





H2020 MSCA - ITN - 2017 - 766030

# C O N T R A

## Computational Oncology Training Alliance

### **ESR 10 - Driver events, evolutionary dynamics and interplay with the external environment across cancer types**

Research project	Cancer progresses in time and space following an evolutionary dynamics that is guided by the interplay between the acquisition of genomic alterations and a favourable local environment. In this ESR project we aim to compare driver events and evolutionary dynamics across cancer types. The analysis will allow the detection of differences and similarities between cancer types and infer relationships between the dynamics of tumour growth and the external environment. In addition to the communities at King's and Crick, the student will benefit of the expertise within the CRUK King's Health Partners Centre (of which the Ciccarelli group is member) that focuses its activities on the interplay between tumour and the surrounding environment.
Supervisor	name Francesca Ciccarelli e-mail <a href="mailto:francesca.ciccarelli@kcl.ac.uk">francesca.ciccarelli@kcl.ac.uk</a> ; <a href="mailto:francesca.ciccarelli@crick.ac.uk">francesca.ciccarelli@crick.ac.uk</a> website <a href="https://www.crick.ac.uk/research/a-z-researchers/researchers-a-c/francesca-ciccarelli/">https://www.crick.ac.uk/research/a-z-researchers/researchers-a-c/francesca-ciccarelli/</a>
Host institution	King's College London   The Ciccarelli lab is currently seconded to the Francis Crick Institute in London, where the student will be located. The group uses both computational and experimental approaches and has access to cutting edges experimental facilities.
PhD program	Faculty of Life Sciences & Medicine, School of Cancer and Pharmaceutical Sciences
Expected results	1) Understanding of temporal development of drug resistance 2) Computational methods to combine cancer data, phylogenetic reconstruction, and clinical annotations 3) Predictive model for the onset of resistance
Planned secondments	1) UVIGO/Posada for refinement of evolutionary dynamics (3 months) 2) ETH/Beerenwinkel to implement phylogenetic reconstructions (3 months) 3) IRB/Lopez-Bigas to integrate with data from cancer circulating DNA (2 months)
Required profile	Solid background in statistics, computer programming, and cancer genetics. Previous experience with genomic data analysis would be favourable