

**EMBO  
Workshop**

The programme for this event was reviewed and approved by the EMBO Course Committee.

# Cancer stem cells 20 years later: Achievements, controversies, emerging concepts and technologies

3 - 6 October 2014 | Catanzaro, Italy



International Network: Higher Education in Molecular Medicine and Allied Sciences

UMG

Logo of the International Network: Higher Education in Molecular Medicine and Allied Sciences (UMG) featuring a circular arrangement of letters H, E, M, S, A, M.

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Programma Operativo Regionale  
FSE 2007-2013

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National Cancer Institute, G. Pascale  
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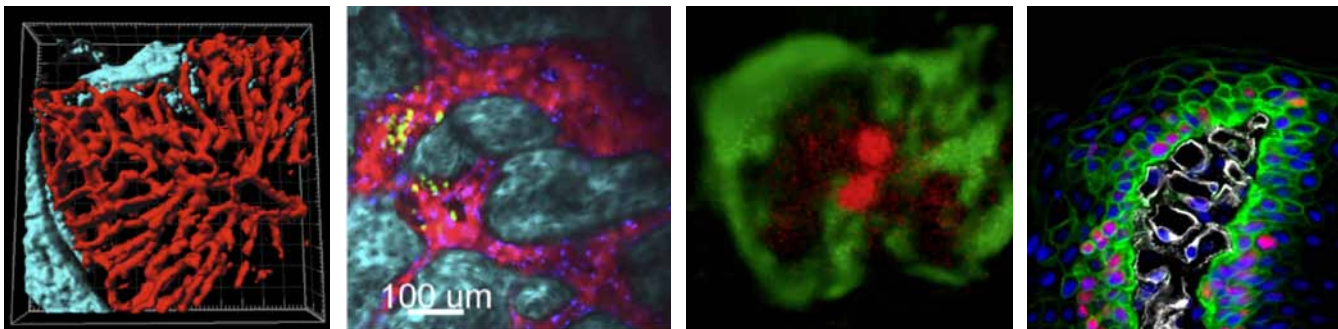
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*[events.embo.org/14-csc](http://events.embo.org/14-csc)*

## **ABOUT THE WORKSHOP**

In 1994 a seminal paper from John Dick's group (Lapidot et al., *Nature* 367:645–648) provided the first compelling evidence that only a relatively minor subset of human acute myeloid leukaemia cells displayed leukaemia-initiating properties when xenotransplanted in immunocompromised animals, whereas the majority of the leukaemic cell population did not show significant leukaemogenic potential. These findings, confirmed by numerous subsequent studies that extended the concept of cancer stem cells to several solid malignancies, prompted an extraordinary effort to elucidate the biology of these cells, identify specific markers, characterise their regulatory mechanisms and discover novel therapeutic agents for their eradication. Two decades later, an impressive wealth of information has been gained on cancer stem cells but numerous basic questions remain open. The aim of this EMBO Workshop is to bring together several of the most distinguished scholars in the field, as well as junior investigators, post-doctoral fellows and students active in cancer stem cell research, for a critical assessment of the progress thus far made in the understanding of the biology of cancer stem cells, of their clinical relevance and prognostic value, and in the identification of effective strategies for their selective targeting.



## **SPEAKERS**

### ***R. Katherine Alpaugh***

Fox Chase Cancer Center, US

### ***Natalia Bednarz-Knoll***

Hamburg, DE

### ***Anna Bigas***

Institut Hospital del Mar d'Investigacions Mèdiques, SP

### ***Cedric Blanpain***

Université Libre de Bruxelles, BE

### ***Dominique Bonnet***

Cancer Research UK, London Research Institute, UK

### ***Jacqueline Bromberg***

Memorial Sloan-Kettering Cancer Center, US

### ***Gennaro Ciliberto***

National Cancer Institute Pascale Foundation; University Magna Græcia of Catanzaro, IT

