master thesis	maximum score 4 points
Publications. 0.5 points for each paper on journals, books or international conferences papers with review panel (max 2 will be assessed)	maximum score 1 points
Other qualifications Second/additional master degree: 2 points Italian specialising master 1 st and 2 nd level degree if relevant: 2 points Training courses outside the University of origin: 1 point	Maximum score 3 points
Letters of reference signed by professors or qualified researchers (0.25 points each)	Maximum score 1 point
Research project	Maximum score 6 points
Oral interview	Maximum score: 75 points
<i>Minimum threshold for passing the interview</i>	<i>50 points</i>
Further information on examinations: Research project (max 2.000 words, bibliography included): the candidate should write her/his research project following one of the titles proposed by the Doctorate. The theme should be developed by emphasizing the integration of mathematical, physical and bioinformatics methods with the experimental approaches typical of the biological laboratory, and the advantages that this integration will give to the advancement of the project. The examining board will assess the scientific dimension of the project, its feasibility related to the length of the PhD, the target setting, the scientific impact of outcomes. The interview will be conducted in English and will cover the presentation of the research project. The candidate can use a Powerpoint presentation, which cannot be longer than 10 slides. Presentation time: 10 minutes; questions and discussion time: 10 minutes. The interview, on request of the candidate and duly authorised by the examining board, may be taken via Skype (Art. 8 of the Call). On specific Candidate's request, its idoneity for one of the specific projects will be assessed.	



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 • Master degree Thesis Abstract • Research project (max 4000 words, bibliography included) written by the candidate, about one of the subjects proposed by the PhD programme. • Letters of reference signed by professors or qualified researchers (as specified on Art. 5 of this Call)	
Assessment criteria for positions reserved to applicants with international qualifications	maximum score 100 points
Curriculum studiorum and vitae (as by the information provided in the Application Form (Annex 3))	maximum score 30 points
Master degree Thesis Abstract	maximum score 5 points
Publications 2 points for each paper published on scientific journals and books or international conference papers with review panel (max 5 publications will be assessed)	maximum score 10 points
Research project	maximum score 50 points
Other qualifications Second/additional master degree: 2 points Italian specialising master 1 st and 2 nd level degree if relevant: 2 points Training courses outside his/her University: 1 point	Maximum score 3 points
Reference letters signed by Professors or qualified researchers (0.5 points for each letter)	Maximum score 2 point
Minimum threshold for admission	75 points

**Further information on examinations:**

The research project (max 4000 words, bibliography included), written by the candidate following one of the titles proposed by the Doctorate should develop the topic from the point of view of complexity and systems biology, on both the methodological and the theoretical sides. The examining board will assess the scientific breath of the project, its feasibility related to the length of the PhD, the target setting, the scientific impact of outcomes.

Titoli progetti di ricerca**Dottorato di Ricerca in SISTEMI COMPLESSI PER LE SCIENZE DELLA VITA****Titles of research projects****PhD Programme in COMPLEX SYSTEMS FOR LIFE SCIENCES****Tema 1 / Theme 1**

Modelli sperimentali e teorici multiscala per lo studio di processi fisiopatologici in organismi eucarioti.

1. Regolazione trascrizionale e post-trascrizionale
2. Epigenetica ed epigenomica
3. Circuiti di regolazione
4. Reti di segnalazione cellulare
5. Modellizzazione teorica e simulazione di processi cellulari
6. Modellizzazione della tumorigenesi e della proliferazione cellulare

Experimental and theoretical multiscale models to study physio-pathological processes in eukaryotic organisms.

1. *Transcriptional and post-transcriptional regulation*
2. *Epigenetics and epigenomics*
3. *Regulatory circuits*
4. *Cell Signalling networks*
5. *Theoretical modeling and simulation of cellular processes*
6. *Modeling of tumorigenesis and cell proliferation*

Tutors: Bussolino, Caselle, Cordero, De Bortoli, Di Cunto, Fiorio Pla, Funaro, Giraudo, Oliviero, Preziosi, Retta, Scianna, Serini

Tema 2 / Theme 2

Analisi e modellizzazione di approcci terapeutici innovativi

1. Modellizzazione di nanotrasportatori
2. Immuno-oncologia
3. Vaccinologia



Analysis and modeling of innovative therapeutical approaches

1. *Modeling of Nanocarriers*
2. *Immuno-oncology*
3. *Vaccinology*

Tutors: Bussolino, Guiot, Funaro, Medico, Medini, Retta, Sangiolo

Tema 3 / Theme 3

Sviluppo di metodi computazionali avanzati per applicazioni –omiche innovative.

1. Genomica, trascrittomica e proteomica
2. Analisi di immagine
3. Studio di processi su singola cellula
4. Strumenti di analisi e visualizzazione di big data per la biomedicina

Development of advanced computational methods for innovative –omics applications

1. *Genomics, transcriptomics and proteomics*
2. *Image analysis*
3. *Analysis of processes at the single-cell level*
4. *Big data visualization and analysis tools for biomedicine*

Tutors: Calogero, Caselle, Cordero, Fariselli, Ficarra, Medico, Oliviero, Primo

Tema 4 / Theme 4

Analisi integrativa in genetica e genomica

1. Modelli cellulari e animali di malattie umane
2. Farmacogenomica in oncologia
3. Immunogenomica in oncologia
4. Modelli di popolazione per malattie rare
5. Modelli di popolazione in ecologia

Integrative analysis in Genetics and Genomics

1. *Cellular and animal models of human diseases*
2. *Pharmacogenomics in Oncology*
3. *Immunogenomics in Oncology*
4. *Population models in Human rare diseases*
5. *Population models in ecology*

Tutors: Calogero, Caselle, Di Cunto, Medico, Retta, Roccatello, Venturino.

Progetto A / Project A (*titolo abbinato alla borsa finanziata dal Dipartimento di Fisica nell'ambito del progetto Dipartimento di Eccellenza/ research project linked to scholarship funded by "Dipartimento di Fisica", project of Departments of excellence*)

"Statistica Fisica dei sistemi biologici". / "Statistical Physics of biological systems"

Tutor: Matteo Osella