DIPARTIMENTO DI
MEDICINA SPERIMENTALE

SAPIENZA
UNIVERSITÀ DI ROMA

Allegato 3 – Piano formativo della Summer School in:
THEORIES IN BIOLOGY, DEVELOPMENT AND CANCER

Dipartimento: Medicina Sperimentale

Tipologia del Corso	*Summer School*
Denominazione	*THEORIES IN BIOLOGY, DEVELOPMENT AND CANCER*
Dipartimento proponente	*Medicina Sperimentale*
Direttore del Corso:	*Mariano Bizzarri*
Numero minimo e massimo di ammessi	*15 -50* *Selection will be performed according to submitted degrees* *Auditor allowed (max. 10)*
Requisiti di ammissione	Graduated in Biology, Biotechnology, Pharmacy, Physics, Chemistry, Philosophy, and Medicine; Ph.D. as well as post-doc students.
Obiettivi formativi	The School envisages the final release of a total of CFUs of 10 (250 hours total work for students, calculated as formal lectures and workout-discussion exercises). A certificate of attendance will be issued in the case of passing the final exam.
Risultati di apprendimento attesi	Over half a century ago, the pathologist Leslie Foulds stated: "...no theory of cancer--or of biology-- is acceptable unless it comprehends neoplasia as one of the possible consequences of biological organization." This state of affairs has not changed much since. The main objective of the course is to provide the framework to place cancer as a “possible consequence of biological organization”. From this perspective, we will elaborate a systemic approach for cancer research based on principles of organismal and developmental biology. During the course, we will explore the benefits of this systemic approach to the clinical management of cancer, by focusing on new targets and therapeutic strategies. A significant body of evidence is currently evidencing that by targeting the cell-tumor microenvironment cross talk, cancer control and tumor reversion can both be achieved without significant side effects. In addition, we expect that this approach will open the way to a different way in mathematical modeling of biological processes, especially when focusing on cell phenotypic transitions.

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Piano delle Attività Formative (Insegnamenti, Seminari di studio e di ricerca, Stage, Prova finale)

Denominazione attività formativa	Responsabile insegnamento	Settore scientifico disciplinare (SSD)	CFU	Ore	Tipologia	Lingua
Activity Section I How does cancer fit into science in general and biology in particular? *History of cancer research* *The great divide: Reductionism versus organicism* *Evolutionary perspective in Biology* *Cancer and developmental biology* *Epistemological, philosophical and methodological issues* *Principles of theory of organisms* *Big-data and personalized medicine in cancer* *How statistics can help you?* *Modeling form and biological Principles*	Prof. Giuseppe Longo		3	66		English
Activity Section II Carcinogenesis, pathogenesis, cancer as a disease *Epidemiology of cancer* *Chemical and Physical carcinogenesis* *Environmental carcinogenesis* *Endocrine disruptors and endocrine-related cancers* *Inflammation, infection and cancer* *Diet, Obesity, Metabolism and cancer* *TOFT vs SMT* *Phenotypic transitions in cancer biology* *Motility and invasiveness. The metastatic process and the default state of the cell.*	Prof. Carlos Sonnenschein		3	66		English
Activity Section III Clinical management: basic insights *Principles of cancer chemotherapy* *Principles of Endocrine manipulation* *Principles of Immunology-based treatment* *Tumor heterogeneity and Resistance-based mechanisms* *Basic of Tumor reversion: the tumor microenvironment as a target* *Tumor treatment and Regenerative Medicine* *Why a cancer bearing patients die?* *Putting back the individual at the center of clinical study*	Prof. Cinzia Marchese		3	66		English

Prova finale	- Submission of a written thesis - Discussion of the thesis		½	12	English
Altre attività	- Seminar and plenary discussion at the end of each Activity Section		½	12	English
TOTALE		**10**			

Inizio delle lezioni	May 2019
Calendario didattico	To be defined
Lingua di erogazione	English
CFU assegnati:	10
Docenti Sapienza responsabili degli insegnamenti relativi curricula brevi (max mezza pagina)	See attached file #2
Modalità di frequenza delle attività didattiche	*Frontal lessons* *Interactive seminars*
Sede di svolgimento Sapienza o sedi esterne (obbligo di Convenzione)	*External location (to be defined)*
Stage	*Microgravity simulation through Random Positioning Machine (RPM) – stage in the Systems Biology group Lab (via Scarpa 16, Lab di Ricerca Sperimentale) – 6 hours*
Quota di iscrizione prevista ripartita massimo in due rate	*€ 2.000,00 (one payment fee)*
Eventuali quote di esenzioni parziali o totali dal pagamento della parte di quota di pertinenza del Dipartimento	*30% reduction for under 30 post-doc students*
Eventuali Convenzioni con enti pubblici e privati o altre Università nazionali o estere	SUMMER SCHOOL will benefit from the collaboration with the "Group for the Development of Partnerships with Research Institutes and Universities of the Russian Federation, coordinated by Prof. Alfredo Antonaci, delegated by the Rector of La Sapienza University.

Delibera Consiglio di Dipartimento di Medicina Sperimentale del 8 Febbraio 2018.

IL DIRETTORE DEL DIPARTIMENTO DI RIFERIMENTO
(FIRMA DIGITALE)