### ***Robert B. Clarke***

University of Manchester, UK

### ***Ruggero De Maria***

National Cancer Institute Regina Elena, IT

### ***Caroline Dive***

Cancer Research UK Manchester Institute, UK

### ***Riccardo Fodde***

Erasmus Medical Center, NL

### ***Christopher Heeschen***

Spanish National Cancer Centre, SP

### ***Tsvee Lapidot***

Weizmann Institute, IL

### ***Cristina Lo Celso***

Imperial College London, UK

### ***Norman J. Maitland***

University of York, UK

### ***Jan Paul Medema***

Academisch Medisch Centrum, NL

### ***Giovanni Morrone***

University Magna Græcia of Catanzaro, IT

### ***Luis F. Parada***

UT Southwestern Medical Center, US

### ***Pier Giuseppe Pelicci***

European Institute of Oncology, IT

### ***Jean-Yves Pierga***

Institut Curie, FR

### ***Timm Schroeder***

Swiss Federal Institute of Technology Zurich, CH

### ***Jan-Jacob Schuringa***

Groningen University Medical Centre, NL

### ***Giorgio Stassi***

University of Palermo, IT

### ***Max Wicha***

University of Michigan Comprehensive Cancer Center, US

### ***Douglas J Winton***

Cancer Research UK Cambridge, UK





## EMBO WORKSHOP

# Cancer stem cells 20 years later: Achievements, controversies, emerging concepts and technologies

3 - 6 October 2014 | Catanzaro, Italy

FRIDAY,  
3 OCTOBER

VENUE: VILLAGGIO GUGLIELMO, COPANELLO (CATANZARO)

ALL DAY

**Arrival and registration**

**Session I: "TWO DECADES LATER – A CSC PROGRESS REPORT"**

*Chairpersons: M. Wicha- N. Maitland*

15:00 - 15:15

**Opening addresses**

15:15 - 15:40

**Giovanni Morrone**, Catanzaro, IT

UNDERSTANDING AND TARGETING CSCs: ARE WE GETTING ANYWHERE YET?

15:40 - 16:15

**Tsvee Lapidot**, Rehovot, IL

REGULATION OF NORMAL AND LEUKEMIC HUMAN STEM CELLS: DYNAMIC STEM CELL INTERACTIONS WITH THE BONE MARROW MICROENVIRONMENT

16:15 - 16:40

**Persio dello Sbarba**, Firenze, IT

THE METABOLICALLY-MODULATED STEM CELL NICHE: A DYNAMIC SCENARIO REGULATING CHRONIC MYELOID LEUKAEMIA CELL RESISTANCE TO TYROSINE KINASE INHIBITORS

16:40 - 17:15

**Norman J. Maitland**, York, UK

PROSTATE CANCER STEM CELL BIOLOGY, GENETICS AND EPIGENETICS: 2004-2014

17:15 - 17:30

**Monica Cojoc**, Dresden, DE

DISCOVERY OF CANCER STEM CELL RELATED MECHANISMS AND BIOMARKERS OF RADIORESISTANCE IN PROSTATE CANCER

17:30 - 18:00

**COFFEE BREAK**

18:00 - 18:35

**Max Wicha**, Ann Harbor, MI, US

TARGETING BREAST CANCER STEM CELLS

18:35 - 18:50

**Alessandro Zannini**, Trieste, IT

PROLYL-ISOMERASE PIN1 IS REQUIRED FOR BREAST CANCER STEM CELLS MAINTENANCE: A NEW THERAPEUTIC TARGET FOR BREAST CANCER

18:50 - 19:50

**Keynote lecture: Cédric Blanpain**, Bruxelles, BE

MECHANISMS REGULATING TUMOR STEMNESS IN SKIN CANCERS

20:00

**WELCOME RECEPTION – DINNER**

**SATURDAY,  
4 OCTOBER**

**VENUE: VILLAGGIO GUGLIELMO, COPANELLO (CATANZARO)**

08:00 - 09:00

**MEET-THE-EXPERT PARALLEL SESSIONS @ BREAKFAST:  
1: Of Mice and Men - 2: Druggable stuff**

**Session II: "NOVEL CONCEPTS, MODELS AND TOOLS IN CANCER STEM  
CELL RESEARCH" (Part 1)  
Chairpersons: D. Bonnet – G. Morrone**

