




H2020 MSCA - ITN - 2017 - 766030

# C O N T R A

## Computational Oncology Training Alliance

### **ESR 9 - Evolution of drug resistance on genetic and phenotypic levels**

Research project	<p>Tumours often show astonishing genetic and phenotypic plasticity, which drives their capability to evolve into drug-resistant states. The acquisition of drug resistance is the main limitation of targeted cancer therapy. Tumours can grow drug tolerant either a) due to selective pressure on cells carrying specific mutations or b) due to phenotypic reprogramming of cells by external environmental factors imposed by the drugs. The latter may be further shaped by the cellular neighbourhoods, such as the density of the web of stromal cells surrounding the tumour and protecting from the drug. This project aims to investigate how advanced models of tumour evolution should be adapted to better explain risk factors leading to treatment resistance and failure.</p>
Supervisor	<p>name Ewa Szczurek e-mail <a href="mailto:szczurek@mimuw.edu.pl">szczurek@mimuw.edu.pl</a> website <a href="http://www.mimuw.edu.pl/~szczurek/">http://www.mimuw.edu.pl/~szczurek/</a></p>
Host institution	<p>University of Warsaw, Poland Faculty of Mathematics, Informatics and Mechanics</p> 
PhD program	<p>Faculty of Mathematics, Informatics and Mechanics; Institute of Informatics</p>
Expected results	<p>1) Mathematical models of tumour evolution, cell composition and emergence of drug-resistant mutations 2) Methods to assess the risk of presence of resistant genotypes prior to the start of therapy</p>
Planned secondments	<p>1) Merck to learn about drug resistance and its analysis (3 months) 2) Ardigen to learn software development and large data analysis (1 month) 3) KCL-Crick -Ciccarelli to learn resistance modeling and integrate with colorectal cancer data (3 months)</p>
Required profile	<p>Solid background in statistics, data analysis, mathematical modeling, excellence and experience in programming, fluent English, interest in molecular biology and cancer evolution</p>