09:15 - 09:50

***Pier Giuseppe Pelicci***, Milano, IT  
REGULATION OF SELF-RENEWAL IN CANCER STEM CELLS

09:50 - 10:05

***Pasquale Sansone***, New York, NY - US  
INHIBITION OF ER/STAT3 SIGNALING PATHWAYS DRIVE THE EVOLUTION OF ER<sup>+</sup>  
METASTATIC BREAST CANCER THROUGH THE GENERATION OF OXPHOS-INDEPENDENT  
SELF-RENEWING CELLS

10:05 - 10:20

***Maria Vivanco***, Bilbao, ES  
TAMOXIFEN RESISTANCE IN BREAST CANCER CELLS

10:20 - 10:55

***Cristina Lo Celso***, London, UK  
IN VIVO IMAGING OF NORMAL AND MALIGNANT HAEMATOPOIESIS

10:55 - 11:10

***Alfredo Budillon***, Napoli, IT  
LONG TERM TREATMENT WITH ZOLEDRONIC ACID INDUCED AN ENRICHMENT IN CANCER  
STEM CELL MARKERS IN PROSTATE CANCER CELLS

11:10 - 11:40

**COFFEE BREAK**

11:40 - 11:55

***Giuseppe Roscilli***, Roma, IT  
MALIGNANT PLEURAL EFFUSIONS AS SOURCE OF LUNG CANCER STEM CELLS: GENOMIC  
CHARACTERIZATION AND ESTABLISHMENT OF IN VIVO PDX MODELS AND DRUG RESPONSE

11:55 - 12:30

***Timm Schroeder***, Basel, CH  
LONG-TERM SINGLE CELL QUANTIFICATION: NEW TOOLS FOR OLD QUESTIONS IN STEM  
CELL RESEARCH

12:30 - 12:45

***Violaine Goidts***, Heidelberg, DE  
SRC, A KEY REGULATOR OF THE MESENCHYMAL PHENOTYPE OF GLIOBLASTOMA STEM-  
LIKE CELLS AS UNCOVERED BY RNAI SCREENING

12:45 - 13:00

***Frank Kruyt***, Groningen, NL  
DIFFERENTIATION IN GBM IS LINKED WITH INCREASED INVASIVE CAPACITY THAT IS  
PARTIALLY MEDIATED BY MMP9

13:00 - 13:15

***Luca Tirinato***, Thuwal SA  
COLORECTAL CANCER STEM CELLS REVEALED BY THEIR LIPID DROPLETS CONTENT

13:15 - 14:30

**LUNCH**

**SATURDAY,  
4 OCTOBER**

**VENUE: VILLAGGIO GUGLIELMO, COPANELLO (CATANZARO)**

14:30 - 16:00

**MEET THE PRESS: MINI-WORKSHOP ON THE EDITORIAL PROCESS AND ETHICS IN SCIENTIFIC PUBLISHING** - Discussion led by **Roberto Buccione** (EMBO Molecular Medicine) and **Yvonne Fischer** (Stem Cell Reports) with the participation of academic Editors of scientific Journals.

**Session II: "NOVEL CONCEPTS, MODELS AND TOOLS IN CANCER STEM CELL RESEARCH" (Part 2)**

**Chairpersons: G. Ciliberto – P. Dello Sbarba**

16:00 - 16:35

**Jan-Jacob Schuringa**, Groningen, NL  
MODELLING OF HUMAN LEUKEMIAS

16:35 - 16:50

**Levi J Beverly**, Louisville, MO - US  
DISSECTING MOLECULAR DETERMINANTS OF LEUKEMOGENESIS, CELL FATE DECISIONS AND THERAPEUTIC RESPONSES USING IN VIVO MOUSE MODELS

16:50 - 17:05

**Tomoko Ishibashi**, Monterotondo, IT  
VARIOUS ORIGINS OF TUMOR INITIATING CELLS IN MAMMARY MOUSE TUMOR MODELS

17:05 - 17:20

**Matteo Bellone**, Milano, IT  
TENASCIN-C PROTECTS EARLY-DISSEMINATED CANCER STEM CELLS FROM IMMUNE SURVEILLANCE

17:20 - 17:45

**COFFEE BREAK**

17:45 - 18:20

**Riccardo Fodde**, Rotterdam, NL  
SECRETED PHOSPHOLIPASES AS STEM CELL NICHE FACTORS IN HOMEOSTASIS, INFLAMMATION, AND CANCER

18:20 - 18:35

**Cheryl Zimmerlin**, Amsterdam, NL  
HDAC1 AND HDAC2 COLLECTIVELY REGULATE INTESTINAL STEM CELL HOMEOSTASIS

18:35 - 18:50

**Patricia Scott**, Duluth, MN - US  
ROLE OF KCNQ1 AND CFTR ION CHANNELS IN COLORECTAL CANCER

18:50 - 19:25

**Douglas J Winton**, Cambridge, UK  
APPLYING AGNOSTIC APPROACHES TO THE STEM CELL PROBLEM IN INTESTINE

19:25 - 19:40

**Simone Di Franco**, Palermo, IT  
P63 ISOFORMS REGULATE THE EMT PROGRAMME AND TUMORIGENESIS IN VIVO OF BREAST CANCER STEM CELLS

20:00

**DINNER**

**SUNDAY,  
5 OCTOBER**

**VENUE: VILLAGGIO GUGLIELMO, COPANELLO (CATANZARO)**

08:00 - 09:00

**MEET-THE-EXPERT PARALLEL SESSIONS @ BREAKFAST:  
3: In vitro veritas? - 2: Early detection: do we have tools?**

**Session III: "CANCER STEM CELLS AS THERAPEUTIC TARGETS?" (Part 1)  
Chairpersons: T. Lapidot – U. Cavallaro**

09:15 - 09:50

**Ruggero De Maria**, Roma, IT  
STRATEGIES FOR TARGETING CANCER STEM CELLS FROM SOLID TUMOURS

09:50 - 10:05

**Sharmila Bapat**, Ganeshkhind, IN  
TUMOR DECONSTRUCTION IDENTIFIES DEFINITIVE END-POINTS IN DRUG SCREENING

10:05 - 10:20

**Marzieh Ebrahimi**, Tehran, IR  
OUTCOME OF MELANOMA GROWTH AND INVASION IS DETERMINED BY BALANCE OF SECRETED CYTOKINES FROM MSCs AND CONTACT MSCs TO TUMOR CELLS

10:20 - 10:55

**Dominique Bonnet**, London, UK  
HETEROGENEITY OF THE LEUKEMIC INITIATING CELLS: IMPLICATIONS FOR TARGETED THERAPIES

10:55 - 11:10

**Rene Rodriguez**, Oviedo, ES  
HUMAN MESENCHYMAL STEM CELLS LOSE IMMUNOSUPPRESSIVE AND ANTI-INFLAMMATORY PROPERTIES UPON ONCOGENIC TRANSFORMATION

11:10 - 11:30

**COFFEE BREAK**

11:30 - 12:05

**Anna Bigas**, Barcelona, ES  
CONTRIBUTION OF WNT/BETA-CATENIN SIGNALING TO NOTCH LEUKEMOGENIC ACTIVITY IN T-CELLS

12:05 - 12:20

**Paola Infante**, Roma, IT  
GLI1/DNA INTERACTION IS A DRUGGABLE TARGET FOR HEDGEHOG-DEPENDENT TUMOR

12:20 - 12:35

**Emma Phillips**, Heidelberg, DE  
IDENTIFICATION OF NOVEL THERAPEUTICS FOR GLIOBLASTOMA FROM FUNGAL NATURAL PRODUCTS

12:35 - 13:10

**Robert B. Clarke**, Manchester, UK  
INVESTIGATION OF SIGNALLING PATHWAYS REGULATING BREAST STEM CELLS

13:10 - 13:25

**Anna Pastò**, Padova, IT  
CANCER STEM CELLS FROM EPITHELIAL OVARIAN CANCER PATIENTS PRIVILEGE OXIDATIVE PHOSPHORYLATION, AND RESIST GLUCOSE DEPRIVATION

13:25 - 13:40

**Erika Durinikova**, Bratislava, SK  
GENE THERAPY MEDIATED BY MESENCHYMAL STROMAL CELLS ON A MODEL OF CHEMORESISTANT CANCER CELLS DERIVED FROM COLORECTAL CARCINOMA

13:40 - 15:00

**LUNCH**



**SUNDAY,  
5 OCTOBER**

**VENUE: VILLAGGIO GUGLIELMO, COPANELLO (CATANZARO)**

**Session III: "CANCER STEM CELLS AS THERAPEUTIC TARGETS?" (Part 2)**  
*Chairpersons: C. Heeschen – G. Cuda*

- 15:00 - 15:35 **Gennaro Ciliberto**, Napoli/Catanzaro, IT  
TARGETING LUNG CANCER STEM CELLS THROUGH FATTY ACID METABOLISMS
- 15:35 - 15:50 **Giovanni Sorrentino**, Trieste, IT  
METABOLIC CONTROL OF YAP AND TAZ BY THE MEVALONATE PATHWAY
- 15:50 - 16:25 **Jacqueline Bromberg**, New York, NY, US  
TARGETING IL6/STAT3 SIGNALING IN CANCER STEM CELLS - FRIEND OR FOE?
- 16:25 - 16:40 **Eva Ebbing**, Amsterdam NL  
LONG-TERM INHIBITION OF HER2 INDUCES EPITHELIAL-MESENCHYMAL TRANSITION IN ESOPHAGEAL CANCER CELLS
- 16:40 - 17:15 **Jan Paul Medema**, Amsterdam, NL  
COLON CANCER, A HETEROGENEOUS DISEASE IN MANY WAYS
- 17:15 - 20:00 **POSTER VIEWING, REFRESHMENTS**
- 20:15 *Transfer to the social event venue*
- 20:30 **BANQUET, ENTERTAINMENT**

**MONDAY,  
6 OCTOBER**

**VENUE: UNIVERSITY OF CATANZARO MAGNA GRÆCIA**

**08:30 Check-out, transfer to the University Campus "S. Venuta"**

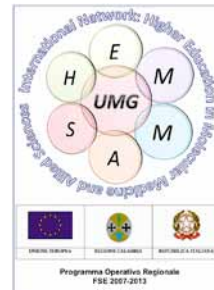
**Session IV: "SPREADING GRIEF AND MISERY: CANCER STEM CELLS,  
CIRCULATING CANCER CELLS, MICROENVIRONMENT AND  
METASTASES"**

**Chairpersons: R. Fodde - G. Viglietto**

- 09:30 - 10:05 **Christopher Heeschen**, Madrid, ES  
DYNAMICS OF CANCER STEM CELL IN THE PANCREAS
- 10:05 - 10:40 **Natalia Bednarz-Knoll**, Hamburg, DE  
CIRCULATING CANCER CELLS: BIOLOGY AND CLINICAL IMPLICATIONS
- 10:40 - 11:15 **Caroline Dive**, Manchester, UK  
CIRCULATING TUMOUR CELLS IN LUNG CANCER, BIOMARKERS AND BIOLOGY
- 11:15 - 11:50 **R. Katherine Alpaugh**, Philadelphia, PA, US  
SEQUENCE ANALYSIS OF MUTATIONS IN CIRCULATING TUMOR CELLS PAIRED WITH  
DATA ON TUMOR TISSUE IN PATIENTS WITH INFLAMMATORY BREAST CANCER
- 11:50 - 12:15 **COFFEE BREAK**
- 12:15 - 12:50 **Jean-Yves Pierga**, Paris, FR  
CIRCULATING TUMOR CELLS IN BREAST CANCER: BIOLOGICAL CHARACTERISTICS AND  
CLINICAL APPLICATIONS
- 12:50 - 13:25 **Giorgio Stassi**, Palermo, IT  
COLON CANCER METASTASIS VIA MICROENVIRONMENT-DRIVEN CD44v6 EXPRESSION
- 13:25 - 14:00 **Luis F. Parada**, Dallas, TX, US  
CANCER STEM CELLS IN GLIOBLASTOMA MULTIFORME
- 14:00 **CLOSING REMARKS - SNACK - END OF WORKSHOP**



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